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1973-1974

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1973-1974

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

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SCHOOL OF MEDICINE (Admissions and General Information)	Dean of the School of Medicine
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STUDENT EMPLOYMENT	Director of Student Aids
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NAVAL RESERVE OFFICERS TRAINING CORPS	Executive Officer, Naval R.O.T.C. Unit
VETERAN'S INFORMATION	Veterans Affairs Officer
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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.

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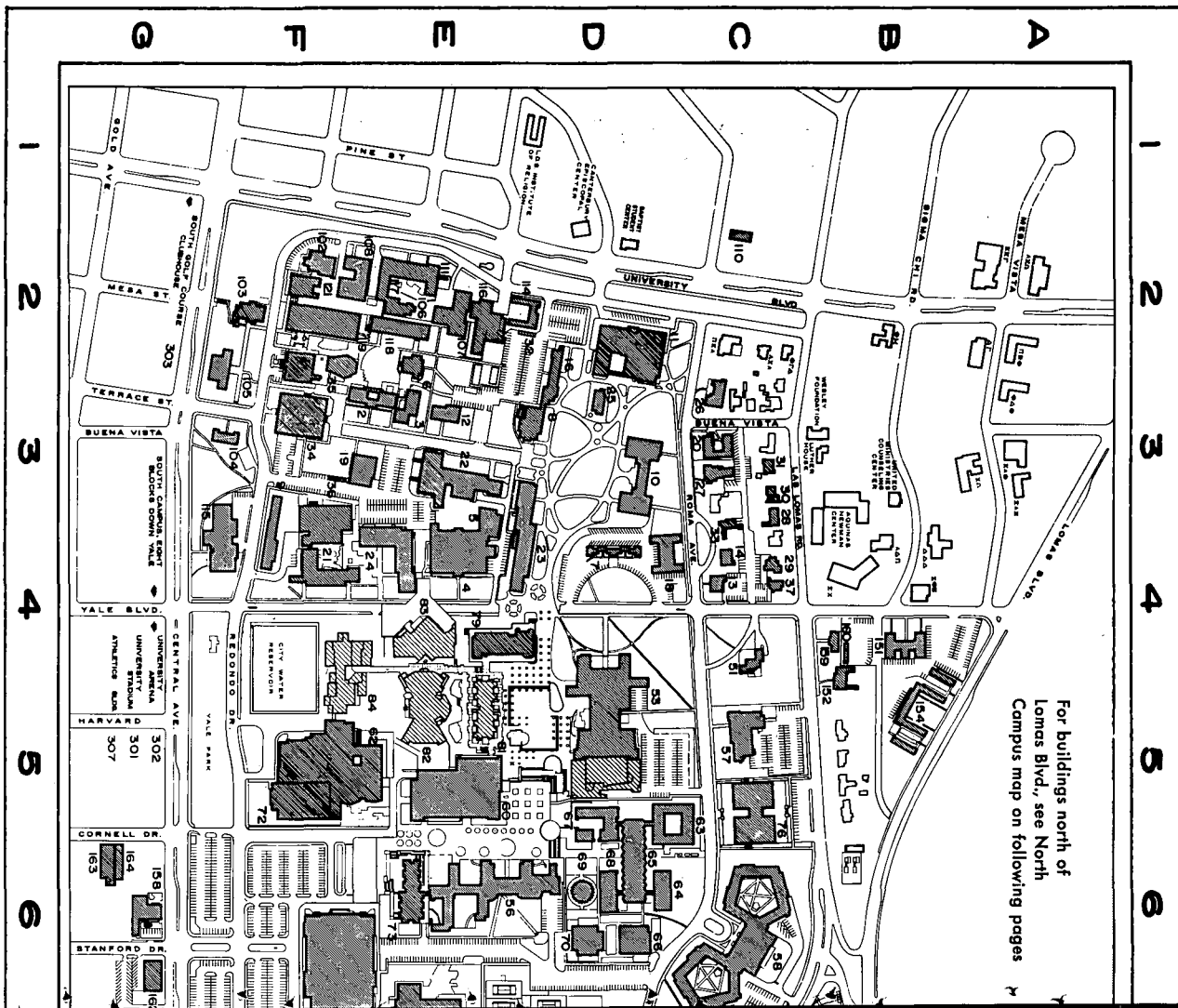
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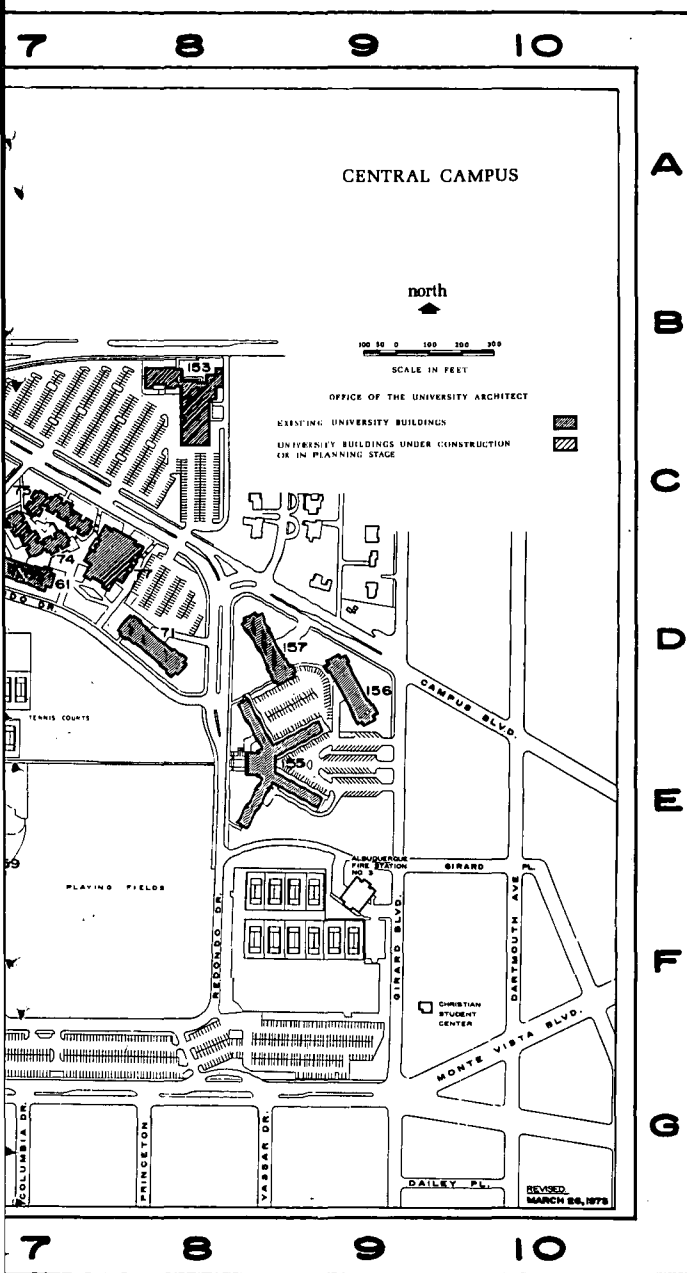
Central Campus Legend of Buildings

(Numerical Listing)

(The first number listed matches map number, 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. Parking and Campus Security
(1821 Roma NE) C-4
14. 1819 Roma NE D-4
16. Bandelier Hall (Departmental Offices) D-2
18. Y-1 E-1
19. Pharmacy E-3
20. Speech Communications E-3
21. Biology (Castetter Hall) E-4
22. Chemistry (Clark Hall) E-3
23. Mitchell Hall (Classrooms) E-4
24. Geology (Northrop Hall) E-3
25. Alumni Memorial Chapel E-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-3
30. 1808 Las Lomas NE C-3
31. 1804 Las Lomas NE C-3
33. 1815 Roma NE E-3
34. Psychology E-3
35. Physics Labs and Lecture Hall E-2
37. 1824 Las Lomas NE D-4
51. President's Home D-4
53. Zimmerman Library D-4
56. Mesa Vista Hall (Departmental Offices) D-4
57. 1915 Roma NE D-4
58. Hakona Hall (Dormitory) D-4
59. Johnson Gymnasium D-4
60. New Mexico Union D-4
61. Santa Clara Hall (Dormitory) D-4
62. Fine Arts Center D-4
63. Education Office Building D-4
64. Industrial Arts D-4
65. Education Administration D-4
66. Home Economics D-4
67. Education Classroom Building D-4
68. Art Education D-4
69. Kiva D-4
70. Manzanita Center (Educational Laboratory) D-4
71. Santa Ana Hall (Dormitory) D-4
72. Popejoy Hall D-4
73. Student Health Center—University College
and Counseling Center D-4
74. Laguna Hall (Dormitory) D-4
75. DeVargas Hall (Dormitory) D-4
76. School of Business and Administrative
Sciences Building (Includes ISRAD Wing) D-4
77. La Póveda (Dining Hall) D-4
79. Ortega Hall (offices and classrooms) D-4



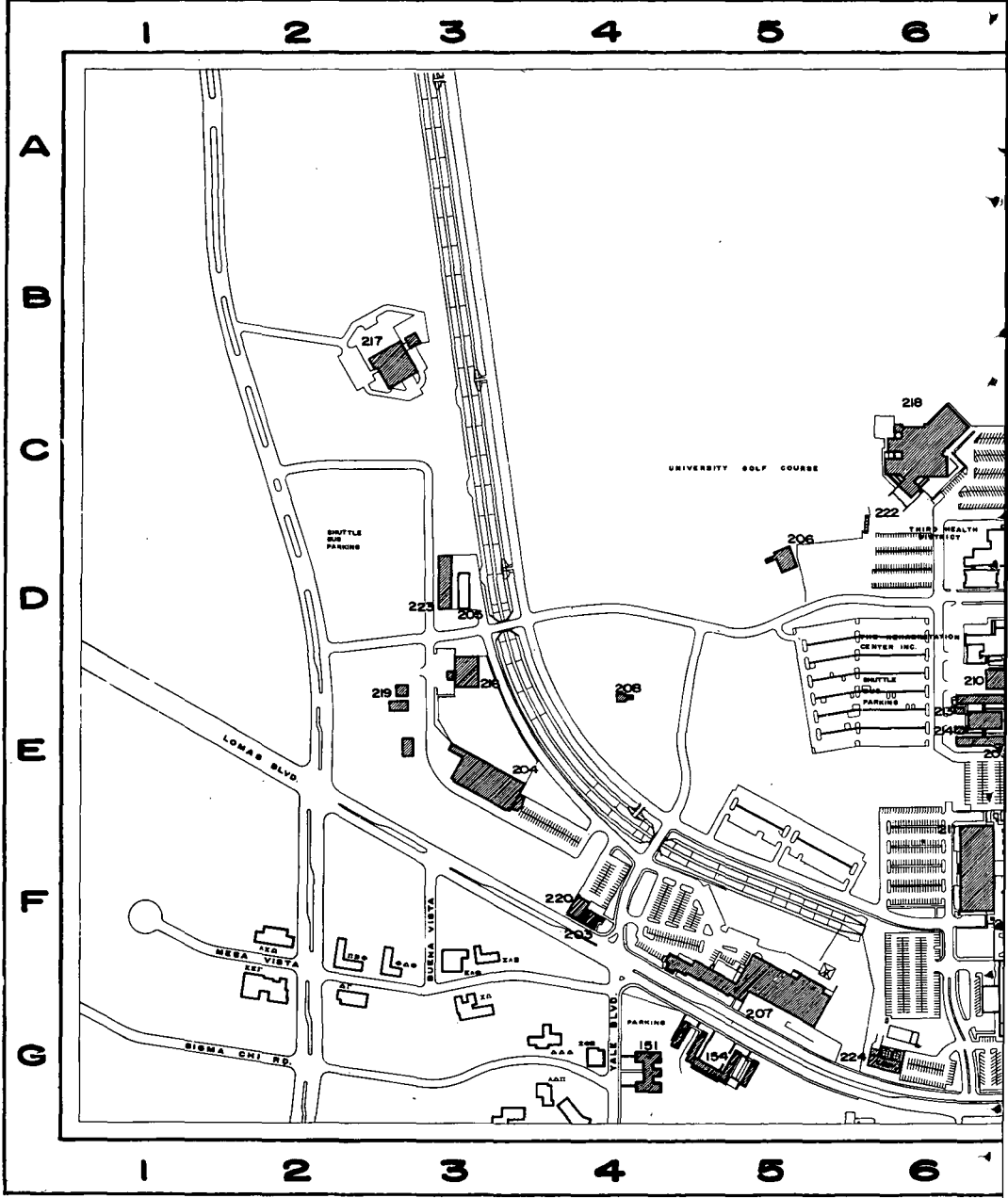


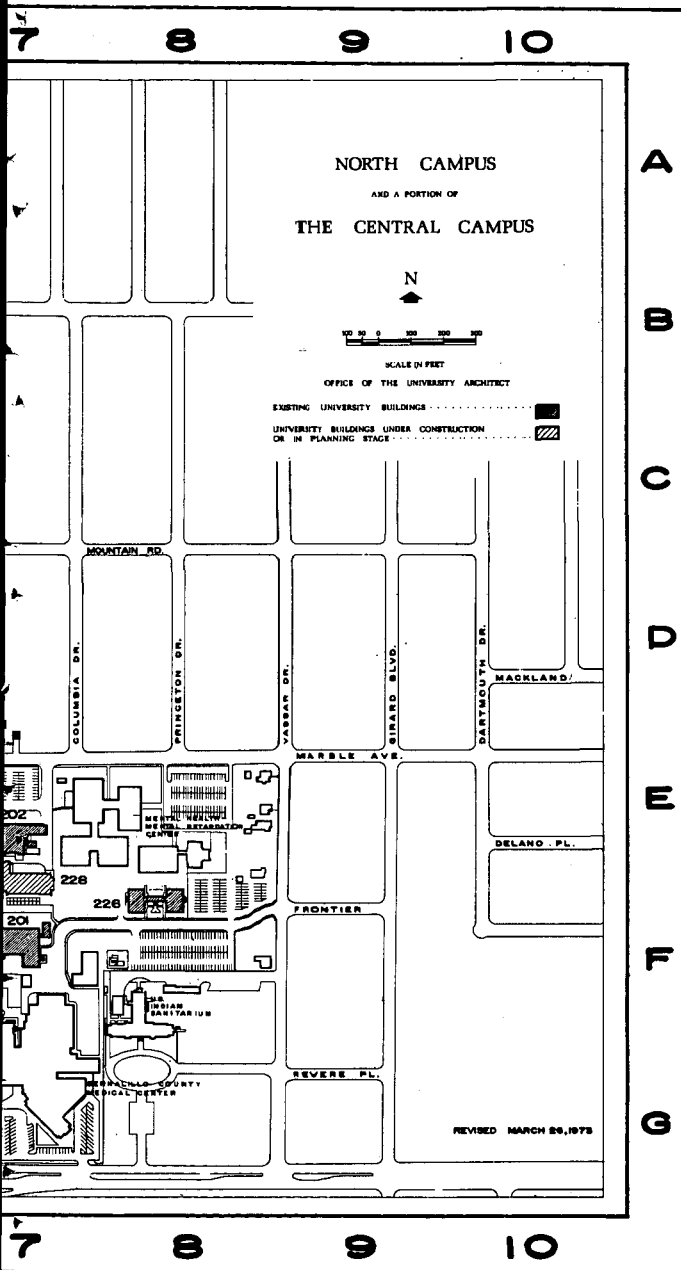
Central Campus Legend of Buildings (Alphabetical Listing)

(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
Architecture Annex (164)	G-6
Art (105)	F-2
Art Annex (102)	F-2
Art Building (under construction) (84)	F-4
Art Department Crafts Annex (2)	E-3
Art Education (68)	D-6
Athletics (307)	South Campus
B-2 (Dental Programs) (114)	D-2
Bandelier Hall (Departmental Offices) (16)	D-2
Bandelier East (Departmental Offices) (8)	D-3
Biology (Caster Hall) (21)	F-4
Bookstore (under construction) (83)	E-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
Computing Center (153)	B-8
Coronado Hall (Dormitory) (155)	E-8
DeVargas Hall (Dormitory) (75)	C-7
Education Administration (65)	D-6
Education Classroom Building (67)	D-5
Education Office Building (63)	C-5
Electrical Engineering (Tapp Hall) (118)	E-2
Engineering Shops and Laboratories (108)	F-2
Farris Engineering Center (119)	F-2
Fine Arts Center (62)	E-5
Ford Utilities Center (116)	E-2
Geology (Northrop Hall) (24)	E-4
Hodgkin Hall (103)	F-2
Hokona Hall (Dormitory) (58)	C-6
Home Economics (66)	D-6
Home Management House (110)	C-1
Humanities Building (under construction) (81)	D-5
Industrial Arts (64)	C-6
ISBA-D Wing (in Sch. of Bus. & Admin. Sci Bldg.)	C-5
Johnson Gymnasium (59)	F-4
Janson 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
Lecture Hall (under construction) (82)	E-5
Library, Zimmerman (53)	D-5
Manzanita Center (Educational Laboratory) (70)	D-6
Marron Hall (Departmental Offices) (9)	F-3
Mechanical Engineering (107)	E-2
Mesa Vista Hall (Departmental Offices) (56)	E-6
Mitchell Hall (Classrooms) (23)	D-3
Naval Science (151)	B-4
New Mexico Union (60)	E-5
Nuclear Engineering Laboratory (121)	F-2
Oriate Hall (Dormitory) (156)	D-9
Ortega Hall (offices and classrooms) (79)	D-4
Parking and Campus Security (1821 Roma NE) (13)	C-4
Parsons Hall (3)	E-3
Pharmacy (19)	E-3
Physics Labs and Lecture Hall (35)	F-2
Popejoy Hall (72)	F-5
President's Home (51)	C-4
Psychology (34)	F-3
Santa Ana Hall (Dormitory) (71)	D-8
Santa Clara Hall (Dormitory) (61)	C-7
Sara Reynolds Hall (104)	F-3
Speech Communications (20)	C-3
State Public Health Laboratory (12)	E-3
Student Health Center—University College and Counseling Center (73)	E-4
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
1824 Las Lomas NE (37)	C-4
1901 Las Lomas NE (159)	B-4
1717 Roma NE (26)	C-3
1805 Roma NE (27)	C-3
1815 Roma NE (33)	C-4
1819 Roma NE (14)	C-4
1821 Roma NE (13)	C-4
1915 Roma NE (57)	C-5

D-5	Humanities Building (under construction)
E-5	Lecture Hall (under construction)
E-4	Bookstore (under construction)
F-4	Art Building (under construction)
F-2	Art Annex
F-2	Hodgkin Hall
F-3	Sara Reynolds Hall
F-2	Art
F-2	Civil Engineering Research Laboratory
F-2	Mechanical Engineering
F-2	Engineering Shops and Laboratories
C-1	Home Management House
E-2	Chemical Engineering
D-2	B-2 (Dental Programs)
F-3	Journalism
E-2	Ford Utilities Center
E-2	Civil Engineering (Wagner Hall)
E-2	Electrical Engineering (Tapp Hall)
F-2	Farris Engineering Center
F-2	Nuclear Engineering Laboratory
B-4	Naval Science
B-4	Jensen Gallery
B-8	Computing Center (2701 Campus NE)
B-5	Apartments for Married Students
E-8	Coronado Hall (Dormitory)
D-9	Alvarado Hall (Dormitory)
D-8	Alvarado Hall (Dormitory)
G-6	Architecture
B-4	159 1901 Las Lomas NE
G-6	162 2500 Central SE
G-6	163 Tamarind Institute
G-6	164 Architecture Annex





North Campus Legend of Buildings (Alphabetical Listing)

(The number listed matches map numbering, the letter-number combination designates location by map coordinates.)

Apartments for Married Students (154)	G-5
Automotive Building (216)	D-3
Cancer Research (227)	F-7
Cancer Research Center (under construction) (227)	F-6
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 Science—Regional Medical Program (209)	E-6
Library of Medical Sciences (201)	F-7
Maternity and Infant Care Project (215)	D-6
Regional Medical Program (226)	F-7
Naval Science (151)	G-4
New Mexico Accident Investigation Facility (219)	E-3
North Campus Chilled Water Plant (224)	G-6
Observatory (208)	E-4
Physics-Astronomy (207)	G-5
Services Building (204)	E-3
Surge Building (2701 Frontier Pl. NE) (226)	F-7
Temporary Storage Building (205)	D-3
Warehouse (223)	D-3
Temp. Warehouse (205)	D-3
1000 Stanford NE (221)	E-7
1837 Lomas NE (220)	F-4

North Campus Legend of Buildings (Numerical Listing)

(The first number listed matches map numbering, the letter-number combination designates location by map coordinates.)

151. Naval Science	G-4
154. Apartments for Married Students	G-5
201. Library of the Medical Sciences	F-7
202. Department of Psychiatry	E-7
203. Continuing Education	F-4
204. Services Building	E-3
205. Temporary Storage Building	D-3
206. Golf Course Club House	D-5
207. Physics-Astronomy	G-5
208. Observatory	E-4
209. Laboratory Sciences, Regional Medical Program; Department of Community Medicine; Research, Department of Medicine	E-6
210. Department of Neurology and Convulsive Disorder Unit	E-6
211. Basic Medical Sciences Building, School of Medicine	F-6
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 Lomas NE	F-4
221. 1000 Stanford NE	E-7
223. Warehouse	D-3
224. North Campus Chilled Water Plant	G-6
226. Regional Medical Program; Surge Building (2701 Frontier Pl. NE)	F-7
227. Cancer Research Center (under construction)	F-6
302. University Stadium	South Campus
302. University Arena	South Campus
307. Athletics	South Campus

1973

JANUARY	FEBRUARY	MARCH	APRIL
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5 6	1 2 3	1 2 3	1 2 3 4 5 6 7
7 8 9 10 11 12 13	4 5 6 7 8 9 10	4 5 6 7 8 9 10	8 9 10 11 12 13 14
14 15 16 17 18 19 20	11 12 13 14 15 16 17	11 12 13 14 15 16 17	15 16 17 18 19 20 21
21 22 23 24 25 26 27	18 19 20 21 22 23 24	18 19 20 21 22 23 24	22 23 24 25 26 27 28
28 29 30 31	25 26 27 28	25 26 27 28 29 30 31	29 30
MAY	JUNE	JULY	AUGUST
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5	1 2	1 2 3 4 5 6 7	1 2 3 4
6 7 8 9 10 11 12	3 4 5 6 7 8 9	8 9 10 11 12 13 14	5 6 7 8 9 10 11
13 14 15 16 17 18 19	10 11 12 13 14 15 16	15 16 17 18 19 20 21	12 13 14 15 16 17 18
20 21 22 23 24 25 26	17 18 19 20 21 22 23	22 23 24 25 26 27 28	19 20 21 22 23 24 25
27 28 29 30 31	24 25 26 27 28 29 30	29 30 31	26 27 28 29 30 31
SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1	1 2 3 4 5 6	1 2 3	1
2 3 4 5 6 7 8	7 8 9 10 11 12 13	4 5 6 7 8 9 10	2 3 4 5 6 7 8
9 10 11 12 13 14 15	14 15 16 17 18 19 20	11 12 13 14 15 16 17	9 10 11 12 13 14 15
16 17 18 19 20 21 22	21 22 23 24 25 26 27	18 19 20 21 22 23 24	16 17 18 19 20 21 22
23 24 25 26 27 28 29	28 29 30 31	25 26 27 28 29 30	23 24 25 26 27 28 29
30			30 31

1974

JANUARY	FEBRUARY	MARCH	APRIL
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5	1 2	1 2	1 2 3 4 5 6
6 7 8 9 10 11 12	3 4 5 6 7 8 9	3 4 5 6 7 8 9	7 8 9 10 11 12 13
13 14 15 16 17 18 19	10 11 12 13 14 15 16	10 11 12 13 14 15 16	14 15 16 17 18 19 20
20 21 22 23 24 25 26	17 18 19 20 21 22 23	17 18 19 20 21 22 23	21 22 23 24 25 26 27
27 28 29 30 31	24 25 26 27 28	24 25 26 27 28 29 30	28 29 30
MAY	JUNE	JULY	AUGUST
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4	1	1 2 3 4 5 6	1 2 3
5 6 7 8 9 10 11	2 3 4 5 6 7 8	7 8 9 10 11 12 13	4 5 6 7 8 9 10
12 13 14 15 16 17 18	9 10 11 12 13 14 15	14 15 16 17 18 19 20	11 12 13 14 15 16 17
19 20 21 22 23 24 25	16 17 18 19 20 21 22	21 22 23 24 25 26 27	18 19 20 21 22 23 24
26 27 28 29 30 31	23 24 25 26 27 28 29	28 29 30 31	25 26 27 28 29 30 31
SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5 6 7	1 2 3 4 5	1 2	1 2 3 4 5 6 7
8 9 10 11 12 13 14	6 7 8 9 10 11 12	3 4 5 6 7 8 9	8 9 10 11 12 13 14
15 16 17 18 19 20 21	13 14 15 16 17 18 19	10 11 12 13 14 15 16	15 16 17 18 19 20 21
22 23 24 25 26 27 28	20 21 22 23 24 25 26	17 18 19 20 21 22 23	22 23 24 25 26 27 28
29 30	27 28 29 30 31	24 25 26 27 28 29 30	29 30 31

1973-74 ACADEMIC CALENDAR

1973 SUMMER SESSION

1973

LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATION AND CREDENTIALS OR APPOINTMENT REQUEST FOR ASSURANCE OF JUNE 2 REGISTRATION

	May 26, Sat. Noon
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; last day for withdrawal without grade; last day for change in grading option	June 15, Fri., 5 p.m.
Independence Day, holiday	July 4, Wed.
End of Sixth Week; last day for withdrawal from course without college or school approval	July 13, Fri., 5 p.m.
Session ends	July 27, Fri., 10 p.m.

1973 ANTHROPOLOGY FIELD SESSION

Registration	June 2, Sat.
Field Session ends	July 20, 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.

1973 FALL SEMESTER

1973

New Student Orientation Period	Aug. 23, Thu.
Walk-through Registration	Aug. 24, Fri.
Instruction begins; Late Registration Fee applies	Aug. 27, Mon.
Late Registration closes	Aug. 31, Fri., 5 p.m.
Labor Day, holiday	Sept. 3, Mon.
End of Second Week; last day for additions to programs of registered students	Sept. 7, Fri., 5 p.m.
End of Fourth Week; \$5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option	Sept. 21, Fri., 5 p.m.
Midsemester	Oct. 19, Fri.
Homecoming, holiday	Nov. 10, Sat.
End of Twelfth Week; last day for withdrawal from course without college or school approval	Nov. 16, Fri., 5 p.m.
Thanksgiving Recess begins	Nov. 21, Wed., 10 p.m.
Classes resume	Nov. 26, Mon., 7:30 a.m.
*Closed Period:	Dec. 8, Sat.-Dec. 21, Fri.
*Pre-examination Week	Dec. 8, Sat.-Dec. 13, Thu.
*Semester Final Examinations	Dec. 14, Fri.-Dec. 21, Fri.
Semester ends; last day for removal of Incomplete grade (5 p.m.);	
Mid-year Recess begins	Dec. 21, Fri., 10 p.m.

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

1973-74 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.

1974 SPRING SEMESTER

1974

New Student Orientation Period	Jan. 17, Thu.
Walk-through Registration	Jan. 18, Fri.
Instruction begins; Late Registration Fee applies	Jan. 21, Mon.
Late Registration closes	Jan. 25, Fri., 5 p.m.
End of Second Week; last day for additions to programs of registered students	Feb. 1, Fri., 5 p.m.
End of Fourth Week; \$5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option	Feb. 15, Fri., 5 p.m.
Midsemester	Mar. 15, Fri.
Spring Recess begins	Mar. 16, Sat., 10 p.m.
Classes resume	Mar. 25, Mon., 7:30 a.m.
Honors Assembly	To be arranged
End of Twelfth Week; last day for withdrawal from course without college or school approval	Apr. 19, Fri., 5 p.m.
*Closed Period	May 6, Mon.-May 18, Sat.
*Pre-examination Week	May 6, Mon.-May 12, Sun.
*Semester Final Examinations	May 13, Mon.-May 18, Sat.
Semester ends; last day for removal of Incomplete grade (5 p.m.); Summer Recess begins	May 18, Sat., 10 p.m.
Commencement	May 19, Sun., 7:30 p.m.

1974 SUMMER SESSION

1974

LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATION AND CREDENTIALS OR APPOINTMENT REQUEST

FOR ASSURANCE OF JUNE 1 REGISTRATION May 25, Sat. Noon

New Student Orientation	May 31, Fri.
Advisement and Registration	June 1, Sat.
Instruction begins; Late Registration fee applies	June 3, Mon.
Late Registration closes; last day for additions to programs	June 7, Fri., 5 p.m.
End of Second Week; \$5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option	June 14, Fri., 5 p.m.
Independence Day, holiday	July 4, Thu.
End of Sixth Week; last day for withdrawal from course without college or school approval	July 12, Fri., 5 p.m.
Session ends	July 26, 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.

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⁹ Deceased 10/31/72.

³⁸ Deceased 1/27/73.

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- 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.
- VIRGINIA REVA**, B.A., St. Mary's College Notre Dame; M.A., University of Michigan. Professor Emeritus of Business Education.
- 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; L.H.D., University of New Mexico. Research Professor Emeritus of History.
- FLORENCE MARGARET SCHROEDER**, B.S., Iowa State College; M.A., Teachers College, Columbia University; Ph.D., New York University. Professor Emeritus of Home Economics.
- VICTOR VIO SEARCY**, B.S., M.S., Oklahoma State University. Instructor Emeritus in Chemistry.
- RAMON JOSÉ SENDER**, B.A., Instituto de Zaragoza; Lic. en Filosofía y Letras, Universidad Central de Madrid; Litt.D., University of New Mexico; LL.D., University of Southern California. Professor Emeritus of Modern Languages.
- MALCOLM PITMAN SHARP**, B.A., Amherst College; M.A., University of Wisconsin; LL.B., S.J.D., Harvard Law School. Lecturer Emeritus in Law.
- ¹⁰ **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.
- TONI TARLETON**, Director Emeritus, Harwood Foundation.
- JOHN TATSCHL**, Diploma, Austrian State Teachers College; Diploma, Vienna Academy of Applied Arts; Diploma, Master School of Sculpture, Vienna Academy of Fine Arts. Professor Emeritus of Art.
- 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.
- HENRY P. WEIHOFFEN**, Ph.B., J.D., J.S.D., University of Chicago. Professor Emeritus of Law.
- 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.

¹⁰ Deceased 2/16/72.

FACULTY

FOR THE ACADEMIC YEAR 1972-73

- 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. Assistant Professor in Art.
- CLIFFORD ABE, B.A.,** College of Idaho; M.S., University of Utah; Ed.D., University of Arizona. Assistant Professor of Guidance.
- 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.
- 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.
- MAUREEN MARGARET AHERN, B.S.,** Wisconsin State University (Stevens Point); M.S., Purdue University. Clinical Supervisor and Lecturer in Speech Pathology, Department of Communicative Disorders.
- HARJIT SINGH AHLUWALIA, M.S.C.,** University of Punjab, India; Ph.D., University of Gujarat, India. Associate Professor of Physics.
- ⁸ **BOHUMIL ALBRECHT, C.E.,** Slovak Institute of Technology, Czechoslovakia; M.S., Ph.D., Columbia University. Professor of Mechanical Engineering.
- RAMON ALEMAN, B.S.,** Texas A & I University; M.Ed., Texas Tech University. Instructor in Guidance.
- ⁸ **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.
- ⁷ **PAULA BROWN ALLEN, B.A., M.F.A.,** University of Oregon. Instructor in English and American Studies (Part-time).
- 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.
- OSCAR ALTAMIRANO,** Instructor in Modern and Classical Languages (Part-time).
- JOE SCOTT ALTENBACH, B.S., M.S., Ph.D.,** Colorado State University. Assistant Professor of Biology.
- ANITA LOUISE ALVARADO, B.A.,** American University; M.A., University of Arizona. Assistant Professor of Anthropology.
- DAVID ALVIREZ, B.A.,** Southwestern University; B.D., Southern Methodist University; M.A., Ph.D., University of Texas (Austin). Assistant Professor of Sociology.
- BARRY CHARLES AMES, B.A., M.A., Ph.D.,** 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.

⁸ On sabbatical leave second semester.

⁷ First semester only.

- DIANA AMSDEN, B.A.**, University of New Mexico; M.El.Ed., Harvard University; M.A., University of Denver. Cataloger, Instructor in Librarianship.
- ⁸ **JOHN ANDREW ANDERSON, B.M.E.**, University of Florida. Adjunct Professor of Chemical Engineering.
- 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, Acting Director of the Division of Government Research (Sem. I).
- 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.
- 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; M.Phil., University of London. Lecturer in Architecture.
- GARO ZAREH ANTREASIAN, B.F.A.**, John Herron School of Art. Professor of Art.
- HAROLD WILLIAM APEL, A.B.**, Miami University (Ohio); M.S. in L.S., Western Reserve University. Acting Readers' Services Librarian, General Library; Visiting Associate Professor of Librarianship.
- OTTO APPENZELLER, M.B., B.S., M.D.**, Sydney University; Ph.D., University of London. Professor of Neurology, Professor of Medicine.
- ²⁵ **JOHN ANTHONY ARAGON, B.A.**, Highlands University; M.A., Ed.D., University of New Mexico. Director, Cultural Awareness Center; Associate Professor of Educational Administration.
- DELFINO ARELLANO, B.A.**, University of New Mexico; M.S.W., University of Southern California. Social Worker III, Department of Psychiatry; Instructor in Psychiatry.
- GWEN S. ARGERSINGER, A.B., M.Phil.**, University of Kansas. Assistant Professor of American Studies.
- GEORGE WARREN ARMS, B.A.**, Princeton University; Ph.D., New York University. Professor of English.
- DONALD ARMSTRONG**, Lecturer in Health, Physical Education and Recreation (Part-time).
- LOIS DUNCAN ARQUETTE**, Lecturer in Journalism (Part-time).
- ROGER WAYNE ASAY, B.A.**, Earlham College; M.A., University of California (Berkeley). Lecturer in Art (Part-time).
- ALONZO C. ATENCIO, B.A., M.S., Ph.D.**, University of Colorado. Assistant Dean for Student Affairs, School of Medicine. Assistant Professor of Biochemistry.
- 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.
- ¹ **KEITH F. AUGER, B.S.**, University of Wisconsin; M.Ed., Ed.D., University of Illinois. Associate Professor of Elementary Education.
- PRATAP SHANKER AVASTHI, M.B., B.S., M.D.**, Lucknow Medical College, India. Assistant Professor of Medicine.
- ² **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. Associate Professor of Educational Foundations, Associate Professor of Sociology.
- ARCHIE JOHN BAHM, B.A.**, Albion College; M.A., Ph.D., University of Michigan. Professor of Philosophy.
- ⁸ **HAROLD BAILEY, B.S., M.A.**, University of New Mexico. Assistant Coordinator, Afro-American Studies; Lecturer in Educational Foundations.
- MOLLIE BETH BAILEY, B.S., M.T.**, Southeastern State College; Ph.D., University of New Mexico. Assistant Professor of Secondary 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.

¹ On sabbatical leave for the year.² On sabbatical leave first semester.⁸ Second semester only.²⁵ Part-time from 10/16/72-1/15/73.

- WILLIAM ERNEST BAKER, B.S.M.E., Ph.D., University of Texas; M.S., University of New Mexico. Associate Professor of Mechanical Engineering.
- WILLIAM JOHN BAKER, B.S.Pharm., University of New Mexico; M.S., University of Southern California. Assistant Professor of Pharmacy (Radiopharmacy), Instructor in Radiology.
- ¹² LYNN HART WRIGHT BANOWSKY, B.A., University of Texas; M.D., Tulane Medical School. Associate Professor of Surgery (Urology); Chief, Division of Urology; Department of Surgery.
- JAMES FRANCIS BARBOUR, B.A., Concordia Theological Seminary; M.A., Washington University; Ph.D., University of California (Los Angeles). Assistant Professor of English. (Part-time).
- ROBERT LEE BARENBERG, B.S., Massachusetts Institute of Technology; M.D., Albany Medical College. Adjunct Assistant Professor of Physiology.
- JAMES EDWARD BARNES, B.S., Central Missouri State College; M.S., Ph.D., University of Kansas. Assistant Professor of Radiology (Medical Physics).
- 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.
- ²⁰ THOMAS FRANCIS BARROW, B.F.A., Kansas City Art Institute; M.S., Northwestern University Institute of Design. Associate Professor of Art. Associate Director, University Art Museum.
- BARBARA L. BARSKY, B.A., Ithaca College; M.A., Hunter College. Visiting Instructor in Speech Communication (Part-time Semester I).
- 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.
- LARRY LUMIR BARTON, B.S., M.S., Ph.D., University of Nebraska. Assistant Professor of Biology.
- HARRY WETHERALD BASEHART, M.A., Ph.D., Harvard University. Professor of Anthropology, Chairman of the Department 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.
- ¹¹ JOHN W. BEAKLEY, B.A., Texas Technological College; M.A., University of Texas; Ph.D., University of Arizona. Associate Professor of Biology.
- CHARLES LEROY BECKEL, B.S., University of Scranton; Ph.D., Johns Hopkins University. Acting Vice President for Research; Assistant Dean of the Graduate School⁷, Professor of Physics.
- JAMES FRANK BECKLEY, B.A., J.D., University of New Mexico. Lecturer in Law (Part-time).
- ⁴ CHARLES E. BECKNELL, B.S., M.A., University of Albuquerque. Coordinator of Afro-American Studies; Assistant Professor of Educational Foundations.
- THERON RONALD BEESON, B.A., M.S., University of Illinois; Certified Public Accountant. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- ⁷ MARTHA HELEN BELL, B.A., M.A., Stanford University. Instructor in Modern and Classical Languages (German).
- PETER CHARLES BELL, B.A., M.A., The Queen's College, Oxford, England; M.B.A., University of Chicago. Lecturer in Business and Administrative Sciences.
- 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.
- SHAUL BEN-DAVID, M.Sc., Hebrew University (Israel); Ph.D., Cornell University. Associate Professor of Economics.

⁴ On leave for the year⁷ First semester only.¹¹ Deceased 11/8/72.¹² Resigned 10/1/72.²⁰ Beginning 1/1/73.

- DAVID THEODORE BENEDETTI, JR., B.A., M.A., University of New Mexico; Ph.D., University of Colorado, Acting Dean of the Graduate School, Professor of Psychology.
- DAVID ALEXANDER BENNAHUM, B.A., Swarthmore College; M.D., University of Geneva (Switzerland). Assistant Professor of Medicine.
- IVEN VELTON BENNETT, B.A., Chico State College; M.A., University of Nebraska; Ph.D., Boston University. Professor of Geography, Acting Chairman of the Department of Geography.
- ROBERT LaFOLLETTE BENNETT, LL.B., Southeastern University School of Law. Director of Special Projects, American Indian Law Center; Lecturer in Law (Part-time).
- 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.
- JOHN JOSEPH BERGEN, B.A., St. Bonaventure University; M.A., Cornell University; Ph.D., University of California (Los Angeles). Assistant Professor of Modern Languages.
- WHITNEY RAU BERGMAN, B.F.A., Julliard School. Lecturer in Dance, Department of Theatre Arts (Part-time).
- ¹⁸ LOUIS CHARLES BERNARDONI, B.A., University of Illinois; M.A., Ed.D., Arizona State University. Professor of Guidance, Chairman of the Department of Guidance and Special Education.
- RICHARD MARTIN BERTHOLD, B.A., Stanford University; M.A., Ph.D., Cornell University. Assistant Professor of History.
- MORGAN BERTHRONG, M.D., Harvard Medical School. Visiting Professor of Pathology (Part-time).
- JOSEPH FRANCIS BERTINETTI, B.B.A., New Mexico State University; M.Ed., University of Texas at El Paso; Ph.D., University of New Mexico. Assistant Professor of Guidance.
- JOSEPH McCALL BICKNELL, B.A., M.D., University of Michigan. Associate Professor of Neurology. Acting Chairman of the Department of Neurology.
- CHARLES DeWAYNE BIEBEL, B.A., Oberlin College; M.S., Ph.D., University of Wisconsin (Madison). Assistant Professor of American Studies and Educational Foundations.
- 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. Professor of Anthropology.
- ANNE KOVACOVICH BINGAMAN, A.B., LL.B., Stanford University. Assistant Professor of Law.
- ⁷LOYD MORGAN BISHOP, B.A., M.A., Oklahoma State University. Instructor in Speech Communication (Part-time).
- ROBERT GORDON BLACHLY, A.B., University of Denver; M.S., University of Missouri. Assistant Professor of Psychiatry (Social Work).
- 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. Professor of Theatre Arts, Assistant Dean of the College of Fine Arts.
- 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.
- ROBERT LINGREN BLEYL, B.S.C.E., M.S., University of Utah; Ph.D., Pennsylvania State University. Associate Professor of Civil Engineering.
- 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.
- JULIUS RUBIN BLUM, A.B., Ph.D., University of California. Professor of Mathematics.

⁷ First semester only.¹⁸ Deceased 7/8/72.

- ARTHUR A. BLUMENFELD**, B.B.A., M.A., University of New Mexico. Director of the Albuquerque Urban Observatory, Assistant Professor of Business and Administrative Sciences.
- ² **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.Ph., University of Manitoba; M.S., University of Colorado. Instructor in Pharmacy (Pharmacy Administration), Assistant Dean of the College of Pharmacy.
- PHILIP KARL BOCK**, B.A., Fresno State College; M.A., University of Chicago; Ph.D., Harvard University. Professor of Anthropology.
- 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).
- EUGENE THOMAS BONESKI**, B.A., Seton Hall University; S.T.L., Catholic University of America. Administrative Officer in the Department of Obstetrics and Gynecology, Lecturer in Obstetrics and Gynecology.
- ERNEST TRUETT BOOK**, B.A., Baylor University; Ph.D., University of Paris. Associate Professor of Modern and Classical Languages.
- THOMAS ALLEN BORDEN**, A.B., Earlham College; M.S., M.D., University of Chicago. Assistant Professor of Surgery (Urology), Chief, Division of Urology, Department of Surgery.
- GERALD M. BORDIN**, B.S., University of California (Berkeley); M.D., St. Louis Medical School. Assistant Professor of Pathology.
- 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.
- EARL WHITFIELD BOURNE**, A.B., Westminster College; M.S., Ph.D., Oklahoma State University. Assistant Professor of Biology.
- FRANCIS HARRY BOWEN**, B.M., University of Illinois; M.M., Texas Techritcal University at Lubbock. Associate Professor of Music.
- ⁸ **E. BOYD**, Adjunct Professor of Art.
- ²⁷ **GERALD JOSEPH BOYLE**, B.S., Colorado College; M.A., University of New Mexico; Ph.D., Syracuse University. Professor of Economics. Acting Chairman, Department of Economics.
- PATRICIA O'ROURKE BRALY**, B.F.A., M.A., University of New Mexico. Lecturer in Art (Part-time).
- MARTIN DANIEL BRADSHAW**, B.S.E.E., M.S.E.E., University of Wichita; Ph.D., Carnegie Institute of Technology. Professor of Electrical Engineering and Computer Science.
- ⁸ **ROBERT BRANDSCHAIN**, A.B., University of Vermont; M. Ed., Temple University. Instructor in Elementary Education (COP Program) (Part-time).
- ⁴ **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.
- JOHN G. BREILAND**, A.B., Luther College; M.S., University of Iowa; Ph.D., University of California (Los Angeles). Lecturer in Physics and Astronomy (Part-time).
- PAUL WALTER BREWER**, B.A., Rice University; M.A., University of Virginia. Instructor in History.
- ⁴ **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. Director of the 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.

² On sabbatical leave first semester.⁴ On leave for the year.⁸ Second semester only.²⁷ Acting chairman effective 11/8/72.

- DOUGLAS GRIDLEY BROOKINS**, A.B., University of California at Berkeley; Ph.D., Massachusetts Institute of Technology. Professor of Geology, Acting Chairman of the Department of Geology.⁷
- 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.
- 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 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.
- SUSANNE BRADLEY BROWN**, B.S., Ohio State University; M.D., Western Reserve University. Pediatrician to Programs for Children, Department of Pediatrics. Instructor in Pediatrics.
- ⁷ **ALFRED BRUNER**, B.A., San Diego State College; Ph.D., Indiana University. Adjunct Associate Professor of Psychology.
- ⁸ **SANDRA JEAN BRUNER**, B.Ed., University of Florida; M.A., Purdue University. Instructor in Biology (Part-time).
- DOMENIC ANTHONY BRUZZESE**, B.S., Georgetown University; M.D., University of New Mexico. Adjunct 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 Theatre Arts.
- ⁸ **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. Assistant Professor of Psychiatry.
- ⁷ **ZBIGNIEW ZYGMUNT BUDAY**, Diploma in Art and Design, Hornsey College of Art (London, England); M.F.A., University of Oklahoma. Lecturer in Art (Part-time).
- ROBERT BUIE**, Bacc. es Arts, Charles Garnier College (Quebec City); M.D., Laval University (Quebec City). Adjunct Assistant Professor of Psychiatry.
- ⁸ **BAINBRIDGE BUNTING**, B.S., University of Illinois; Ph.D., Harvard University. Professor of Art, Professor of Architecture.
- JOYCE TILLMAN BURGESS**, B.S., M.S., University of Arkansas. Instructor in Home Economics (Part-time).
- LLOYD ROBERT BURLEY**, B.Ed., Duluth State Teachers College; M.A., Ph.D., State University of Iowa. Professor of Physical Education.
- 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.
- ⁸ **WILLIAM CHARLES BUSS**, B.S., Portland State University; M.S., University of Alberta; Ph.D., University of Oregon Medical School. Assistant Professor of Pharmacology.
- ⁷ **J. KENT BUTLER**, B.S.E., M.S.E., Ph.D., Arizona State University. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- DOLORES SMITH BUTT**, B.A., M.A., Ph.D., University of New Mexico. Associate Professor of Communicative Disorders (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.
- JONATHAN FERRIS CALLENDAR**, B.S., California Institute of Technology; A.M., Ph.D., Harvard University. Assistant Professor of Geology.
- DIANA FRANCES CALVERT**, B.S., University of Oklahoma; Pharm.D., University of Southern California. Assistant Professor of Pharmacy (Clinical Pharmacy).

⁸ On sabbatical leave second semester.

⁷ First semester only.

⁸ Second semester only.

- ¹ **JOHN MARTIN CAMPBELL**, B.A., University of Washington; Ph.D., Yale University. Professor of Anthropology.
- ROBERT DALE CAMPBELL**, B.A., M.A., University of Colorado; Ph.D., Clark University. Professor of Geography.
- ⁸ **WILLIAM CAPELS**, B.B.A., University of New Mexico; Visiting Lecturer in Business and Administrative Sciences (Part-time).
- EDWIN H. CAPLAN**, B.B.A., M.B.A., University of Michigan; Ph.D., University of California. C.P.A.; Professor of Business and Administrative Sciences.
- ALFRED SAMUEL CARASSO**, B.Sc., University of Adelaide; M.Sc., M.A., Ph.D., University of Wisconsin. Associate Professor of Mathematics.
- JOSEPH PETER CARDILLO**, A.B., Dartmouth College; Ph.D., George Peabody College. Assistant Professor of Psychiatry, Assistant Professor of Psychology, Instructor in Pediatrics.
- JAMES F. CARLIN**, B.S., De Pauw University; M.D., Western Reserve University. Associate 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.
- MARION DICKENS CARPENTER**, B.S., University of Colorado; M.S., University of Texas. Assistant Professor of Nursing.
- ⁸ **JUDITH WEICHSEL CARR**, B.F.A., M.F.A., Cranbrook Academy of Art. Instructor in Art Education (Part-time).
- MARY HELEN CARROLL**, R.N., Providence Hospital; B.S.N.Ed., Catholic University; C.N.M., Holy Family Hospital (Pakistan); C.N.M., Catholic Maternity Institute, Santa Fe, N.M.; M.H.A., St. Louis University. Assistant Professor of Nursing.
- MATTHIEU CASALIS**, License (Theology); Doctorate (Religion) Faculté de Théologie, Strasbourg. Assistant Professor of Philosophy.
- ROBERT FOSTER CASTLE**, A.B., M.D., Western Reserve University. Professor of Pediatrics.
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- 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.
- EDITH ANN CHERRY**, B.A., B.Arch., M.Arch., Rice University. Visiting Lecturer in Architecture.
- THOMAS WESLEY CHICK**, B.S., Arkansas State Teachers College; M.D., University of Arkansas School of Medicine. Assistant Professor of Medicine.
- FREDERICK MARTIN CHREIST, SR.**, B.A., DePauw University; M.A., Ph.D., Northwestern University. Professor of Communicative Disorders (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.

¹ On sabbatical leave for the year.

² On sabbatical leave second semester.

³ Second semester only.

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- ¹ **WOODROW WILSON CLEMENTS, B.A.**, New Mexico Highlands University; M.A., University of New Mexico. Professor of Physical Education.
- DANIEL EMMETT CLIFFORD, D.D.S.**, Creighton University. 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.
- CHARLES KUDNER COATES, B.A.**, University of Virginia. Associate Professor of Journalism.
- RUBEN COBOS, B.A., M.A.**, University of New Mexico. Associate Professor of Modern and Classical Languages.
- PAUL TERRY COCHRAN, B.A.**, DePauw University; M.D., Western Reserve University School of Medicine. Assistant Professor of Medicine.
- 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, Assistant Professor of Obstetrics and Gynecology.
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- ²¹ **SANFORD COHEN, B.A., M.A., Ph.D.**, Ohio State University. Professor of Economics, Chairman of the Department of Economics.
- ROBERT CARL COHLMAYER, B.S.**, Architectural Engineering, University of Illinois. Professor of Architecture.
- FREDERICK COHN, B.S.**, Franklin Marshall College; M.D., University of Pennsylvania. Adjunct Assistant Professor of Health Education.
- CARL GENE COIN, M.D.**, University of Oklahoma School of Medicine. Adjunct Associate Professor of Radiology.
- VAN DEREN COKE, B.A.**, University of Kentucky; M.F.A., Indiana University. Director of the University Art Museum, 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.
- RICHARD BROOKS COLE, B.B.A.**, University of New Mexico; J.D., University of New Mexico School of Law. Lecturer in Law (Part-time).
- WILLIAM FLETCHER COLEMAN, B.S.**, Florida Presbyterian College; Ph.D., Indiana University. Assistant Professor of Chemistry.
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- EDWIN FRANCIS CONNERLEY, B.A.**, University of Nebraska; M.P.A., University of Southern California. Assistant Professor of Public Administration.
- JOHN TEHERANCE CONWAY, B.F.A.**, Herron School of Art; M.A., University of New Mexico. Lecturer in Art (Part-time).
- JUDD STEPHEN CONWAY, A.B.**, Harvard University; M.A., University of Michigan. Assistant Professor of Political Science.
- ⁶ **JOHN RICHARDSON COONEY, B.A., J.D.**, University of New Mexico. 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.
- ³ **JAMES GORDON COOPER, B.S.**, University of Maine; M.A., Ed.D., Stanford University. Professor of Educational Foundations.

¹ On sabbatical leave for the year.³ On sabbatical leave second semester.⁶ On leave second semester.⁷ First semester only.⁸ Second semester only.²¹ Resigned chairmanship effective 11/8/72.

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- CARL ERNEST CORDS**, B.S., Arizona State University; Ph.D., University of Washington. Assistant Professor of Microbiology.
- SANDRA LEA CORLESS**, B.S., University of Minnesota; M.A., University of New Mexico. Lecturer in Speech Communication and Director of Debate.
- 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.
- BERRY DEAN COX**, B.A., M.A., University of New Mexico. Lecturer and Clinical Supervisor in Audiology, Department of Communicative Disorders.
- 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.
- ⁸ **CHESTER RAYMOND CRAIN, JR.**, A.B., Knox College; M.A., University of California (Riverside). Instructor in Mathematics (Part-time).
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- DONALD COLGETT CUTTER**, B.A., M.A., Ph.D., University of California. Professor of History.

⁴ On leave for the year.⁸ Second semester only.

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- ⁸ ROBERT P. D'ALESSANDRO, B.F.A., Pratt Institute; M.F.A., Brooklyn College. Lecturer in Art (Part-time).
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- DAVID WAYNE DARLING, B.S., M.S., Western New Mexico University; Ed.D., University of Texas. Professor of Elementary Education.
- FRED MORTON DART, B.M., University of Michigan; M.A., University of Maryland. Associate Professor of Music.
- 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. Professor of Sociology, Director of Research for the Criminal Justice Program (ISRAD).
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- PAUL BENJAMIN DAVIS, B.A., Oberlin College; M.A., Ph.D., University of Wisconsin. Associate Professor of English.
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- PHILLIP 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.
- PAUL BYRON DEARTH, B.A., M.A., Ph.D., University of California (Los Angeles). Associate Professor of Health Education.
- LORRAINE MARIE DECK, B.S., Wayne State University; M.S., University of New Mexico. Instructor in Chemistry.
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- ² JOANNA deKEYSER, B.M., University of Southern California. Assistant Professor of Music.
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- EDWARD VINCENT DeSANTIS, A.B., M.A., Ph.L., Fordham University; B.D., Woodstock College. Lecturer in English (Part-time).
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² On sabbatical leave first semester.⁸ Second semester only.⁴ On leave for the year.

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- 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.
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- ⁸ **WILLIAM SMITH DIXON**, A.B., Princeton University; J.D., Yale University. Lecturer in Law (Part-time).
- 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, Assistant Chairman of the Department of Surgery.
- ZEE M. DOBKINS**, B.A., Oklahoma College of Liberal Arts; M.A., California State College (Los Angeles). Instructor in Guidance and Special Education (Part-time).
- ⁷ **HENRY MORGAN DODD, JR.**, B.S., Ph.D., University of Kansas. Adjunct Professor of Civil Engineering.
- EARL M. DOUGLAS**, A.B., University of New Mexico; M.Ed., University of Texas at El Paso; Ph.D., University of New Mexico. Assistant Professor of Elementary Education.
- 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, Director of Engineering Research Activities, Professor of Mechanical Engineering.
- CLETA MARIE DOWNEY**, B.A., M.A., University of New Mexico. Lecturer in Art; Assistant Curator of Prints, University Art Museum (Part-time).
- 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 Communicative Disorders (Speech Pathology), Coordinator of Clinical Services in the Department of Communicative Disorders.
- PATRICIA DRAPER**, B.A., Vassar College; M.A., Ph.D., Harvard University. Assistant Professor of Anthropology.
- 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.
- KATHLEEN TIMMINS DUDDY**, B.A., Briar Cliff; M.A., Ph.D., University of New Mexico. Assistant Professor of Elementary Education.
- MARIE-LOUISE duFAULT**, B.S., Ed.M., Boston University. Associate Professor of Dental Hygiene, Assistant to the Director of the Dental Programs.
- ⁷ **THOMAS AQUINAS DUFFEY, JR.**, B.S., Cornell University; M.S., University of New Mexico. Adjunct Professor of Civil Engineering.
- ⁷ **CHARLES T. DuMARS**, B.S., University of Oregon; J.D., University of Arizona. Lecturer in Law (Part-time).
- MARCIA ELLEN DUNCAN**, B.A., Washburn University of Topeka; M.L.S., Kansas State Teachers College. Government Publications Cataloger, Instructor in Librarianship.

³ On sabbatical leave second semester.

⁴ On leave for the year.

⁷ First semester only.

⁸ Second semester only.

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- 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. Coordinator of Graduate Studies, School of Business and Administrative Sciences, 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, Chief, Division of Cardiovascular and Thoracic Surgery in the Department of Surgery.
- GUSTAVE A. EFROYMSON**, A.B., A.M., Ph.D., Harvard University. Associate Professor of Mathematics.
- JOHN ROBERT EHRENBERG**, B.A., Dartmouth College; M.A., Stanford University. Assistant Professor of Political Science.
- ⁴ **RONALD RALPH EICHORN**, B.S., University of Utah. Assistant Professor of Architecture.
- HELEN EILSTEIN**, M.A., Ph.D., University of Warsaw. Associate Professor of Philosophy.
- GEORGE EISENBERG**, B.A., University of Illinois; M.D., University of Chicago. Adjunct Assistant Professor of Pediatrics.
- PETER MICHAEL ELLER**, B.A., C. W. Post College; M.A., Ph.D., University of New Mexico. Lecturer in English (Part-time).
- HENRY CARLTON ELLIS**, B.S., College of William and Mary; M.A., Emory University; Ph.D., Washington University. Professor of Psychology.
- ² **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.
- ⁸ **SUSAN STIMUS ELLIS**, B.A., University of New Mexico. Lecturer in Journalism (Part-time).
- 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.
- 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.
- 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.
- ⁴ **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.
- ² **WAYNE C. EUBANK**, B.S., West Texas State College; M.A., Northwestern University; Ph.D., Louisiana State University. Professor of Speech Communication.
- ANDREW PAUL EVAN**, B.A., Bethel College; M.A., Ph.D., University of North Dakota. Assistant Professor of Anatomy.
- DICK EVANS**, B.F.A., M.F.A., University of Utah. Assistant Professor of Art.

² On sabbatical leave first semester.⁸ Second semester only.⁴ On leave for the year.

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- JAMES SAMUEL EVERETT, B.S.E., M.A.,** Kansas State Teachers College; Ed.D., University of Kansas (Lawrence). Assistant Professor of Guidance and 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, Assistant Professor of Physiology.
- LEONARD FELBERG, B.Mus., M.Mus.,** Yale University. Associate Professor of Music.
- KARL THOMAS FELDMAN, JR., 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.
- EGON FELLIG, National Music Academy of Rumania;** pupil of G. Enesco (Rumania); pupil of Dounis (Ecuador). Lecturer in Music.
- SANDRA LEE FERKETICH, B.A.,** University of New Mexico; M.S., Indiana University. Assistant Professor of Nursing.
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- DOUGLAS PETER FERRARO, A.B.,** Columbia College; M.A., Ph.D., Columbia University. Associate Professor of Psychology.
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- WILLIAM CARL FIEDLER, B.S., M.S., Ph.D.,** Purdue University. Professor of Pharmacy.
- CHARLES TWIST FIELD, A.B.,** Stanford University; M.F.A., University of Washington. Associate Professor of Art.
- FRANK RESOLVERT FIELD, B.S.,** State University of New York; M.A., Ed.D., Ball State University. Assistant Professor of Industrial Education, Department of Secondary Education.
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- ⁸ **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, 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, Ph.D., University of Minnesota. Assistant Professor of Surgery.
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- ⁴ **REGINALD HEBER FITZ, B.A., M.D.,** Harvard University. Professor of Medicine.
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- ⁸ **WALTER GARRETT FLICKINGER, B.A.,** Yale University; J.D., University of Michigan. Visiting Professor of Law.

⁸ On sabbatical leave second semester.⁸ Second semester only.⁴ On leave for the year.

- ⁷ **MARSHALL S. FLOYD**, A.S., Misa College; B.S., M.A., University of New Mexico. Instructor in Secondary Education (Part-time).
- TROY SMITH FLOYD**, B.J., M.A., University of Missouri; Ph.D., University of California. Professor of History, Acting Chairman of the Department of History, Semester II only.
- 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.
- ⁷ **JERRY MAURICE FREEDMAN**, B.S.M.E., M.S.M.E., University of New Mexico; Ph.D., Northwestern University. Adjunct Professor of Mechanical Engineering.
- THOMAS PATRICK FRIDEN**, A.B., Gonzaga University; M.A., Ph.D., University of Illinois. Assistant Professor of Psychology.
- KENNETH J. FRIEDENBACH**, B.S., Santa Clara University; M.S., University of New Mexico. Instructor in Mathematics (Part-time).
- ⁴ **JEFFREY WAYNE FROELICH**, A.B., University of California (Riverside); M.A., Harvard University. Assistant Professor of Anthropology.
- ² **GENE FRUMKIN**, B.A., University of California at Los Angeles. Associate Professor of English.
- ROBERT LEE FULTON**, B.A., Rice University; M.D., Washington University School of Medicine. Assistant Professor of Surgery.
- WILLIAM ROGERS GAFFORD**, B.S., University of New Mexico; M.S., University of Texas. Professor of Civil Engineering.
- WILLIAM RALEIGH GALEY, JR.**, B.S., Lewis and Clark College; Ph.D., University of Oregon Medical School. Assistant Professor of Physiology.
- PATRICK JOSEPH GALLACHER**, B.A., M.A., University of Detroit; Ph.D., University of Illinois. Associate Professor of English.
- ⁸ **DAVID J. GALLAGHER**, B.S., Rutgers University; M.S.E., Ph.D., Arizona State University. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- F. CHRIS GARCIA**, B.A., M.A., University of New Mexico; C.Phil., Ph.D., 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.
- ROBERTO GUADALUPE GARCIA**, B.A., St. Charles Borromeo Seminary. Lecturer in Architecture (Part-time).
- ²⁸ **LEONARDO GARCIA-BUNUEL**, M.D., University of Zaragoza, Spain. Associate Professor of Psychiatry.
- CARLOS ALBERTO GARCIA-MORAL**, M.D., University of Buenos Aires Medical School. Associate Professor of Orthopaedics.
- A. MILTON GARRETT**, B.A., M.A., University of Northern Colorado; D.Ed., Texas A&M University. Assistant Professor and Assistant Chairman of Industrial Education, Department of Secondary Education.
- WILHELM BELRUPT GAUSTER**, A.B., Harvard University; Ph.D., University of Tennessee. Adjunct Professor of Nuclear Engineering.
- 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.
- 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 LILLIAN GEHLEN**, B.S., Evangel College; M.A., Ph.D., Michigan State University. Assistant Professor of Sociology.
- 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.

² On sabbatical leave first semester.⁴ On leave for the year.⁷ First semester only.⁸ Second semester only.²⁸ Resigned 10/2/72.

- 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. Associate Professor of Mathematics.
- 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.
- WILLIAM GRANT GILSTRAP II, B.A., Stanford University; J.D., University of New Mexico. Lecturer in Law (Part-time).
- 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. Lecturer in Dance, Department of Theatre Arts. (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, JR., B.A., Texas Technological University; M.A., Ph.D., University of Wisconsin. Assistant Professor of Psychology.
- ⁷ JO ANN MAJOR GODFREY, B.S., New Mexico State University; M.A., University of New Mexico. Visiting Instructor in Sociology.
- ELLEN HELLER GOLDBERG, B.A., Russell Sage College; Ph.D., Cornell University Medical College. Instructor in Microbiology.
- JOSEPH GOLDBERG, A.B., Trinity College; LL.B., Boston College. Assistant Professor of Law.
- GERALD MARTIN GOLDHABER, B.A., University of Massachusetts; M.A., University of Maryland; Ph.D., Purdue University. Assistant Professor of Speech Communication.
- RICHARD THOMAS GOLDHAHN, A.B., University of Pennsylvania; M.D., Temple University School of Medicine. Assistant Professor of Pathology.
- JAMES LOWTH GOLDSMITH, B.A., Saint Michael's College; M.A., Ph.D., Harvard University. Visiting Assistant Professor of History.
- SISTER MARY TERESA GOMEZ, B.A., Marycrest College; M.A., George Peabody College for Teachers; Ed.S., University of New Mexico. Lecturer in Elementary Education (TTT Early Childhood Training Project).
- DOLORES GONZALES, B.A., Highlands University; M.A., Teachers College, Columbia University; Ed.D., Pennsylvania State University. Associate Professor of Elementary Education.
- RUSSELL BRIAN GOODMAN, A.B., University of Pennsylvania; B.A., M.A., Oxford, England; Ph.D., Johns Hopkins University. Assistant Professor of Philosophy.
- ⁸ DOUGLAS HUNTLEY GORDON, B.A., University of New Hampshire; M.A., University of Hawaii. Assistant Professor of Geography.
- MARILYN KAY GORDON, B.S.Ed., University of Missouri; M.A., University of New Mexico. Instructor in Mathematics and Statistics. (Part-time).
- 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.
- 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 Communicative Disorders.
- 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, B.A., Meredith College; M.Mus., Artist diploma, New England Conservatory of Music. Lecturer in Music (Part-time).
- JOHN ROOT GREEN, B.S., Ph.D., University of California. Professor of Physics.
- MARGARET SMITH GREER, B.A., Texas Women's University; M.A., Ed.D., University of New Mexico. Instructor in Educational Foundations (Part-time).

⁷ First semester only.⁸ Second semester only.

- PETER GREGORY, B.A., Ohio Wesleyan University; Ph.D., Harvard University. Professor of Economics.
- ⁸ ROBERT JOSEPH GRETHLE, JR., B.S., M.A., University of New Mexico. Ph.D., University of Southern California. Instructor in Mathematics (Part-time).
- G. ROBERT GRICE, B.A., Washburn College; M.A., Ph.D., 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.
- ROBERT W. GRIFFITHS, B.S., Utah State University; M.D., Tulane University; M.S., Mayo Graduate School of Medicine. Assistant Professor of Medicine.
- F. JAMES GROGAN, A.S., Belleville Area College; B.S., St. Louis College of Pharmacy; Pharm.D., University of Tennessee. Assistant Professor of Pharmacy (Clinical Pharmacy).
- RONALD LLOYD GROW, B.A., M.A., University of California (Los Angeles). Visiting Associate Professor of Art.
- THEODORE N. GUINN, A.B., Fresno State College; M.A., Ph.D., 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.
- JOHN ALVIN GUSTAFSON, B.A., St. Olaf College; M.A., Colorado State College. Assistant Professor of Physical Education.
- 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).
- WILLIAM MELVIN HADLEY, B.S., M.S., Ph.D., Purdue University. Assistant Professor of Pharmacy (Pharmacology).
- JOHN BENJAMIN HAEBERLIN, JR., B.Sc., University of Chicago; M.D., McGill University. Adjunct Associate Professor of Medicine.
- LIANG-SHIN HAHN, B.S., Ph.D., Stanford University. Associate 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, Director of Higher Education Program of the College of Education.
- BRUCE DOUGLAS HALL, B.A., University of Kansas; LL.B., Harvard University. Lecturer in Law (Part-time).
- 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.
- BRUNO HANNEMANN, B.A., M.A., University of California (Berkeley). Visiting Lecturer in German and Russian.
- ⁷ MAXINE COWTON HANSEN, B.A., State University of Iowa; M.S., University of New Mexico. Instructor in Health, Physical Education, and Recreation (Part-time).
- DALE LESTER HANSON, B.A., St. Olaf College; M.S., Mankato State College; Ph.D., Michigan State University. Professor of Physical Education, Chairman of the Department of Health, Physical Education, and Recreation.
- MARY ELLEN HANSON, B.F.A., Drake University; M.A. in L.S., University of Denver. Assistant Acquisition Librarian, Instructor in Librarianship.
- IOLA W. HARDING, B.A., Kentucky State College; M.A., University of Kentucky. Lecturer in Educational Foundations (Afro-American Studies) (Part-time).
- WILLIAM RICHARD HARDY, B.S., M.D., University of Illinois. Associate Professor of Medicine, Associate Professor of Pathology.
- HENRY COSAD HARPENDING, A.B., Hamilton College; M.A., Ph.D., Harvard University. Assistant Professor of Anthropology.

⁷ First semester only.⁸ Second semester only.

- BOBBY JACK HARR, B.A., M.S.S.W.,** University of Texas (Austin). Social Worker III, Department of Pediatrics, Instructor in Pediatrics (Social Work).
- CATHERINE NEIGHBOR HARRIS, R.N. Diploma,** University of Kansas Medical Center; **B.S., M.S.,** University of California (San Francisco). Nurse Coordinator, Mental Health Center; Adjunct Assistant Professor of Psychiatry (Nursing).
- MARY BIERMAN HARRIS, B.A.,** Radcliffe College; **M.A., Ph.D.,** Stanford University. Associate Professor of Educational Foundations.
- RICHARD JEROME HARRIS, B.S.,** University of Wisconsin; **M.A., Ph.D.,** Stanford University. Associate Professor of Psychology.
- ⁸ **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.
- ²⁰ **JOYCE KAREEN HARTL, B.S.,** University of Puget Sound. Instructor in Psychiatry (Occupational Therapy).
- CHARLES ROBERT HARTUNG, B.A.,** Cornell College; **M.F.A.,** Yale University School of Drama. Professor of Theatre Arts, Chairman of the Department of Theatre Arts.
- JOHN FREDERICK HARVEY, A.B.,** Dartmouth College; **B.S.,** University of Illinois; **Ph.D.,** University of Chicago. Dean of Library Services, Professor of Librarianship.
- KARL WILLIAM HATTLER, B.S.,** Emerson College; **M.S., Ph.D.,** University of Oklahoma. Adjunct Assistant Professor of Audiology, Department of Communicative Disorders.
- CHARLES FREDERICK HAWKINS, B.E.E.,** University of Florida; **M.S.E.E.,** Northeastern University; **Ph.D.,** University of Michigan. Visiting Assistant Professor of Electrical Engineering and Computer Science.
- PATRICIA JEAN HEDBERG, B.A.,** University of New Mexico. Counselor/Lecturer in General Honors (Part-time).
- WARREN ALLEN HEFFRON, A.B., M.D.,** University of Missouri. Assistant Professor of Community Medicine, Assistant Professor of Medicine.
- MARION JACOB HEISEY, B.A.,** Otterbein College; **M.A., Ph.D.,** Kent State University. Associate Professor of Guidance.
- JEREMY WILLIAM HEIST, B.A.,** Harvard University. Assistant Professor of English.
- PERRY A. HENDERSON, B.S.,** Morehouse College; **M.D.,** Western Reserve University. Associate Professor of Obstetrics and Gynecology; Assistant Chairman of the Department of Obstetrics and Gynecology; Director, Maternity and Infant Care Project, School of Medicine; Acting Chairman and Chief of Service, Department of Obstetrics and Gynecology, 12/1/72-11/1/73.
- VIRGINIA RUTH MCKINNEY HENDERSON, B.A.,** Spelman College; **M.A.,** Boston University. Instructor in Pediatrics, Instructor in Psychiatry.
- 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. Associate Professor of Orthopaedics.
- WILLIAM HENTEL, B.S.,** New York University; **M.D.,** University of Basel (Switzerland). Adjunct Associate Professor of Pathology.
- CARL FREDERIC HERBOLD, JR., A.B.,** Dartmouth College; **LL.B., M.Phil.,** Yale University. Instructor in History.
- ROBERT DEUPREE HERRON, B.A.,** University of Richmond; **M.A., Ph.D.,** University of Wisconsin. Assistant Professor of Modern and Classical Languages.
- REUBEN HERSH, B.A.,** Harvard University; **M.S., Ph.D.,** New York University. Professor of Mathematics.
- ALICE BIERNOFF HIAT, B.A.,** Reed College; **M.A.,** University of Oregon; **Ph.D.,** University of New Mexico. Research and Evaluation Officer in the Department of Pediatrics, Adjunct Instructor in Pediatrics.
- FRANK CUMMINGS HIBBEN, B.A.,** Princeton University; **M.S.,** University of New Mexico; **Ph.D.,** Harvard University. Professor of Anthropology.
- MICHAEL ALBERT HICKEY, B.S. in Med., M.D.,** University of Nebraska. Director of the Student Health Service; Assistant Professor of Psychiatry.

⁸ On sabbatical leave second semester.

²⁰ Resigned 12/15/72.

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

RODRIGO HIDALGO, M.D., Barcelona University School of Medicine. Instructor in Orthopaedics.

⁸ FRANK ERNEST HIGGINS, B.A., University of California (Long Beach); M.A., Ph.D., University of New Mexico. Instructor in Mathematics (Part-time).

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.

FANIA HILELSON, M.A., Vilnius Kapsukas Name State University. Adjunct Assistant Professor of Modern Languages.

³⁰ BONNIE LOUISE HILL, B.S., M.S., University of Minnesota. Assistant Professor of Nursing.

¹ ANTHONY GROVE HILLERMAN, B.A., University of Oklahoma; M.A., University of New Mexico. Professor of Journalism, Chairman of the Department of Journalism.

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

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.

JAMES LEON HOBAN, JR., B.A., M.Ed., University of Virginia; Ph.D., University of Illinois. Assistant Professor of Speech Communication.

ULTON GRAY HODGIN, JR., B.S., M.D., University of Pittsburgh. Adjunct Assistant Professor of Medicine.

CLARENCE CLAYTON HOFF, B.A., Bradley University; M.S., Ph.D., University of Illinois. Professor of Biology.

JACQUELYNE HOLDCRAFT, B.S., M.D., Louisiana State University. Assistant Professor of Surgery (Otolaryngology).

RICHARD LEE HOLEMON, B.S., Southeast Missouri State College; M.A., Ed.D., Washington University. Associate Dean for Curriculum and Instruction of the College of Education, Associate Professor of Educational Administration.

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

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.

¹⁴ MAGNUS MACK CARY HOMESTEAD, B.A., Kenyon College; M.L., University of Washington. Humanities Librarian, Assistant Professor of Librarianship.

² RICHARD BAXTER HOOD, B.A., Duke University; M.A., Syracuse University; Ph.D., Stanford University. Assistant Professor of Communicative Disorders (Audiology).

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

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.

HILARY H. HORAN, B.A., Loyola of Montreal, Canada; M.A., University of New Mexico. Lecturer in Speech Communication.

LISE MARIE HOSHOUR, B.A., Barnard College; Diplome, Institut Supérieur D'Interpretariat et de Traduction (Paris). Instructor in Modern and Classical Languages (Part-time).

¹ On sabbatical leave for the year.

² On sabbatical leave first semester.

⁸ Second semester only.

¹⁴ On sabbatical leave 1/1/73-6/30/73.

³⁰ Resigned 12/31/72.

ARTHUR VINCENT HOUGHTON III, B.S., M.S., University of Illinois; Ph.D., Purdue University. Professor of Mechanical Engineering.

⁶ 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.

JANE OSBURN HOWARD, B.A., University of Arizona; M.A., Ph.D., University of New Mexico. Coordinator, Deaf/Blind Children's Program, Programs for Children; Instructor in Pediatrics; Instructor in Psychiatry.

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

² MILTON BRYAN HOWARD, B.A., University of Colorado; M.F.A., Pratt Institute. Associate Professor of Art.

ROBERT EUGENE HOWARD, A.B., Ph.D., Washington University; M.D., Washington University School of Medicine. Associate Professor of Pathology.

⁷ ENID ETHEL HOWARTH, B.A., University of Miami; M.A., University of Connecticut; Ph.D., University of New Mexico. Lecturer in Architecture (Part-time).

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, Associate Professor of Radiology.

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

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

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. 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.

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).

LEON HURWITZ, B.S., Cornell University; M.S., Ph.D., University of Rochester. Professor of Pharmacology, Chairman of the Department of Pharmacology.

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

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

⁸ FRANK WILLIAM IKLÉ, B.A., Ph.D., University of California at Berkeley. Professor of History, Chairman of the Department of History.

DAVID LEWIS INCE, B.A., Texas College of Arts and Industries; M.L.S., University of Texas (Austin). Chief, Administrative Services, The General Library; Instructor in Librarianship.

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

⁶ LIEF E. ISAACSON, B.S., University of New Mexico; D.D.S., Baylor University. Instructor in Dental Programs (Part-time).

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

² On sabbatical leave first semester.

⁸ On sabbatical leave second semester.

⁷ First semester only.

⁸ Second semester only.

- JANET GAY JACOBS**, B.A., Western New Mexico University; M.A., University of New Mexico. Lecturer in Music (Part-time).
- RONALD EUGENE JACOBSEN**, B.S., University of New Mexico. Instructor in Physical Education. Varsity Wrestling Coach.
- IRA SHELDON JAFFE**, A.B., M.F.A. (Cinema), Columbia University. Lecturer in Theatre Arts.
- J. HERIBERTO JARAMILLO**, B.S., Universidad de Antioquia; M.A., Ph.D., University of New Mexico. Assistant Director of Latin American Projects, College of Education; Assistant Professor of Educational Administration.
- MARI-LUCI JARAMILLO**, B.A., New Mexico Highlands University; M.A., University of California at Los Angeles; Ph.D., University of New Mexico. Associate Professor of Elementary Education, Chairman of the Department of Elementary Education.
- ⁷ **ROBERT MOSELEY JEFFERSON**, B.S., Michigan College of Mining and Technology; M.B.A., University of New Mexico. Adjunct Professor of Nuclear Engineering.
- WILLIAM HARVEY JEFFERY**, Pharm.D., University of California (San Francisco). Assistant Professor of Pharmacy (Clinical Pharmacy).
- 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., Ph.D., Yv'e University. Associate Professor of Business and Administrative Sciences.
- DAMIAN J. JELSO**, B.S., University of New Mexico; D.D.S., Loyola Dental School (Chicago); M.S., Case Western Reserve University. Lecturer in Dental Programs (Part-time).
- ⁸ **FRANCES DOLORES JENKINS**, B.S., M.S., University of California (Berkeley); Ph.D., University of Missouri (Rolla). Adjunct Professor of Chemical Engineering.
- JOHN WILLIAM JENNE**, B.A., M.D., M.S., University of Minnesota. Associate Professor of Medicine.
- LEONARD LEON JERMAIN**, B.S., M.S., University of Oregon. Professor of Journalism, Acting Chairman of the Department of Journalism.
- ROBERT CLIFFORD JESPERSON**, B.A., University of Utah; M.A., Ph.D., Stanford University. Assistant Dean, College of Arts and Sciences; Associate Professor of Modern Languages.
- GEORGE ROGER JIRACEK**, B.S., M.S., University of Wisconsin; Ph.D., University of California (Berkeley). Assistant Professor of Geology (Geophysics).
- ¹ **DAVID MARCUS JOHNSON**, B.A., St. Olaf College; M.A., Ph.D., University of Connecticut. Associate Professor of English.
- DORRIS MATTHEWS JOHNSON**, B.A., Southeast Missouri State College; M.A., George Peabody College. Instructor in Elementary Education (Part-time).
- GORDON VERLE JOHNSON**, B.S., M.S., University of California (Berkeley); Ph.D., University of Arizona. Associate Professor of Biology.
- JOSEPH ELDO JOHNSON**, B.A., B.S., University of Missouri; M.D., University of Tennessee. Physician, Department of Medicine; Instructor in Medicine.
- LEE McKAY JOHNSON**, B.A., Tulane University; M.A., Ph.D., Stanford University. Assistant Professor of English.
- ¹ **PEDER JACK JOHNSON**, B.A., M.A., University of Minnesota; Ph.D., University of Colorado. Associate Professor of Psychology.
- ⁷ **RICHARD MALCOLM JOHNSON**, B.A.E., School of Art Institute, Chicago. Adjunct Assistant Professor of Art Education.
- ² **ROY LINTON JOHNSON, JR.**, B.S.C.E., M.S.C.E., Ph.D., University of Wisconsin. Associate Professor of Civil Engineering, Assistant Dean of the Graduate School (Semester II).
- 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. 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.
- JOEL M. JONES**, A.B., Yale University; M.A., Miami University; Ph.D., University of New Mexico. Associate Professor of American Studies and English, Director of American Studies.

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

- SANDRA BURTON JONES, B.S.N., University of Iowa; M.S., University of Colorado. Instructor in Nursing.
- ²² VERNON DOUGLAS JONES, B.A., Florence State College; Ph.D., Vanderbilt University. Pharmacologist, Mental Health Center, Department of Psychiatry; Adjunct Assistant Professor of Psychiatry (Pharmacology).
- SCOTT WILSON JORDAN, A.B., M.D., University of Kansas. Associate Professor of Pathology.
- 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.
- ⁴ JOHN KACERE, M.F.A., University of Iowa. Professor of Art.
- DJELAL KADIR, B.A., Yale University; Ph.D., University of New Mexico. Visiting Lecturer in Spanish.
- ⁹ MILTON KAHN, B.S., University of California; Ph.D., Washington University. Professor of Chemistry.
- ⁴ 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.
- ³ SIMON TSAI KAO, B.S., Chi-Nan National University of China; Ph.D., Catholic University of America. Associate Professor of Mathematics.
- RALPH JAY KAPLAN, B.A., Hofstra College; M.D., Albany Medical College. Associate Professor of Surgery (Neurosurgery).
- CLAYTON LOUIS KARKOSH, B.Arch., Iowa State University; M.F.A., Yale University. Associate Professor of Theatre Arts.
- 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.
- HELEN KLUTCHER KEE, B.S., California State College at Los Angeles; M.S., University of California at Los Angeles. Assistant Professor of Nursing, Assistant Dean of the College of Nursing.
- DENNIS C. KEEFE, B.F.A., M.A., University of New Mexico. Lecturer in Art.
- MARGOT LUE KEEFFE, D.H., Marquette University; B.A., M.A., University of New Mexico. Assistant Professor of Dental Hygiene. }
- PHILIP EARL KEEN, B.S., M.D., University of New Mexico. Instructor in Anatomy.
- 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.
- ROBERT BRUCE KEITH, B.A., Texas A&M College; J.D., University of New Mexico. Lecturer in Law (Part-time).
- DAVID OTIS KELLEY, B.A., M.A., University of Southern California. Resources Development Librarian, Professor of Library Science.
- ROBERT OTIS KELLEY, B.S., Abilene Christian College; M.A., Ph.D., University of California (Berkeley). Assistant Professor of Anatomy.
- 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.
- HENRY ALEXANDER KELLY, B.B.A., University of Texas; LL.B., University of Texas School of Law. Lecturer in Law (Part-time).
- 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).

³ On sabbatical leave second semester.⁴ On leave for the year.⁷ First semester only.²² On leave July and August.

- GEORGE LEONARD KEPERS, B.Ed., St. Cloud State College; M.A., Colorado State College; Ed.D., University of Colorado. Professor of Guidance, Acting Chairman of the Department of Guidance and Special Education.⁷
- PAUL RICHARD KERKOF, B.S., St. Mary's College (California); Ph.D., University of California. Assistant Professor of Biology.
- 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 ERNEST EVANS KILKER, B.U.S., University of New Mexico. Visiting Lecturer in Undergraduate Seminar Program (Part-time).
- WILLIAM C. KILPATRICK, JR., B.S., Morehouse College; M.D., Howard University. Assistant Professor of Orthopaedics.
- ALAN SHELLY KING, B.S., Juniata College; M.D., Harvard Medical School. Assistant Professor of Medicine.
- ⁸ DAVID SOLOMON KING, B.A., Manchester College; M.A., Ph.D., Indiana University. Associate Professor of Astronomy.
- ¹⁵ ALEXANDER LIONEL KISCH, B.A., Columbia University; M.D., Harvard Medical School. Associate Professor of Medicine.
- ROBERT ALAN KLEIN, B.A., Hunter College; M.A., University of Tennessee. Psychologist, Programs for Children; Assistant Director, Vista Larga Therapeutic School Project; Assistant Professor of Pediatrics; Instructor in Psychiatry.
- 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.
- MORTON M. KLIGERMAN, B.S., M.D., M.Sc. (Rad.), Temple University; M.A. (Honorary), Yale University. Professor of Radiology; Chief, Division of Radiation Therapy; Director, Cancer Research and Treatment 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; Professor of Secondary Education.
- EUGENE LARUE KLINGLER, JR., B.S., M.D., Tufts University. Associate 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.
- ALLEN VICTOR KNEESE, B.S., Southwest Texas College; M.A., University of Colorado; Ph.D., University of Indiana. Adjunct Professor of Economics.
- JEANNE JENSEN KNIGHT, B.S., Brigham Young University; M.E., Utah State University; Ed.D., University of New Mexico. Assistant Professor of Elementary Education.
- ⁸ HAROLD KNUD KNUDSEN, B.S., M.S., Ph.D., University of California. Associate Professor of Electrical Engineering and Computer Science.
- KARL PETER KOENIG, B.A., Trinity College; M.S., Ph.D., University of Washington. Associate Professor of Psychology.
- ³ JACK KOLBERT, B.A., M.A., University of Southern California; Ph.D., Columbia University. Professor of Modern and Classical Languages.
- 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.
- MARYLEE JOANNE KORDOSKY, B.S., College of St. Catherine; M.S., University of California (San Francisco). Assistant Professor of Nursing.
- MARIO KORNFIELD, M.D., D.Sc., University of Zagreb, Yugoslavia. Associate Professor of Pathology.

⁸ On sabbatical leave second semester.¹⁵ On sabbatical leave 9/1/72-8/31/73.⁷ First semester only.

- ARNOLD HERMAN KOSCHMANN, B.A., Valparaiso University; B.S.E.E., M.S., Ph.D., Purdue University. Professor of Electrical Engineering and Computer Science.
- WILLIAM JACOB KOSTER, B.S., Ph.D., Cornell University. Professor of Biology.
- PAUL DAVID KOTTLER, B.S., M.S., Ph.D., University of Wisconsin. Assistant Professor of Psychology.
- JAMES NORMAN KRAFT, JR., B.A., University of Arkansas; M.F.A., University of New Mexico. Assistant Professor of Art.
- RICHARD MILTON KRAUSE, B.A., M.A., University of New Mexico. Assistant Professor of Speech Communication (Telecommunications).
- ³⁰ RITA CAROLINE ANN KROSKA, B.S., M.S., Catholic University; M.P.H., Ph.D., University of Minnesota. Professor of Nursing.
- ROGER LEE KROTH, B.A., M.A., State University of Iowa; Ed.D., University of Kansas. Associate Professor of Special Education.
- 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 REINHOLZ KURUCZ, A.B., Washington University; M.A., University of New Mexico. Instructor in Guidance and Special Education (Part-time).
- WALTER THOMAS KYNER, A.B., M.A., Ph.D., University of California (Berkeley). Professor of Mathematics.
- AARON J. LADMAN, B.A., New York University; Ph.D., Indiana University. Professor of Anatomy, Chairman of the Department of Anatomy.
- ⁴ 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 Communicative Disorders, Chairman of the Department of Communicative Disorders, Associate Professor of Surgery (Otolaryngology, Audiology).
- ⁶ DAVID LANDAU, B.A., Western Reserve University; M.S.T., Ph.D., University of Florida. Assistant Professor of Biology.
- MARCIA ELLEN LANDAU, B.S., Queens College City University; M.S., University of Miami; Ph.D., University of Florida. Visiting Assistant Professor of Psychology (Part-time).
- DARYL FRANKLIN LANE, B.A., University of San Francisco; M.A., University of Wisconsin; Ph.D., University of New Mexico. Lecturer in English (Part-time).
- DONALD NORBERT LANGE, B.S., University of Minnesota; M.A., Ed.D., University of New Mexico. Associate Professor of Elementary Education and Guidance; Coordinator of Field Experiences in the College of Education; Director of Manzanita Center.
- LUCY HAMPSON LAUGHLIN, A.B., Pomona College; M.A., University of New Mexico. Instructor in Elementary Education.
- HAROLD WADE LAYENDER, 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, Vice Chairman of the Department of Medicine.
- 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).
- ⁷ JESSIE EDMINSTER LAWSON, B.A., San Francisco State College; M.A., East Carolina University. Lecturer in English (Part-time).
- WAYNE RODERIC LAZORIK, B.S., M.F.A., University of Minnesota. Assistant Professor of Art.
- JOHN K. LEACH, B.S., Baldwin-Wallace College; M.D., Albany Medical College. Associate Professor of Medicine, Assistant Professor of Physiology.
- CHRISTOPHER PRATT LEAVITT, B.S., Ph.D., Massachusetts Institute of Technology. Professor of Physics.

⁴ On leave for the year.⁷ First semester only.⁶ Second semester only.³⁰ Resigned 12/31/72.

- 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**, B.A., Pomona College; M.A., University of California (Berkeley); Ph.D., University of California (San Diego). Assistant Professor of Philosophy.
- 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.
- CECIL R. LENNOX**, B.S., New Mexico Highlands University; M.S., Purdue University. Instructor in Industrial Education, Department of Secondary Education (Part-time).
- KENNETH CARL LERSTEN**, B.A., Augustana College; M.A., Ed.D., University of California (Berkeley). Associate Professor of Physical Education.
- SAMUEL B. LESLIE**, B.S., M.D., University of Oklahoma. Clinical Ophthalmologist, Department of Surgery; Associate Professor of Surgery (Ophthalmology).
- JOHN WILLIAM LEVCHUK**, B.Sc., M.Sc., Philadelphia College of Pharmacy and Science. Assistant Professor of Pharmacy (Hospital Pharmacy).
- RICHARD M. LEVIN**, B.A., Culver-Stockton College; M.S., Indiana University; Ph.D., University of New Mexico. Coordinator of Mental Health Team, Student Health Center; Instructor in Psychiatry; Lecturer in Guidance.
- 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.
- 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.
- ¹⁸ **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.
- FOLKE DETLEF LINDSTROM**, Undergraduate work at Högre Allmänna Läroverket, Halmstad, Sweden; equivalent of M.D., University of Lund, Sweden. Assistant Professor of Medicine.
- JOHN DAVID LINSLEY**, B.S., Ph.D., University of Minnesota. Adjunct Professor of Physics.
- 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. Associate Professor of Chemistry.
- JACK E. LOCKETT**, B.S., Oklahoma State University; M.B.A., Wayne State University. Director of Food Services; Instructor in Home Economics (Part-time).⁷
- JULIANNE LOUISE LOCKWOOD**, B.A., Upsala College; M.A., New York University. Psychologist, Programs for Children; Instructor in Pediatrics; Instructor in Psychiatry.
- 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., 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. Assistant Dean of the College of Engineering, Associate Professor of Nuclear Engineering.

⁷ First semester only.¹⁸ On leave 8/1/72-7/31/73.

- CATHERINE ELLEN LOUGHLIN, B.S., University of Connecticut; M.Ed., Pennsylvania State University; Ed.D., Rutgers University. Associate Professor of Elementary Education.
- PAT WINFRED LOYD, B.B.A., East Texas University; M.A., University of New Mexico; Ed.D., Colorado State College. Associate Professor of Secondary Education, Assistant Chairman for Business Education.
- GLENN DAVID LUBASH, B.A., Columbia University; M.D., State University of New York. Professor of Medicine, Chief of the Renal Division, Department of Medicine.
- DAVID MICHAEL LUCOFF, B.S. in Nuc. Eng., M.S., Ph.D., University of Wisconsin. Assistant Professor of Nuclear Engineering.
- PETER ANTHONY LUPSHA, B.A., Oklahoma State University; M.A., University of California (Berkeley). Associate Professor of Political Science.
- ⁸ THOMAS ROBERT LYONS, B.S., M.S., Ph.D., University of New Mexico. Instructor in Anthropology (Part-time).
- MICHELLE MACCARIO, M.D., University of Louvain (Belgium). Adjunct Assistant Professor of Neurology.
- ⁹ RAYMOND RALPH MACCUDRY, B.A., M.A., Louisiana State University; Ph.D., University of North Carolina. Professor of Modern and Classical Languages.
- LEOPOLDO J. MACIAS, B.A., University of Utah; M.A.T., University of New Mexico; Ph.D., Ohio State University. Assistant Professor of Secondary Education.
- ⁷ HAROLD ALFRED MACKAY, B.Sci., Rutgers University; M.Sci., Ph.D., University of New Mexico. Visiting Assistant Professor of Biology (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. Assistant Professor of Law, Director of the Clinical Law Program.
- MAX MADRID, B. Music, M. Music, University of Texas. Associate Professor of Music.
- ³¹ WAYNE ROWAN MAES, Th.B., Owasso College; A.B., Central Michigan University; M.A., Ph.D., Michigan State University. Professor of Guidance and Special Education, Chairman of the Department of Guidance and Special Education.
- ⁷ ZELDA RUTH MAGGART, B.S., Northeast Missouri State College; M.A., Ph.D., University of New Mexico. Instructor in Elementary Education. (Part-time).
- ⁸⁵ MANORANJAN MAJUMDAR, B.A., M.A., University of Calcutta. Visiting Assistant Professor of Economics.
- ⁷ GLORIA GRIFFIN MALLORY, B.F.A., M.A., Ph.D., University of New Mexico. Instructor in Educational Foundations (Part-time).
- MIRIAM PITTSCHNER 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.
- LOIS ANNETTE MARCHINO, B.A., M.A., Purdue University; Ph.D., University of New Mexico. Lecturer in English.
- LEON JESUS MÁRQUEZ, B.A., M.A.T.S., University of New Mexico. Assistant Professor of Modern and Classical Languages.
- ELSIE GEHMAN MARTIN, B.S., Duke University; M.N.Ed., University of Pittsburgh. Assistant Professor of Nursing.
- MAVIS DOUGHTY MARTIN, B.A., M.Ed., University of Oklahoma; Ph.D., University of Iowa. Associate Professor of Elementary Education.
- 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 Theatre Arts.
- AURELIA LAURA MARTINEZ, B.S., M.A., University of New Mexico. Assistant Professor of Nursing, Special Assistant to the Dean and Director of Ethnic Program, College of Nursing.

⁸ On sabbatical leave second semester.

⁷ First semester only.

⁶ Second semester only.

³¹ Beginning 1/15/73.

⁸⁵ Deceased 2/16/73.

- JOSÉ ELEAZAR MARTINEZ**, B.S., in C.E., University of New Mexico; M.S., Iowa State University. Professor of Civil Engineering.
- TOMAS O. MARTINEZ**, B.A., University of New Mexico. Instructor in American Studies (Chicano Studies) (Part-time).
- [†] **KIRTLLEY FLETCHER MATHER**, B.S., Denison University; Ph.D., University of Chicago. Visiting Professor of Geology (Part-time).
- JAMES ROBERT MATTHEWS**, B.S., University of Illinois; M.S., Ph.D., 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.
- PETER CHARLES MAXFIELD**, A.B., Regis College; J.D., University of Denver; LL.M., Harvard University. Visiting Associate Professor of Law.
- ³⁰ **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. Associate 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**, Assistant Professor of English.
- RONALEE ANN MAYFIELD**, B.A., M.A., University of Colorado. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- M. REYES MAZON**, B.S., Arizona State College; M.A., New Mexico Highlands University. Director of the Southwest Center for Cultural Pluralism and Assistant Professor of Educational Foundations.
- 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).
- MAX EDGAR McCLELLAN**, B.A., Buffalo State Teachers College; M.A., Ph.D., State University of Iowa. Adjunct Associate Professor of Audiology, Department of Communicative Disorders.
- THOMAS STRUEYER McCONNELL**, B.S., University of Wyoming; M.D., University of Illinois. Associate Professor of Pathology; Director of the Clinical Laboratories, Bernalillo County Medical Center.
- WILLIAM ALEXANDER McCONNELL**, B.S., University of New Mexico. Lecturer in Architecture (Part-time).
- JAMES MICHAEL McCORMICK**, B.A., Aquinas College; M.A., Michigan State University. Visiting Assistant Professor of Political Science.
- 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.
- 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.
- 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; Ed.D., Teacher's College, Columbia University. Associate Professor of Art Education, Chairman of the Department of Art Education.
- DAVID RAY McKINNEY**, B.S., Southwestern State College; M.T., (ASCP), Tucson Medical Center. Medical Technologist in the Department of Medicine, Lecturer in Medicine.

[†] First semester only.³⁰ Resigned 1/31/73.

- ¹⁷ **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.
- ⁷ **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.
- DAVID CARLTON McPHERSON**, B.A., Hardin-Simmons University; M.A., Ph.D., University of Texas. Associate Professor of English.
- 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 Dean of the College of Fine Arts, Professor of Music.
- ROBERT L. McROBERTS**, B.A., Amherst College; M.D., Yale University. Instructor in Orthopaedics.
- JAMES HERMAN MEADOWS**, B.S., New Mexico State University; M.S., University of New Mexico. Lecturer in Pathology.
- JOHN HELLER MECHEM**, B.S., M.S.Ed., Colorado State University. Instructor in Physical Education; Head Swimming Coach.
- HAROLD CHARLES MEIER**, B.A., M.A., Ph.D., University of Colorado. Associate Professor of Sociology.
- ⁸ **IVAN PETER MELADA**, B.A., State Teachers College (West Chester, Pa.); M.A., Ph.D., University of California (Berkeley). Associate Professor of English.
- PETER SCHUYLER MELLON**, B.A., Trinity College (Connecticut); M.A., Stanford University. Visiting Lecturer in Classics, Department of Modern and Classical Languages.
- GILBERT WILSON MERKX**, A.B., Harvard University; M.A., Ph.D., Yale University. Associate Professor of Sociology.
- PATRICIA MOEHRIG MERSHON**, B.S., M.A., Ph.D., University of New Mexico. Assistant Professor of Pediatrics.
- ROGER GEORGE MERTIN**, B.F.A., Rochester Institute of Technology. Visiting Assistant Professor of Art.
- RONALD PIERCE MEßNER**, B.A., Oberlin College; M.D., University of Chicago. Associate Professor of Medicine.
- ¹ **RICHARD CLYDE METZLER**, B.S., University of Michigan; M.A., Ph.D., Wayne State University. Associate Professor of Mathematics.
- ³¹ **JANICE LOUCILLE MEYERS**, B.S.N., M.S., Kansas University. Medical Center. Instructor in Nursing.
- ROBERT MICALI**, B.S.Ed., M.Ed., Temple University; Ed.D., Rutgers University. Associate Professor of Guidance and Special Education.
- JAMES WILLIAM MICHAELS, JR.**, B.A., M.S., North Carolina State University. Visiting Assistant Professor of Sociology.
- WILLIAM MONROE MICHENER**, A.B., Dartmouth College; M.D., Tufts University Medical School; M.S., University of Minnesota. Associate Professor of Pediatrics, Assistant Chairman of the Department of Pediatrics.
- LAURINE M. MICKELSEN**, B.S., Brigham Young University; M.S., University of Utah. Project Director, Indian Recreation Program; Assistant Professor of Health, Physical Education and Recreation.
- CLARA O. MIERA**, Certificate, Dental Programs; University of New Mexico. Instructor in Dental Assisting.

¹ On sabbatical leave for the year.⁸ On sabbatical leave second semester.⁷ First semester only.¹⁷ On sabbatical leave 10/1/72-3/31/73.³¹ Beginning 1/15/73.

- 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.
- MARCIA CAROL MILES**, B.S., State University of New York (Geneseo); M.A., University of New Mexico. Lecturer and Clinical Supervisor in Speech Pathology, Department of Communicative Disorders (Part-time).
- 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.
- LEONARD RICHARD MILLER**, B.A., M.A., University of New Mexico. Assistant Professor of Health, Physical Education and Recreation (Part-time).
- PAMELA BURG MINZER**, B.A., Miami University; LL.B., Harvard Law School. Lecturer in Law (Part-time).
- STEPHEN R. MISSALL**, B.S., Stanford University; M.D., Baylor College of Medicine. Instructor in Pediatrics.
- MERLE MITCHELL**, B.A., Southern Methodist University; M.A., University of New Mexico; Ph.D., George Peabody College for Teachers. Professor of Mathematics.
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- ^a **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.
- CLEVE BARRY MOLER**, B.A., California Institute of Technology; M.S., Ph.D., Stanford University. Associate Professor of Mathematics.
- NANCY MARTIN MOLER**, B.S., Stanford; M.S., Ph.D., University of Michigan. Visiting Assistant Professor of Mathematics.
- 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.
- JOSE ANTONIO MONDRAGON**, Coordinator of Chicano Studies, Lecturer in American Studies.
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- DIXON McGUIRE MOODY**, M.D., University of Texas—Southwestern Medical School (Dallas). Assistant Professor of Radiology (Neuroradiology), Assistant Professor of Surgery (Neurosurgery).
- 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.
- JAMES CLARK MOORE**, B.A.Ed., M.A.Ed., Ph.D., Arizona State University. Director of Testing, University College; Associate Professor of Educational Foundations.
- SISTER GIOTTO MOOTS**, B.F.A., School of the Art Institute of Chicago; M.A., Villa Schifanoia (Rosary College) (Italy); M.F.A., University of Wisconsin. Lecturer in Art (Part-time).
- ^a **GERALDINE ANN MORGAN**, B.S., St. Anselm's College; M.S., Boston University. Instructor in Nursing (Part-time).
- LARRY LaVERNE MORGENSTERN**, B.A., University of Kansas; M.D., University of Kansas School of Medicine (Kansas City). Associate Professor of Obstetrics and Gynecology.
- PERRY T. MORI**, B.S., B.A., M.B.A., Northwestern University; J.D., University of New Mexico. C.P.A.; 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.
- CARY JACKS MORROW**, B.S., Davidson College; Ph.D., Tulane University. Visiting Assistant Professor of Chemistry.

^a On sabbatical leave second semester.^a Second semester only.

- ¹⁸ **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. Assistant Professor of Community Medicine, Instructor in Psychiatry.
- ROBERT DAVID MOSELEY, JR.**, M.D., Louisiana State University. Professor of Radiology, Assistant Chairman of the Department of Radiology; Chief, Division of Diagnostic Radiology, 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. Physician, Department of Orthopaedics; Adjunct Assistant Professor of Orthopaedics; Chief, Division of Children's Orthopaedics, Department of Orthopaedics.
- ¹⁹ **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. Psychologist, Department of Psychiatry; Instructor in Psychiatry.
- ² **PATRICIA MURPHY**, B.A., University of Rochester; M.A., Ph.D., University of Wisconsin. Assistant Professor of Modern and Classical Languages.
- ¹ **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.
- RAYMOND RICHARD MURRAY**, B.A., Hamilton College; M.D., State University of New York, Upstate Medical Center at Syracuse; M.P.H., University of Michigan. Assistant Professor of Obstetrics and Gynecology.
- 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, Dean pro tem of the School of Medicine (8/1/71-5/31/73).
- ⁸ **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).
- WILLIAM PATRICK NEAL**, B.S., Southern Oregon College; M.A., University of New Mexico. Instructor in Speech Communication and Director of Forensics.
- 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. Lecturer in English (Part-time).
- KENNETH MICHAEL NELSON**, B.A., M.D., Columbia University. Assistant Professor of Surgery (Neurosurgery).
- ROBERT DEWEY NESBITT, JR.**, 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.

¹ On sabbatical leave for the year.² On sabbatical leave first semester.³ On sabbatical leave second semester.⁷ First semester only.¹⁸ On sabbatical leave 1/1/73-6/30/73.¹⁹ On sabbatical leave 1/1/73-9/30/73.

- ³¹ **THOMAS MICHAEL NIEMCZYK**, B.S., University of Wisconsin. Assistant Professor of Chemistry.
- PER-MAGNUS NIKLASSON**, M.D., University of Lund (Sweden). Assistant Professor of Medicine.
- 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.
- 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.
- 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.
- GARY OWEN O'DOWD**, B.B.A., J.D., University of New Mexico. Director, Institute of Public Law and Services; Lecturer in Law.
- CAROLE EVE OFFIR**, B.A., University of California (Los Angeles). Assistant Professor of Psychology.
- GRACE OLIVÁREZ**, J.D., University of Notre Dame. Director of Institute for Social Research and Development, Professor of Law.
- JOHN WILLIAM OLLER, JR.**, B.A., Fresno State College; M.A., Ph.D., University of Rochester. Coordinator of the Programs in Linguistics and Language Pedagogy, Associate Professor of Educational Foundations.
- 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; Ph.D., Florida State University. Assistant Professor of Home Economics.
- JAMES R. O'MARA**, B.B.A., Bowling Green University; M.P.A., George Washington University. Director of Naval Science.
- JOHN LEROY OMDAHL**, B.S., M.S., Colorado State University; Ph.D., University of Kentucky. Assistant Professor of Biochemistry.
- 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, Chief of the Division of Hand Surgery, Department of Surgery.
- ¹ **CYRUS OMID'VARAN**, B.S., South Dakota State University; M.S., University of Kansas; Ph.D., University of Delaware. Associate Professor of Civil Engineering.
- BRIAN EDGAR O'NEIL**, B.A., M.A., Ph.D., University of California (Berkeley). Assistant Professor of Philosophy, Acting Chairman of the Department of Philosophy.
- CORNELIS WILHELMUS ONNEWEER**, B.A., M.A., University of Utrecht (Netherlands); Ph.D., Wayne State University. Assistant Professor of Mathematics.
- CHUKWUEMEKA ONWUBU**, B.A., Northwestern University; M.A., Michigan State University. Assistant Professor of Sociology.
- JOSEPH FRANK OSER, JR.**, A.B., Kent State University; M.D., Ohio State University. Physician in the Department of Medicine, Instructor in Medicine.
- GERALD DENNIS OTIS**, B.A., University of Minnesota; M.A., Ph.D., University of Arizona. Assistant Professor of Psychiatry (Psychology).
- 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.
- PETER KARL PABISCH**, B.A., Teachers' Training College, Vienna; M.A.T., Pedagogical Institute, Vienna; M.A., University of Illinois. Assistant Professor of Modern and Classical Languages.
- RALPH WAYNE PACE**, B.S., University of Utah; M.S., Brigham Young University; Ph.D., Purdue University. Professor of Speech Communication, Chairman of the Department of Speech Communication.

¹ On sabbatical leave for the year.³¹ Beginning 1/15/73.

- EDMUND P. PALKO**, B.S.M.E., University of Pittsburgh; M.S.Ed., University of Southern California. Director of Aerospace Studies.
- 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.
- ELEFTHERIOS PAUL PAPADOPOULOS**, B.Sc., University of Thessaloniki (Greece); Ph.D., University of Kansas. Associate Professor of Chemistry.
- 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.
- LUCILLE ANN PAPILE**, A.B., Albertus Mangus College; M.D., The Medical College of Pennsylvania. Instructor in Pediatrics.
- 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.
- ⁷ **MARY KAY PATINO**, B.A., Western Michigan University; M.Ed., Louisiana State University. Assistant Professor of Guidance and Special Education (Part-time).
- HARVEY DUKE PAYMELLA**, B.S., College of Emporia; M.S., Kansas State Teachers College. Coordinator of Native American Studies; Lecturer in American Studies.
- GLENN TAPLIN PEAKE**, B.A., M.D., University of Kansas. Assistant Professor of Medicine, Assistant Professor of Pediatrics.
- FRANCES JEAN PELOZO**, 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).
- HENRY JAMES PEPE**, B.S., M.S., Kansas State Teachers College. Instructor in Guidance and Special Education. (Part-time).
- STEPHEN RUDOLPH PERLS**, B.A., Antioch College; M.A., University of Chicago; D.Ed., University of Oregon. Assistant Professor of Psychiatry.
- 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.
- ⁴ **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.
- DONALD FRANCIS PETERSEN**, A.B., DePauw University; M.S., South Dakota State University; Ph.D., University of Chicago. Adjunct Associate Professor of Radiology (Radiobiology).
- 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. Instructor in Elementary Education.
- KAREN PETERSON**, B.A., M.A., University of New Mexico. Clinical Supervisor and Lecturer in Speech Pathology, Department of Communicative Disorders.
- 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.
- ² **PAUL VERNON PETTY**, B.S.E., Arkansas State Teachers College; M.A., Duke University; Ph.D., University of Texas. Professor of Educational Administration.

² On sabbatical leave first semester.⁷ First semester only.⁴ On leave for the year.

- ⁴ **THOMAS HALL PHILIPS**, A.B., A.M., Harvard University. Professor of Music.
- ROY GLENWOOD PICKETT**, B.A., M.A., Ph.D., University of Iowa. Associate Professor of English.
- MICHEL LOUIS ROGER PILLET**, D.P.L.G., Ecole Nationale Supérieure des Beaux-Arts; M.Arch., University of California (Berkeley). Associate Professor of Architecture.
- CHARLOTTE LEWIS PIPER**, B.A., Baker University; M.A., University of New Mexico. Associate Professor of Physical Education.
- MARY GAINES PITTMAN**, B.S., University of Alabama; M.A., California State University at Long Beach. Assistant Professor of Home Economics.
- 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, Chief of the Division of Neurosurgery in the Department of Surgery, Medical Director of BCMC.
- BARBARA CORRADO POPE**, B.A., Hiram College; M.A., Columbia University. Instructor in History.
- THOMAS LAFAYETTE POPEJOY, JR.**, B.B.A., J.D., University of New Mexico. Lecturer in Law (Part-time).
- BRUCE EARL PORCH**, B.S., M.Ed., Wayne State University; Ph.D., Stanford University. Associate Professor of Communicative Disorders (Part-time), Associate Professor of Neurology (Rehabilitation Medicine).
- 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.
- MARY JANE POWER**, A.B., Regis College; A.M., Ph.D., University of Wisconsin. Assistant Professor of English.
- ⁸⁰ **MARY CAROLINE POZORSKI**, B.S.N., University of Wisconsin; M.S.N., Case Western Reserve University. Program Staff Member, Manpower Development, New Mexico Regional Medical Program; Assistant Professor of Nursing.
- RICHARD ROLAND PRAIRIE**, B.S., University of Minnesota; M.S., Ph.D., North Carolina State College. Instructor in Mathematics and Statistics (Part-time).
- ¹ **LOUIS ELLIOT PRICE**, A.B., University of California at Los Angeles; M.A., Ph.D., University of Iowa. Associate Professor of Psychology.
- DONALD VICTOR PRIOLA**, B.S., Ph.D., Loyola University. Associate Professor of Physiology, Assistant Chairman of the Department of Physiology, Associate Professor of Pharmacology.
- 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.
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- CLIFFORD RAY QUALLS**, B.A., Long Beach State College; M.A., Ph.D., University of California (Riverside). Associate 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. Assistant Professor of Community Medicine, Assistant Professor of Psychiatry.²⁴
- GEORGE HEINZ QUENTIN**, B.Ch.E., Rensselaer Polytechnic Institute; M.S.Ch.E., Ph.D., Iowa State University. Assistant Professor of Chemical Engineering.
- BEVERLY JEAN QUINLAN**, B.S., M.S., Kansas State College (Pittsburgh). Assistant Professor of Physical Education, Director of Women's Intramurals.
- HOWARD NEIL RABINOWITZ**, B.A., Swarthmore College; M.A., University of Chicago. Instructor in History.
- ROGER JAMES RADLOFF**, B.S., Iowa State University; Ph.D., California Institute of Technology. Assistant Professor of Microbiology.

¹ On sabbatical leave for the year.⁸⁰ Resigned 12/31/72.⁴ On leave for the year.²⁴ 7/1/72-12/31/72. Adjunct Assistant Professor of Psychiatry 1/1/73-6/30/73.

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- DARREL ROBERT RANDALL, B.F.A., University of California. Lecturer in Music.
- ALBERT RATNER, B.S., Brooklyn College; M.S., Ph.D., Michigan State University. Associate 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.
- 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, Assistant Professor of Community Medicine.
- ^a ROBERT GEOFFREY REINES, A.S.E.E., Franklin Institution; B.S., Ohio State University. Lecturer in Architecture (Part-time).
- ^a ADAO VENTURA FERREIRA REIS, B.A., University of Minas Gerais. Visiting Lecturer in Portuguese.
- ²⁸ ARMIN MICHAEL REMBE, B.S., University of Washington; M.D.; University of Washington School of Medicine. Adjunct Assistant Professor of Medicine.
- DAVID A. REMLEY, A.B., Wabash College; A.M.T., Harvard University; Ph.D., Indiana University. Associate 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.
- 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.
- ⁸ R. WAYNE REYNOLDS, B.B.A., M.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- CRUZ REYNOSO, A.B., Pomona College; LL.B., University of California School of Law (Berkeley). Professor of Law.
- 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.
- ⁴ HAROLD V. RHODES, B.A., M.A., University of Wichita; Ph.D., University of Arizona. Associate Professor of Political Science.
- 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.
- CHARLES GILBERT RICHARDS, B.S.E., M.S.E., Ph.D., University of Michigan. Associate Professor of Mechanical Engineering.
- ⁸² HAROLD ORVILLE RIED, B.A., Nebraska Wesleyan University; M.A., Ph.D., University of Nebraska. Professor of Speech Communication.
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- ⁵ BRUCE JOSEPH RIGSBY, B.A., University of Louisville; Ph.D., University of Oregon. Associate Professor of Anthropology.
- JOHN RAYMOND RINALDI, B.S.Ed., University of Albuquerque; M.Ed., Texas Technical University. Co-Director, Pupil Personnel Services Project (EPDA), Assistant Professor of Guidance.

⁴ On leave for the year.⁵ On leave first semester.⁸ Second semester only.²⁸ Beginning 1/1/73.⁸² Retired 12/31/72.

- JAMES TURNER ROACH**, B.A., J.D., University of New Mexico. Lecturer in Law (Part-time).
- ⁷ **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**, B.A., Williams College; M.A., Ph.D., Columbia University. Assistant Professor of History.
- ² **GEORGE ROBERT**, Student of Edward Steuermann and Anton von Webern. Professor of Music.
- 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.
- HOWARD DAVID RODEE**, B.A., M.A., Ohio State University. Lecturer in Art.
- ⁸ **MARIAN ELLEN RODEE**, A.B., University of Pennsylvania; M.A., Columbia University. Lecturer in Art (Part-time).
- ALFRED RODRIGUEZ**, A.B., Brooklyn College; M.A., Ph.D., Brown University. Professor of Modern and Classical Languages.
- JANET ROEBUCK**, B.A., University of Wales; Ph.D., University of London. Associate 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).
- LEO MICHAEL ROMERO**, A.B., Oberlin College; J.D., Washington University School of Law; LL.M., Georgetown University Law Center. Assistant Professor of Law.
- LOUIS ANDREW ROSASCO**, B.Ed., State University of New York (New Paltz); M.A., Ed.D., New York University. Professor of Educational Foundations, Chairman of the Department of Educational Foundations.
- ESTELLE HELENE ROSENBLUM**, B.S.N., Wayne State University; M.A., University of New Mexico. Instructor in Nursing.
- SIDNEY ROSENBLUM**, B.A., Drew University; M.A., Ohio State University; Ph.D., University of Iowa. Professor of Psychology, Assistant Chairman of the Department of Psychology (Semester I).
- 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 LANGE ROSENZWEIG**, A.B., Mount Holyoke College; M.A., Ph.D., Columbia University. Lecturer in Art (Part-time).
- MICHAEL L. ROSENZWEIG**, A.B., Ph.D., University of Pennsylvania. Associate Professor of Biology.
- GUNTHER ERIC ROTHENBERG**, B.A., Ph.D., University of Illinois; M.A., University of Chicago. Professor of History.
- 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.
- WILLIAM JOHN RYAN**, B.S., College at Geneseo, State University of New York; M.S., Ph.D., Purdue University. Assistant Professor of Communicative Disorders.
- JOHN HARRIS SAIKI**, B.A., University of North Dakota; M.D., McGill University. Assistant Professor of Medicine.

² On sabbatical leave first semester.⁸ Second semester only.⁷ First semester only.

- LUCILLE SUZANNE BACA SAIS, Associate of Science Degree in Dental Hygiene, University of New Mexico. Instructor in Dental Programs (Part-time).
- CHARLOTTE GAYLE SAMPLEY, B.A., M.A., Eastern New Mexico University. Assistant Professor of Business Education, Department of Secondary Education.
- JOSEPH VICTOR SCALETTI, B.A., M.S., University of Connecticut; Ph.D., Cornell University. Professor of Microbiology, Acting Chairman of the Department of Microbiology, 10/1/72-3/31/73.
- TERENCE JOSEPH SCALLEN, B.S., College of St. Thomas; M.D., Ph.D., University of Minnesota. Associate Professor of Biochemistry.
- ⁸ WENDEL AUREL SCARBROUGH, B.A., M.A., New Mexico Highlands University. Instructor in Mathematics and Statistics (Part-time).
- DON PAUL SCHLEGEL, B.Arch., University of Cincinnati; M.Arch., Massachusetts Institute of Technology. Professor of Architecture, Chairman of the Department of Architecture, Consultant to the University of New Mexico Architect's Office.
- ⁸ KENDALL OLIVER SCHLENKER, B.A., Eastern New Mexico University; J.D., University of New Mexico; LL.M., New York University. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- ⁴ PAUL FREDERIC SCHMIDT, A.B., University of Rochester; Ph.D., Yale University. Professor of Philosophy, Chairman of the Department of Philosophy.
- ⁸ 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; Coordinator of the Recreation Program, Department of Health, Physical Education, and Recreation; Director of the Center for Leisure and Recreation (ISRAD).
- KRISTINA SCHOYEN, B.A., Syracuse University; M.A., University of New Mexico. Instructor in Art Education (Part-time).
- WALTER GEORG SCHREIBER, B.A., Hobart College; M.F.A., Yale University. Technical Director, Popejoy Hall; Assistant Professor of Theatre Arts.
- ³⁷ HOWARD LINN SCHREYER, B.Sc., University of Alberta; M.S., Ph.D., University of Michigan. Adjunct Professor of Mechanical Engineering.
- GEORGE FREDERICK SCHUELER, A.B., Stanford University; M.A., University of California (Berkeley). Assistant Professor of Philosophy.
- WILLIAM DIETRICH SCHULZE, A.B., San Diego State College. Assistant Professor of Economics.
- TIMOTHY STEPHEN SCHUSTER, A.B., Harvard College; M.D., Columbia University College of Physicians and Surgeons. Assistant Professor of Psychiatry.
- KARL H. SCHWERIN, B.A., University of California; Ph.D., University of California at Los Angeles. Professor of Anthropology.
- NEIL RAYMOND SCOTT, B.S., Kansas State University; M.D., Duke Medical School; M.A., Stanford University. Instructor in Psychiatry.
- 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).
- ARMOND HAROLD SEIDLER, B.S., M.S., Ph.D., University of Illinois; F.A.C.S.M. Professor of Physical Education.
- KARL JOHN SEITZ, A.B., Brown University; M.A., University of Michigan. Instructor in History.
- WESLEY THOMAS SELBY, B.F.A., M.M., University of New Mexico; M.M., University of Colorado. Assistant Professor of Music.
- ROBERT ALAN SENESCU, B.A., Columbia College; M.D., Boston University Medical School. Professor of Psychiatry, Chairman of the Department of Psychiatry.
- CLAUDE MARIE SENNINGER, License, Doctorate, University of Paris; M.A., University of Texas. Associate Professor of Modern and Classical Languages.
- RUDOLFO GAITAN SERRANO, B.A., San Jose State College; M.A., University of the Pacific, Ph.D., University of Arizona. Assistant Professor of Educational Foundations.
- JAMES E. SEUBERT, B.S.R.T., University of Missouri. Teacher-Technologist, Department of Radiology; Assistant Instructor in Radiology.

⁸ On sabbatical leave second semester.

⁴ On leave for the year.

⁸ Second semester only.

³⁷ Resigned 9/30/72.

- WILLIAM MAC SEYMOUR**, B.Mus.Ed., Music and Arts College; Ed.D., Washington University. Associate Professor of Music, Chairman of the Department of Music.
- 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.
- NESBY WAYNE SHARP**, B.F.A., M.Mus., University of New Mexico. Lecturer in Music (Part-time).
- 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, Chief, Division of Nuclear Medicine, Department of Radiology.
- JERRY MARK SHUCK**, B.S., M.D., D.Sc., University of Cincinnati. Associate Professor of Surgery.
- ROGER WALLACE SHUGG**, A.B., A.M., Ph.D., Princeton University. Director of the University Press, Professor of History (Part-time).
- 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.
- PAUL HYMAN SILVERMAN**, B.S., Roosevelt University; M.S., Northwestern University; Ph.D., School of Tropical Medicine, University of Liverpool England. Professor of Biology, Chairman of the Department of Biology.
- 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.
- [†] **JUNE LOUISE HAIG SIMONS**, B.A., M.A., University of Oregon. Lecturer in English (Part-time).
- 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; Ph.D., University of Michigan. Assistant Professor of Business and Administrative Sciences.
- DOROTHY LYNN SINGLER**, B.S., M.A., Northwestern University. Lecturer in English (Part-time).
- CAROLYN ANN SIRKEL**, B.F.A., University of New Mexico; M.F.A., San Jose State College. Assistant Professor of Theatre Arts.
- 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.
- ROBERT WAYNE SLENES**, B.A., Oberlin College; M.A., University of Wisconsin (Madison). Instructor in History.
- 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; Coordinator of the Health Education Program, Department of Health, Physical Education, and Recreation.
- CAROL ANN SMITH**, B.A., Portland State College; M.A., Ph.D., Stanford University. Assistant Professor of Anthropology.
- 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, Chief of the Division of Dermatology, Department of Medicine.
- ² **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 On sabbatical leave first semester.[†] First semester only.

- LOTSEE PATTERSON SMITH**, B.A., Oklahoma College of Liberal Arts; M.L.S., University of Oklahoma. Assistant Professor of Secondary Education.
- MARY ELIZABETH SMITH**, B.A., University of Michigan; M.A., Columbia University; Ph.D., Yale University. Associate Professor of Art.
- 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. 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.
- DONALD WINSTON SMITHBURG**, A.B., University of Washington; Ph.D., Harvard University. Visiting Professor of Public Administration.
- 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 Theatre Arts.
- RODMAN ELDREDGE SNEAD**, B.A., University of Virginia; M.A., Syracuse University; Ph.D., Louisiana State University. Professor of Geography.
- WILLIAM ELMER SNEAD**, B.A., University of New Mexico; J.D., University of New Mexico School of Law. Lecturer in Law (Part-time).
- 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; Ph.D., Indiana University. Assistant Professor of Speech Communication.
- 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. Associate Professor of Pathology, Assistant 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. Adjunct 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, Ph.D., Stanford University. Assistant Professor of History.
- BERNARD SPOLSKY**, B.A., M.A., Victoria University of Wellington (New Zealand); Ph.D., Université de Montréal. Professor of Linguistics and of Elementary Education.
- ELLEN SPOLSKY**, B.A., McGill University; M.A., Ph.D., Indiana University. Assistant Professor of English.
- JAMES NORMAN SPUHLER**, B.A., University of New Mexico; M.A., Ph.D., Harvard University. Leslie Spier Professor of Anthropology.
- HAROLD A SPURGEON**, B.A., Monmouth College; Ph.D., Loyola University. Instructor in Physiology.

- 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., University of Iowa; Ph.D., University of Maryland. Professor of Pharmacy (Pharmaceutical Chemistry), Director of Pharmacy Admissions and Records and Academic Scholarship.
- JIMMY CLAYTON STANDEFER**, B.A., Ph.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.
- AL THORNTON STEELE**, Visiting Lecturer, Business and Administrative Sciences (Part-time).
- 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.
- VERA POLGAR JOHN-STEINER**, B.A., Barnard College; Ph.D., University of Chicago. Associate Professor of Educational Foundations.
- DAVID V. STEPHENSON, JR.**, B.S., York College; M.D., University of Nebraska College of Medicine; Graduate study at United Theological Seminary. Associate Professor of Surgery, Director of the BCMC Emergency Room.
- JOANNE WINIFRED STERLING**, B.A., Chatham College; M.A., Ph.D., University of New Mexico. Assistant Professor of Psychiatry (Rehabilitation).
- CARL RUSSELL STERN**, B.A., Reed College; M.Phil., Yale University Graduate School. Assistant Professor of Philosophy.
- CHARLES J. STERNHAGEN**, B.A., Carroll College; M.D., Loyola University, Stritch School of Medicine. Assistant Professor of Radiology.
- WILLIAM DUENO STIEHM**, B.S., University of Wisconsin; M.D., Columbia University. Assistant Professor of Radiology.
- ALEXANDER PAUL STONE**, B.S., Columbia University; M.S., Newark College; Ph.D., University of Illinois. Associate Professor of Mathematics.
- ³⁴ **JUSTIN FEDERMAN STONE**, Visiting Lecturer in the Undergraduate Seminar Program (Part-time).
- ²⁰ **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;²³ 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).
- ⁴ **DAVID STRATMAN**, LL.B., University of Cuza (Romania); Ph.D., Boston University. Assistant Professor of Sociology.
- ROBERT GEOFFREY STRICKLAND**, M.B.B.S., M.D., University of Adelaide. Associate Professor of Medicine and Chief of the Division of Gastroenterology, Department of Medicine.
- LYNN STRONGIN**, B.A., Hunter College; M.A., Stanford University. Lecturer in English (Part-time).
- HARRY PAUL STUMPF**, B.A., University of Colorado; M.A., George Washington University; Ph.D., Northwestern University. Associate Professor of Political Science.
- ERNEST T. SUAZO**, B.A., University of New Mexico; M.Ed., University of Arkansas. Counselor Psychologist, Department of Psychiatry; Assistant Professor of Psychiatry.
- DONALD DAVID SULLIVAN**, A.B., A.M., University of Chicago; Ph.D., University of Colorado. Assistant Professor of History.
- 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. Associate Professor of History.

⁴ On leave for the year.²⁰ On sabbatical leave 9/1/72-5/31/73.²³ 7/1/72 through Semester I.³⁴ Semester I through 10/20/72 only.

- 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, Chief of the Division of Anesthesiology, Department of Surgery.
- EDITH TANNENBAUM**, B.S.N., Cornell University; M.P.H., University of North Carolina. Nurse V, New Mexico Regional Medical Program; Instructor in Nursing.
- ROBERT EDWIN TAPSCOTT**, B.S., University of Colorado; Ph.D., University of Illinois. Associate Professor of Chemistry.
- WALTON ROBERT LAWSON TAYLOR**, B.S., Sacramento State University. Assistant Professor of Business and Administrative Sciences.
- ² **ERNEST WARNOCK TEDLOCK**, B.A., M.A., University of Missouri; Ph.D., University of Southern California. Professor of English.
- ⁷ **LEE EDWARD TEITELBAUM**, B.A., Harvard University; LL.B., Harvard Law School; LL.M., Northwestern University School of Law. Visiting Associate Professor of Law.
- PAUL THORLEIF THERKILDSEN**, B.S., Bradley University; M.S., Ph.D., University of Colorado. Associate Professor of Economics.
- EVELYN JUNE THOMAS**, B.S., University of New Mexico; M.S., Loma Linda University. Instructor in Nursing, Instructor in Psychiatry.
- ROY THOMAS**, B.Sc., University of Alberta; Ph.D., University of California. Professor of Physics.
- 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).
- ¹ **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.
- JOHN THOMAS HANLEY TIMM**, B.A., University of Wisconsin (Oshkosh); M.A., Marquette University; M.A., University of Wisconsin (Madison). Assistant Professor of Modern and Classical Languages.
- SEI TOKUDA**, B.S., University of Hawaii; Ph.D., University of Washington. Associate Professor of Microbiology.
- JOHN IVAN TODOR**, B.P.E., University of Alberta; M.A., Ph.D., University of California (Berkeley). Assistant Professor of Health Education.
- 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.
- MILTON 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.
- ⁸ **RICHARD KEITH TRAEGER**, B.S., University of Wisconsin; M.S., Case Western Reserve University; Ph.D., University of New Mexico. Adjunct Professor of Chemical Engineering.
- ⁸ **FREDERICK D. TRAUGER**, A.B., Fresno State College. Lecturer in Geology (Part-time).
- 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.
- DOROTHY WEBB TRESTER**, B.S., M.S., Louisiana State University. General Reference Librarian, Assistant Professor of Librarianship.

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

- GEORGE EMMANUEL TRIANDAFILIDIS**, B.S., Robert College; M.S., Ph.D., University of Illinois. Professor of Civil Engineering, Manager of the Soil and Rock Mechanics Department, 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.
- ⁸ **HOYT TROWBRIDGE**, B.A., M.A., Ph.D., University of Wisconsin. Professor of English.
- GUY WALLIS TRUJILLO**, B.S.Ed., M.A., Northern Arizona University. Co-Director of the Pupil Personnel Services Project; Assistant Professor of Guidance.
- RUPERT AMARANTE TRUJILLO**, B.A., M.A., New Mexico Highlands University; Ed.D., University of New Mexico. Assistant Dean for Student Affairs, College of Education; Associate Professor of Educational Foundations.
- THOMAS J. TSCHETTER**, B.S., Augustana College; M.B.A., University of South Dakota. Visiting Lecturer in Business and Administrative Sciences (Part-time).
- KENNETH SIK KWONG TUNG**, M.D., Melbourne University, Australia. Associate Professor of Pathology.
- 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.
- HORACIO ULIBARRÍ**, B.A., St. Thomas Seminary; M.A., New Mexico Highlands University; Ed.D., University of New Mexico. Professor of Educational Administration.
- MADELINE RUTH ULIBARRÍ**, B.S., Illinois State University; M.A., New Mexico Highlands University; Ed.D., University of New Mexico. Assistant Professor of Home Economics (Part-time).
- ⁸ **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, 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. Assistant Professor of 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 *Natural Resources Journal*.
- ARTHUR VALL-SPINOSA**, B.A., Whitman College; M.D., University of Washington. Assistant Professor of Medicine.
- 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 Biochemistry, Assistant Professor of Chemistry.
- RICHARD D. VAN DONGEN**, B.S., M.A., Ed.D., University of New Mexico. Assistant Professor of Elementary Education.
- GLEN DEAN VAN ETEN**, B.S., M.S., Kansas State Teachers College; Ed.D., University of Kansas. Associate Professor of Special Education.
- ⁷ **MONA CARLENE VAN ETEN**, B.S., Kansas State Teachers College; M.S., University of Kansas; Ed.S., George Peabody College for Teachers. Associate Professor of Guidance and Special Education (Part-time).
- STEPHEN H. VAN HAUEN, JR.**, B.S., M.S., Oklahoma State University. Budget Director, Visiting Lecturer in Business and Administrative Sciences (Part-time).
- EDMUNDO EUSEBIO VASQUEZ**, B.A., New Mexico Highlands University; M.A., Stanford University. Instructor in Educational Foundations (Part-time).
- CARDER MIKESSELL VAUGHN**, B.F.A., University of New Mexico. Lecturer in Theatre Arts (Part-time).

⁸ On sabbatical leave second semester.⁷ First semester only.

- THOMAS JOSEPH VENARDOS, B.S., Northern Arizona University; M.A., Ed.D., University of New Mexico. Counseling Psychologist, Counseling Center; Lecturer in Guidance (Part-time).
- PETER JAMES VICHI, B.S., University of Albuquerque; M.S., Texas Christian University. Director, Laboratory Sciences Program of the School of Medicine, Lecturer in Pathology.
- 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, Professor of Pharmacology.
- PETER WALCH, B.A., Swarthmore College; M.F.A., Ph.D., Princeton University. Associate Professor of Art.
- 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).
- ⁸² R. WAYNE WALKER, A.B., J.D., University of California (Berkeley). Professor of Law.
- ROBERT WILLIS WALKER, A.B., LL.B., West Virginia University; LL.M., Harvard University. Associate Professor of Law.
- FRANCIS JOSEPH WALL, B.S., Sul Ross State College; M.S., University of Colorado; Ph.D., University of Minnesota. Biostatistician in the Department of Community Medicine, Adjunct Assistant Professor of Community Medicine.
- ROBERT JAMES 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. Associate Professor of Chemistry.
- L. HELEN WALTERS, B.S., Teachers College, Columbia University; M.A., University of Minnesota; Ed.D., Colorado State College. Professor of Elementary Education.
- ROBERT CARLTON WALTERS. Lecturer in Architecture (Part-time).
- ⁸ EDWARD CHARLES WALTERSCHEID, B.A., J.D., University of New Mexico. Lecturer in Law (Part-time).
- DOLORES JO WARD, B.A., Thiel College, M.S.W., University of Pittsburgh, School of Social Work. Social Worker III, Department of Psychiatry, Instructor in Psychiatry.
- 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.
- JOYCE HEEMSTRA WARNER, B.A., Northwestern College; M.Ed., University of Nebraska. Assistant Professor of Business Education, Department of Secondary Education.
- 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.
- ROBERT EARLE WATERMAN, B.A., Lawrence College; Ph.D., University of Washington. Assistant Professor of Anatomy.
- ELIZABETH WATERS, Hanya Holm School, New York City; student of the dance with Ruth St. Denis. Assistant Professor of Dance, Department of Theatre Arts; Associate Professor of Physical Education.
- BILLY LESLIE WATSON, B.A., M.Ed., North Texas State University; Ed.D., University of California (Los Angeles). Associate Professor of Special Education.
- GUY ANTHONY WATSON, B.A., University of Alaska; Ed.D., University of Southern California. Associate Professor of Secondary Education, Director of the Learning Materials Center, College of 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.
- KIRK HOWELL WEBSTER, B.S., Tulane University; M.D., Tulane University Medical School. Assistant Professor of Medicine.

⁴ On leave for the year.

⁸ Second semester only.

⁸² Retired 12/31/72.

- ⁷ **ROBERT GIDEON WEBSTER**, B.S., M.A., University of New Hampshire; Ph.D., Tufts University. Visiting Assistant Professor of Psychology (Part-time).
- U. WILLIAM WEEKS**, B.S., M.S., Iowa State University. Director of Development, Associate Professor of Physical Education.
- MARY MARTHA WEIGLE**, B.A., Radcliffe College; M.A., Ph.D., University of Pennsylvania. Assistant Professor of Anthropology and English.
- WILLIAM LOUIS WEISMANTEL**, B.S.C.E., University of Missouri; LL.B., Harvard Law School; Ph.D., Harvard University. Lecturer in Architecture (Part-time).
- 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.
- ROBERT TERRANCE WERTZ**, B.A., Long Beach State College; M.A., Ph.D., Stanford University. Adjunct Associate Professor of Speech Pathology, Department of Communicative Disorders.
- FRANCIS CHRISTOPHER WESSLING, JR.**, B.S., Washington University; M.S., University of New Mexico; Ph.D., University of Minnesota. Associate Professor of Mechanical Engineering.
- DONALD ALLAN WEST**, A.B., M.D., University of Kansas. Instructor in Psychiatry.
- ⁸ **EDWARD WEST**, B.A., Lake Forest College; M.F.A., Rochester Institute of Technology. Lecturer in Art (Part-time).
- 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 Chemical and Nuclear Engineering.³⁹
- JAMIE KAY WHEELER**, B.S., Eastern New Mexico University; M.D., Baylor University. Assistant Professor of Pathology, Assistant Professor of Medicine.
- 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.
- 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).
- WILLIAM HASTINGS WIESE**, B.A., Yale College; M.D., Harvard Medical School; M.P.H., Harvard School of Public Health. Assistant Professor of Medicine, Assistant Professor of Community Medicine, Assistant Dean for Undergraduate Medical Education, School of Medicine. Acting Chairman of the Department of Family and Community Medicine.³⁸
- ⁷ **BRUCE EDWARD WIGGINS**, B.A., University of New Mexico. Instructor in Health, Physical Education, and Recreation (Part-time).
- GAYNOR CLARKE WILD**, B.S., South Dakota School of Mines and Technology; Ph.D., Tulane University. Assistant Professor of Biochemistry.
- MAURICE WILBERT WILDIN**, B.S.M.E., University of Kansas; M.S.M.E., Ph.D., Purdue University. Professor of Mechanical Engineering, Chairman of the Department of Mechanical Engineering.
- DAVID ROBERT WILKIE**, B.P.E., University of New Brunswick; M.A., University of Alberta. Coordinator of Intra-Mural and Recreation Activities, Assistant Professor of Physical Education.
- ARTHUR SCOTT WILKINSON**, B.M., M.Mus., University of Arizona. Lecturer in Music (Part-time).

⁷ First semester only.⁸ Second semester only.³⁸ Beginning 1/12/73.³⁹ Departments combined 1/22/73.

- FLOYD THOMAS WILLIAMS, B.S., Georgia Southern College; M.M., University of Cincinnati. Lecturer in Music.
- ⁸ JACK DOYLE WILLIAMS, B.A., M.A., University of New Mexico. Ph.D., University of Texas (Austin). Instructor in Secondary Education (Part-time).
- 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).
- ¹ 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, Associate 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.
- NATHANIEL WOLLMAN, B.A., Pennsylvania State College; Ph.D., Princeton University. Dean of the College of Arts and Sciences, Professor of Economics.
- MILES DAVID WOLPIN, B.S., University of Pennsylvania; Ph.D., Columbia University; J.D., Columbia University School of Law. Visiting Assistant Professor of Political Science.
- 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.
- ² 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.
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- ² 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.
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- ⁷ RONALD PETER WRONA, B.S., Arizona State University; M.F.A., Cranbrook Academy of Art. Instructor in Art Education (Part-time).
- ⁷ HARRY WUGALTER, B.A., M.A., University of New Mexico. Instructor in Educational Administration (Part-time).
- JOHN ALBERT YEAKEL, B.S., M.S., Pennsylvania State University; Ph.D., University of Florida; C.P.A. Associate Professor of Business and Administrative Sciences.
- JOSEPH EUGENE YELL, B.F.A., M.F.A., Art Institute of Chicago. Professor of Theatre Arts.
- SIDNEY SHIH-CHWEN YEN, B.A., Taiwan Normal University; M.L.S., George Peabody College for Teachers. Cataloger, Assistant Professor of Librarianship.
- ⁷ FREDERICK GORDON YOST, B.M.E., Polytechnical Institute of Brooklyn; Ph.D., Iowa State University. Adjunct Professor of Nuclear Engineering.

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

- JOSEPH WOZENCRAFT YOUNG**, B.A., University of Texas; M.F.A., Yale University. Visiting Associate Professor of Theatre Arts.
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- RODNEY WILSON YOUNG**, B.A., University of Colorado; M.A., Ph.D., University of New Mexico. Assistant Director of English Tutorial Program of University College, Assistant Professor of Elementary Education.
- 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, Assistant Dean of the Graduate School.
- GORDON ALVIN ZICK**, B.A., University of Wisconsin; M.Ed., Wisconsin State University; Ed.D., University of Illinois. Associate Professor of Guidance.
- 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.
- MILES VERNON ZINTZ**, B.A., Iowa State Teachers College; M.A., Ph.D., University of Iowa. Professor of Elementary Education.

ANDEAN STUDY AND RESEARCH CENTER, QUITO, ECUADOR

- NELSON DAVILA**, Licenciatura (Journalism), Central University of Ecuador (Quito). Associate Director of the Andean Study Center, Lecturer in Journalism.
- ⁷ **THEODORE H. GHERMAN**, B.S., M.A., University of Oregon. Ed.D., University of Massachusetts. Instructor in Secondary Education.
- ROBERT DEUPREE HERRON**, B.A., University of Richmond; M.A., Ph.D., University of Wisconsin.

BRANCH COLLEGE AT GALLUP

- LLOYD HAROLD CARRELL**, B.A., Nebraska State; M.A., Colorado State. Lecturer in Mathematics (Part-time).
- WILLARD LAYAR CLAWSON**, B.S., Brigham Young University; M.S., Northern Arizona University. Lecturer in Geology (Part-time).
- DARWIN KAY CRANER**, A.A., Lewiston State Normal School; B.S., M.S., University of Utah. Lecturer in History and Political Science.
- LAWRENCE LLOYD DICKERSON**, B.A., M.A., University of New Mexico. Lecturer in Psychology (Part-time).
- ⁷ **WILFRED ERIACHO**, B.A., M.A., University of New Mexico. Lecturer in Art Education (Part-time).
- ⁸ **FRANK XAVIER ESTRADA**, B.A., New Mexico Highlands; M.A., University of California (Los Angeles). Lecturer in English (Part-time).
- ⁸ **BRUCE ROBERT FRAMPTON**, A.B., A.M., University of California (Los Angeles). Lecturer in Speech (Part-time).
- KAY F. GAJEWSKI**, A.B., Marquette University; M.A., University of Minnesota. Lecturer in English (Part-time).
- JOE RICHARD GILL**, B.A., M.S., Eastern New Mexico University. Lecturer in Physical Education and Health Education (Part-time).
- LETHELLE ADEN MCGLAMERY**, B.S., Oklahoma State University. Lecturer in Business Education (Part-time).
- WALTER JOHN MEHL**, B.S., M.S., Ph.D., University of Wisconsin. Lecturer in Educational Foundations (Part-time).
- ⁷ **CAROLINE R. MURPHY**, Assistant Instructor in Navajo (Part-time).

⁷ First semester only.

⁸ Second semester only.

FRANKLIN KENT NORTHUP, B.A., M.A., University of Northern Colorado. Lecturer in Music (Part-time).

ROBERT L. PAINTER, B.A., University of South Florida; M.S., Florida State University. Lecturer in Sociology (Part-time).

⁷ **KAREN LEE PERCE, B.S., M.A.T.,** University of New Mexico. Lecturer in Home Economics (Part-time).

LORRAINE PRICE, A.B., Hope College. Assistant Instructor in English (Part-time).

GILBERT RANJEL, B.A., University of New Mexico. Lecturer in Spanish (Part-time).

STUART LEROY RUCKER, B.S., Eastern New Mexico University. Lecturer in Biology (Part-time).

BOYCE CAUBLE RUSSELL, B.A., Eastern New Mexico University; M.A.T., New Mexico State University. Lecturer in Physical Education, Assistant to the Director.

⁷ **MARTHA MARGARET TECKLENBURG, B.S.,** Northwestern State College; M.A., New Mexico Highlands University. Lecturer in Mathematics (Part-time).

CARON JUSTUS VOLLMER, B.A., Duns Scotus College. Assistant Instructor in Navajo (Part-time).

JANET SUE WALKER, B.Mus. Ed. in Music Therapy. Assistant Instructor in Music (Part-time).

MARILYN KAYE WALKER, B.A., Swarthmore College; M.A., San Francisco State College. Lecturer in English.

THOMAS JACK WEEDA, A.B., Western Michigan University; M.A., Michigan State University. Lecturer in Economics (Part-time).

JUDITH ANDERSON WENGER, B.A., Temple Buell College; M.A., Case Western Reserve University. Lecturer in Art (Part-time).

NIRAM ALLEN WILSON, JR., A.B., Harvard University; B.F.T., American Institute for Foreign Trade. Lecturer in Modern Languages.

LLOYD OSCAR YANDELL, B.A., Ed.M., University of Oklahoma; Ed.M. in S., University of New Mexico. Lecturer in Mathematics (Part-time).

LOS ALAMOS RESIDENCE CENTER

GRADUATE DIVISION

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.

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Engineering: **VICTOR W. BOLIE, WILLIAM S. CLOUSER, RICHARD C. DOVE, MAURICE W. WILDIN.**

Computer Science: **LARA H. BAKER, VICTOR W. BOLIE, LAMBERT H. KOOPMANS, JAMES B. MORRIS, JR., DONALD R. MORRISON, DALE SPARKS, RICHARD F. THOMAS, MARK B. WELLS.**

Mathematics: **WILLIAM A. BEYER, PAUL E. HARPER, LAMBERT H. KOOPMANS.**

Physics: **JOSEPH J. DEVANEY, NELSON JARMIE, CHRISTOPHER P. LEAVITT, VICTOR H. REGENER.**

⁷ **LARA HENRY BAKER, JR., B.S., M.S., Ph.D.,** New Mexico State University. Adjunct Professor of Electrical Engineering and Computer Science.

⁷ **RICHARD JOSEPH BECKMAN, B.S., Ph.D.,** Kansas State University. Adjunct Professor of Mathematics.

⁷ **BILLY LEWIS BUZBEE, B.A., M.A., Ph.D.,** University of New Mexico. Adjunct Professor of Mathematics.

⁸ **JAMES LEON CLARK, B.S.,** University of New Mexico; M.S., University of Idaho; Ph.D., University of New Mexico. Adjunct Professor of Mathematics.

⁷ **ALBERT EDWIN EVANS, JR., B.S.,** Yale University; M.S., Ohio State University; Ph.D., University of Maryland. Adjunct Professor of Chemistry.

⁷ **RICHARD ALLEN GENTRY, B.S.,** San Jose State College; M.S., University of Oklahoma; Ph.D., New Mexico State University. Adjunct Professor of Physics.

⁷ First semester only.

⁸ Second semester only.

- ⁸ **BOBBY RAY HUNT**, B.S., University of Wichita; M.S., Oklahoma State University; Ph.D., University of Arizona. Adjunct Professor of Electrical Engineering and Computer Science.
- ⁸ **EDWARD DAN LOUGHRAN**, B.S., M.S., Ph.D., Ohio State University. Adjunct Professor of Chemistry.
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- ⁸ **GRACE H. MOFFAT**, B.S., M.A., City University of New York; Ph.D., New York University. Adjunct Assistant Professor of Physiology.
- JAMES BERTRAM MORRIS, JR.**, B.S., Ph.D., University of Texas. Adjunct Professor of Mathematics, ⁷Adjunct Professor of Electrical Engineering and Computer Science.
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- RICHARD FRANK THOMAS, JR.**, B.S., Duke University; M.S., Tulane University. Adjunct Instructor of Electrical Engineering and Computer Science.
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- ⁸ **EUGENE MICHAEL WEWERKA**, B.A., Ph.D., University of Minnesota. Adjunct Professor of Chemistry.

Undergraduate Division

- ⁸ **MARYANN FANNING ALLISON**, B.Ed., Duquesne University; M.A., (Education), M.A., (Anthropology), University of Colorado. Adjunct Instructor in Anthropology.
- ⁷ **ROSCOE M. BARNES**, B.A., Adams State College. Adjunct Instructor in Instrumentation Electronics.
- PAUL GENE BLACK**, B.S.Ed., Southwest Texas State College; M.A., University of Arkansas. Adjunct Instructor in Speech.
- ⁷ **WILLIAM MELVIN BOEDECKER**, Adjunct Instructor in Instrumentation Electronics.
- ⁸ **BILLY LEWIS BUZBEE**, B.A., M.A., University of Texas (Austin); Ph.D., University of New Mexico. Adjunct Instructor in Mathematics.
- GLENDIA ANN BUZBEE**, B.A., Harding College; M.S., Texas Technological College. Adjunct Instructor in Mathematics.
- ⁷ **KATHERINE CAMPBELL**, B.A., Radcliffe College; M.A., University of Maryland. Adjunct Instructor in Mathematics.
- ⁷ **ALOIS DAVID CERNICEK**, B.A., Masaryk University (Brno, Czechoslovakia); M.A., University of Chicago. Adjunct Instructor in Linguistics.
- MARJORIE BELL CHAMBERS**, B.A., Mount Holyoke College; M.A., Cornell University. Adjunct Instructor in History.
- ⁷ **ESTHER W. CHURCH**, B.A., Waynesburg College; M.S.T., University of Montana. Adjunct Instructor in Biology.
- GLORIA LOUISE CORDOVA**, B.A., College of Mount Saint Joseph-on-the-Ohio. Adjunct Instructor in Chemistry.
- ROBERT HUDSON DINEGAR**, A.B., Cornell University; A.M., Ph.D., Columbia University. Adjunct Professor of Chemistry.
- ⁷ **BARBARA RATTRAY DUBOIS**, B.A., M.A., University of Michigan. Adjunct Instructor in English.
- ⁷ **ROBERT O. EIKLEBERRY**, A.B., M.S., University of Iowa. Adjunct Instructor in Biology.
- MANUEL DAVID ESQUIBEL**, B.A., College of Santa Fe. Adjunct Instructor in Spanish.
- ⁷ **JOHN F. FOX, JR.**, A.A.S., Hudson Valley Community College; B.S., M.S., State University of New York (Oswego). Adjunct Instructor in Instrumentation Electronics.
- TERALENE STEVENS FOX**, B.S., College of Idaho; M.S., Kansas State University. Adjunct Instructor in Biology.
- ⁷ **HORACE W. GAMBELL**, B.S., M.S., State University of New York (Oswego). Adjunct Instructor in Instrumentation Electronics.

⁷ First semester only.⁸ Second semester only.

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- ⁷ HENRY LEWIS LAQUER, A.B., Temple University; M.A., Ph.D., Princeton University. Adjunct Professor of Chemistry.
- JUDITH MARIE LATHROP, A.B., Vassar College; M.A., University of Southern California. Adjunct Instructor in English.
- ⁸ JEANNE LAWTON, B.A., University of New Mexico. Adjunct Instructor in English.
- ⁸ ROBERT G. LAWTON, B.S., M.S., University of California. Adjunct Instructor in Instrumentation Electronics.
- ⁷ HOWARD P. LINDBERG, B.S.E.E., University of New Mexico. Adjunct Instructor in Instrumentation Electronics.
- ⁷ MARJORIE DEE LITTLE, B.S., Colorado Agricultural and Mining College; M.S., Ohio State University; M.A., Colorado State College. Adjunct Instructor in Speech.
- ⁸ EMMA MacLEOD, B.A., St. Ambrose College; M.A., University of Iowa. Adjunct Instructor in Journalism.
- ⁸ CHARLES WILLIAM McCABE, Adjunct Instructor in Instrumentation Electronics Technician Program.
- ⁸ JOHN BLAIR McHALE, Adjunct Instructor in Instrumentation Electronics Technician Program.
- MARY KATHRYN McLEOD, B.S., University of Albuquerque; M.A., University of New Mexico. Adjunct Instructor in Art⁷, Adjunct Instructor in Art Education⁸.
- DONALD MORRIS, B.S., M.S., New Mexico State University. Adjunct Instructor in Economics.
- ⁷ RAYMOND E. MORRISON, JR., B.S., State University College of New York (Oswego); M.S., Syracuse University. Adjunct Instructor in Instrumentation Electronics.
- JUDE PARDEE, B.A., Radcliffe College. Adjunct Instructor in Spanish.
- STEPHEN GREGORY PORTMAN, B.A., Texas Christian University; M.A., North Texas State University; Ph.D., University of New Mexico. Adjunct Professor of Philosophy.
- JAMES LOWTHER REILEY, B.S., Lehigh University; M.A., Northern Arizona University. Adjunct Instructor in History.
- ⁸ CALVIN ALEXANDER ROBERTS, B.A., Valdosta State College; M.A., New Mexico Highlands University. Adjunct Instructor in History.
- ⁸ MARIO EDWARD SCHILLACI, B.S., Drexel Institute of Technology; M.A., Brandeis University. Adjunct Instructor in Physics.
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- ⁸ DWIGHT L. STEPHENSON, B.S.E.E., California State Polytechnic College. Adjunct Instructor in Instrumentation Electronics.
- FORREST PAUL STRONG, B.F.A. in Ed., University of Nebraska; M.A., New Mexico Highlands University. Adjunct Instructor in Art.
- ⁷ EDGAR A. THOMAS, Adjunct Instructor in Instrumentation Electronics.
- ⁷ JAMES VICTOR YOUNG, B.M.E., M.A., Eastern New Mexico University. Adjunct Instructor in Music.

ADVISORY COUNCIL

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ASSISTANT INSTRUCTORS

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- ALVIE RAY BARKER, JR., B.M.E., M.M.E., University of New Mexico. Assistant Instructor in Music, Albuquerque Youth Symphony (Part-time).
- PHOEBE JEAN BECKTELL, B.S., University of Minnesota. Assistant Instructor in Nursing.
- ⁷ VIOLET MARIE BEGLEY, B.S., University of Minnesota; Nursing Diploma, Bethesda Hospital, St. Paul, Minnesota. Assistant Instructor in Nursing (Part-time).
- GERTRUDE MAGDALINE BRAIG, R.N., Mercy Hospital (Ohio); B.S.N., University of Akron. Assistant Instructor in Nursing.

⁷ First semester only.

⁸ Second semester only.

- [†] **SANDRA JEAN BRUNER**, B.Ed., University of Florida; M.S., Purdue. Assistant Instructor in Biology (Part-time).
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- [†] **LEONARD GILBERT ESPINOSA**, B.A., University of New Mexico; J.D., University of New Mexico School of Law. Assistant Instructor in Law (Part-time).
- ⁸ **JOHNNY LYNN GOAD**, B.S., University of New Mexico. Assistant Instructor in Pharmacy (Part-time).
- DALE EUGENE KEMPTER**, B.M.E., B.M., University of Kansas; M.M.E., University of New Mexico. Assistant Instructor in Music, Albuquerque Youth Symphony (Part-time).
- ESTHER ETTI MARES**, T.D., Herzliel Hebrew Institute Teachers College. Assistant Instructor in Elementary Education.
- MARY TAPIA MARTINEZ**, Assistant Instructor in Elementary Education (Part-time).
- [†] **FRANCES McBRIDE**, B.S., University of New Mexico. Assistant Instructor in Nursing (Part-time).
- BRENDA F. M. McCORMICK**, R.N., Regina Grey Nuns' School (Canada); B.S.N., McGill University. Assistant Instructor in Nursing.
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- JUDITH M. ESPINOSA PIERCE**, B.S.N., University of New Mexico. Assistant Instructor in Nursing.
- LINDA F. SKOGMO**, B.S.N., University of New Mexico. Assistant Instructor in Nursing.
- LORNA LUELLA STOLL**, B.S., Stanford University. Assistant Instructor in Nursing.
- NANCY RUTH WEART**, B.A., Cornell College. Assistant Instructor in Music, Albuquerque Youth Symphony (Part-time).

TEACHING ASSISTANTS

- MICHAEL F. ADOLF**, B.A., M.S., Miami University. Department of Mathematics and Statistics.
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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 Gallup and Northern branches, at the Los Alamos Graduate 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 1972. 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 reaccredited 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 education and training program in speech pathology was accredited by the American Boards of Examiners in Speech Pathology and Audiology in 1972.

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 120.

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 (known as Los Alamos Residence Center from 1970 to 1973) 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. In 1970, three ethnic studies programs—Afro-American Studies, Chicano Studies, and Native American Studies—were established. The Northern Branch of the University, with headquarters at Española, was established in 1973.

The University has 54 instructional departments and non-departmentalized schools and colleges, with the master's degree being offered in 52 fields. The doctorate may be earned in 27 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 nuclear and laser technology, new sources of energy, and 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 Army's White Sands Proving Grounds are some 250 miles to the south; while in Albuquerque itself at Kirtland Air Force Base are the Air Force Special Weapons Center and Air Force Weapons Laboratory, the Field Command of the Defense Nuclear Agency, Sandia Laboratories, and the Atomic Energy Commission's Albuquerque operations office.

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 UNIT—acquires films (rental) for instructional purposes in regularly scheduled undergraduate and graduate classes.

AUDIO-VISUAL UNIT—provides, upon request, audio-visual and special purpose equipment to faculty for instructional purposes in regularly scheduled undergraduate and graduate classes.

CLOSED CIRCUIT TELEVISION UNIT—provides video tape recording and playback equipment upon request by faculty for use in regularly scheduled undergraduate and graduate classes. Personnel will upon request of faculty members assist in the development, production, and videotaping of a special program or a series of programs.

INSTRUCTIONAL DEVELOPMENT UNIT—assists faculty members in employing different methods and/or modes of teaching, utilizing the "newer" media and technology, toward improvement of instruction.

IN-SERVICE TRAINING UNIT—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 UNIT—develops and produces graphic material in any form for instructional purposes, including: photography (all types), charts, diazo, transparencies and other graphics.

AUDIO SERVICE UNIT—produces and/or duplicates audio materials: reel and cassette; monaural and stereo. Audio compression or expansion of pre-recorded tapes is also available.

ELECTRONIC REPAIR UNIT—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 recently enlarged Maxwell Museum of Anthropology is located adjacent to the new Anthropology office wing. Entrance is from the south off the Ash Street mall; public parking is available at metered locations on University Boulevard and Roma Street. Public hours are from 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. Newly installed permanent exhibitions include the program area **Man in the Southwest**. Other permanent program areas on Human Evolution, Band Societies and Peasant Societies, and an ethno-botanical garden are scheduled for completion during 1973-74. Other exhibits include selections from an extensive textile collection, and, during 1973-74 a major temporary exhibition on ethno-music. Director: J. J. Brody (on leave 1973-74); Acting Director: John M. Campbell.

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. Director: Van Deren Coke.

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: Stephen Brogden.

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 800 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 800,000 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 locked carrels and 207 open carrels. 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 650,000 cataloged and processed volumes, several thousand other cataloged serials and pamphlets, 320,000 microforms, 71,000 maps, and 1,124,000 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 Carter 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.

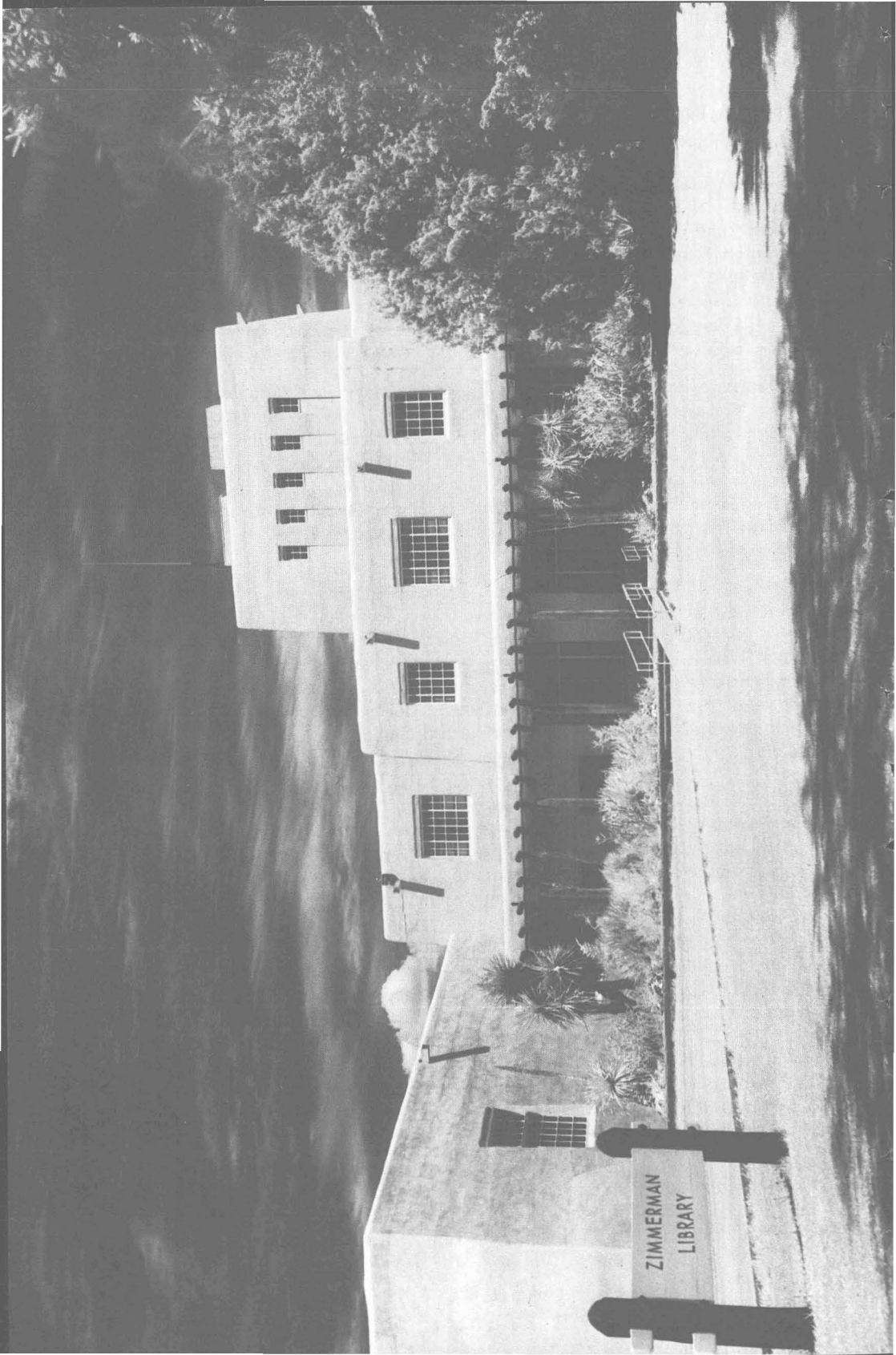
The Van de Velde Collection of Mexican Materials, consisting of 8,686 bound volumes, 93 maps, and 50 linear feet of pamphlets was purchased in 1939 by a special appropriation of the State Legislature. It contains much rare and valuable material dealing with history, archaeology, ethnology, geology, folklore, 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.

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



ZIMMERMAN
LIBRARY

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 9 a.m. to 6 p.m., Saturdays; and Sundays from 1 to 11 p.m. During holidays, examination weeks, and inter-sessions, hours may vary.

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 42,000 books and scores, and 11,000 recordings and tapes. The audio materials, which include the Archive of South-western Music, are available for use through specially designed listening facilities.

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 on 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 105,000 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 and Bernalillo County Medical Association's Library.

The library's collection has grown to more than 74,000 items including books, serials, pamphlets, technical reports, microfilm, microfiche, videocassettes, 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 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) MEDLINE 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

Charles L. Beckel, Acting Vice President for Research

Several research support activities are administratively under the supervision and direction of the Vice President for Research. He works 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

Grace Olivárez, Professor of Law, 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 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. Two of them—the Home Improvement Project and New Careers—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 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, Associate Professor of Economics, 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. It utilizes 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.

COLLEGE ENRICHMENT PROGRAM

Dan Chavez, Assistant Professor of Educational Foundations, 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

Richard A. Anderson, Associate Professor of Architecture, Acting Director

The Division of Government Research was established in 1945 for the purpose of publishing studies on government and politics at the state, regional, and national level. They are 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 two programs:

NEW CAREERS

New Careers is working with 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 several public agencies. Participants in the latter phase include the Albuquerque Public Schools, the State Department of Health and Social Services, 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 model for management trainees.

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, 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. Investigations include handling problems of criminality, rehabilitation of offenders, administration of the justice and corrections systems.

In addition, the program is to make recommendations for improvement and coordination of law enforcement agency efforts. It assists agencies in their dealings with the federal government.

The program emphasizes the development of management systems and potentials, and the creation of information resources necessary for sound decision-making in the field of criminal justice.

THE SPECIAL SERVICES PROGRAM

Sterling Nichols, Jr., Director

The Special Services Program 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. The program also provides reader services for the blind.

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 the 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 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.

ERIC H. WANG CIVIL ENGINEERING RESEARCH FACILITY

Delmar Eugene Calhoun, 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 19 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 an 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 subsistence 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 Pro-

gram. 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.

EQUAL EDUCATIONAL OPPORTUNITY POLICY

The University of New Mexico does not discriminate against any person on the grounds of sex, race, color, or national origin in any of its programs or activities.

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 con-

taining 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. 106).
2. Enclose with the application form the application fee.
3. Have ACT scores (see p. 106) 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 processing is completed. This preliminary notice is firm for the student's planning purposes subject only to completion of his high school program. Final notifications of 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 four-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 trigonometry, four years of English and one year of social sciences and/or humanities 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 18 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.

CLEP SUBJECT EXAMINATIONS

The University of New Mexico participates in the College Level Examination Program (CLEP) administered by the College Entrance Examination Board. Credit is granted to newly admitted and regularly enrolled students who achieve scores of 45 or better on any of the CLEP subject examinations listed below, as approved by the appropriate academic department. (Credit is not granted for subject examinations not listed below, nor is credit granted for completion of the CLEP General Examinations.)

CLEP Subject Examination	Equivalent UNM Course	Credit Granted (Semester hours)
Biology	Biol 110-111	6
General Chemistry	Chem 101L-102L	8
English Composition	Engl 101	3*
Analysis and Interpretation of Literature	Engl 102	3*
American Literature	Engl 280	3*
English Literature	Engl 280	3*
Elementary Computer Programming—Fortran IV	Math 155	2
College Algebra	Math 121	3
Statistics	Math 102	3
Trigonometry	Math 123	1
American Government	Pol Sc 200	3
General Psychology	Psych 107	3
Tests and Measurements	Psych 410	3
Human Growth and Development	Psych 320	3
Educational Psychology	Psych 210	3*
Sociology	Soc 101	3*

* To receive credit, both objective AND essay portions of examinations must be completed.

Persons wishing to take one or more CLEP subject examinations may obtain registration forms and the Bulletin of Information for Candidates at a nearby college testing center or by writing:

College Level Examination Program
Box 1821
Princeton, N.J. 08540

Examinations are administered during the third week of each month at test centers located conveniently throughout the United States. Your registration form and test fee must be received by the test center you select no later than three weeks prior to the test date.

Students who have completed CLEP subject examinations within the past five years may arrange for transcripts to be sent to UNM by writing to CLEP at the above address.

In writing for your test results, give the following information:

1. Your name and social security number.
2. Date (month and year) on which test was written.
3. Name and address of Test Center where you wrote the examination.
4. Request mailing to: Dean of Admissions, The University of New Mexico, Albuquerque, New Mexico 87106

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. 106) 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. 172).

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. 172).

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 may 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. 111).

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. 106); 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 one 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 Development Tests nor for the Comprehensive College Tests (General Examinations). The veteran has the opportunity, while enrolled in regular status in the University, to demonstrate his competence in any University subject, and to earn credit in that subject, by making a satisfactory grade on an examination to establish credit see "General Academic Regulations" (p. 158).

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	
	N.M. Residents	Non-Residents
Students carrying 12 or more hours:		
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	
	N.M. Residents	Non-Residents
Students carrying 12 or more hours:		
Tuition and Fees ¹	\$216.00	\$630.00
Graduate Student Association Fee—Non-Refundable ³	9.00	9.00
Total Tuition and Required Fees	\$225.00	\$639.00
Student Group Health and Accident		
Insurance Premium (optional) ²	12.30	12.30
Total Tuition and Fees with		
Group Insurance	\$237.30	\$651.30
All Students carrying 11 or fewer hours		
Tuition and Fees, per semester hour	\$ 18.00	\$ 52.50
Graduate Student Association Fee—Non-Refundable ³	9.00	9.00

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.

³ The non-refundable Graduate Student Association fee is charged once each semester to each Law and Graduate Student regardless of the number of hours carried.

TUITION AND FEE PAYMENT

All students are required to pay tuition and fees, or to make arrangements satisfactory to the University for such payment, **prior** to the beginning of the registration procedure.

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

Checks or money orders should be made payable to THE UNIVERSITY OF NEW MEXICO and should be mailed to the Cashier, The University of New Mexico, Albuquerque, New Mexico, 87131. **Do not mail cash. To assure credit to the proper student account, it is mandatory that payment be accompanied by the 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 ¹ , 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 ²	25.00
Mathematics 020 ²	25.00
Home Economics 445L (Home Management)	50.00
Horseback Riding (PE 131) ²	40.00
Bowling Fee—Payable at Bowling Lanes	
Skin and Scuba Diving (PE 132) ²	15.00
Skiing (PE 141) Ski Instruction Fee ²	15.00
Skiing (PE 141) Ski Lift Fee, Equipment Rental and Tram Fee— Payable to Sandia Peak Ski Area	
Ice Skating (PE 143)—Payable to Ice Arena	
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	
Industrial Education Laboratory Fees (some classes)—Payable at class. Maximum fee	10.00
Art Education Laboratory Fee—In addition to the regular tuition and in lieu of text book purchase, a fee up to \$10.00 per credit hour will be charged in each lab class, depending upon the nature of the materials necessary for the classroom.	

¹ Applies to college credit already earned in another college-level institution but not directly acceptable under University regulations.

² The Refund Schedule for withdrawal applies to these courses.

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.

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 domicile 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 domicile 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.

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. A change in status from non-resident to resident for tuition purposes can be made only after satisfactory evidence has been presented in writing to the Dean of Admissions and Records that residence requirements have been met.

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. 153 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 non-refundable fee determined by the Graduate Student Association and set forth in their constitution. The University collects this fee as an accommodation and it is turned over to the Graduate Student Association.

STUDENT ACCOUNTS. Students are required to pay all accounts due the University during one semester **before** registering for a new semester.

REFUNDS UPON WITHDRAWAL

Registration fees will be refunded (where the student withdraws or drops courses voluntarily) to the end of the 4th week of the semester as follows:

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

Students withdrawing after the 4th week of a semester, or those withdrawing at any time under discipline or because of academic deficiencies, will not be entitled to any refund.

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

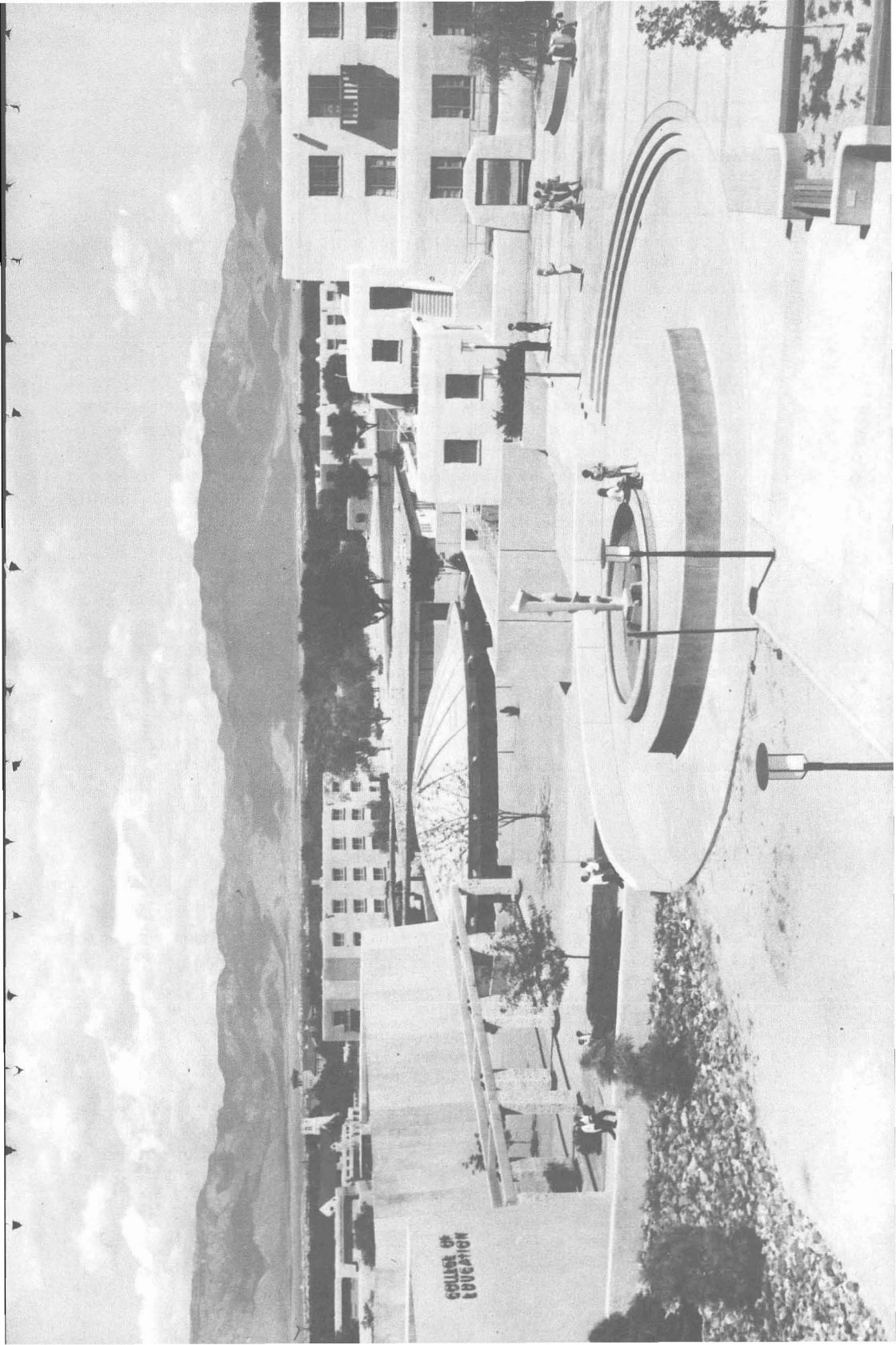
ESTIMATE OF TOTAL EXPENSE

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

Tuition and fees	\$228.00
Student health and accident insurance	12.30
Books and supplies	100.00
Board and room	540.00*
Clothing, laundry, misc.	319.70
Total, per semester	\$1,200.00

Non-resident students must add \$414.00 per semester to the foregoing tuition.

* Semester for school year (see p. 126).



STUDENT HOUSING

FACILITIES

THE UNIVERSITY operates residence halls for 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 trained 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 room and board contract which obligates the student for one entire semester. Written consent of parents must be filed with the Office of the Dean of Students for all first semester freshmen whose homes are not in Albuquerque and who wish to live off campus.

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.

Residents are required to comply with all University rules and housing regulations as a condition of their contract.

Dogs or other pets are not permitted in University buildings or on University premises for sanitary reasons.

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 a Residence Hall request card in advance of the session for which he has been admitted. All students desiring accommodations in the University residence halls must complete and return this request card to receive the contract and application forms for room and board on campus.
2. After reading the terms and conditions of the contract, the student should complete the contract and 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 contract, applications, and deposit are received, a residence hall assignment will be confirmed by the Housing Reservations and Collections Office as space is available.
4. All communications regarding room and board accommodations should be directed to Housing Reservations and Collections Office, La Posada Hall.
5. 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 must 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 is contracted on a semester basis. Deferred payment dates are extended for student convenience, and do not represent payments on a monthly contract.

ROOM AND BOARD PAYMENT SCHEDULE 1973-74

FALL SEMESTER	TYPE OF ROOM	
	DOUBLE	SINGLE
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
SPRING SEMESTER—for FALL residents remaining in the halls	TYPE OF ROOM	
	DOUBLE	SINGLE
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	TYPE OF ROOM	
	DOUBLE	SINGLE
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.

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. For further information, contact the Housing Office, La Posada 201.

OFF CAMPUS HOUSING

A posting service for landlords is available in the Housing Office and may be checked by students desiring off campus housing. The Housing Office does not assume any responsibility for off campus housing arrangements made by students.

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 Direct Student Loans, Nursing Student Loans, Cuban Loans, New Mexico Student Loans, Federal Guaranteed Loans, University Short Term Loans, The Federal Work-Study Program, The University Scholarship Program (both Academic and Athletic), and the Educational Opportunity Grant Program. The Student Aids Office is located in Mesa Vista Hall.

GENERAL POLICY STATEMENT

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

1. Each student must **complete** 12 semester hours each semester with an average grade of 2.0 (or C) on a 4.0 scale. Courses taken under the Credit Option or Credit/No Credit grading systems and included in the 12 semester hours must be recorded as Credit. Incomplete courses will not be accepted within the 12 semester hour requirement.
2. Any student who withdraws during a semester must have a valid documented reason for such withdrawal, in order for aid to be renewed the following semester.
3. Any student who feels he has a justifiable reason for attaining less than a 2.0 average or for withdrawal under circumstance not deemed valid by the Director of Student Aids, may after he has appealed to the Director of Student Aids and been denied, apply for a hearing before a sub-committee designated by the Chairman of the Scholarship, Prizes, Loans, and High School Relations Committee. The application for appeal must contain the facts of his case in writing.

Policy on Renewal of Academic Scholarships is:

1. Freshmen must have a 2.5 scholastic average (or C+) on a 4.0 scale, with at least 12 semester hours taken for grade purposes, for first renewal. Credit/No Credit courses may not be included in the 12 hour minimum.
2. For all semesters subsequent to the first, the student must attain a 3.0 average (or B) on a 4.0 scale. Except, that a student may be renewed for **one semester** if he fails to attain a 3.0 average provided his overall average, including that semester, is 3.0 or greater. If he fails to attain an average of 3.0 in two successive semesters he is removed from the scholarship. The conditions provided in Item 1 concerning hours taken etc., are continued for each semester the student receives a scholarship.

3. A student may receive a maximum of eight semesters under the scholarship.

Each student is informed in the letter awarding him the scholarship of the conditions of renewal.

LOAN FUNDS

The University administers its own Student Loan Fund and cooperates in the administration of several others. Applications and information concerning all loan funds are available in the Student 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 DIRECT STUDENT LOANS

The National Direct Student Loan Program is one of the features of the Higher Education Amendments Act of 1972. Under the terms of the act, funds are available for loans to qualified undergraduate and graduate students. The deadline for filing a loan application is 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, Mesa Vista Hall. 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 nine months after the student leaves school. Interest will be paid by the Federal Government while the student remains in school if he qualifies on the basis of financial need. 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, Mesa Vista Hall, for further information.

THE NEW MEXICO STUDENT LOAN PROGRAM

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

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

Interested students should apply to the Student Aids Office, Mesa Vista Hall.

COLLEGE WORK-STUDY PROGRAM

The University participates in the College Work-Study Program established under the Economic Opportunity Act of 1964, as amended. This program permits colleges and universities to employ students who are in need of earnings from part-time employment in order to pursue their courses of study. Students are limited to 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, Mesa Vista Hall, 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 secretarial 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, Española, 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; (4) the recommendation of the student's counselor or principal (in the case of freshman applicants); (5) special abilities and/or accomplishments.

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.

SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANTS

The University of New Mexico, under provisions of the Higher Education Act of 1965, PL 89-389, as amended, 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, Mesa Vista Hall, 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.

L. Charles Bernardoni Memorial Student Assistance Fund. A short-term loan fund established in the memory of the late Dr. Bernardoni. The fund is primarily for students interested in pursuing a degree in counseling.

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 (un-sponsored) 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.

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 Laboratories Scholarship. A \$500 scholarship will be awarded annually to a worthy native New Mexican who is a member of a minority group. Scholarship is based on financial need. Selection of recipient will be made by the Committee on Scholarships, Prizes and Loans.

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

Albuquerque Chapter of the American Institute of Architects Scholarship. A \$100 tuition scholarship is awarded annually to a promising student in 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.

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.

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.

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 freshman 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 Border Machinery Company Civil Engineering Scholarships. Two scholarships of \$500 each to be awarded annually to a junior or senior in Civil Engineering. Open to residents of New Mexico and awarded on the basis of scholarship, financial need, and interest in the construction industry. Selection of recipients will be made 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 Engineering 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.

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 student in the College of Nursing.

Pharmacy

The American Foundation for Pharmaceutical Education Scholarships. Two scholarships of \$300 each are awarded to third, fourth, or fifth year students in the College of Pharmacy who rank in the upper quarter of their class scholastically, who maintain at least a B average, and who can demonstrate need. The scholarships are made possible by an annual grant from the American Foundation for Pharmaceutical Education.

The John W. Dargavel Foundation Scholarship. One scholarship of \$200 is awarded to a third, fourth, or fifth year student in the College of Pharmacy based on need. The scholarship is made possible by an annual grant from the John W. Dargavel Foundation, administered by the National Association of Retail Druggists.

The Davis Brothers Scholarship. One scholarship covering annual resident tuition is awarded to a third, fourth, or fifth year student in the College of Pharmacy on the basis of scholarship, ability, and need. The scholarship is made possible by an annual cash award from the Albuquerque Division of Davis Brothers, Inc.

The McKesson and Robbins Scholarship. One scholarship of \$300 is awarded to a third, fourth, or fifth year student in the College of Pharmacy on the basis of scholarship and need. The scholarship is made possible by an annual cash award from the El Paso and Amarillo Divisions of McKesson & Robbins, Inc.

The New Mexico Allied Drug Travellers Association Scholarship. One scholarship of \$300 is awarded to a fourth or fifth year student in the College of Pharmacy who has creditable scholarship and who has need of financial assistance. The scholarship is made possible by an annual cash award from the New Mexico Allied Drug Travellers Association.

The Women's Pharmaceutical Auxilliary Scholarship. One scholarship covering resident tuition for one semester is awarded annually to a student in the College of Pharmacy upon approval of a committee of the Auxilliary. The scholarship is made possible by a cash award from the Women's Auxilliary of the New Mexico Pharmaceutical Association.

Health Professions Scholarship Program. A number of scholarships of varying amounts are awarded annually to qualifying second, third, fourth, and fifth year students in the College of Pharmacy. Scholarships are awarded competitively on the basis of exceptional financial need. Other eligibility requirements include U.S. citizenship and full-time enrollment (12 hours or more) in good standing. The scholarships are made possible by an annual grant from the Bureau of Health Manpower Education of the Department of Health, Education and Welfare. It should be emphasized that these scholarships are dependent on annual or periodic federal legislation for funding. Therefore, it is frequently impossible to predict the annual amount of financial support in advance.

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.

The Inez McDavid Memorial Scholarship. A scholarship is awarded annually to an undergraduate or graduate student majoring in communicative disorders (speech pathology or audiology). This scholarship, which pays resident tuition, is offered as a memorial to the late Mrs. Pete McDavid in recognition of her interest and work in behalf of hearing and speech impaired children. The scholarship recipient will be chosen by the faculty of the Department of Communicative Disorders.

UPPERCLASS AWARDS AND PRIZES

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 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.

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.

Pharmacy

The Student Branch of the American Pharmaceutical Association Award in Pharmacy. The University of New Mexico Student Branch of the American Pharmaceutical Association annually awards an appropriate book and certificate to the freshman student in the College of Pharmacy who ranks highest in scholarship in his class.

The College of Pharmacy Alumni Award. Alumni of the University of New Mexico College of Pharmacy annually award an appropriate reference book and certificate to the graduating senior in the College of Pharmacy who ranks highest in pharmaceutical chemistry and chemistry.

The Bristol Award. Bristol Laboratories annually awards an engraved plaque and an appropriate reference book to the graduating senior in the College of Pharmacy who ranks highest in scholarship in pharmacy and pharmaceuticals.

The College of Pharmacy Faculty Award. 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 point average for the entire course in pharmacy.

The H. E. Henry Award. The family of the late H. E. Henry annually presents an appropriately engraved pocket watch 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.

The Johnson & Johnson Award. The Johnson & Johnson Company annually awards an engraved replica of a Revolutionary War Mortar and Pestle, and an opportunity to compete for a graduate scholarship, to a graduating senior in the College of Pharmacy who has exhibited scholarship and interest in the field of pharmacy administration.

The Lilly Achievement Award. Eli Lilly & Company annually awards an engraved plaque to a graduating senior in the College of Pharmacy in recognition of scholastic and professional achievement, leadership ability, and ethical conduct.

Mallinckrodt Award. The Mallinckrodt Company awards an engraved sterling silver serving tray to a graduating senior who has exhibited scholarship and interest in the field of radio-pharmacy.

The McKesson & Robbins Award. McKesson & Robbins, Inc., annually awards an engraved plaque to the outgoing president of the University of New Mexico Student Branch of the American Pharmaceutical Association.

The Merck, Sharp, & Dohme Award. Merck, Sharp, & Dohme, annually awards a set of valuable reference books to a graduating senior in the College of Pharmacy who is an outstanding student in clinical pharmacy.

The New Mexico Pharmaceutical Association Award. The New Mexico Pharmaceutical Association annually awards an appropriate reference book and certificate to the graduating senior in the College of Pharmacy who ranks highest in scholarship in pharmacology and other biological sciences.

The Kappa Psi Junior Award. The UNM Chapter of Kappa Psi Pharmacy Fraternity annually awards an engraved plaque to the junior student in the College of Pharmacy who ranks highest in scholarship in his class.

The Rho Chi Award. The UNM Chapter of the Rho Chi Pharmacy Honor Society annually awards an appropriate reference book to the sophomore student in the College of Pharmacy who has the highest grade point average in his class.

The College of Pharmacy Student Wives Club Award. The College of Pharmacy Student Wives Club annually awards a cash prize to a student in the College of Pharmacy who ranks high in scholarship and whose wife is a member of the Student Wives Club.

The Upjohn Achievement Award. The Upjohn Company annually awards an engraved plaque and a \$50 cash prize to a graduating senior in the College of Pharmacy in recognition of an outstanding contribution to pharmacy student affairs, professional activities, and community service.

MEDALS AND CERTIFICATES

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 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.

Pharmacy

The American Pharmaceutical Association Recognition Certificate. The American Pharmaceutical Association annually presents a certificate to the graduating senior in the College of Pharmacy who, as a member of the Student Chapter of APh.A. gave outstanding service to the organization, college, and community.

Kappa Psi Scholarship Honors Certificate. Kappa Psi annually presents a certificate to each member of the UNM Chapter of Kappa Psi who completes the last two years of the professional pharmacy curriculum with a minimum grade point average of 3.0 for each year.

Rho Chi Certificates of Achievement. Rho Chi annually presents a certificate to those freshman and sophomore students in the College of Pharmacy who have maintained a 3.0 grade-point index but who have not yet qualified otherwise for membership in Rho Chi.

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 available 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 counseling and career services 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 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. He also provides information and counseling for all other awards for study abroad such as the several Marshall Scholarship programs, Foreign Area Fellowships, Dougherty Foundations, etc.

AMERICAN STUDENTS ABROAD. Information and counseling is offered to the American student who wishes to study abroad. Documents concerning institutions of higher learning throughout the world, admission practices, equivalences, costs and methods of applying the work to American credit are available. The office maintains a current bibliography on both study and student travel and issues the International Student Identification Card to eligible persons.

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 seven full time general physicians and seven 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.

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.

The Career Services Center is located on the second floor, south wing of Mesa Vista Hall.

Services rendered by the Career Services Center to students and prospective employers are free.

WOMEN'S CENTER

The Women's Center at 1824 Las Lomas (corner of Yale and Las Lomas) is open weekdays from 9:00 a.m. to 5:00 p.m. The Center has a comprehensive library of books, periodicals, and pamphlets, on, by, for, and about women. Zimmerman library has a complete catalog file of this library. There is a counselor at the Center for all problems—academic, personal, and interpersonal. The Center staff works to facilitate the needs of women by cooperation with and utilization of the various departments in student and academic affairs. The Center is funded by UNM, ASUNM, and GSA.

The University Clinical Law Program has an office in the Women's Center. This service is available to women students and staff members.

The Women's Studies Program is temporarily located in the Women's Center.

NEW MEXICO UNION

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

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

The Athletic Offices and service facilities for student athletes is located on the south campus and are coordinated with many indoor sports on the main campus in Johnson Gymnasium, which includes an indoor pool, two large arenas, handball courts, and other specialized areas. The University Basketball Arena, with a seating capacity of 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 Kappa Lambda, Alpha Tau Omega, Delta Sigma Phi, Delta Upsilon, 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 Pi 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. The Thunderbird, a literary magazine containing literary contributions submitted by students is published periodically.

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

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

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.

COURSE NUMBERING SYSTEM

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

Freshmen, may in some instances, qualify for courses numbered in the 200's. Courses numbered 300 or above are not open to lower division students (freshmen and sophomores) except in rare instances, and then only with the approval of the college dean. See the section of this catalog concerning your college for specific regulations.

GRADES

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

A, Excellent. 4 grade points per credit hour.

B, Good. 3 grade points per credit hour.

C, 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 fourth week of a semester or second 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 (This maximum will be reduced by the number of hours earned in any departmental offerings specifically approved for CR/NC grading.);
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; c) in some departments and colleges, courses which are a part of the student's minor (see specific colleges and/or departmental requirements); d) examinations to establish credit; e) correspondence courses.
4. Hours are **not** computed in the scholarship index, even though a final grade of CR (Credit) indicates satisfactory completion of a course.
5. 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 fourth week of the semester or second week of the summer session, while doing passing work, 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."

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. Detailed procedures for accomplishing change in a student's program of studies are available from the student's college office or from the Office of Admissions and Records. 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 four weeks of the semester or the first two weeks of the summer session without a grade, 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 first four weeks of the semester or the second week of summer session up to and including the last day of 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 for undergraduate (NC for graduates) if he is failing the course at the time of withdrawal, as determined by the instructor in the course. A student cannot withdraw from a course, or courses, after the twelfth week of the semester or the sixth week of the summer session and receive a grade of W without petition to, and approval by, the dean or

director of his college or school, which approval is limited to hardship cases involving circumstances beyond the student's control. 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 complying with official change of program procedures, 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 GRADING OPTION. No change in grading option in any course can be made after the fourth week of the semester or the second week of the summer session, e.g., credit to audit, letter grade to credit option. Any change in grading option after registration requires completion of a Program Change Request.

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. When a student withdraws officially from the University during the first four weeks of the semester or the first two weeks of the summer session, 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 from the end of the fourth week through the twelfth week of the semester or from the end of the second week through the sixth week of the summer session. After the end of the twelfth week of the semester or the sixth week of the summer session no student is permitted to withdraw with a grade of W without petition to, and approval by, the dean or director of his college or school, which approval is limited to hardship cases involving circumstances beyond the student's control. 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 two weeks of the semester or the first week of the summer session. A student may change from credit to audit basis only during the first four weeks of the semester or the first two weeks of the summer session.

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 is subject to suspension at the end of any semester in which he was carried on academic probation unless he has succeeded in removing himself from such probation 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. 120).

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 (examinations to establish credit will not be provided in non-professional physical education activity courses) and in which he has not been previously enrolled at the University of New Mexico. Students enrolled in the Graduate School have the same privilege, except that only undergraduate credit can be earned in this manner. An interview with the department concerned is required. Upon recommendation of the department chairman and approval by the dean or director of 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 at the University of New Mexico may count toward graduation and 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 residence credit 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. Completion of a second major under a Bachelor of Arts or Bachelor of Science program is recorded on the student's

permanent record but does not result in the awarding of a second Bachelor of Arts or Bachelor of Science degree.

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.

MAXIMUM OF CREDIT (CR) GRADES ALLOWED TOWARD DEGREE. A maximum of 24 semester hours of CR grading (Credit Option and CR/NC approved courses) can be applied toward an undergraduate degree.

DIVIDENDS AND PENALTIES. For every 15 semester hours of A, or for every 30 semester hours of B, the hours required for graduation are reduced by one. The maximum of such dividends allowed is four. Dividends may not be applied toward the residence requirement. For every 15 semester hours of D, the hours required for graduation are increased by one. Dividends and penalties are awarded or assessed only on work done in residence at the University of New Mexico. No dividends or penalties are given in the Colleges of Arts and Sciences, Engineering, Fine Arts, Nursing, Pharmacy, the School of Business and Administrative Sciences, and the University College—BUS program.

DEFINITION OF RESIDENCE CREDIT. Residence credit is all University of New Mexico earned credit with the exception of extension and correspondence credit.

RESIDENCE CREDIT REQUIREMENTS. No student shall be awarded a UNM baccalaureate degree who has not earned a minimum of 30 semester hours of UNM credit, 15 of which must be earned after the student has 92 semester hours of credit acceptable toward the baccalaureate degree. This requirement is in addition to and does not replace any other graduation requirements. University of New Mexico credit for purposes of compliance with this rule does not include correspondence and extension credit.

In no case is the number of hours specified to be earned after the student has completed 92 semester hours in his degree program to be interpreted as necessarily the last hours.

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

The student who has completed a baccalaureate degree and who is seeking a second undergraduate degree will be reclassified by the degree college in accordance with the hours and requirements completed toward the new degree.

Residence credit requirements for the second degree will be determined on the same basis as those for the first degree.

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").
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. 161.
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. Stu-

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

The core courses in the program (Gen St 301, 302, 403, 404,—see p. 428) are taken in the Junior and Senior years. The best time to join the program is as a second semester sophomore or as a junior. Part of the course requirement (see below) can be fulfilled with Gen St 111 or 112 (Freshman General Studies Seminar—see p. 427), or with one-credit hour courses in the Undergraduate Seminar Program (see below), which may be taken at any time in the student's undergraduate years. For freshmen and sophomores who are interested in the General Honors Program, these courses provide a good way of keeping in touch.

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

1. Completion of 9 credit hours in courses Gen St 301, 302, 403, 404 (normally six hours from 301 and 302, and three hours of either 403 or 404), the selection to be approved by the Director of the Program.

2. Completion of at least an additional 6 credit hours in either Gen St 301, 302, 403, or 404, in Gen St 111 or 112 (Freshman General Studies Seminar), in Gen St 399 (Individual Study) or in Undergraduate Seminar Program courses.
3. A 3.2 over-all scholarship index.
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.

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

To minimize the destructive aspects of grading, the following system is used: A (Honors) is computed in the scholarship index in the normal way; CR (Credit) gives credit for the course but this credit is not computed in the scholarship index; NC (No Credit) neither gives credit nor is computed in the scholarship index. Students are rewarded for excellent work, but are not penalized if they do not perform at the highest level.

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

Students in the General Honors Program can also undertake Departmental Honors if they want to.

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

Registration for the courses is on a first come, first served basis at the

Honors Center. Information on registration procedures is available at the Honors Center.

THE DEPARTMENTAL HONORS PROGRAM. A Departmental Honors program is available to qualified students in many departments of the University and will ultimately be available in nearly all departments. Students should inquire of the chairman of their major department (or the dean of the college in colleges which are not departmentalized) as to the availability of a program. Candidates for a B.U.S. degree may be candidates for graduation with departmental honors if they meet the requirements for the major and for the Departmental Honors program in a certain department.

The purposes of departmental honors programs are as follows: (1) to intensify and deepen the 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.

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

Minimal requirements for graduation with Departmental Honors are as follows: (a) an 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.

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

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 and some college offices 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 four-year course leading to a degree advisable, the University College can provide a variety of two-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



Student Health Center-University College and Counseling Center

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 activity of the University College is research investigation regarding UNM student characteristics. The University College staff has long been active in seeking to describe and analyze patterns of student enrollment and retention at UNM, the patterns of 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

All who are enrolled in the University College can be classified only as freshmen or sophomores. You cannot obtain junior or senior status until you have transferred to a degree granting college. The most critical all-university scholastic regulation that results from your classification is the following:

Courses numbered in the 100's are those open to freshmen. Courses numbered in the 200's are normally for those of sophomore status although in some instances freshmen may qualify for them. Courses numbered in the 300's and 400's are for upper classmen with junior and senior status. These courses **are not** open to freshmen except in **rare** instances.

As a freshman you should be predominantly enrolled for courses at the 100 level. Only when placement scores or previous background warrant would

you be enrolled for a 200 level course. The only instances of a freshman receiving permission to take a 300 or 400 level course would be those rare exceptions such as a foreign student coming to the University whose knowledge of his native language exceeds the work offered in the first two years of that language.

For other all-university scholastic regulations, see the section of this catalog titled, "General Academic Regulations".

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. 160).

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 combination 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 entrance interview is required. 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. 160).
3. An informational interview prior to transfer.

TRANSFER FROM OTHER COLLEGES IN THIS UNIVERSITY

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

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

If you seek transfer into the Bachelor of University Studies program from another institution you must meet the University's general qualitative admission requirements for transfer, and 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, 2500 Central S.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 ten. 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 Wrtnng w/Rdgs in Expos	3	Engl 102 Wrtnng 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

Fall Semester		Second Year	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 II	10
Elective		3		
Md Lab 101 Med Lab Science I		<u>6</u>		
		15		<u>20</u>

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.

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 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
Bus Ed 112 Intern Typ	3	Hist 101 or 102 Western Civ	3
Bus Ed 113 Shorthand Theory	3	Bus Ed 114 Shorthand Dictation	3
Sp Com 101 or 255 Fund of Spch		Bus Ed 262 Adv Typ	3
or Pub Spkg	3	Elective	3
Elective	3		
	<u>15</u>		<u>15</u>
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	Bus Ed 201 Intro to Data Process	3
§Accounting	3	Electives	6
§Electives	4		
	<u>15</u>		<u>15</u>

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 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 by passing the Writing Skills Test.

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) and a demonstrated proficiency in English writing.

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, 1974, must make application for his degree in the College of Arts and Sciences office by December 21, 1973.

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 with 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 (exclusive of USP courses), 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. Six hours. Recommended courses are: Arch 101, 261, 262; Art Hi 101, 130, 270, 271, 272; T A 115, 116; Music 139, 140, 171. Not acceptable for this group are courses in Studio, Dance, and Applied Music.

MAJOR AND MINOR STUDIES

At the beginning of his junior year a student shall select (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. Cr (Credit) grades are not accepted in the major and minor with the exception of previously approved courses by the Entrance and Credits Committee in a few departments. (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. A distributed minor in Religious Studies is offered by the Philosophy Department and includes courses in several other departments.

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.

Completion of Arts and Sciences group requirements will satisfy the General Education requirements for teacher certification by the College of Education.

See p.216 for a listing of professional education requirements for certification.

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, Theatre Arts, and Library Science. A student may not elect both a major and a minor outside the college and all majors and minors outside the College of Arts and Sciences must be approved by the faculty of the College of Arts and Sciences.

The minor in art consists of 21 semester hours distributed as follows: 6 hours in the introductory course, Art St 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."

ELECTIVE COURSES ACCEPTABLE AND UNACCEPTABLE

Acceptable

Most courses in the College of Arts and Sciences as well as those taught in most other colleges including:

1. Up to 6 hours of shorthand;
2. Up to 4 hours of ensemble music;
3. Up to 4 hours of PE activity;
4. Eight hours of Dance may be substituted for 4 hours of PE and 4 hours of Ensemble Music;
5. Up to 3 hours of shop;
6. Up to 7 hours in Health, Physical Education, and Recreation to be chosen from HEd 171, 212, PE 397, 398, 399, 466, 489, Recrea 175, 452, 480;

Unacceptable

1. Courses in typing or in office machines and filing and any hours in excess of 6 in shorthand in the College of Arts and Sciences;
2. Ensemble music in excess of 4 hours;
3. PE activity courses in excess of 4 hours;
4. Shopwork in excess of 3 hours;
5. Courses in Health, Physical Education, and Recreation in excess of 7 or courses taken other than those listed as acceptable in item 6 above;
6. Hours in excess of 3 in high school methods and in excess of 6 in practice teaching;
7. All courses in elementary education, nursing, and pharmacy which are primarily vocational or directed towards professional practice.

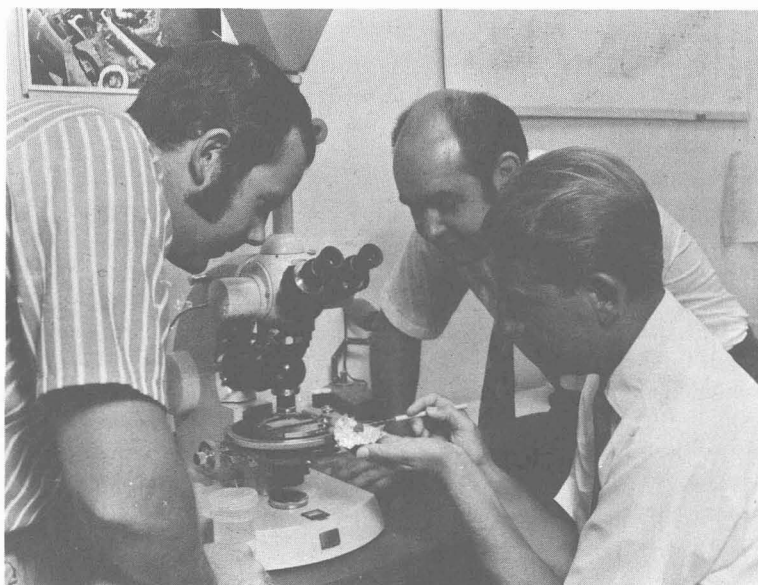
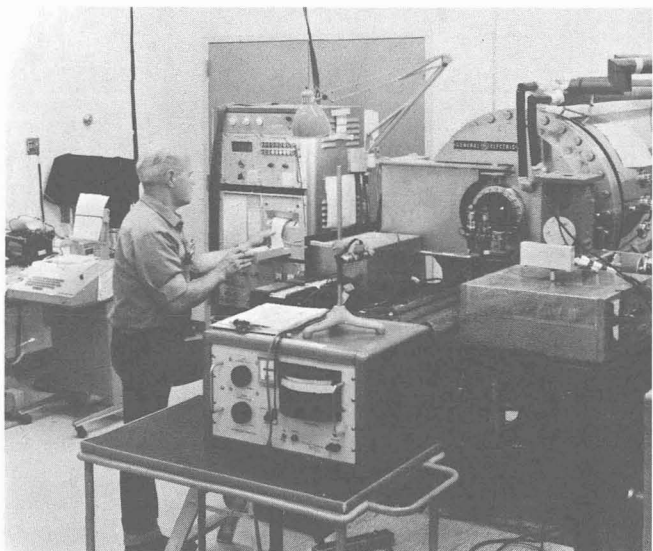
GENERAL RULINGS

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 with-out a penalty of 1 hour for every 3 excessive hours.
- Exceptions to these rules may be made only by the Dean.

FRESHMAN-SOPHOMORE PROGRAMS

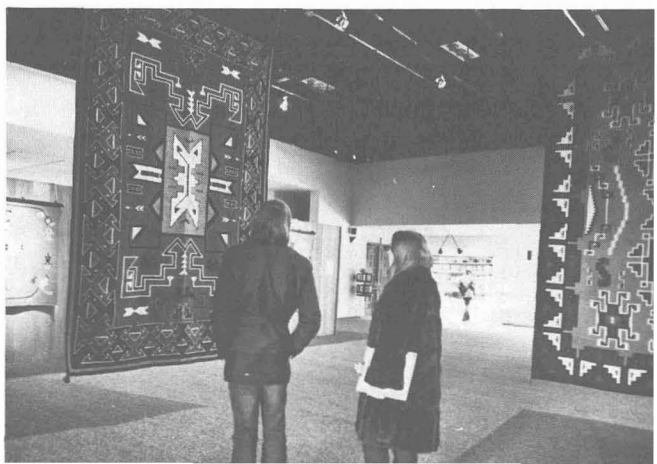
Normally students enrolled as freshmen in University College take only courses numbered 100-199. Courses numbered 200-299 are open to sophomores.

A Physics
Laboratory



Lunar
Samples—
Department
of Geology

Department of
Anthropology—
Maxwell Museum



Deviations from this selection of courses should be made only with the permission of the University College adviser or the Dean of the College.

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, Biology Department, Chairman of the Premedical Advisory Committee, or Drs. Fritz Allen and W. F. Coleman of the Chemistry Department; those interested in Medical Technology may consult Dr. David Landau, 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 pre dental 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 pre dental 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, Biology Department, or Drs. Fritz Allen and W. F. Coleman, Chemistry Department.

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 re-

quirements 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 mathematics 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, Biology Department, or Drs. Fritz Allen and W. F. Coleman, Chemistry Department.

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. Students who have already completed a baccalaureate degree and who have the required courses for entrance into the Medical Technology program need only to take the year of work at the University of New Mexico Medical School to satisfy the UNM residence requirement and to obtain the degree of Bachelor of Science in Medical Technology.

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. David Landau, Department of Biology, as early in their student careers as possible.

PREScribed PROGRAM—MEDICAL TECHNOLOGY

Freshman Year		Second Semester	
First Semester			
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 253 Gen Bact	2	A&S group requirement	6
A&S group requirement	3	Elective	3
	13		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. Holeman (Education), E. Lieuwen (History), G. Merckx (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, art history, 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 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 residence rule on p. 167. 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.

N.R.O.T.C. CURRICULUM (See pp. 308-309).

DEPARTMENTS OR PROGRAMS OF INSTRUCTION

The College of Arts and Sciences offers work in the fields listed below:

American Studies	Journalism
Anthropology	Latin-American Studies
Biology	Linguistics
Chemistry	Mathematics and Statistics
Communicative Disorders	Modern and Classical Languages
Comparative Literature	Paleoecology
Economics	Philosophy
Economics-Philosophy	Physics and Astronomy
English	Political Science
English-Philosophy	Psychology
Geography	Russian Studies
Geology	Sociology
History	Speech Communication
Ibero-American Studies†	

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.

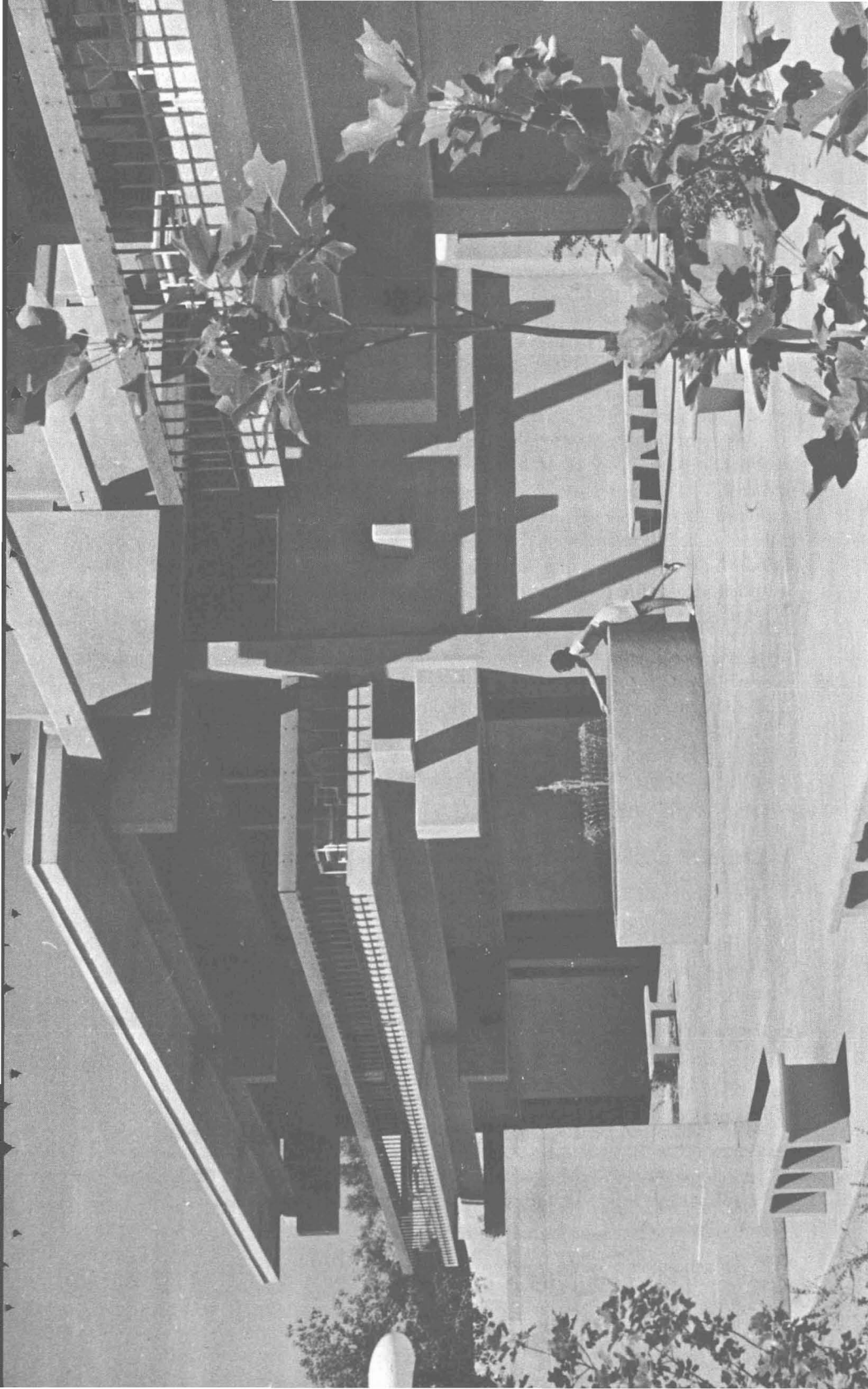
DEGREES OFFERED

The School of Business and Administrative Sciences offers three degrees: The Bachelor of Business Administration, The Master of Business Administration, and The Master of Industrial Administration. A Ph.D. in Business and Administrative Sciences now has been approved by the State Board of Educational Finance and will be offered in the near future.

Bachelor of Business Administration. The B.B.A. degree requires satisfactory completion of a four-year (125 hours) course of studies which features an upper division (junior and senior years) professional curriculum. Specific admission and graduation requirements are discussed in later sections.

Before admission to the upper division professional curriculum, the student first takes coursework in a number of foundation subject areas outside the field of business while enrolled in the University College or some other college. The coursework in the upper division consists of two groups. The first group is required of all students in the School and comprises the core of the subject matter in business and the administrative sciences, including courses in managerial controls, organizational sciences (behavior), operations, and environment. The second group in the upper division professional curriculum consists of elective courses of the student's own choosing.

The Program provides the opportunity for a 24-hour concentration in Accounting or more limited specialization in the fields of Computer-Based Management Information Systems, Finance, International Business, Management Science, Marketing, and Organizational Behavior. Qualified students who seek further specialization in these fields should plan on an additional year of study leading to the M.B.A. degree.



Business Administration Building

Master of Business Administration. The School offers two programs leading to the M.B.A. degree. One program is for persons already having completed a bachelor's degree. For information concerning the Master of Business Administration degree, consult the **Graduate 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 program which permits a student to complete a bachelor's degree in a field outside of business and an M.B.A. degree in five years. 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 to complete the requirements of the graduate program of this school. This program is described in a later section as the Three-Two Program.

Master of Industrial Administration. A program leading to the M.I.A. degree is offered to selected candidates who have successfully completed the first phase (i.e., the Certificate Phase) of the Executive Program. This program is restricted to experienced line or staff managers who retain full job responsibilities while in attendance. Further information is available in the separate **Executive Program Bulletin** of the School of Business and Administrative Sciences or from the Director of the Executive 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 has established a new Upper Division program leading to the Bachelor of Business Administration degree. This program provides 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 the last 62 hours attempted.

3. A scholarship index of at least 2.3 for the "Specific Requirements" (see below) or a grade of "C" or higher in each of these courses.
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—Either a scholarship index average of at least 2.3 must be earned for this entire group of courses or a grade of "C" or better must be earned in each of these courses.* These courses are prerequisites for all 300- and 400-level courses in the School of Business and Administrative Sciences.**

- | | |
|--|---------|
| (1) Math 121, 180 (or the equivalent) | 6 hours |
| (2) Econ 200, 201 | 6 hours |
| (3) Behavioral Sciences—Either Psych 102 and a second year or higher psychology course or Soc 101 and a second year or higher sociology course | 6 hours |
| (4) Statistics—Math 102, B&AS 290L | 4 hours |
| (5) Computer Science—Math 155 (or the equivalent) | 3 hours |
| (6) Introduction to Accounting—B&AS 202* | 3 hours |

- | | |
|--------------|-----------------|
| c. Electives | 12 hours |
| Total | 62 hours |

APPLICATION FOR ADMISSION FROM UNIVERSITY COLLEGE

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.

* Supercedes requirement noted in the **University of New Mexico Catalog 1972-73**. Students desiring an accounting concentration must earn at least a "C" in B&AS 202, and should schedule this course for the first semester of the sophomore year. Those aspiring toward an accounting concentration should consult with a member of the accounting faculty during their first semester at the University.

** B&AS 340 may be taken by those concentrating in accounting in the second semester of the sophomore year.

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). Such students should notify the School of their intent to transfer and present a transcript of their college work not later than the twelfth week of the semester in which they will complete the requirements for admission.

TRANSFER FROM OTHER 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. Students desiring to transfer credit for upper division courses must obtain approval of the faculty.

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 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 24 hours in Economics and Business and Administrative Sciences while enrolled in this School.
5. Course requirements

(a) Pre-admission requirements	62 hours
(b) Business and Administrative Sciences' Core (Numbers in parentheses are the numbers of courses previously offered which may be used to satisfy the new course requirements)	
B&AS 300 Management Science I (329)	3 hours
B&AS 301 Management Science II (329)	3 hours
B&AS 303 Accounting for Management Control (225) (For non-accountants Accounting concentrations will take 340)	3 hours
B&AS 306 Organization Behavior I (Students who have taken the old 330 [Organization Theory] may substitute	

it for one of 306 or 307. They should consult with a professor in Organization Theory [see faculty listings below under concentrations] to determine whether they should take 306 or 307.)

B&AS 307 Organization Behavior II	3 hours
B&AS 308 Organization Environment	3 hours
B&AS 309 Legal Environment of Business (306)	3 hours

or

B&AS 310 Business Law (307)	3 hours
(Students concentrating in Accounting must take 310, but need not take 309.)	

B&AS 322 Marketing Management (308)	3 hours
B&AS 326 Financial Management (310)	3 hours
B&AS 498 Senior Seminar (492) (taken in the last semester of the senior year)	3 hours
Econ 300 Micro-Economic Theory	3 hours
Econ 315 Money and Banking	3 hours
Total Business and Administrative Sciences' Core	36 hours

(c) Electives

Upper Division Humanities	3 hours*
Upper Division Social Science and/or Behavioral Sciences	3 hours*
Other—at least 6 hours must be in Business and Administrative Sciences courses; electives may include up to 6 hours of courses at the graduate level provided approval of the Graduate School is obtained	
	21 hours
Total Electives	27 hours
Total Degree Requirements	125 hours

GENERAL STUDIES

Students who accept an invitation to join the University of New Mexico General Studies program may apply their various seminars to satisfying appropriate General Education Requirements or Electives when approved in advance by the Dean of the School of Business and Administrative Sciences.

AIR FORCE AND NAVAL ROTC

Students enrolled in the Air Force or Naval ROTC may need an extra semester beyond four years to complete the requirements for the degree of Bachelor of Business Administration and their commission. However, it is possible for students to complete these requirements in four years by using their required Naval and Air Force Courses as their "other electives" (see Graduation Requirements, part 5 (c)). It is important that such students insure that they are taking the required courses for the degree.

APPLICATION FOR DEGREE

During the first semester of the senior year students must file an application for the B.B.A. Degree with the Registrar of the School of Business and Adminis-

* Accounting concentrations may substitute accounting electives for these two requirements.

trative Sciences. A graduation summary sheet will then be prepared and a copy supplied to the student. No student will be included on a list of candidates for graduation unless an application for degree has been approved.

CONCENTRATIONS

Candidates for the B.B.A. degree need not declare a concentration. However, those students desiring a concentration may choose from the following. In all instances, the courses listed for a concentration are in addition to the core courses required of all candidates for the B.B.A. degree. Those not desiring to complete a concentration will be certified as having a concentration in General Management and so listed in the graduation program.

Accounting: Advisers: Mr. Caplan, Mr. Christman, Mr. Mori, Mr. Yeakel.

In addition to the core courses required of all B.B.A. candidates (except B&AS 303), the accounting concentration consists of these courses:

a. B&AS 340, 341, 346, 440	12 hours
b. three of the following four courses:	
B&AS 342, 443, 445, 449	9 hours
Total	<hr/> 21 hours

B&AS 348 is strongly recommended as an elective. Students interested in careers in professional accounting are urged to consider an additional year of study leading to the MBA degree.

Computer-Based Management Information Systems: Advisers: Mr. Bell, Mr. Peters, Mr. Reid.

Students must have a scholarship index of 3.0 or better in order to qualify for a concentration in computer-based management information systems.

The course requirements are B&AS 340, 341, 346 (which may be substituted for B&AS 303 in the core requirements), 449, 534, and two courses (6 hours) in computer science or from among B&AS 530, 531, 532, or 533, depending upon the student's prior preparation and educational objectives.

Finance: Advisers: Mr. Simonson, Mr. Taylor, Mr. Yeakel.

Students electing a finance concentration, in addition to B&AS 326, must take B&AS 470, 471, 472, and two of the following: B&AS 341, Econ 303, 350, 400, 415, and 424.

An alternative is available to students with senior standing and a scholarship index of 3.0 or better. These students may, with the permission of the instructors, substitute any two of B&AS 570, 571, 572, for the three undergraduate finance courses, B&AS 470, 471, and 472.

International Business: Adviser: Mr. Winter, Mr. Lenberg.

Students must have a scholarship index of 3.0 or better or consent of adviser in order to qualify for a concentration in international business.

The course requirements are:

- a. B&AS 480 and 485
- b. two of the following: B&AS 586, 587, or 588

- c. three of the following: Anth 314, Econ 420, 450, Hist 384, 483, Pol Sc 355, 356, 455, Soc 365 or 425.

Management Science: Advisers: Mr. Bell, Mr. Peters, Mr. Reid.

Students must have a scholarship index of 3.0 or better in order to qualify for a concentration in management science. The course requirements are B&AS 436, 439, and

- two of the following: B&AS 530, 531, 532, 533, or 534.
- two courses (6 hours) in additional mathematics, computer science, or cognate subject areas depending upon the student's prior preparation and educational objectives.

Marketing: Advisers: Mr. Lenberg, Mr. Winter.

Students electing a marketing concentration must take B&AS 480, 485, 486, and 487 and complete one of the following alternative programs:

- students with senior standing and a scholarship index of 3.0 or better or consent of adviser take two of the following: B&AS 581, 582, and 583.
- students not qualified for graduate courses under "a" above must complete the following courses during the senior year: Econ 332, plus one of the following: Econ 330, 340, or Journ 401.

Organizational Behavior: Advisers: Mr. Finston, Mr. Jehenson.

In order to qualify for a concentration in organizational behavior, students must have earned a scholarship index of 3.0 or better in B&AS 306 and 307. Additional courses in this concentration are B&AS 464 and 466 plus two upper division courses in psychology and/or sociology.

SUGGESTED FIRST TWO YEARS OF BBA PROGRAM

Freshman Year			
First Semester		Second Semester	
Math 121 College Algebra	3 hours	Math 180 Calculus	3 hours
Natural Science	4 hours	Econ 200 Principles & Problems	3 hours
Humanities Elective	3 hours	Soc 101 or	3 hours
Social Science elective	3 hours	Psych 102	
Elective	3 hours	Humanity, elective	3 hours
		Elective	3 hours
	16 hours		15 hours
Sophomore year			
First Semester		Second Semester	
Math 155 Problem Solving with Computers	3 hours	Math 102 Probability & Stat	3 hours
Econ 201 Principles	3 hours	B&AS 290L Business Stat Lab	1 hour
B&AS 202 Intro to Acct	3 hours	Soc Science elective	6 hours
Soc or Psych (200 level or above)	3 hours	Humanity elective	3 hours
Elective	3 hours	Elective*	3 hours
	15 hours		16 hours

Junior and Senior Years

Suggested programs for the junior and senior years for each concentration are available from the Registrar's office of the School and from the advisers.

*Students concentrating in Accounting may take B&AS 340 at this time.

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 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.**

* 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.

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. Normally, a minimum grade point average of 3.0 on all work taken at the University of New Mexico.
3. Demonstration of sufficient breadth in the undergraduate program (see "Breadth Requirements" following.)
4. Completion, with a grade of "C" or better, of the following courses in mathematics and economics (or their equivalents): Math 162 and 163 or 180 and 181; Econ 201, 300, and 303. (Note: These requirements can be met after admission to the School—see below.)
5. A satisfactory score on the 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 application forms may be acquired from the UNM Testing Center or by writing directly to Educational Testing Service, Box 966, Princeton, New Jersey, 08540. Since an application cannot be considered without the results of this test, students are urged to make arrangements to take it early in the semester preceding admission to the program.

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

Transfers must meet normal requirements for admission to this University and must have completed 30 credit hours of course work at the University of New Mexico before being admitted to the first year of the M.B.A. program (fourth year of the "Three-Two" program). 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	15 hours
English, History, Literature, Modern Languages, Philosophy, Speech	

Social Sciences	15 hours
Anthropology, Economics (except 201, 300, 303), Geography, Political Science, Psychology, Sociology	
Laboratory Sciences	8 hours
Biology, Chemistry, Geology, Physics	

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
		<u>30</u>

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	<u>18</u>
		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

† Detailed information concerning curriculum may be found in other sections of this catalog.

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. 158-165.

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. 169-171. 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 19 hours during a regular semester, or 10 hours during an eight-week summer session unless:

1. Grades for the previous semester were B's in two-thirds of the coursework, with no grade below C, and,

† 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.

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

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

1. You are enrolled in University College and
 - a. you have completed 14 or more hours and have a 2.5 or higher grade point average, or
 - b. you have completed 26 or more hours and have a 2.0 or higher grade point average, or
 - c. you have a 2.0 or higher grade point average on the last two semester or 30 hours, or
 - d. you have received notice that this is your last semester of eligibility.
2. You are enrolled in Arts and Sciences, Fine Arts, BUS or any other degree college, or in non-degree status, and your overall grade point average is 2.0 or higher.
3. You are a transfer student provisionally enrolled in the College of Education.
4. You have already earned a bachelor's degree.

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

1. Come to the College of Education, Records Office, complete an Application for Admission to a Teacher Education Program form, and obtain information on the compilation of a data folder.
2. Complete and return your data folder to the College of Education, Records Office, by the second week of each semester, and the first week summer session.
3. Complete an interview with a College of Education faculty member in the program to which you are applying.
4. Special Education majors must successfully complete Sp Ed 250 and 271, taken concurrently with screening into the program.
5. Art Education majors must successfully complete Art Ed 220, taken concurrently with screening into the program.
6. You will be notified by mail whether or not you have been admitted to a Teacher Education Program.

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.

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).

NOTE: Any student admitted to a teacher education program during his 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.

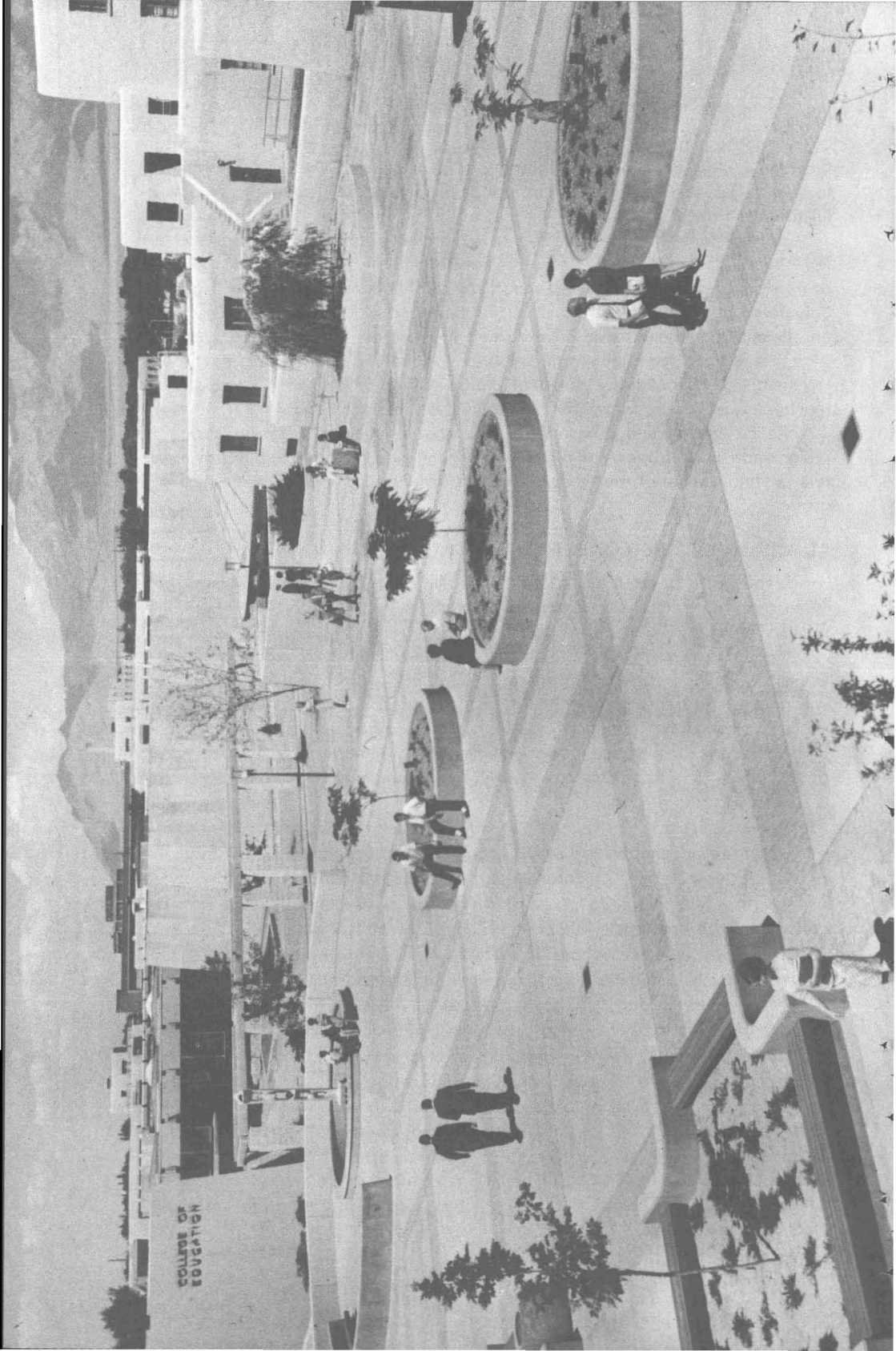
ADMISSION TO THE COLLEGE OF EDUCATION

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.

It is not necessary to be enrolled in the College of Education in order to pursue certain teacher education programs. 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. 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.

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. Graduate students must maintain a 3.0 grade point average.
2. Been admitted to a teacher education program at the University of New Mexico. Any stipulations indicated at the time of admission must have been removed.
3. Applied for admission to student teaching with the University supervisor of student teaching (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 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 grade-point average.
6. Completed satisfactorily all prerequisites for student teaching listed in the current University catalog.
7. Planned a total semester schedule of no more than 15 hours of course work, including student teaching. (A course load of 12 hours is highly recommended.) 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.

8. 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.

9. 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.

Special Requirements for Physical Education Student Teachers

1. Must have submitted recommendations from three faculty members, including his adviser, indicating that the student is believed ready for student teaching.
2. As determined by his adviser in consultation with the student teaching personnel, a student must have successfully completed a major portion of his theory course work.
3. Must have completed all of the following pre-requisites: Ed Fdn 290, 300 and 310; PE 319, 301, 302, 309, 310, 345, 444, and Biol 326L.
4. Must have removed all D's and F's in his major field.

5. Must have attained at least a 2.5 grade point average in his major field and at least a 2.2 grade point average overall.
6. Students enrolled in physical education student teaching may be required to comply with a modified Academic Calendar.

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 an observation and laboratory facility for College of Education and other University students. They may observe a model nursery or kindergarten in session; an individual student or teacher engaged in specific activity, diagnostic tests being administered; or remedial teaching. Students may also be directly involved in supervised teaching, remedial activities, counseling individuals or groups, or in practicing skills. It has closed circuit television and video feedback capabilities.

INDUSTRIAL EDUCATION LABORATORIES. Industrial Education laboratories are maintained for the use of students in various Industrial Education courses in woods, metals, welding, power mechanics, electricity, and drafting.

HOME ECONOMICS LABORATORIES. Modern food and clothing laboratories are available to both undergraduate and graduate students.

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

THERAPEUTIC PHYSICAL EDUCATION LABORATORY. This laboratory encompasses some 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.

SPECIAL PHYSICAL EDUCATION POOL. Adjacent to Johnson Gymnasium and the Department of Health, Physical Education and Recreation's olympic size pool is the smaller special pool. This smaller pool will be utilized to enable undergraduate and graduate students to learn about the handicapped child in an aquatic and therapy setting. The pool will be additionally used for recreation and instruction.

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 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. 167.

6. Completion of the prescribed curriculum which leads to the desired degree (see Curricula, pp. 216-237). **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. 219-221.

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 well-balanced plan of study in general education. Each student must satisfy minimum requirements in six of the following ten areas of study:

1. Behavioral Sciences
2. Communication Arts
3. Multicultural Studies
4. Fine and Practical Arts
5. Foreign Language
6. Humanities
7. Mathematics
8. Natural Sciences
9. Health Education, Physical Education and Recreation
10. Social Sciences

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

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. In some programs Ed Fdn 300 and 310 are part of a module. Students should check with the appropriate department for further information.

CURRICULA

Curricula are outlined on the following pages under the respective departments for the purpose of directing students in their chosen fields of work. 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.

The student will develop in consultation with a departmental adviser a plan for meeting the General Education requirement which consists of a minimum of three hours in six or more of the areas of the College of Education General (Liberal) Education requirements listed on p. 215.

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

Freshman Year	
First Semester	Second Semester
Gen Educ Requirement	9
Art St 123 Studio Fundamentals	6
	9
	3
	3
	15

* Or approved substitute.

Sophomore Year

First Semester		Second Semester	
General Elective	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	General Elective	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
	<u>18</u>		<u>15</u>

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	3		
	<u>18</u>		<u>18</u>

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	5
	<u>15</u>		<u>14</u>

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. 233. "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 St 123, Art Hi 130, and Art elective (200 level), Art Ed 110, 115, 220, and 401.

BUSINESS EDUCATION

COMPREHENSIVE CURRICULUM INCLUDING VOCATIONAL OFFICE EDUCATION

(Leading to the degree of Bachelor of Science in Education)

Freshman Year		Sophomore Year	
Engl 101 Wrtg W/Rdgs in Expos	3	Sp Com 256 Communication for Tchrs	3
Engl 102 Wrtg W/Rdgs in Lit	3	Engl (Lit)	3
§Laboratory Science	6	Ed Fdn 290 Founda of Ed	3
§Math elective	3	Econ 200, 201 Prin & Probs; Prin	6
§§Bus Ed 112 Inter Typing	3	§Accounting	6
Bus Ed 262 Adv Typing	3	§Data Processing	3
Bus Ed 117 Office Mach & Filing	2	§Bus Ed 113 Shorthand Theory	3
Psych 102 Gen Psych I	3	§Bus Ed 114 Shorthand Dictation	3
Gen Elect or Minor	6	Bus Ed 201 Intro to Data Process for	
		Bus Ed	3
	<u>32</u>		<u>33</u>

† Students enrolled in the College of Fine Arts must meet group requirements listed on pp. 262-264. 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.

§ See Business Education adviser.

§§ May be waived if student has had typewriting or shorthand in high school.

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 310 Business Law	3	Bus Ed 463 Student Teaching	15
Bus Ed 253 Shorthand Transcription	3	Gen Elect or Minor	9
Bus Ed 257 Sec'l Admin	3		
Bus Ed 265 Bus Comm	3		
Bus Ed Elective	3		
Bus Ed 350 Voc Off Lab	3		
§Economics	3		
Gen Elect or Minor	6		
	<u>33</u>		<u>30</u>

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	6	Econ 200, 201 Prin & Probs; Prin	6
§Math elective	3	Ed Fdn 290 Founda of Ed	3
§§Bus Ed 112 Inter Typing	3	§Accounting	6
Bus Ed 262 Adv Typing	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	5	§Data Processing	3
	<u>29</u>	Gen Elect or Minor	3
			<u>33</u>
Junior Year		Senior Year	
Ed Fdn 300 Hum Grwth & Dev	3	Fine or Prac Arts (not in Bus Ed)	3
Ed Fdn 310 Learn & Classroom	3	§Soc Sci	3
B&AS 310 Business Law	3	Bus Ed 463 Student Teaching	15
Bus Ed 265 Bus Comm	3	Major Electives	3
B&AS 306 Behavior I	3	Gen Elect or Minor	9
§Economics	3		
Major Electives	6		
Gen Elect or Minor	6		
Bus Ed 350 Voc Off Lab or Business Elective	3		
	<u>33</u>		<u>33</u>

Majors in any Business Education Curriculum must earn a minor of 18 hours outside the field of business. (24 semester hours required for a teaching minor).

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, Bus Ed 262, and 12 additional hours in courses in Business Education, Economics, and Business and Administrative Sciences courses.

GRADUATE COURSES

See course listings under Education, Secondary. See also Department Chairman for course of study.

EDUCATIONAL ADMINISTRATION

See pp. 365-366 for course descriptions and the **Graduate School Bulletin** for all graduate programs.

§ See Business Education adviser.

§§ May be waived if student has had typewriting or shorthand in high school.

EDUCATIONAL FOUNDATIONS

See pp. 366-369 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 54 semester hours in general education. A program of studies in general education is to be designed by the student and an adviser. It shall include work in all of the following areas:

- Behavioral Sciences
- Communication Arts/Foreign Language
- Multicultural Studies (written agreement between student and adviser)
- Fine and Practical Arts
- Humanities and Social Sciences
- Mathematics
- Natural and/or Physical Sciences
- Health, P.E. and Recreation

Work in General Education may also count as part of minor study. Selected courses currently listed for the College of Arts and Sciences, the College of Fine Arts, and the College of Education will satisfy the General Education requirement. The student pursuing a degree in elementary education should contact the Department of Elementary Education for a list of suggested courses that satisfy these requirements. The student should contact an adviser in the Department of Elementary Education and develop with the adviser an individually profitable way to participate in Multicultural Studies. With consent of adviser and approval of department chairman, experience may be substituted for course work in any of the eight areas listed above.

RATIONALE

The Department of Elementary Education perceives the role of the elementary teacher in the Southwest as one that requires a broad education which is supportive to multicultural needs of Southwest communities. The eight areas listed above encompass all ten areas of the General Education Requirement for the College of Education. (See General Education Requirement for College of Education.) The intent of the Department of Elementary Education is: (1) to encourage learning in a wide range of study areas and (2) to encourage a pursuit of study somewhat unique to each individual student. Therefore, a number of options in each area is available. Selection may be based on the student's background, goals in education, and interests.

In keeping with this viewpoint, the student in consultation with an adviser in Elementary Education must develop an individual plan of study for meeting Multicultural Studies requirement. Selecting courses clearly focused on multicultural study, developing fluency in a language spoken in the Southwest, participating in an independent study, or developing a field experience are among the options possible. **The adviser will file a written statement of the student's individual plan of study.**

The flexibility provided by many options is conducive to study in the programs housed in the Department of Elementary Education; Associate of Arts Programs, bilingual education, early childhood education, and elementary teacher education. This flexibility is also in keeping with educational practices which the Department of Elementary Education encourages students to develop in their own elementary classrooms.

PROCESSING ESTABLISHED BY THE DEPARTMENT OF ELEMENTARY EDUCATION FOR AIDING STUDENTS IN COMPLYING WITH THE REQUIREMENTS.

1. The Department will make available a list of suggested courses to students.
2. The Department will provide advisers who will explore with students options in courses and other relevant experiences which contribute to General Education.
3. The advisers will plan with students experiences in Multicultural Studies.
4. Prospective students will contact the Department of Elementary Education during the Freshman year or as soon as possible thereafter for information pertaining to bilingual education and early childhood education programs as well as elementary teacher education.

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
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

* Because a number of the required professional education courses are graded on a credit/no credit basis, students should exercise caution in selecting credit/no credit grading options in the non-professional areas of the program. See p. 159 for restrictions on credit/no credit option.

† 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.

"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 (Spanish-English or Navajo-English). 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 102 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 Tchng 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 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 pp. 206-207.

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. The program of studies shall be designed by the student and the Department staff.

MAJOR STUDY IN SPECIAL EDUCATION (SAMPLE PROGRAM)

(Leading to the degree of Bachelor of Arts in Education)

Freshman Year			
First Semester		Second Semester	
Psych 101 Gen Psych I	3	Engl 102 Wrtg w/Rdgs in Lit	3
Engl 101 Wrtg 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	Electives (Optional)	6
Elective (Optional)	4		
	14-17		16
Sophomore Year			
First Semester		Second Semester	
Spc Ed 250 Intro to	2	Spc Ed 381 Nat & Needs of the	
Hum & Soc Sci	3	Mentally Retarded	3
Behavioral Sciences	3	Ed Fdn 290 Found of Educ	3
Communication Arts	3	Fine & Prac Arts	3
Spc Ed 271 Educ of Except Children	3	Mathematics	3
Electives (and/or minor)	1-4	Electives (and/or minor)	3-6
	15-18		15-18
Junior Year			
First Semester		Second Semester	
Ed Fdn 300 Hum Growth & Dev	3	Spc Ed 444 Char of Emot Distrb Child	3
Fine & Prac Arts	3	Spc Ed 450 Adap Inst Tech in Spc Ed	6
Spc Ed 440 Soc & Psy Prob	3	Ed Fdn 310 Lrng & the Classroom	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 473 Tchg the Mentally Retarded	3	Spc Ed 383 Ed Problems of the Mex-Am	3
C & I 431 Prod of the Instr		Spc Ed 479 Meth & Matls	3
Mater for the Classroom	3	Spc Ed 400 or 462 Student Tchg in	
Ed Fdn 474 Eval in Sch Curr	3	Spc Ed	6
Spc Ed Elective	6		
	<u>15</u>		<u>12</u>
MINOR STUDY IN SPECIAL EDUCATION			
Spc Ed 250 Intro to Spec Ed	2	§Electives in Special Education	16
Spc Ed 271 Educ of Except Children	3		<u>24</u>
Spc Ed 381 Nat & Needs of Mentally Retarded	3		

HEALTH, PHYSICAL EDUCATION & RECREATION

MAJOR STUDY IN HEALTH EDUCATION

(Leading to the degree of Bachelor of Science in Health Education)

Freshman Year

First Semester		Second Semester	
Engl 102 Wrtg w/Rdgs in Lit	3	Engl Elect	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	
H Ed 164 First Aid	2	& Biochem	4
H Ed 171 Pers & Comm Health	3	Psych 102 Gen Psych II	3
PE Activity	1	Elective	2
	—	PE Activity	1
	<u>17</u>		<u>17</u>

Sophomore Year

Biol 136-139L Hum Anat & Phys & Lab	5	Biol 253-254L Introductory Microbiology	4
Anth 102 Dev of Culture	3	Ed Fdn 290 Found of Educ	3
Soc Elect	3	Sp.Com 255 Public Speaking	3
Psych Elect	3	Fine Arts Elective	3
H Ed 345 Prof Lab Exper in H Ed	2	Engl (Lit)	3
PE Activity	1	PE Activity	1
	<u>17</u>		<u>17</u>

Junior Year

Ed Fdn 300 Hum Grwth & Dev	3	Ed Fdn 310 Learn & Classrm	3
Electives	1	φH Ed 469 Elem Sch Hlth & H Ed	3
φH Ed 470 Sec Sch Hlth & H Ed	3	H Ed 301 Gen Safety Educ	3
H Ec 125 Food for Man	3	H Ed 212 Fund Hum Sexuality	3
Soc Elective	3	H Ed 345 Prof Lab Exper in H Ed	2
Nurs 352 Fund of Commun Hlth Nurs	2	Electives	3
	<u>15</u>		<u>17</u>

Senior Year

First Semester		Second Semester	
C&I 432 Prod of Instr Material for Classroom	3	H Ed 461 Stu Tchg Sec Sch Electives	6
Guid 431 Theories of Human Interaction	3		8
Electives	2		
H Ed 400 Stu Tchg Elem Sch	6		
	<u>14</u>		<u>14</u>

φ Limited to juniors and seniors only.

§ To be approved by adviser.

MINOR STUDY IN HEALTH EDUCATION

H Ed 164 First Aid	2	H Ed 470 Sec Sch Hlth & H Ed	3
H Ed 171 Pers & Comm Hlth	3	Guid 431 Theories of Human Interaction	3
H Ed 212	3	Electives (to be selected in	
H Ec 125 Food for Man	3	consultation with H Ed adviser)	4
H Ed 469 Elem Sch Hlth & H Ed		H Ed 301 Gen Safety Educ	3
or			
			<u>24</u>

GENERAL EDUCATION

From the following courses students must develop a written plan of study for General Education in consultation with an adviser from the Department of Health, Physical Education, and Recreation:

Behavioral Science	9 Hours
Psych 102	3
Psych elective	6
Communicative Arts	9 Hours
Engl Elective	3
Speech Elective	3
Sp Com 277 (Prob Solv, Creat, & Commun)	3
Multicultural Studies	9 Hours
Anth 102 (Dev of Culture)	3
Elective	3
Elective	3
Fine and Practical Arts	6 Hours
Fine Arts Elective	3
H Ec 125 (Food for Man)	3
Natural Sciences	8 Hours
Biol 121L	4
Biol 122L	4
Social Sciences	6 Hours
Electives	3
Electives	3
Total	<u><u>47 Hours</u></u>

MAJOR STUDY IN PHYSICAL EDUCATION

CURRICULA FOR STUDENTS PREPARING TO TEACH PHYSICAL EDUCATION. These curricula leading to the degree of Bachelor of Science in Physical Education are designed to prepare the student to teach Physical Education in elementary and/or junior and senior high schools. Students completing the program are eligible to apply for a four-year Provisional Teaching Certificate in New Mexico.

A 24-hour minor is required. Provisional minors include: Health, Biology, Science, Social Science, Early Childhood Study, Bilingual Education, Psychology, Special Education, Recreation.

Freshman Year

**Engl 101 or Equivalent	3	
**Psych 102 General II	3	
§**Biol 110-121L	3-4	
PE 210 Folk Dancing	2	
PE 345 Prof Lab Exp	1	
*PE 105 Water Safety Inst (or current Certificate)	2	
Gen Ed Electives	6	
Electives	8-7	
	28 + 4-5 below:	
	Total	32-33

Men

PE 117 Ind Tumbling	1
PE 160 Phys Fitness	2
PE Activity	1
	<u>4</u>

Women

PE 115 Gymnastics	1
PE 142 Track & Field	1
PE 151 Body Mech & Self Test	1
PE 152 Competency in Team Sports	1
PE 211 Competency in Ind & Dual Spts	1
	<u>5</u>

Sophomore Year

Biol 136 Anat & Physiology	3	
Biol 139L Anat & Physiology Lab	2	
Ed Fdn 290 Found of Educ	3	
PE 319 PE in Elem School	2	
Biol 326L Physiology of Exercise	3	
PE 345 Prof Lab Exp	2	
PE 398 Prin in PE	3	
Gen Educ Elective	6	
Electives	2	
	26 + 6-5 below:	
	Total	32-31

Men

PE Activity Electives	2
PE 203 Teach of Wrestling	2
PE 373 Treat of Athletic Injuries	2
	<u>6</u>

Women

Electives	1
PE Activity Electives	1
PE 109 Modern Dance I	1
PE 360 Officiating or	
PE 366 Tchg of Modern Dance	2
	<u>5</u>

Junior Year

PE 397 Kinesiology	3
PE 489 Test & Meas in PE	3
Junior Block (Fall) 11 semester hours:	
Ed Fdn 300 Hum Grwth & Dev	3
PE 301 Tchg of Team Sports	2
PE 310 Folk Dance in Sch Prog	2
PE 444 Tchg of PE	4
Junior Block (spring) 11 semester hours:	
Ed Fdn 310 Learn & Classrm	3
PE 302 Tchg Indiv & Dual Spts	2
PE 309 Tchg of Gymnastics	2
PE 345 Prof Lab Exp in PE (Jr. Bl.)	4
Electives	4
PE Activity Elective	2
	<u>34</u>

Senior Year

PE 399 Org & Adm of PE	3
PE 452 Org of Sports Prog	3
PE 466 Special PE	3
øPE 400 Stu Tchg Elem Sch	3
PE 461 Stu Tchg Sec Sch	6
PE Act Elective	1
Electives	11

30

* Must be completed by time of graduation.

** May be counted for General Education.

§ Biol minors must take 121L.

ø Option for grades 1-12 Certification.

MINOR STUDY IN PHYSICAL EDUCATION

Men		Women	
Biol 136-139L	5	PE 152, 210, 211	4
PE 160 Phys Fitness Prog	2	H Ed 164	2
PE 163 Swimming	2	PE 345 Prof Lab Exp in PE	2
PE 203 Tchg of Wrestling	2	PE 301, 310, 444 or	
PE 210 Folk Dance	2	PE 302, 309, 345 (Jr BI)	8
PE 301 Tchg Team Spts	2	PE 398 Prin of PE	3
PE 309 Tchg of Gymnastics	2	PE 399 Org & Adm of PE	3
PE 397 Kinesiology	3	PE 452 Org of Spts Prog	3
PE 398 Prin of PE	3	PE Activities	2
PE 399 Org & Adm of PE	3		
	<u>26</u>		<u>27</u>

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 173 Intro to Athletic Training	2	PE 397 Kinesiology	3
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		<u>28</u>

ATHLETIC TRAINING OPTION

(Leading to the degree of Bachelor of Science in Physical Education)

Freshman Year		Second Semester	
First Semester			
Engl 101 Wrtg w/Rdgs in Expos	3	Gen Ed Elective	3
Biol 121L Principles of Biology	4	Biol 122L Principles of Biology	4
PE 173 Intro to Athletic Trng	2	Electives	3
PE 160 Physical Fitness Progs	2	PE 162 Fund of Football	2
PE 161 Fund of Basketball	2	PE 163 Swimming	2
PE Elective	2	PE Elective	3
PE 117 Individual Tumbling	1	PE Activity Elective	1
	<u>16</u>		<u>18</u>
Sophomore Year		Second Semester	
First Semester			
Chem 101L Gen Chemistry	4	Chem 102L General Chemistry	4
Gen Ed Elective	3	Biol 136/139L Human Anatomy	
Sp Com 255 Public Speaking	3	& Physiology with Lab	5
Biol 371L Invertebrate Zoology	4	PE Elective	3
PE Elective	2	H Ed 171 Personal & Community Health	3
PE 309 Tchg of Gymnastics	2	Ed Fdn 290 Foundations of Ed	3
	<u>18</u>	PE Activity Elective	1
			<u>19</u>
Junior Year		Second Semester	
First Semester			
Psych General Elective	3	Biol 421L Comparative Vertebrate	
Physcs 151 General Physics	3	Anatomy	5
Ed Fdn 300 Human Growth & Development	3	PE 173 Intro to Athletic Training	2
Biol 326L Physiology of Exercise	3	PE 397 Kinesiology	3
PE 398 Prin of Physical Ed	3	Physcs 152 General Physics	3
PE 466 Special Phys Ed	3	Ed Fdn 310 Learning & the Classroom	3
	<u>18</u>		<u>16</u>
Senior Year		Second Semester	
First Semester			
PE Elective	3	SSec Ed 461 Student Teaching	3
PE 489 Test & Measurements in PE	3	PE 494 Clinical Progs for	
PE 494 Clinical Progs for		Corrective Therapy or Athl Trng	3
Corrective Therapy or Athl Trng	3	Electives	3
SSec Ed 461 Student Teaching	3	H Ec 325 Nutrition	3
	<u>12</u>		<u>12</u>

§ See Department of Secondary Education.

GENERAL EDUCATION

Students must develop a written plan of study for General Education in consultation with an adviser from the Department of Health, Physical Education, and Recreation. This plan must include as a minimum one course taken from each of six of the ten following areas:

1. Behavioral Sciences
2. Communication Arts
3. Multicultural Studies
4. Fine and Practical Arts
5. Foreign Language
6. Humanities
7. Mathematics
8. Natural Sciences
9. Health Education and Recreation
10. Social Sciences

MAJOR STUDY IN RECREATION

(Leading to the degree of Bachelor of Arts in Recreation)

Freshman Year		Sophomore Year	
Engl 102 Wrtg w/Rdgs in Lit	3	H Ed 171 Personal and Community Health	3
Bus Ed 265 Bus Communications	3	Speech 255 Public Speaking	3
Natural Science	6-8	Recrea 321 Recrea Leadership	3
Recrea 175 Found of Recrea	3	Recrea 345 Prof Lab Exper in Recrea	3
Fine and Practical Arts Elective	5-6	Social Science Elective	3
H Ed 164 First Aid	2	HPER Elective	3
Psych 102 Gen Psychology II	3	Psychology elective	3
Recrea 290 Creat and Soc Arts for Recrea	3	Recrea Program Option	3
Electives	2	Directed Recrea Electives	6
		Electives	3
	<u>30-33</u>		<u>33</u>
Junior Year		Senior Year	
Recrea 378 Outdoor Recreation	3	Recrea 476 Field Work in Recrea	3-6
Sp Com 277 Prob Solv, Creat, & Commun	3	Recrea 480 Admin of Recrea Progs	3
Recrea 454 Dev of Recrea Programs	3	Multi-Cultural Education	3
Recrea 475 Field Work in Recrea	3-6	Social Science Elective	3
Psychology Elective	3	Recrea Program Option	6
Social Science Elective	3	Directed Recrea Elective	3
Fine and Practical Arts Elective	2-3	Electives	8-11
Recrea Program Options	3		
Directed Recrea Elective	3		
Electives	3		
	<u>29-33</u>		<u>29-35</u>
		TOTAL	128

MINOR STUDY IN RECREATION

Recrea 175 Fdns of Recrea	3
Recrea 290 Creat and Soc Arts for Recrea	3
PE 319 PE In Elem School	2
Recrea 321 Recrea Leadership	3
Recrea 345 Prof Lab Experience in Recrea	3
Recrea 454 Dev of Recrea Program	3
Electives	7
TOTAL	<u>24</u>

GENERAL EDUCATION

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

Behavioral Science	9 Hours
Psych 102 (General Psych II)	3
plus 6 hours of Psych electives (200 level or above)	6
Communicative Arts	12 Hours
Engl 102	3
Sp Com 255 (Public Speaking)	3
Sp Com 277 (Prob Solv, Creat, & Commun)	3
Bus Ed 265 (Business Communications)	3
Fine and Practice Arts	6 Hours
Natural Sciences	6 Hours
Social Sciences	9 Hours
Health Education or Physical Education	3 Hours
Multicultural Education	3 Hours
Total	<u>48 Hours</u>

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
§Communication elective	3	Econ 201 or 200	3
§Communication elective	3	Humanities elective	3
Psych 101 or 102 Gen Psych I, II	3	Communication Art	3
Science Elective	4-6	Art Ed 130 Tech of Design Ed (fall)	3
Soc 101 Intro	3	Ed Fdn 290 Founda of Ed	3
H Ec 101 Freshman Seminar (fall)	2	H Ec 125 Food for Man	3
H Ec 102 Infant Growth & Dev	3	H Ec 250 Clothing & Human Behavior (spring)	2
H Ec 120L Food Science	3	H Ec 252 Textiles	3
H Ec 150L Clothing Const	2	H Ec 218	3
	<u>29-31</u>		<u>32</u>

§ Approval of Department needed.

Junior Year		Senior Year	
Area I or II Elective	3	Area I or II Elective	3
Econ, Hist, or Geog	3	H Ec 408L Child Growth & Devel	2-3
§Multi-cultural 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 445L Home Management Resid	4
H Ec 341 House & Its Environment	3	H Ec Ed 461 Student Teaching in Sec Sch	6
H Ec 443 Home Management	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		§Multi-cultural elective	3
(spring)	3		
Elective	6		
	33		31-33

12 hours selected from Sociology and/or Psychology, 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 281 Int Org Chem & Biochem	4
Soc 101 Intro	3	Econ 201 or 200	3
H Ec 101 Freshman Seminar (fall)	2	Psych 102 General Psych II	3
H Ec 102 Infant Growth & Dev	3	Soc Elective	3
H Ec 120L Food Science	3	Speech Communication	3
H Ec 125 Food for Man (fall)	3	H Ec 252 Textiles	3
H Ec 222L Meal Management	3	Elective	3
Elective	3		32
	33		
Junior Year		Senior Year	
B&AS 202	3	B&AS 306 Organizational Behavior I—Theory of Concepts	3
Biol 253-254L Introductory Microbiology	4	Econ, Geog or Hist	3
Psych 230 Psych of Adj	3	Literature Elective	3
Ed Fdn 310 Learn & Classroom	3	H Ec Ed 437	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 Environment (fall)	3	H Ec 428 Diet Therapy	3
H Ec 408L Child Growth & Devel	3	H Ec 434 Organization & Mgt	3
H Ec 431L Experimental Foods	3	H Ec 443 Home Management	3
Electives	6	Electives	4
	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, 253, 254L, 136; Chem 141L, 281; B&AS 202, 306. 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.

§ Approval of Department needed.

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, 218, 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.

INDUSTRIAL EDUCATION

CURRICULUM FOR STUDENTS PREPARING TO TEACH INDUSTRIAL EDUCATION

This curriculum leading to the degree of Bachelor of Science in Industrial Education is designed to prepare the student to teach Industrial Arts in junior and senior high schools. This major requires a composite of 54 hours instruction to receive certification by the University. The professional education requirements are met with 27 hours of instruction. The general education requirements are met with a minimum of 39 hours or a maximum of 45 hours instruction. Students must develop a written general education plan in consultation with an Industrial Education Adviser.

Freshman Year		Sophomore Year	
I Ed 101 Shop Computation	3	Ed Fdn 290 Founda of Ed	3
I Ed 105 Intro to I Ed	1	I Ed 225 Design in I A	3
I Ed 110L Machine Woodworking	3	I Ed 230L Power Mechanics	3
I Ed 111L Ind Graph (Drafting) Des I	4	I Ed 261L Discr Geo	2
I Ed 112L Ind Graph (Drafting) Des II	4	I Ed 262L Arch Dftng	2
I Ed 120L Machine Metalworking	3	I Ed 265L Finishing & Maint	3
Fine Arts Elective	3	I Ed 280L Elect & Electronics I	3
		I Ed 285L Welding	3
	21		22
Junior Year		Senior Year	
§Ed Fdn 300 Hum Grwth & Dev	3	I Ed 466 Theory & Org of	3
#Ed Fdn 310 Learn & Classrm	3	Sec Ed 433 Tchg of Ind Subj	3
I Ed 315L Hot Metal Processes	3	I Ed 470L Carpentry	3
I Ed 335L Int Power Mechanics	3	I Ed 461, 462, 463 Student Tchg	6-15
I Ed 350L Cabinet Making	3	in Sec Sch	7
I Ed 365L Adv Machine Metalworking	3	Elective	
I Ed 380L Elect & Electronics II	3		
I Ed 386L Metal Fabrication	3		
§Sec Ed 361 Pre-Stu Tchg Exp	3		
#Sec Ed 362 Pre-Stu Tchg Exp	3		
	30		22-31

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.

§ Must be taken concurrently (Module I).

Must be taken concurrently (Module II).

**CURRICULUM FOR STUDENTS PREPARING TO TEACH MUSIC
IN GRADES 1-12 (128 hours) See pp. 266-267.**

(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
	<u>15</u>		<u>17</u>
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
	<u>17</u>		<u>17</u>
Semester V		Semester VI	
Ed Fdn 290	3	Music Ed 446	2
Mus Ed 313	2	Ed Fdn 300	3
Music 309	3	Mus Ed 366	2
Music 261	3	Music 364 (365)	2
Music 363	2	Music 262	3
Applied Music	3	Applied Music	3
Ensemble	1	Ensemble	1
	<u>17</u>		<u>16</u>
Semester VII		Semester VIII	
English Lit elect	3	Mus Ed 461	3
Music 453	2	Music 405 or 406	2
Stu Tchg 400	3	Fine Arts elect	3
Fine Arts elect	3	Applied music	2
Mus Ed 451	3	Ensemble	1
Applied music	2	Elective	1
Ensemble	1		
	<u>17</u>		<u>12</u>

All students pursuing the curriculum listed above are also subject to all requirements pertaining to Music Education listed on pp. 266-267.

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.

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 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 undergraduate 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. 206-207 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, Mathematics Education, 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. 216.
2. Business Education: For details see p. 217.
3. Home Economics: For details see p. 228.
4. Industrial Education: For details see p. 230.
5. Music Education: For details see p. 230.
6. Physical Education: For details see p. 224.
7. Health Education: For details see p. 223.
8. Special Education: For details see p. 222.

GENERAL EDUCATION. To meet the general education requirements in Secondary Education, students must demonstrate that they have had appropriate experiences in a minimum of six of the following areas:

1. Behavioral Sciences
2. Communicative Arts
3. Multicultural Studies

4. Fine and Practical Arts
5. Foreign Language
6. Humanities
7. Mathematics
8. Natural Sciences
9. Health, Physical Education and Recreation
10. Social Sciences

Work taken by students in these areas will be designed to supplement, augment, or extend work in the major field.

To insure understanding of, and compliance with, the general education requirements, a file must be established by the student in the department prior to the beginning 300 level professional education courses. The folder will include a form which will list: (1) the areas to be included in the student's general education component; and, (2) the experiences selected to fulfill the requirements in those areas. The form will be signed by both the student and the department adviser.

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
Pre-Student Teaching Module I, 6 Semester Hours*	
Ed Fdn 300 Human Growth and Development	3
Sec Ed 361 Pre-Student Teaching Exp in Sec Ed I	3
Pre-Student Teaching Module II, 6 Semester Hours*	
Sec Ed 362 Pre-Student Teaching Exp in Sec Ed II	3
Ed Fdn 310 Learning and the Classroom	3
Students must complete Pre-Student Teaching Modules I and II with satisfactory competency development and recommendation from the Pre-Student Teaching Module faculty before being admitted into Student Teaching Preparation and Internship Modules.	
Sec Ed 430-445 Special Methods of Tchng in Sec Schs or approved Educ substitute	3
Sec Ed 461, 462, 463 Student Tchng	6
Total Professional Education	24

COMPOSITE TEACHING AREAS

The composite teaching major area is designed to enable the prospective teacher to acquire unified learning within a broad field of closely related subject matter disciplines which would not be possible in a single subject-matter major teaching area.

The application of this unified knowledge to the teaching of currently unified or generalized secondary school subjects (e.g., Communication Arts, General Science, Social Studies) is an avowed purpose of this form of preparation.

The composite is also designed to prepare students to teach adequately in several closely related subjects. This type of preparation will be of particular advantage to novice teachers beginning their careers in small secondary schools in which they must expect multiple rather than single subject teaching assignments.

* The pre-student teaching modules form a two-semester block program. The courses in each semester must be taken concurrently and they will be taught in a block of time on campus with additional hours of field experiences required each week.

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.

MAJOR IN MATHEMATICS EDUCATION

Students who propose to major in mathematics education are required to plan a program which will enable them to develop proficiencies in the following areas of mathematics: calculus; algebra; geometry; probability and statistics; computing; applications of mathematics; history of mathematics. In addition to the required areas, students will be encouraged to develop proficiency in other

areas of mathematics, such as topology, number theory, and advanced analysis. A variety of means (e.g., course work, field experiences, independent study) may be appropriate for individual programs. **STUDENTS MUST MEET WITH AN ADVISER IN SECONDARY EDUCATION AS SOON AS POSSIBLE TO PLAN THEIR PROGRAM.** The aim is to develop a program such that the various components (general education, mathematics, professional education, electives) will enhance each other and other activities of the student so as to provide an integrated series of experiences which will serve as the basis of a successful career in education.

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, contrastive 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 pro-

gram 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.

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 post-graduate 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. 103.

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 mathematics or English are required to take remedial work for no credit to remove these subject deficiencies. Students with particularly high scores in the English

area of the ACT are excused from Engl 101 (3 hours); those who are placed in Math 163 are excused from Math 162 (4 hours).

Students intending to study engineering should take in high school all of the mathematics and English possible as well as chemistry and physics. The mathematics should include a minimum of 2 units of algebra, 1 unit of geometry, and $\frac{1}{2}$ 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. 243.

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 the degrees of Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Mechanical Engineering and the Bachelor of Engineering degree with several options. These four-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 eight regular semesters to complete requirements for his degree.

The College of Engineering is a member of the American Society for Engineering Education. The curricula in Civil, Electrical, and Mechanical Engineering are accredited by the Engineer's Council for Professional Development.

MEDICAL ENGINEERING TECHNOLOGY

The College of Engineering offers a two-year program of study leading to the degree of Associate of Science in Medical Engineering Technology.

INSTRUMENTATION ENGINEERING TECHNOLOGY

The College of Engineering also offers a two-year associate degree program at the Northern New Mexico Branch of the University of New Mexico which leads to the degree of Associate of Science in Instrumentation Engineering Technology. The program is supervised by the Department of Mechanical Engineering. Information on this program may be obtained from the Director of the Northern New Mexico Branch or the Department of Mechanical Engineering.

SPECIAL FIELDS

In addition to the four major professional fields of study listed above, in which the Bachelor of Science degree is offered, three options are currently available in the Bachelor of Engineering degree program. These three options are: Biomedical Engineering Option, Computer Science Option, and Energy and Power Systems Option. It is expected that in the future additional options will be available within the Bachelor of Engineering degree program, hence, the student should consult with the Dean's office. In addition, it is possible to specialize to some degree by choosing appropriate elective courses within the basic curriculum of one of the major departments.

DEGREE 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 four 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 (Co-op) for students majoring in Chemical, Civil, Electrical and Computer Science, or Mechanical Engineering. The Co-op curriculum is a 5 year work-study program which alternates a semester of full-time academic study with a semester of full-time employment in industry. Co-op students gain industrial experience which helps provide career guidance and helps make his academic study become more meaningful. Also, Co-op students earn a substantial part of their educational expenses.

Students who are interested in the Co-op Program may apply to the Engineering Co-op Director soon after being admitted to the University. Co-op

students normally must finish the first semester of the freshman year with at least a 2.5 grade average before beginning interviews for a Co-op job with industry. Thus, Co-op students normally begin their first work phase at the end of their freshman year.

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

While on each work phase co-op students must register in Engineering 100 and pay a \$15.00 fee. This registration maintains the students' academic status including eligibility for dormitory, activity card, library, insurance, and health services. After completing each work phase, the co-op student registers in one of the Engineering courses, Evaluation of Co-op Work Phase, for 1 credit hour. The academic credit earned from the co-op work phase may be counted as technical elective credit toward the students' Engineering degree.

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. 158-171). 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. 167.
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 REQUIREMENTS IN THE COLLEGE OF ENGINEERING

The degree programs offered by the several departments are listed, in alphabetical order, on the following pages. Following these departmental listings, the programs of studies for the three options available under the Bachelor of Engineering program and for the two-year Medical Engineering Technology Program are listed. 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			Second Semester		
	Cr.	Lect.-Lab.		Cr.	Lect.-Lab.
Chem 101L Gen	4	(3-3)	CE 102L Engr Comp Meth	3	(2-4)
Engr 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)
	15	(11-9)	***Science Elective	3 or 4	(3-3)
				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 $\frac{1}{2}$ 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.

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. 452 for Mathematics; to p. 421 for English; to p. 342 for Chemistry; to p. 400 for Civil Engineering; and to p. 505 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. 159 for an explanation of the grading system.)

CHEMICAL ENGINEERING

Chemical engineering has long played a primary role in the nation's energy resources—the extraction, refinement, and transportation of natural gas, crude oil and other fossil fuels. It will continue to play a vital role in energy resources for the future—nuclear, geothermal, solar and coal gasification. Chemical engineering relates directly to the cleaning up of our water, air, and land, because separation processes and chemical reaction engineering form the basis of any attack on pollution. The chemical engineer will continue to play an important role in feeding, clothing, and housing an increasing population throughout the world. Participation of chemical engineers in artificial body organ development and other areas closely related to the medical field will continue to expand.

The goal of chemical engineering education is the development of the ability to apply the principles of chemical and certain physical changes of materials to the resolution of technological problems for the benefit of society. The course of study in chemical engineering is designed to afford students broad training in the fundamentals of mathematics, physics, chemistry and the engineering sciences, followed by the distinctly professional courses of Unit Operations and Unit Processes.

The graduate chemical engineer will find many avenues of opportunity in research and development; production, operation, and maintenance; design and construction; management and administration; technical service and sales; and consulting. These opportunities are world-wide in industries which have produced an array of synthetic chemical products: antibiotics, fibers, fertilizers, paper, explosives, rocket propellents, ceramics, pesticides, adhesives, detergents, paints, medical supplies, process foods, cosmetics, and synthetic rubbers.

§ Humanities or social science elective. Consult adviser.

*** Students who intend to major in Chem Engr or Biomed Engr must take Chem 102L or 122L. Others should consult adviser.

LABORATORY FACILITIES. The Chemical Engineering Laboratory is equipped with pilot plant equipment for the study of unit operations such as evaporation, solvent extraction, distillation, absorption, filtration, and crystallization. The unit processes such as nitration, sulfonation, hydrogenation, etc., can be carried out in the Process Laboratory which is equipped for the study of small scale production of various chemical products. Teaching Laboratories for the engineering sciences fluid mechanics, and heat transfer are available in the Farris Engineering Center.

COMPUTER FACILITIES. Digital computers provide the basic computational tool for today's modern engineer. Freshman engineering students are introduced immediately to the University's IBM 360/67 computer. Numerical analysis and digital computation is an important part of each year's instruction in chemical engineering, and by the senior year students are encouraged to use many of the sophisticated computer codes available in industry.

COOPERATIVE EDUCATION. The Chemical Engineering Department participates in the Cooperative Education Program. Excellent opportunities exist throughout the Southwest for undergraduate chemical engineering students. For further information contact the Department Chairman or the Director of Cooperative Education.

CURRICULUM IN CHEMICAL ENGINEERING

Hours required for graduation: 130*

Sophomore Year					
First Semester			Second Semester		
	Cr.	Hrs. Lect.-Lab.		Cr.	Hrs. Lect.-Lab.
Math 264 Calculus III	4	(4-0)	Math 316 App Ord Diff Eq	3	(3-0)
Physcs 161 Gen	3	(3-0)	Physcs 262 Gen	3	(3-0)
Chem 301 & 303L Organic	4	(3-3)	Physcs 163L or 264L Gen Lab	1	(0-3)
Ch E 251 Chem Calc	3	(3-0)	Chem 302 & 304L Organic	4	(3-3)
Econ 200 Prin and Probs	3	(3-0)	Ch E 252 Ind Stoichiometry	3	(3-0)
			Elective	3	(3-0)
	17	(16-3)		17	(15-6)
Junior Year					
First Semester			Second Semester		
	Cr.	Hrs. Lect.-Lab.		Cr.	Hrs. Lect.-Lab.
Ch E 301 Thermo	3	(3-0)	Ch E 302 Ch E Thermo	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)
EECS 203 Intro to EE I	3	(3-0)	Chem 312 & 314L Physical	4	(3-3)
Elective	6	(6-0)	Elective	3	(3-0)
	18	(18-0)		15	(12-9)
Senior Year					
First Semester			Second Semester		
	Cr.	Hrs. Lect.-Lab.		Cr.	Hrs. Lect.-Lab.
Ch E 413 Unit Oper III	3	(3-0)	Ch E 452 Seminar	1	(1-0)
Ch E 415L Unit Oper Lab II	2	(0-6)	Ch E 450 Ch E Econ	3	(3-0)
Ch E 461 Seminar	1	(1-0)	Ch E 482L Proc Lab II	2	(0-6)
Ch E 481L Proc Lab I	1	(0-3)	Ch E 494L Ch E Design	3	(2-3)
Ch E 461 App Ch E Kinetics	3	(3-0)	Electives	6	(6-0)
Electives	6	(6-0)			
	16	(13-9)		15	(12-9)

* Reduced for students placed ahead in freshman mathematics and/or English.

NOTES:

1. At least 18 hours of electives are to be taken in the humanities and social sciences.
2. 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 fulfill society's needs. Civil Engineers with advanced education beyond the baccalaureate are in increasing demand. Students with sufficiently high grades should continue to the master's degree or beyond.

CONSTRUCTION OPTION. R. H. Clough, Adviser. Students who are interested in careers in the construction industry can elect to follow the construction option 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.



Farris Engineering 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. 240 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. Freshman engineering students are introduced to the use of the digital computer, and upper division classes make use of it as a computational tool. The College of Engineering computer facilities are interfaced with the University IBM 360 Computer and are available for use by all engineering students. In addition, the Civil Engineering Department provides analog computer facilities. The use of modern digital and analog computers is an integral part of the instruction at all levels.

CURRICULUM IN CIVIL ENGINEERING

Hours required for graduation: 130*

First Semester			Sophomore Year			Second Semester		
	Cr.	Lect.-Lab.	Hrs.				Cr.	Lect.-Lab.
Math 264 Calculus III	4	(4-0)		Math 316 Appl Ord Diff Equa	3	(3-0)		
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)		
Engr Elective	3	(3-0)		EECS 203 Intro to EE I	3	(3-0)		
or								
Sp Com 255 Pub Spkg	3	(3-0)						
	17	(14-9)					15	(12-9)
Junior Year								
Math 265 Vector Analysis	4	(4-0)		CE 360L Soil Mech	3	(2-3)		
or				CE 306 Struc Anal II	3	(3-0)		
Math 345 Statistical				CE 332 Water Res & Hydr E I	3	(3-0)		
Methodology	3	(3-0)		CE 324L Struc Des in Metals	3	(2-3)		
CE 302 Mech of Materials	3	(3-0)		CE 336L Sanitary Engr I	3	(2-3)		
CE 303L Mech of Mater Lab	1	(0-3)		Elective	3	(3-0)		
CE 305 Struc Anal I	2	(2-0)						
CE 331L Fluid Mech	3	(2-3)						
CE 382 Transp Engr	2	(2-0)						
Elective	3	(3-0)						
	17 or 18	(15-6)					18	(15-9)

* Reduced for students placed ahead in freshman mathematics and/or English.

First Semester			Senior Year		Second Semester		
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 or 3	(3-0)					
Elective	3	(3-0)					
	16 or 17	(17-0)				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.

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		Second Semester	
	Hrs. Cr. Lect.-Lab		Hrs. Cr. Lect.-Lab
EECS 231 Digital Computation	2 (2-0)	EECS 207L EE Lab II	2 (1-3)
Physcs 161 Gen Physcs	3 (3-0)	EECS 213 Circ & Systems I	4 (4-0)
EECS 203 Intro to EE I	3 (3-0)	Physcs 262 Gen Physcs	3 (3-0)
EECS 206L EE Lab I	2 (1-3)	Math 264 Calculus III	4 (4-0)
Math 316 Appl Ordinary Diff Equations	3 (3-0)	Elective	3 (3-0)
Elective	3 (3-0)		
	<u>16 (15-3)</u>		<u>16 (15-3)</u>
Junior Year			
First Semester		Second Semester	
CE 202L Engr Statics	3 (2-3)	EECS 340 Statistical Mthds in Elec Engr	3 (3-0)
EECS 313 Circ & Systems II	4 (4-0)	ME 206L Dynamics	3 (2-3)
EECS 321 Electronics I	3 (3-0)	EECS 322 Electronics II	3 (3-0)
EECS 325L Electronics Lab I	2 (1-3)	EECS 326L Electronics Lab II	2 (1-3)
EECS 361 Electromag Fields and Waves I	3 (3-0)	Physcs 330 Atomic and Nuclear or EECS 370 Physical Properties of Elec Engr Materials	3 (3-0)
		EECS 362 Electromag Fields and Waves II	3 (3-0)
	<u>15 (13-6)</u>		<u>17 (15-6)</u>
Senior Year			
First Semester		Second Semester	
ME 301 Thermodynamics	3 (3-0)	EECS Elective Lab	2 (1-3)
EECS Elective Lab	2 (1-3)	EECS Elective Lab	2 (1-3)
Electives	12 (12-0)		
	<u>17 (16-3)</u>		<u>17 (16-3)</u>

NOTES:

- At least 18 hours of electives are to be taken in the humanities and social sciences.
- Normally, at least 12 hours of electives and two elective laboratories are taken in Electrical Engineering and Computer Science, to form a coherent program.
- 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.
- 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

* Reduced for students placed ahead in freshman mathematics and/or English.

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 computer 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			Sophomore Year		Second Semester		
	Cr.	Hrs. Lect.-Lab.				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)		
Econ 200 Prin and Probs	3	(3-0)	ME 206L Dynamics	3	(2-3)		
ME 201L Intro to Design	3	(2-3)	EECS 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				
ME 314L Dyn of Mech Sys	3	(2-3)	Vibrations	3	(2-3)		
EECS 204 Intro to EE II	3	(3-0)	ME 318L ME Lab I	2	(0-6)		
CE 302 Mech of Materials	3	(3-0)	ME 370 Engr Mater Science	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	3	(3-0)	elective	2 or 3	(2-0)		
Technical Elective	3	(3-0)					
	14	(10-12)			17 or 18	(17-0)	

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 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

* Reduced for students placed ahead in freshman mathematics and/or English.

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; Febe-tron 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 312 & 316 Adv Engr Math I and Ord Diff Equations
 ChE or ME 301 Thermodynamics
 ME 320 Heat Transfer
 ME 317 or CE 331L Fluid Mechanics
 ChE or ME 370 Engineering Materials Science
 EECS 203 & 204 Intro to EE I, II
 EECS 336 Intro to Digital Computer Programming

In addition, it is recommended that senior year electives be chosen from the following:

Nucl E 420 Fund of Nucl Engr
 Nucl E 423L Radiation Measurements and Analysis
 Nucl E 430 Intro to Nucl Engr
 Nucl E 470 Materials for Energy Production

BACHELOR OF ENGINEERING OPTIONS

Students who wish to pursue a Bachelor of Engineering degree, instead of the Bachelor of Science in one of the departments previously listed, must report this intention to the Engineering College office at the time they transfer into the college. The college office will assign these students an advisory committee appropriate for the option which the student plans to pursue. The student will work with this committee, rather than a specific department, in planning his program, selecting his electives, etc. It is anticipated that the number and types of options available under this degree program will increase in the near future. The curriculum requirements in the three options now available are listed in the following pages.

BIOMEDICAL ENGINEERING OPTION

Biomedical engineering is a relatively new and rapidly growing profession which combines the concepts and techniques of many related disciplines. With

the aid of the necessary supporting knowledge of chemistry, physics, mathematics, and biology, many of the theoretical and experimental methods of engineering can be applied directly to the solution of numerous challenging problems in the life sciences and in clinical medicine. For example, research-oriented biomedical engineers may wish to participate in the design of advanced clinical patient-monitoring systems, or in the development of artificial limbs and internal organs, or in the application of modern neurology to the design of more intelligent machines. Expanding national health care delivery systems, and new priorities for the quality of life in future economic planning, are providing new employment opportunities for practice-oriented biomedical engineers. The graduate biomedical engineer interested in eventual clinical practice may wish to apply for admission to a school of medicine, dentistry, or veterinary medicine. Opportunities are also available to qualified biomedical engineering graduates to pursue further graduate study in engineering, biology, biochemistry, pharmacology, physiology, and microbiology.

CURRICULUM IN BIOMEDICAL ENGINEERING OPTION

Hours required for graduation: 130*

First Semester			Sophomore Year			Second Semester		
				Hrs.				Hrs.
			Cr.	Lect.-Lab		Cr.	Lect.-Lab	
Biol. 121L Prin Biol			4	(3-3)	Biol 122L Prin Biol	4	(3-3)	
Chem 301 Org Chem			3	(3-0)	Chem 302 Org Chem	3	(3-0)	
Chem 303L Org Chem Lab			1	(0-3)	Chem 304L Org Chem Lab	1	(0-3)	
Physcs 161 Gen Physics			3	(3-0)	— — H&SS Elec	3	(3-0)	
CE 202L Statics			3	(2-3)	EECS 203 Intro to EE I	3	(3-0)	
Math 264 Calc III			4	(4-0)	EECS 206L EE I Lab	2	(1-3)	
			18	(15-9)		16	(13-9)	
			Junior Year					
Physcs 262 Gen Physics			3	(3-0)	Math 316 Diff Equations	3	(3-0)	
Chem 315L Phys Chem			4	(3-3)	Chem 324 Biochem	3	(3-0)	
Sp Com 255			3	(3-0)	EECS 404 Biomedical			
Tech Elective***			7	(7-0)	Instrumentation	3	(3-0)	
					— — H&SS Elec	3	(3-0)	
					Tech Elective***	4	(4-0)	
			17	(16-3)		16	(16-0)	
			Senior Year					
Life Sci Elective			4	(3-3)	EECS 407 Biomodels	3	(3-0)	
Tech Elective***			5	(5-0)	— — H&SS Elect	3	(3-0)	
Elective**			6	(6-0)	Tech Elective***	7	(7-0)	
					Elective**	3	(3-0)	
			15	(14-3)		16	(16-0)	

COMPUTER SCIENCE OPTION

The Computer Science Option is a program of study which covers both the hardware and software aspects of computers. The course work offered toward the degree is supplemented by laboratory experiments in which students not

* Reduced for students placed ahead in freshman mathematics and/or English.

** Unrestricted Elective.

*** Technical Electives: These electives will be developed in consultation with an option committee adviser to comprise a meaningful sequence for a stem specialization (e.g., sanitary bioengineering, medical instrumentation, biomechanics and prosthesis design, biomedical systems and analysis, radiological engineering, biomaterials development, biochemical engineering, clinical engineering). These 23 hours will include 10 hours from engineering science courses.

only gain practical experience in the use of the existing college and university computer facilities, but also actively participate in the development of new computer structures and interface equipment. Using engineering problem solving methods, students of computer science also gain expertise in the development and application of modern computing techniques.

Students in Computer Science may elect a number of courses in the junior and senior year and hence, have an opportunity to select supporting work from many disciplines. These elective courses should be chosen in consultation with an adviser to provide the student a comprehensive education with a selected specialization.

Research in Computer Science is being actively pursued within the College of Engineering. Current research includes the development of an artificial ear, pattern recognition, and hybrid computer designs. Computer Science students may have the opportunity to contribute to similar research projects. An active colloquium series is held in the College as part of Computer Science research. Students are expected to attend and participate in these colloquiums.

In addition to the research activities, students are afforded the opportunity to operate the several laboratory computers themselves. This hands-on experience is limited only by the time available on the various machines, and all students are encouraged to do computer experimentation. Students have an opportunity to use several types of computers during their college careers.

CURRICULUM IN COMPUTER SCIENCE OPTION

Hours required for graduation: 130*

First Semester		Sophomore Year		Second Semester	
	Hrs.		Hrs.		Hrs.
	Cr.	Lect.-Lab		Cr.	Lect.-Lab
EECS 335 Intro Dig Comp	3	(3-0)	EECS 337 Intro Comp Sci	3	(3-0)
Math 316 Diff Equations	3	(3-0)	Math 264 Calculus III	4	(4-0)
EECS 203 Intro to EE I	3	(3-0)	Physcs 262 Gen Physics	3	(3-0)
EECS 206L EE Lab I	2	(1-3)	CE 202L Statics	3	(2-3)
Physcs 161 Gen Physics	3	(3-0)	EECS 213 Circs Sysms I	4	(4-0)
EECS 336 Dig Comp Progm	2	(2-0)			
	16	(15-3)		17	(16-3)
Junior Year					
EECS 435 Intro Assem Desgn	3	(3-0)	Cp Sci 356 Compiler Const	3	(3-0)
EECS 321 Electronics I	3	(3-0)	EECS 437 Operat Sysms	3	(3-0)
Elective§	3	(3-0)	Math 321 Linear Algebra	3	(3-0)
Sp Com 255	3	(3-0)	H&SS Elective	3	(3-0)
EECS 207L EE Lab II	2	(1-3)	Elective*	3	(3-0)
Cp Sci 355 Progm Lang	3	(3-0)			
	17	(16-3)		15	(15-0)
Senior Year					
EECS 438 Logic Design	3	(3-0)	EECS 415 Minicomp Tech	3	(3-0)
Tech Electives**	6	(6-0)	Tech Electives**	6	(6-0)
Elective§	3	(3-0)	Math Elective	3	(3-0)
EECS 434L Logic Lab	2	(1-3)	H&SS Elective	3	(3-0)
H&SS Elective	3	(3-0)	EECS 498 Seminar	2	(2-0)
	17	(16-3)		17	(17-0)

§ Unrestricted Elective.

* Reduced for students placed ahead in freshman mathematics and/or English.

** Technical Electives: these electives will be developed in consultation with an option committee adviser to comprise a meaningful sequence for a stem specialization.

ENERGY AND POWER SYSTEMS OPTION

With the continuing world-wide growth in population and the growth in automation and appliance use in industrialized and developing countries, the demand for energy and power production is expected to continue to grow at increasingly greater rates. Concurrent with the growth in demand for energy and power is the widespread demand to improve and maintain the environment. The Energy and Power Systems Option will prepare students to meet the challenges of these often conflicting demands through employment with the utility and manufacturing industries, architectural engineering firms, research laboratories, and state and federal regulatory agencies. Opportunities are also available for qualified graduates to pursue graduate study in many areas of energy and power systems engineering.

Some of the current research interests in the College of Engineering are: energy conversion devices including nuclear reactors, engines, and their components; energy sources including fossil fuels, solar energy, geothermal energy, and nuclear energy; and energy and power system analysis.

The Energy and Power Systems Option curriculum permits development of a variety of supporting work areas through selection of technical electives, including: energy conversion and power generation, nuclear, mechanical, electrical, and chemical engineering, systems analysis and control, environmental impact, management and economics, and legal and professional problems. Each student has an opportunity to develop at least two supporting work areas in addition to the basic core curriculum.

CURRICULUM IN ENERGY AND POWER SYSTEMS OPTION

Hours required for graduation: 130*

First Semester			Sophomore Year		Second Semester		
			Hrs.			Hrs.	
			Cr.	Lect.-Lab		Cr.	Lect.-Lab
Math 264 Calc III	4	(4-0)			Math 265 Vector Analysis	4	(4-0)
Physcs 161 Gen Physics	3	(3-0)			Physcs 162 Gen Physics	3	(3-0)
CE 202L Statics	3	(3-0)			Tech Elective**	3	(3-0)
Elective§	3	(3-0)			EECS 203 Intro to EE	3	(3-0)
Tech Elective**	3	(3-0)			H&SS Elective	3	(3-0)
	16	(16-0)				16	(16-0)
			Junior Year				
ChE-ME 301 Thermodynamics	3	(3-0)			ME 302 Thermodynamics	3	(3-0)
ME 317 Fluid Mechanics	3	(3-0)			ME 320 Heat Transfer	3	(3-0)
Tech Electives**	6	(6-0)			CE-ME 370 Materials Sci	3	(3-0)
H&SS Elective	3	(3-0)			ME 482 Energy Conversion	3	(3-0)
					Tech Elective**	3	(6-0)
					HSSC Elective	3	(3-0)
	15	(15-0)				18	(18-0)
			Senior Year				
Nucl E 430 Intro Nucl Engr	3	(3-0)			Nucl E 470 or EECS 370 Matls for		
EECS 480 Power Sys Analysis	3	(3-0)			Nuclear or Elec Applications	3	(3-0)
Tech Elective**	3	(3-0)			Tech Elective	7	(6-1)
H&SS Elective	6	(6-0)			H&SS Elective	3	(3-0)
Elective§	3	(3-0)			Elective§	3	(3-0)
	18	(18-0)				16	(15-1)

* Reduced for students placed ahead in freshman mathematics and/or English.

§ Unrestricted Elective.

** Technical Electives: these electives will be developed in consultation with an option committee adviser to comprise a meaningful sequence for a stem specialization.

MEDICAL ENGINEERING TECHNOLOGY

The Medical Engineering Technology Program at the University of New Mexico is a two-year program leading to an Associate Degree. Students completing the Medical Engineering Technology Program will be trained to work in the field as follows: a) The MET solves complex installation and maintenance biomedical equipment problems by analyzing layout drawings, technical specifications and operating characteristics. b) Conducts preoperational tests of biomedical equipment systems to determine consistency with required specifications. c) Repairs, calibrates and modifies biomedical equipment systems. d) Develops preventive maintenance programs for biomedical equipment and is knowledgeable in the problems of electrical safety and hazards. e) Is available to assist in inservice training of other hospital personnel to effectively and safely use biomedical equipment systems. Graduates of Medical Engineering Technology are encouraged to seek certification in their profession with the Association for the Advancement of Medical Instrumentation, 1500 Wilson Blvd., Suite 417, Arlington, Virginia 22209.

ADMISSION. The Medical Engineering Technology Program is open to men and women who:

- a) Meet the admission requirements described under "Admission" in the University of New Mexico bulletin,
- b) Are personally interviewed by the Director of the Medical Engineering Technology Program.

A limited number of students will be selected for admission to the Medical Engineering Technology Program. Selection will be on the basis of the student's aptitudes, prior academic training, personal references, and the interview with the Director. The Medical Engineering Technology Program is open to high school graduates, to persons with technical electronics education, and to persons with life science training. Special examinations for advanced standing may be arranged so that skills already mastered by the student will not be duplicated in the Medical Engineering Technology Program.

ASSOCIATE DEGREE REQUIREMENTS. To complete the requirements for the Associate of Science Degree in Medical Engineering Technology the candidate must:

- a) Complete all of the work outlined in the curriculum,
- b) Maintain a grade average of at least 2.0 on all course work related to the Medical Engineering Technology Program.
- c) Be recommended for the degree by the appropriate faculty at the University of New Mexico.

A student in the Medical Engineering Technology Program may consider academic work beyond the Associate Degree level and desire to work for a bachelor's degree in engineering, biology, or some other area. In this event the student should make his plans known to the Director of the Medical Engineering Technology Program as soon as possible so that suitable substitutes can be made to the curriculum below in order to assist the student in his bachelor degree goals.

CURRICULUM IN MEDICAL ENGINEERING TECHNOLOGY

First Semester		Second Semester	
	Credit		Credit
Engl 101 Wrtg w/Rdgs in Expos	3	*Math 181 Calculus for the Soc & Bio Sci	3
*Math 180 Calculus for the Soc & Bio Sci	3	Biol 122L Principles of Biology	4
Chem 141L Elements of General Chemistry	4	*Physcs 151 General Physics	3
Biol 121L Principles of Biology	4	Engr T 151 Fundamentals of Elec Circuits	4
Engr T 150 Introduction to MET	2	Engr T 152L Electrical Circuits Lab	2
	16 hrs.		16 hrs.
Third Semester		Fourth Semester	
	Credit		Credit
***Physcs 152 General Physics	3	EECS 335 Introduction to Digital Computers	3
Hum & Soc Sci Elective	3	Technical Elective (see note)	3
Chem 281 Integrated Organic Chem & Biochem	4	Biol 236L Paramedical Anat & Phys	4
Engr T 251 Electronics	4	Engr T 253 Medical Instrumentation	4
Engr T 252L Electronics Lab	2	Engr T 254L Medical Instrumentation Lab	2
	16 hrs.		16 hrs.

INSTRUMENTATION ENGINEERING TECHNOLOGY

The Instrumentation Engineering Technology program is a two-year program leading to an Associate Degree. The program is offered at Los Alamos as a part of the Northern New Mexico Branch of The University of New Mexico. Courses are offered in the late afternoon and evening so that a student can work and still participate in the program. Class size is kept small enough to assure that each student can get the individual attention which is needed.

A graduate of the program will have acquired skills in the application of electrical and mechanical principles needed to implement projects designed by an engineer or a scientist. Emphasis is placed on practical applications of physical principles. The degree granted upon completion of this program is Associate of Science in Instrumentation Engineering Technology.

Most graduates of the program are likely to seek full-time employment. Some may wish to continue their studies toward a BS degree in engineering or some other field, but it should be recognized that only a fraction of the credit for this program is applicable to another degree.

ADMISSION: Each year a limited number of students will be selected for admission to the program. For details of admission procedures and requirements, a prospective student should contact the director of the Northern New Mexico Branch.

INSTRUMENTATION ENGINEERING TECHNOLOGY PROGRAM

First Semester		Second Semester	
	Credit		Credit
Math 130 Alg & Trig	3	Math 150 Alg, Trig, & Calc	4
Engr T 132L Intro to Engr Tech	3	Engr T 142 Mechanics	3
Engr T 133L Meas Lab	5	Engl 101 Wrtg w/Rdg in Expos	3
Engr T 134L Drawing Interp	3	Engr T 145L Machine Skills	4
Engr T 135L Basic Elect	4	Engr T 146L Instru w/Appl Electronics	5
	18 hrs		19 hrs

* Or Math 162-163, Calculus, I & II.

** Or Chem 101L General Chemistry.

*** Or Physcs 160-161, General Physics.

Note: Technical electives are to be selected from mathematics, physics, biology, chemistry or engineering.

Third Semester		Fourth Semester	
	Credit		Credit
Math 151 Alg, Trig, & Calc	4	CE 102L Engr Comp Methods	3
Engr T 232 Heat	3	ME 201L Intro to Engr Design	3
Engr T 233L Instru w/Appl Data		Engr T 241L Instru w/Appl Control Sys	5
Collection	5	Engr T 244L Fabrica & Materials	3
Econ 200 Principles and Problems	3	Social Science Elective	3
Social Science Elective	3		
	<hr/> 18 hrs		<hr/> 17 hrs

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. 151).

You should also read carefully the General Academic Regulations of the University (pp. 158-171) and the listing of courses offered by the College. These are under nine headings:

Architecture p. 321

Art (Studio) p. 323

Art History p. 326

Dance p. 535

Film p. 536

Fine Arts p. 427

Music p. 489

Music Education p. 494

Theatre Arts p. 532

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. 175. 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.

Art
Museum



Popejoy
Hall

Department
of
Architecture



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. 208-209.

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. 169; 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 undergraduate program is designed to provide broad experience in architecture, planning, and related environmental concerns, as preparation for entry into

§ An exception is made for students who are admitted from the University College under provision 2(b), p. 175. Please consult the Assistant Dean of the College if your admission is on this basis.

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. Enrollment quotas have been established for each year throughout the program. 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. 261 (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 | <u>10</u> |
| | 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. 323.

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. 261 (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. 176). 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 102; 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. 216. 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. 489.

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. 261 (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 of 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) 23 hours in music theory, including 105, 106, 107, 108, 205, 206, 207, 208, 309, 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) 15 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 9 hours in music electives.
Instrumental Performance:	8 hours in applied music; 2 hours in ensemble; and 5 hours in music electives.
Vocal Performance:	4 hours in applied music; 2 hours in music history (473); 2 hours in diction for singers; and 7 hours in music electives.
Keyboard Pedagogy:	4 hours in applied music; 4 hours in music pedagogy; and 7 hours in music electives.

Instrumental Pedagogy:	8 hours in applied music; 2 hours in music pedagogy; and 5 hours in music electives.
Vocal Pedagogy:	6 hours in applied music; 4 hours in music pedagogy; 2 hours in diction for singers; and 3 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
11 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) 23 hours in music theory (see curriculum p. 492);
 - (b) 18 hours in music history (see curriculum p. 491, 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) 15 hours in music electives. 68

CURRICULUM IN MUSIC EDUCATION

Total 128 hours

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. 208-209 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) 23 hours in applied music
 - (b) 23 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
3. Courses in music education: 194, 294, 313, 366, 400, 444, 446, 451, and 461 20
-
- Total 128 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 below you must also satisfy all general College and University requirements for graduation. Read carefully the paragraph on p. 261 (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, film, or music. 48 hours

*See College of Education section, for definitions of biological and physical sciences.

2. (a) Major in theatre arts, including courses 103 and 104, 125 and 126, Dance 159 and 160 or	
(b) Major in theatre arts with an emphasis in television drama, including courses 125 and 126, and Sp Com 251, 265, 366, and 466.	70
(Note: Hours which are used as part of the major may not also be used in satisfaction of requirements outside the major.)	
3. Additional courses in any field.	10
Total	<u>128 hours</u>

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 103 and 104, 125 and 126, and Dance 159 and 160. (Note: Hours which are used as part of the major may not be used in satisfaction of requirements outside the major.)	48
3. Additional courses in any field.	20
Total	<u>128 hours</u>

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 103 and 104, 125 and 126, 315 and 317;	
(b) 3 hours, Dance 159; and	
(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; and 3 hours, education elective.	24
Total	<u>128 hours</u>

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, Science of Materials), English, French, Geography, Geology, History, Latin-American Studies, Mathematics, Medical Sciences, Music, Philosophy, Physics, Political Science, Portuguese, Psychology, Public Administration, Sociology, Spanish, Speech Communication, Speech Pathology and Audiology.

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 grade point average of at least 3.0 during his last four semesters;
4. seeks no more than nine hours of graduate credit during that semester (six during the summer session); courses must be listed in the **Graduate School Bulletin**;
5. obtains **in advance** the approval of the major department and the Dean of the Graduate School.

Although courses numbered above 500 are normally open only to graduate and professional students, exceptional undergraduate students may, with advance approval from the instructor and the Graduate School, take such courses for **undergraduate** credit.

GRADUATE CREDIT AND EXTENSION OR CORRESPONDENCE COURSES

A maximum of six hours of credit may be granted for graduate extension courses taken from the University of New Mexico, but no extension credit may be transferred from other institutions.

The University accepts no correspondence credit toward its advanced degrees.

OFF-CAMPUS RESIDENCE CENTERS

The University offers graduate credit for work taken at the University of New Mexico Graduate Center at Los Alamos. For information concerning this center, see p. 305.

INFORMATION

For further information consult the **Graduate School Bulletin**, the Graduate School, or the department concerned.

SCHOOL OF LAW

THE STATE BAR of New Mexico having previously adopted a resolution to that end, and the Legislature of New Mexico having made financial provision, the Regents of the University of New Mexico, on March 31, 1947, as expressly authorized by Laws 1889, Ch. 138, Sec. 15, approved the establishment of a School of Law. The School is fully accredited: it was approved by the American Bar Association on February 24, 1948, and membership in the Association of American Law Schools was granted in December 1948. The School offers a curriculum leading to the degree of Juris Doctor (J.D.). A chapter of the Order of the Coif was established at the School in 1971.

Information concerning the School is found in the School of Law Bulletin which may be obtained by writing to the Dean of the School of Law, The University of New Mexico, 1117 Stanford NE, Albuquerque, New Mexico 87106.

ADMISSION

Information about the procedure of applying to the Law School is contained in the School of Law Bulletin. All applicants for admission to the School of Law are required to take the Law School Admission Test (LSAT), and to have a baccalaureate degree from an accredited college or university before registration.

Final selection of applicants is 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.

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, residency and fellowship 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, genetics, immunology, 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. 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 1973.

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 Certified 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").

CERTIFIED 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 ten 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 from 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 (at least 8 in biology).

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 twelve months Program in Medical Technology is approved by the AMA Council on Medical Education. It meets the requirements of the fourth year of study leading to a BS 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 BS 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 (BUS) 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 BUS 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")

APPLICATION AND ADMISSION PROCEDURE

1. All applications and credentials required for the Medical Technology Program must be submitted by January 15.
2. Entering freshmen and pre-professional transfer students should obtain information pertaining to admission to the University of New Mexico from the Dean 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 January 15 deadline. Official transcripts of collegiate training must be sent directly from each institution previously attended.
2. An appointment for personal interview with the Admissions Committee of the Laboratory Sciences program will be arranged after receipt of application and transcript and after the January 15 deadline.
3. Selection of applicants for the July class will be made by the Admissions Committee of the Laboratory Sciences program and all applicants will be notified of their acceptance or nonacceptance.
4. Instructions for registration will be furnished by the Dean of Admissions, the University of New Mexico.
5. 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	\$228.00	\$642.00
Md Lab 402	228.00	642.00
Total	\$456.00	\$1284.00

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 through the Office of Student Aids. In addition, there are certain scholarships from local and national organizations specifically for students enrolled in the Laboratory Sciences Program. Information may be obtained at the Student Aids Office and the office of the Director of the Laboratory Sciences Programs.

Graduates of the program will be eligible and expected to take the national examination for Medical Technologists administered by the American Society of Clinical Pathologists.

AFFILIATED TEACHING HOSPITALS

The 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 Community Service Worker Program.

For information concerning eligibility in this program, contact: UNM School of Medicine's Community Service Worker Program, 2701 Frontier 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 Community Service Worker Program
4. Personal interview by director of a community agency or their designated member.

CURRICULUM

1st Year Fall		2nd Year Fall	
CSW 010 Intro to Community Services	0	Soc 101 Intro to Soc	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		
	<u>10-13</u>		<u>12-15</u>
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
	<u>12-15</u>		<u>15</u>
Summer		Summer	
CSW 052 Field Placement	6	CSW 062 Advanced Field Placement	6
Elective	3-6	Elective	3-6
	<u>9-12</u>		<u>9-12</u>
		TOTAL	67 + hours

DEGREE REQUIREMENTS:

1. Enrollment in UNM School of Medicine-Community Service Worker Program
2. A UNM Scholarship Index of 2.0

3. A minimum of 70 hours of earned credit, including:
- | | |
|------------------------------------|----------|
| a) CSW 040, 101, 102, and 109 | 10 hours |
| b) CSW 050-051-052 and 060-061-062 | 36 hours |
| c) Engl 101 and Engl 102 | 6 hours |
| d) Soc 211 and Soc 216 | 6 hours |
| e) Electives | 12 hours |
| | 70 hours |

RADIOLOGICAL SCIENCES PROGRAMS

The following Radiological Sciences Programs are offered through the UNM School of Medicine under the direction of the Department of Radiology:

1. A two year program for Radiologic Technologists leading to an Associate of Science Degree in Radiologic Technology.
2. A one year program for Nuclear Medicine Technologists leading to an Associate of Science Degree in Nuclear Medicine Technology.

ASSOCIATE OF SCIENCE DEGREE IN RADIOLOGIC TECHNOLOGY

A twenty-four month program beginning in July of each year is offered to high school graduates and is limited to ten students per year. This program prepares the paraprofessional to perform complex radiographic procedures which assist the radiological physician in disease investigation and diagnosis. Both clinical and didactic phases of the curriculum are provided by the following affiliated hospitals: Bernalillo County Medical Center, Veterans Administration Hospital, and the Lovelace Clinic. Graduates are required to take the national examination for Radiologic Technologists prepared by the American Registry of Radiologic Technologists.

ADMISSION REQUIREMENTS

1. Be at least 18 years of age (AEC regulation).
2. Meet UNM entrance requirements.
3. Personal interview with the Program faculty.
4. Application on file with the Director, January 31 prior to the July entrance.

CURRICULUM*

First Year		Second Year	
Summer		Summer	
103 Professional Orientation & Ethics	2	163 Intermed Radiographic Positioning	3
105 Medical Terminology	1	201 Intern Radiological Physics	2
107 Radiologic Technology	4	207L Radiologic Tech Lab II	8
205 Radiation Protection	1		
Fall		Fall	
020 Film Critique	0	211 Introduction to Nuclear Med	1
108L Radiologic Tech Lab I	4	212L Nuclear Medicine Lab	3
151 Human Anatomy & Physiology	3	271 Radiation Therapy	2
161 Radiographic Positioning	3	272L Radiation Therapy Lab	3
162L Radiographic Positioning Lab I	4	281 Special Radiographic Procedures	3
209 Basic Radiological Math	2		
314L Clinical Nuclear Med Lab	3		

* These courses can be taken only by those enrolled in the Radiological Science Program.

First Year		Second Year	
Spring		Spring	
010 Journal Club	0	221 Preventive Main & Radiographic Instrumentation	1
101 Basic Radiological Physics	4	231 Intra-Oral Radio	1
111 Radiologic Darkroom Chem	1	261L Radiographic Positioning Lab II	8
121 Radiological Nursing Procedures	2		
164L Interm Radiographic Positioning Lab	4		

FEES

Tuition for the Radiological Sciences Program is listed in the catalog under "Student Expenses." In addition to tuition, required books and uniforms will cost approximately \$150.00 for the two year period.

ASSOCIATE OF SCIENCE DEGREE IN NUCLEAR MEDICINE TECHNOLOGY

A twelve month program of study in Nuclear Medicine Technology begins in July of each year and is limited to six students per year. Clinical and laboratory training provide the student with the knowledge necessary to perform the complex diagnostic procedures involving the administration and tracing of radioactive materials within the human body. Graduates of the program are expected to take the national registry examination for Nuclear Medicine Technologists.

ADMISSION REQUIREMENTS

1. At least 18 years of age (AEC regulation).
2. Meet UNM entrance requirements.
3. MT, RN, RT; or at least thirty hours of acceptable college work.
4. Personal interview with the Program Faculty.
5. Application on file with the Director on January 31 prior to the July entrance.

CURRICULUM

Summer		Fall	
010 Journal Club	0	301 Adv Radiological Physics	2
103 Professional Orient & Ethics	2	311 Intermed Nuclear Lab Procedures	1
201 Intermed Radio Physics	2	312L Intermed Nuclear Procedures Lab	1
205 Radiation Protection	1	341 Nuclear Instrumentation	3
309 Basic Nuclear Lab Procedures	1	342L Nuclear Med Instrumentation Lab	4
310L Basic Nuclear Procedures Lab	1	Pharm 412L Radiopharmacy	4
313 Clinical Nuclear Medicine	2	Math 121/180 Algebra/Calculus	3
314L Clinical Nuclear Med Lab	3		
Spring			
321 Nuclear Radiation Biol	2		
322 Radionuclide Therapeutics	1		
291 Surv of Med & Surg Diseases	4		
Pharm 416 In-vitro Studies	2		
Math 122/181 Intro to Finite Math/Calculus	3		
352L Radioimmunoassay Lab	2		
391 Special Problems	1-3		

FEES

Same as the Radiologic Technology Program except \$100 for a one year period.

COLLEGE OF NURSING

PROFESSIONAL nursing, based on a theoretical framework, is a dynamic service involved in the life process of man. It is concerned with factors which assist the individual to attain his optimal level of functioning.

The foundation of the professional nurse's approach is knowledge of the sciences, the humanities, and the processes identified as nursing.

As a professional practitioner, the nurse is sensitive to a broad range of cues, and has command of a large selection of alternatives to bring to bear on a situation in which a person or group is in need of health care at a primary, secondary, or tertiary level of prevention.

The professional nurse synthesizes knowledges, skills, and concern for people to create a flexible structure and to form a unique approach to the provision of health care. He also participates in social change, and has a sense of personal responsibility for man's welfare, a zest to learn, a healthy skepticism, and the ability to think and act independently and collaboratively.

Nursing education, in the mainstream of higher education, develops from a base of natural and social sciences; reflects a theoretical framework; incorporates cognitive, manual, and communication skills.

Learning is facilitated in an accepting environment where students have the opportunity to practice skills and to test theories under relatively non-stressful circumstances. Therefore, the faculty is responsible for creating an educational environment by selecting meaningful experiences and incorporating learning theories, which facilitate the conceptual and experiential learning of the student.

As an active participant in the educational environment, the student engages in self-direction, observes and participates comfortably with the faculty, and is involved in the professional practice of nursing.

PURPOSE OF THE COLLEGE

Graduates of the College of Nursing will be prepared as beginning practitioners with the ability to give patient and family-centered nursing care in a variety of settings in the health care field. Graduates of the College of Nursing will be qualified to apply for graduate study in nursing, 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 College has been accredited since 1965.

LICENSURE OF GRADUATES

Graduates of the College of Nursing are eligible to take the State Board Examinations which provide the basis for becoming registered nurses.

ADMISSION PROCEDURES

All students seeking acceptance to the College of Nursing must meet requirements for admission to the University.

Beginning freshman students and student transfers at the freshman level

are admitted to University College. A detailed statement of admission requirements is in the "Admission and Registration" section of this catalog.

In addition to meeting University requirements for acceptance by the College of Nursing, transfer applicants should submit the following by March 1 of the year preceding their first enrollment in nursing courses. This material should be addressed to the Recorder, College of Nursing, the University of New Mexico, Albuquerque, New Mexico 87131.

1. The College of Nursing biographical data form. This form may be obtained from the above address.

2. Two recommendation forms to be obtained from above address. Applicants should request that completed forms be mailed directly to the Recorder, College of Nursing.

Generally, the number of applicants exceeds the number of students that can be admitted to the College of Nursing. Since spaces are limited, an applicant whose plans change so that he cannot enroll should notify the College as soon as possible to permit acceptance of an alternate. Applications received later than March 1 may not be processed in time for acceptance by the College of Nursing for the fall semester.

REQUIREMENTS FOR ADMISSION

The Admission, Progression, and Graduation Committee of the College of Nursing will review the applicant's educational records, recommendations, and all available information regarding university performance and suitability for nursing. Preference will be given to those applicants evaluated by the Committee to be best qualified to succeed in the nursing program. To be considered for acceptance into the College of Nursing the student must have:

1. Completed the foregoing prescribed by the College of Nursing.
2. Earned 26 hours of credit applicable to the nursing degree. Preference will be given to those students who have met or are completing the prerequisites for the Introductory Nursing course 201L.
3. Grade point averages required:
 - a. Students transferring from University College:
A grade point average of 2.0 or better on all hours attempted or a grade point average of 2.0 or better on all hours attempted in the previous two semesters of enrollment. If fewer than 26 hours were attempted in the previous two semesters, a grade point average 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.
 - b. Students transferring from other degree granting colleges of this University:
Scholarship index of 2.0 while enrolled in the other degree granting college.
 - c. Transfer students from other accredited institutions:
Student shall meet all University admission requirements.
 - d. New Mexico residents will be considered to have priority over non-New Mexico residents.

4. An interview with a member of the Admissions, Progression, and Graduation Committee if distance permits.

The College of Nursing reserves the right to request the student to supply any additional information it deems necessary.

REGISTERED NURSE STUDENTS

All registered nurse students seeking acceptance for the College of Nursing must first meet requirements for admission to the University and then the general requirements for entrance into the College of Nursing as stated above.

College credit earned in associate degree programs and hospital schools at the discretion of the College of Nursing may be applied toward a Bachelor of Science in Nursing. Blanket credit is not given for nursing courses previously taken in either an associate degree or diploma program. No lower division credits will be transferred into the University of New Mexico as upper division credits.

For provision to establish credit by examination in courses offered by this University, the student is referred to the "General Academic Regulations" section of this catalog.

Credit for all nursing courses may be established by examination which includes a written challenge examination, a demonstration of clinical competence and other course requirements. Arrangements for these examinations are made with the instructor in each course. No more than 16 weeks are allowed for completion of the examination to establish credit. Course outlines, bibliographies and requirements for completion of the examination to establish credit for any nursing course may be reviewed in the College of Nursing office. Students should consult this information before seeing the instructor or deciding to establish credit by examination in a course. Students may not enroll in or challenge by examination any nursing course without the instructor's permission, nor until they have successfully completed or established credit for all prerequisites. To allow some flexibility, registered nurse students should petition the Admission, Progression, and Graduation Committee to enroll in and/or establish credit by examination a nursing course at a time when they are completing, concurrently, non-nursing prerequisites for the course. Credit for more than one nursing course per semester may be established by examination. Credits earned through examination to establish credit are considered residence credits.

EXAMINATIONS TO ESTABLISH CREDIT

All students may request to establish or validate credit by examination for courses according to the policies stated under "General Academic Regulations."

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, selected from the faculty in the College of Nursing, are available to students in the nursing program and students contemplating entry to the program.

Students are responsible for their own transportation to and from all clinical facilities. If owning and driving a motor vehicle, the student is responsible for maintaining licensure and insurance coverage.

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.

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 approach 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.

DEAN'S LIST

At the end of each semester the names of students who have outstanding academic records are put on the Dean's List, which is made available to University and outside news media. To qualify for the Dean's List in the College of Nursing, a student must have carried at least 12 academic hours and made a grade-point average of 3.2 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 from public and private sources, 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. Minority and disadvantaged students are encouraged to apply to these offices for assistance.

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, U.S. Air Force Hospital—Kirtland Air Force Base, The Bernalillo County Mental Health Center, Maternal-Infant Care Clinics, Indian Health Service Stations and Centers, and Outreach Areas in New Mexico (PORVENIR Project).

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. Up-to-date immunizations as specified by the College of Nursing.
2. An annual Tuberculin Test.

The annual Tuberculin Test and the immunizations, except oral Polio, can be received in the Student Health Service. A copy of the result must be filed with the College of Nursing Recorder.

The faculty of the College of Nursing recommend early medical supervision and treatment for any illness or condition. In the case of pregnancy, the student must assume complete responsibility for her own safety and welfare.

UNIFORMS

Students are responsible for obtaining appropriate uniforms to be worn during nursing practice periods. Uniforms and caps are available at the UNM Bookstore.

FEES

There is a \$2.50 laboratory fee for students, in Nursing 201L and Nursing 203L. The fee for the National League for Nursing Achievement Tests for regularly enrolled Junior and Senior students is approximately \$9.00. Individual courses may set a fee for educational materials or materials required when establishing credit by examination.

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, except as previously stated in this catalog.

Nursing courses may not be entered more than twice.

Maximum credit load for which a student may register is 18 semester hours.

Each student in a clinical course may be required to obtain nursing student liability insurance. Contact the College Recorder for information regarding sources of the insurance.

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. Review the prerequisites carefully in order to plan the course of study.

Students who participate in the General Honors program may apply General Studies seminars to satisfy appropriate requirements upon approval by the Dean, College of Nursing.

Students who wish to make substitutions or exceptions to the program may present their request to the Admission, Progression, and Graduation Committee of the College of Nursing.

The nursing curriculum is at present in the process of revision. Applicants entering as freshmen during the 1973-74 academic year should write directly to the College of Nursing for further information regarding the new curriculum.

It is the student's responsibility to meet all departmental requirements.

PROFESSIONAL CURRICULUM

Please note that in addition to the specific course requirements outlined below, you must also satisfy all general College of Nursing and University requirements for graduation.

The curriculum is as follows:

1. Courses outside the major.
 - a. Communication Arts. At least 3 hours must be in expository writing. Additional hours may be selected from English, speech, linguistics, and foreign languages. 6 hours
 - b. Biological and physical sciences. At least 3-4 hours must be in integrated organic and bio-chemistry, 3-4 hours in microbiology or bacteriology; 4 hours in Biol 236L or a comparable course (Biol 136-139L is not considered comparable); 3-4 hours in pharmacology; and 3 hours in physics, mathematics, or statistics. Additional hours may be selected from chemistry, biology, mathematics, physics, statistics, geology, earth sciences, astronomy, pharmacology, engineering, and nutrition. 30 hours
 - c. Behavioral and social sciences. At least 3 hours must be in Psych 102 or a comparable course and 3 hours in Psych 320 or a comparable course. Additional hours may be selected from architecture, psychology, anthropology, ethnic studies, women's studies, political science, economics, sociology, and geography. 15 hours
 - d. Humanities. Courses may be selected from art, music, history, literature, philosophy, or foreign language literature. 3-6 hours
 - e. Additional courses in any field. 8-11 hours
 - f. 2 hours P.E.; exception made for students who will be 30 years old or over at time of graduation. 2 hours
2. Courses in the major. The following courses must be completed:

Nurs 201L, 202; 203L, 303, 304L, 320, 321L; 330, 331L; 351, 352, 450, 451L, 452, 453L, 462, 463, and 464L. 62 hours

Total 127 + 2 PE

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 consultation to the profession of pharmacy and other Health Sciences in the State of New Mexico with respect to drug information, pharmacy practice, and clinical pharmacy service. It is engaged in service responsibility to the Bernalillo County Medical Center in the area of pharmacy distribution, clinical pharmacy, and radiopharmacy. The College of Pharmacy also operates a centralized radiopharmacy which supplies service to various hospitals and institutions throughout the State of New Mexico.

OPPORTUNITIES IN PHARMACY

The profession of pharmacy offers, to properly trained individuals, a wide variety of opportunities for service in interesting and satisfying positions. More than 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 as administrators in pharmaceutical organizations and editing or writing for pharmaceutical publications. Positions as research scientists in manufacturing plants and as teachers in colleges of pharmacy are open to those who prepare themselves by pursuing graduate work toward advanced degrees.

RECOGNITION

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education, the national accrediting agency in pharmaceutical education, and holds membership in the American Association of Colleges of Pharmacy.

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 Chairman, Grants and Financial Aids Committee, College of Pharmacy. For a listing of these scholarships, please see "Financial Aid" section of this catalog.

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, 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 1205, 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 trigonometry; four years of English; and one year of social sciences and/or humanities. 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 2.2 on all hours attempted;

or

(b) A scholarship index of at least 2.2 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 2.2 shall be required on all work attempted in as many previous consecutive semesters as are necessary to bring the student's total hours attempted to at least 30.

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 the Dental Programs, see pp. 297-301).

TRANSFER FROM OTHER COLLEGES IN THE UNIVERSITY

Transfer to the College of Pharmacy from another degree-granting college of the University of New Mexico requires a scholarship index of 2.2 on all work attempted while the student was enrolled in the other degree-granting college(s).

TRANSFER FROM OTHER COLLEGES AND INSTITUTIONS

Students who wish to transfer from other accredited non-pharmacy institutions, must present at least 26 semester hours of acceptable credit with a grade-point average of at least 2.2 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 evaluation of individual 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 and Toxicology, 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 in the major fields of Pharmacy (Pharmacy and Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology and Toxicology, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy, and Radiopharmacy.) However, a student may receive credit towards graduation if, after completion of all course requirements, he has no more than three grades of D in the above required Pharmacy courses and provided that no more than two of these grades of D are obtained prior to enrolling in the professional courses of the fifth year. (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 course selected as part of the required Pharmacy curriculum or as a non-professional elective may be taken under the Credit (CR) Grade Option.
5. 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 or if he has more than two grades of D in required Pharmacy courses as stated in item 3 above.

MAXIMUM NUMBER OF HOURS

Students in the College of Pharmacy may not enroll for more than 18 hours per semester without prior consultation of the Academic Adviser of the College of Pharmacy.

ACADEMIC ADVISEMENT

The Director of Pharmacy Admissions and Records is responsible for all academic advising of a general nature, e.g., assistance in selection of courses for planning a program, changes in program, interpretation of scholastic regulations and other academic matters.

Students are urged to consult individual faculty members of the College of Pharmacy for information and advice in the specific areas, viz., Pharmacy and Pharmaceutics, Pharmacology and Toxicology, Pharmacognosy, Pharmaceutical Chemistry, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy and Radiopharmacy.

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 full-time resident study before they will be recommended for the degree of Bachelor of Science in Pharmacy. Exceptions to this rule must be petitioned for by the student and voted upon by the faculty. Those transferring from other colleges of pharmacy may be given residence credit for more than two years of work provided the courses and credit are applicable to the work outlined in the curriculum of this College.

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 offered in the Colleges of Arts and Sciences, Education, Engineering, Fine Arts, Nursing, and the Dental Programs within the College of Pharmacy; the Schools of Business and Administrative Sciences, Law, and Medicine; or the Departments of Aerospace Studies or Naval Science. Professional electives shall include elective courses offered by the College of Pharmacy, excluding the Dental Programs, as listed in the catalog.

Elective Requirements by year of study.

- (a) For students entering the preprofessional year and the first, second, and third professional years in the fall semester 1973-74, 15 hours of non-professional electives will be required in the first four years. § Professional elective requirements to be taken in the fifth year are outlined in the Proposed Curriculum (Effective Fall Semester, 1974) on p. 295.
 - (b) For students entering the fourth professional year (fifth year) in the fall semester 1973-74, a minimum of 16 hours and a maximum of 21 hours of non-professional electives will be required for graduation. §§ Professional elective requirements to be taken prior to graduation must be sufficient to meet the 160 semester hour requirement 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 and Toxicology, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy, and Radiopharmacy). However, a student may receive credit towards graduation if, after completion of all course requirements, he has no more than three grades of D in the above required Pharmacy courses and provided that no more than two of these grades of D are obtained prior to enrolling in the professional courses of the fifth year. (For the purpose of administering this rule, 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.

§ No more than two hours in non-professional physical education.

§§ No more than four hours in non-professional physical education.

CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

(Description of the courses offered will be found in the catalog section "Courses of Instruction.")

- A. For students enrolling in the preprofessional year and the first, second, and third professional years in Semester I, 1973-74.

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	3	Math 181 Calc for Soc & Biol Sci II	3
*Math 123 Trigonometry	—	Elective	3
	<u>14</u>		<u>17</u>
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 253-254L Introductory Microbiology	4	Physcs 102 Intro to Physics	3
Elective	3	Physcs 153L Gen Physics Lab	1
Elective	3	Pharm 232 Soc-Econ Health Care	3
	<u>16</u>	Pharm 236 O.T.C. Drugs & Products	2
		Elective	3
			<u>18</u>
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	3	Pharm 346L Clinical II	3
Chem 253L Quant Analysis	4	Pharm 374 Phmcol I	2
Elective	3	Biol 430L Verte Physiol	5
	<u>16</u>		<u>17</u>
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
	<u>16</u>	Pharm 422 Pharmacy Law	3
			<u>17</u>
Fifth Year (Fourth Professional Year)			

For the fifth year curriculum, see below the proposed curriculum effective the Fall Semester, 1974.

- B. For students enrolling in the fifth year (fourth professional year) Semester I, 1973-74.

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
	<u>16</u>		<u>15</u>

* Math 123 is required by students who have not successfully completed trigonometry in high school or who have not tested out of the course. Elective credit (1 unit) will be granted to those students who successfully complete Math 123.

Proposed curriculum leading to the Degree of Bachelor of Science in Pharmacy.
(Effective Fall Semester, 1974).

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 I Gen	4	Physcs 102 Intro	2
Math 180 Calc for Soc & Biol Sci I	3	Math 181 Calc for Soc & Biol Sci II	3
*Math 123 Trigonometry	—	Elective	3
	<u>14</u>		<u>15</u>

Second Year (First Professional Year)			
Pharm 231 Pharm Orientation	2	Pharm 234 History 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 II Anat Phys (Organ or Syst)	6	Biol III Anat Phys (Organ or Syst)	6
Elective	3	Elective	3
Elective	3		
	<u>18</u>		<u>15</u>

Third Year (Second Professional Year)			
Pharm 341L Operative Pharm I	4	Pharm 342L Operative Pharm II	4
Pharm 343 Pharm Calc	2	Chem 324 BioChem	3
Pharm 345 Clinical I	3	Pharm 346L Clinical II	3
Chem 253L Quant Anal	4	Pharm 374 Phmcol I	2
Biol 253-254L Introductory Microbiology	4	Pharm 232 Soc-Econ of Hlth Care	3
		Pharm 236 O.T.C. Drugs & Products	2
	<u>17</u>		<u>17</u>

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 Pharm Law	3
	<u>16</u>		<u>17</u>

**Fifth Year
(Fourth Professional Year)**

In the fifth pharmacy year, the student will be able to select an option or area of specialty. These are the professional areas of:

1. Community Pharmacy
2. Hospital Pharmacy
3. Radiopharmacy
4. Preparation for Post-baccalaureate Studies

In the Preparation for Post-baccalaureate Studies area, the student may select specialized training toward a Ph.D. in Pharmaceutical Chemistry, Pharmacology, Pharmaceutics, Pharmacy Administration or Pharmacognosy; Masters of Business Administration, Doctor of Pharmacy in Clinical Pharmacy; Master of Science or Residency Certification in Hospital Pharmacy.

* Math 123 is required by students who have not successfully completed trigonometry in high school or who have not tested out of the course. Elective credit (1 unit) will be granted to those students successfully completing Math 123.

1. Community Pharmacy Option:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Pharm 424 Pharm Retl Manag	2
Pharm 421 Phm Acctg & Fin Manag	3	Pharm 484 Toxicology I	3
Pharm 423 Phm Admin & Org Behav	3	Professional Electives	10
	<u>14</u>		<u>15</u>

2. Hospital Pharmacy Option:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Pharm 452 Inst Pharm Manag	3
Pharm 451 Inst Phm Prac	3	Pharm 484 Toxicology I	3
Pharm 423 Pharm Admin & Org Behav	3	Professional Electives	9
	<u>14</u>		<u>15</u>

3. Radiopharmacy Option:

First Semester		Second Semester	
Med Radiation Physics I	3	Med Radiation Physics II	2
Health Physics	1	Pharm 416 Radioimmunoassay	2
Nuclear Med Survey	2	Radiopharm Rotations	8
Pharm 412L Radiopharm I	4	Radiopharm Research	3
Pharm 449L Clinical V	5		
	<u>15</u>		<u>15</u>

4. Preparation for Post-Baccalaureate Studies**Combined B.S. Pharm-M.B.A. Program:**

First Semester		Second Semester	
Pharm 421 Pharm Account	3	Pharm 426 Pharm Mktg	3
B&AS 501 Quant Analysis II	3	B&AS 502 Acct & Manag Info Sys I	3
B&AS 503 Acct & Manag Info Syst II	3	B&AS 504 Organiz Econ I	3
B&AS 505 Organiz Econ II	3	B&AS 506 Organiz Behavior I	3
B&AS 507 Organiz Behavior II	3	B&AS 508 Organiz Ecology	3
	<u>15</u>		<u>15</u>

Following completion of the fifth year in the above program and one summer session, the student electing this program would enter the final year of the M.B.A. program.

Pharmacy Administration:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Pharm 424 Pharm Retl Manag	2
Pharm 421 Pharm Acctg & Fin Manag	3	Pharm 426 Pharm Mktg	3
Pharm 423 Pharm Admin & Org Behav	3	Pharm 498 Probs in Pharm Admin	2
Pharm 425 Sem in Pharm Admin	2	Professional Electives	6
	<u>16</u>		<u>13</u>

Clinical Pharmacy:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Pharm 450L Clinical VI	9-15
Pharm 423 Phm Admin & Org Behav	3	Professional Electives	0- 6
Professional Electives	3		
	<u>14</u>		<u>15</u>

Pharmaceutical Chemistry:

Students selecting the Pharmaceutical Chemistry option in the fifth year will be required to take a minimum of 30 hours from the courses listed below. The detailed schedule is to be determined after coordination with the appropriate faculty member in the area of specialization desired.

First Semester		Second Semester	
Math 264 Calculus III	4	Math 265 Vector Analysis	4
Chem 405 Qual Org Anal	4	Chem 454 Instrum Analysis	4
Adv Org Pharm Chem I	3	Adv Org Pharm Chem II	3
Chem of Nat Prod I	3	Chem of Nat Prod II	3
Synth of Org Med I	3	Synth of Org Med II	3
	<u>17</u>		<u>17</u>

Pharmacology:

First Semester		Second Semester	
Pharm 449L Clinical V	3	Pharm 486L Toxicology II	4
Biological Assay	3	Pharm 479 Psychopharmacol	2
Med Sc 589 Adv Biometry for Rsch	3	Pharm 488L Biochem Pharmacol	4
Med Sc 691 Sc Writing	1	Med Sc 588 Adv Biometry for Rsch	3
Electives	5	Pharm 498 Probs in Pharmacol	1-3
	<u>15</u>		<u>14-16</u>

Pharmacognosy:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Biol 474L Plant Anatomy	4
Chem of Nat Products I	3	Chem of Nat Products II	3
Professional Elective	3	Chem 454L Instrum Analysis	4
	<u>14</u>	Professional Elective	4
			<u>15</u>

Pharmaceutics:

Students selecting the Pharmaceutics option in the fifth year will be required to take a minimum of 29 hours from the courses listed below. The detailed schedule is to be determined after coordination with the appropriate faculty member in the area of specialization desired.

First Semester		Second Semester	
Pharmacokinetics	3	Clinical Pharmaceutics	3
Sem in Pharmaceutics	1	Problems in Pharmaceutics	5
Pharm 449L Clinical V	8	Math or Chem Electives	6-8
Math or Chem Electives	3-4	Principles of Pharm Manuf	3
Princ of Pharm Formul	3	Pharmacy Problems	1-2
Pharm Problems	1-2		

Hospital Pharmacy:

First Semester		Second Semester	
Pharm 449L Clinical V	8	Pharm 484 Toxicology I	3
Pharm 451 Instit Pharm Prac	3	Pharm 452 Institutional Pharm Manag	3
Pharm 423 Pharm Admin & Ora Behav	3	Pharm 456 Res & Stat Methods	3
Pharm 453 Sem Hosp Pharm Admin	2	Professional Elective	4
	<u>16</u>		<u>13</u>

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.

Minority students, who have been under-represented in dental careers, are encouraged to consider Dental Assisting and Dental Hygiene at UNM.

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 auxilliary 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 upon completion of their education. Licensure is not required.

The class is limited to 12 students. The Admissions Committee selects the class on the basis of high school and college records, ACT results, and a personal interview. High school or college courses in general biology and typing are prerequisites. Application for the dental assisting program must be completed and the required personal interview must be held prior to March 1.

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 for the fall semester only.

One year of college attendance is prerequisite to admission. Applicants who have completed the general education requirements for the Dental Hygiene degree with satisfactory grades are preferred. These courses include:

English, 6 hours

Human Anatomy & Physiology with lab, 5 hours

General Chemistry with lab, 4 hours

Organic Chemistry—Biochemistry with lab, 4 hours

Psychology, 3 hours

Sociology, 3 hours

Speech, 3 hours

Performance records in these courses and scholastic indexes for high school and college are strong factors in the selection of students.

Transferable dental hygiene curriculum courses which are completed before the applicant is selected need not be repeated during the student's enrollment in the dental hygiene 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.

Preference is given to residents of New Mexico. An increasing number of

men are entering the Dental Hygiene Program. Potential students who are past the age of most college students are not handicapped by this factor and are encouraged to apply.

APPLICATION PROCEDURE

The applicant should:

1. Apply for admission to the University of New Mexico as described in this bulletin (refer to "Admission").
2. Request a dental hygiene application packet from the Director, UNM Dental Programs, and follow the instructions therein.
3. Arrange a personal interview with the Dental Programs Director.
4. Take the Dental Hygiene Aptitude Test by the end of November prior to the March 1 application deadline. An application for the test can be obtained from the Dental Programs office or from the American Dental Hygienists' Association, 304 East 45th Street, New York, New York 10017.

REQUIREMENTS FOR THE ASSOCIATE OF SCIENCE DEGREE

The candidate must:

1. Complete all of the work outlined in the curriculum below and maintain a grade average of at least 2.0.
2. Be unanimously recommended by the full-time Dental Hygiene Program Faculty.

PROGRAM FOR THE BACHELOR OF SCIENCE DEGREE IN DENTAL HYGIENE

This degree offering is designated to prepare teachers of clinical dental hygiene and is available to students who have received the Associate Degree in Dental Hygiene or a Certificate in Dental Hygiene from a school accredited by the American Dental Association's Council on Dental Education. Applicants for enrollment in the Bachelor's Degree program must meet these requirements:

1. Admissibility to the University of New Mexico as described in this bulletin;
2. Written application to enter the Bachelor's program;
3. A 2.5 grade point average from the Dental Hygiene Associate Degree or Certificate program;
4. Satisfactory evidence of possessing the clinical skills currently provided by UNM or willingness to gain these skills in special courses arranged by UNM Dental Programs.
5. Written recommendation from the Director of the Dental Hygiene school in which the applicant completed the Associate Degree or Certificate in Dental Hygiene;
6. Records of medical and dental examinations within the past three months. Forms are available from the Dental Programs Office.

Applicants to the Bachelor's degree program have a March 1 deadline for completion of the admission application and credentials.

BACHELOR OF SCIENCE REQUIREMENTS

1. Completion of 128 semester hours including the required listed below;
2. At least a 2.0 scholarship index in all hours attempted at the University of New Mexico;
3. At least a 2.4 scholarship index in all dental hygiene courses.

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 and second year requirements are fulfilled by completion of an Associate Degree or Certificate program in dental hygiene at an accredited two-year school.

Ed Fdn 300*, Human Growth and Development (3)

Ed Fdn 310*, Learning and the Classroom (3)

C&I 431*, Production of Instructional Materials (3)

C&I 432*, Audio-Visual Methods and Techniques (3)

DH 410, Dental Health Education Methods (3)

DH 400, Seminar (2)

Sec Ed 461, Student Teaching (Dental Hygiene) (6)

Sec Ed 462, Student Teaching (Dental Hygiene) (6-9)

Sp Com 277, Prob Solv, Creat, & Commun (3)

or 315, Problems of Interpersonal Comm

Guid 431, Theories of Human Interaction (3)

Electives to complete 128 credit hours.

*Pre-requisites to Sec Ed 461 and 462 for Dental Hygiene students.

Students who wish to become eligible for the four-year provisional teaching certificate issued by the New Mexico State Department of Education must meet the general education requirements of the College of Education.

A basic premise of the general education requirement for certification in Secondary Education is that the requirements should be fulfilled in accordance with the needs and interests of each student. Students will be required to meet with the Dental Hygiene Program Adviser in Secondary Education to decide: (1) which of the areas listed below will be selected to fulfill the general education requirements, and (2) what kinds of experiences will be included within the selected areas.

In a further effort to maintain maximum flexibility in students' programs, a variety of experiences will serve to satisfy requirements in the several areas. There will not be pre-determined minimum requirements for any area. Rather, the student and the Secondary Education adviser will, upon consultation, decide upon the appropriate experiences (e.g., courses, work, experience, independent study). If it appears that a student has deficiencies (needs) which may handicap efforts toward certification or ability to perform effectively as a teacher, specific recommendations will be made to assist the student. If student and adviser cannot agree on some matter, the case will be referred to the departmental appeals committee.

To meet the general education requirements in Secondary Education, students must demonstrate that they have had appropriate experiences in a

minimum of six of the areas listed below. Work taken by the student in these areas will be designed to supplement, augment, or extend work in his major teaching field. It is considered essential that educators have a wide variety of experiences as a basis for a successful professional career.

1. Behavioral Sciences
2. Communicative Arts
3. Multicultural Studies
4. Fine and Practical Arts
5. Foreign Language
6. Humanities
7. Mathematics
8. Natural Sciences
9. Health, Physical Education, and Recreation
10. Social Sciences

To insure understanding of, and compliance with, the general education requirement, a folder for each student will be maintained by the Secondary Education Department. The folder will include a form which will list: (1) the areas to be included in the student's general education component; and, (2) the experiences selected to fulfill the requirements in those areas. The form will be signed by both the student and the adviser.

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, 87131.

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.162.

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. 168.)

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 four-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. 168 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 87131.

CONFERENCES, INSTITUTES, AND SHORT COURSES

All conferences and special courses connected with the University of New Mexico are coordinated through the Division of Continuing Education. The development 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 specialties 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 BRANCH COLLEGES AND RESIDENCE CENTERS

The University of New Mexico has as its primary responsibility the task of serving the citizens of the state by offering opportunities for higher education. It has generally been the policy of the University to provide these opportunities on the main campus, with supplementary programs in extension and independent study. In addition to these programs, the University has two branch colleges and two residence centers.

BRANCH COLLEGES

The two Branch Colleges of the University of New Mexico offer courses within the first two years of a baccalaureate program and are under the supervision of the Division of Continuing Education. Academic requirements and regulations are the same at the Branches as on the main campus.

All credits earned by students while attending a Branch College of the University of New Mexico are transferable to appropriate schools and colleges on the main campus of the University. Credits are also transferable to other colleges and universities in New Mexico and surrounding states on the same basis as credit earned on the main campus. Students enrolling at the Branches should contact a representative from the college of their choice to determine which courses are applicable toward the degree desired.

All communications regarding entrance to the Branches should be addressed to the Dean of Admissions and Records, The University of New Mexico, Albuquerque, New Mexico, 87131. The University requires 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 and Records from the high school or college previously attended. Transcripts in the possession of students are not acceptable for entrance purposes.

THE GALLUP BRANCH

The University of New Mexico-Gallup Branch began its first full-term instruction in September 1968. The Branch offers courses within the first two years of a baccalaureate program. In addition, the Branch offers technical and para-professional post-high school courses which are responsive to needs of the Gallup area.

At the present time the Branch occupies a building donated to the Branch College by the Gallup Lions Club. The Branch also uses facilities in the Gallup High School, including classrooms and laboratories. Most classes are held in the late afternoon and evening, although some are scheduled in the daytime. A new facility including classrooms, laboratories, library, and office space is scheduled to be constructed in 1974.

THE NORTHERN BRANCH

The University of New Mexico-Northern Branch was established in February 1973. Instruction at the Branch will begin with the 1973 Summer Session and headquarters will be located near Española.

The Branch District encompasses seven school districts and facilities for Branch College classes will be secured in the different high school classrooms and the laboratories in the area where demands warrant such use. Classes will be held in the late afternoons and evenings although some will be scheduled for the daytime.

In connection with the Northern Branch of the University of New Mexico, the College of Engineering offers a two-year associate degree program in Instrumentation Engineering Technology at Los Alamos. Further description of the program may be seen in the "Engineering" section of this catalog.

THE LOS ALAMOS GRADUATE CENTER

The University of New Mexico and the Los Alamos Scientific Laboratory (LASL), operated by the University of California (Berkeley), cooperate in the advanced training of graduate students specializing in chemistry, engineering, mathematics, and physics. Under these arrangements, it is possible for 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.

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. 191).

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.

At the present time, the Division can offer options for students interested in:

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.

COMBINATION WITH LAW DEGREE. 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.

STATE AND LOCAL ADMINISTRATION. The program in this area will prepare students for positions in state and city government. It is particularly designed for those students who are interested in careers in or are seeking to do research on problems in state and local programs in the Southwest.

For description of courses offered in Public Administration, see the "Courses of Instruction" section of this catalog. For 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

WOMEN'S STUDIES

Women's studies is an interdisciplinary program, which focuses on learning about women and the contributions they make to society. While academic life has long neglected the accomplishments and abilities of women, this program begins by recognizing the equality of women. It aims to provide women and men with knowledge about women they have long been deprived of and looks toward broadening the opportunities for women in the modern world.

Courses in the area of women's studies are offered by several departments of the University and announcements of these courses may be obtained from the Women's Coordinating Center, 1824 Las Lomas Road, N.E., Tel. 277-3716.

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 for the four-year program is accomplished during registration for the fall semester. New students for the two-year program can process at any time before the midpoint of the second semester of their sophomore year. Specifics may be obtained by contacting the Air Force ROTC staff members 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," 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

Freshman Year			
First Semester		Second Semester	
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
AF ASP 402 Flight Instruction	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.

Freshman Year			
First Semester		Second Semester	
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
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Junior Year

Nav Sc 303 Navigation and Naval Operations	3	Nav Sc 304 Navigation and Naval Operations	3
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Senior Year

Nav Sc 407 Principles of Naval Organization and Management	3	Three hour elective	3
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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
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Senior Year

Nav Sc 431 Amphibious Warfare	3	Three Hour Elective	3
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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, or physics 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 799. Courses from 001 to 099 may or may not carry credit, but are not applicable toward a baccalaureate degree; from 100 to 199, lower division, are normally open to freshmen; from 200 to 299, lower division, normally open to sophomores; from 300 to 499, upper division, normally open to juniors, seniors, fifth-year undergraduates, and graduates; 500 to 799, graduate and professional, normally open 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—Cp Sci
 Curriculum & Instruction—C&I (See Education, 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—EECS (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—EECS
 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 & H Ec 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—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
 Paleocology—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)
 Telecommunication—(See Speech Communication)
 Theatre Arts—TA
 Undergraduate Seminar Program—USP (See General Studies)
 Zuni—(See Modern and Classical Languages)

ACCOUNTING

See Business and Administrative Sciences.

AEROSPACE STUDIES

Edmund P. Palko, Lt Col, USAF, Director; Noel F. Austin, Capt, USAF, Assistant Director; John R. Grierson, Capt, USAF, Assistant Director.

CURRICULUM

See p. 308.

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. <100—Fall, 101—Spring>

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. <200—Fall, 201—Spring>

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. <300—Fall, 301—Spring>

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. <400—Fall, 401—Spring>

402. Flight Instruction. (3)

Principles of flight, federal aviation regulations, weight and balance, preflight inspection, aviation weather, navigation, radio communication, emergency procedures, 36½ hours airborne instruction. Successful completion of all phases results in FAA certification as a private pilot. Prerequisite: qualified senior students in the POC. <Fall>

AMERICAN STUDIES

COMMITTEE IN CHARGE: Joel M. Jones (American Studies) Chairman; G. Argersinger (American Studies), G. Arms (English), E. Baughman (English), C. Biebel (American Studies), B. Bunting (Art), W. M. Dabney (History), P. F. Schmidt (Philosophy), 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)

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)‡***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 in Interdisciplinary Methodology. (3)**

Prerequisite: permission of instructor.

***651. Individual Study. (1-3 hrs. per semester, to a maximum of 12)‡**

For Ph.D. candidates only.

***699. Dissertation. (3-9 hrs. per semester)**

See the *Graduate School Bulletin* for total credit requirements.

ANTHROPOLOGY

PROFESSORS H. W. Basehart (Chairman), L. R. Binford, P. K. Bock, J. M. Campbell, F. C. Hibben, R. H. Lister, K. H. Schwerin, B. Spolsky, J. N. Spuhler; **ASSOCIATE PROFESSORS** J. J. Brody[†], B. J. Rigsby; **ASSISTANT PROFESSORS** A. L. Alvarado, 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. Weigle; Visiting Assistant Professor S. M. Steele.

Explanation of footnotes not indicated will be found on p. 310.

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. Core Seminar: Anthropological Linguistics. [Proseminar: Introduction to Research] (6)**
Rigsby
Modern descriptive linguistics; phonological and grammatical analysis; social and cognitive factors in language. Recommended for the first year of graduate study. <Spring>
- *509. Core Seminar: Social Anthropology & Ethnology. [Seminar: Anthropological Theory] (6)**
Barrett, Basehart, Schwerin
Principal theoretical and methodological orientations in contemporary social anthropology and ethnology. Recommended for first year of graduate study. <Spring>
- *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>
- 331. Biology and Behavior of Primates. (3) Froehlich**
Discussion of evolutionary history of primates and the biology and behavior of living primates.
- *343. Population Problems in Anthropology. (3) Harpending**
Aspects of demography and population biology, models of population growth, regulation life tables, and reproductive behavior. Special attention is given to problems of inference in anthropological studies.
- *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) Rhine
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>
- *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. **Core Seminar: Advanced Physical Anthropology** [Advanced Physical Anthropology] (6) Harpending, Rhine, Spuhler
Advanced study of the biological organization of past and present primate and human populations. Recommended for first year of graduate study. <Fall>

ARCHAEOLOGY

- *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>
- 349. **Archaeology of Complex Societies.** (3) Cordell
Comparative approach to origin and development of stratified societies and pristine states as known from the archaeological record. <Fall 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) Binford, 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>
- *366. [266F] **Archaeological Field Techniques.** (3) Judge
Introduction to site survey, techniques of excavation, field mapping, data recording, initial laboratory analysis, cataloging, and site reporting. Prerequisite: permission of instructor. <Spring>
- *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) Binford, 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) Cordell
The archaeology of the continent of South America from the time of the Paleo-Indian to the European period. Emphasis is upon the Andean area. <Spring 1973 and alternate years>
- *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>
- *515. **Core Seminar—Archaeology and Cultural Evolution.** (6) Binford, Cordell, Judge
Advanced study of the explanatory problems presented by our current knowledge of man's past. Recommended for the first year of graduate study. <Fall>
- *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. <Offered upon demand>
- *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)‡
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>
- *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 1973 and alternate years>
- *309. **Comparative Studies of Childhood.** (3) Draper
Study of childhood in different cultural settings, ranging from primitive, peasant, to modern; consideration of theoretical problems in the relation of socialization to other cultural systems.
- *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)
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) Sebring
The application of anthropological methods and principles to problems of inter-cultural communication and social change. <Fall 1972 and alternate years>
- *321. Ethnology of South Asia.** [Ethnology of Asia] (3) Sebring
Survey of modern social structures and cultures of South Asia with emphasis upon selected areas and problems. <Spring 1974 and alternate years>
- *336. Ethnology of Africa.** (3) Basehart, Draper
Cultural and social patterns characteristic of sub-Saharan Africa with special reference to problems of culture history and comparative political organization. <Spring>
- *341. Biosocial Bases of Sex Roles.** (3) Draper, Harpending, Smith
Biological and sociological bases of sex role differentiation.
- *345. Spanish-Speaking Peoples of the Southwest.** (3) Alvarado
Analysis of the ethnohistory and modern culture patterns of Spanish-speaking peoples of the Southwest.
- *347. Anthropological Folklore.** (3) Weigle
Comparative and ethnographic study of selected genres of expressive culture.
- *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>
- *357. Southwestern Ethnology: Non-Pueblo Peoples.** (3) Alvarado
The cultures, and relationships of Pima, Papago, Yaqui, Tarahumara, Seri, Yumans, Navajos, and Apaches. <Fall>
- *358. Southwestern Ethnology: Pueblo Peoples.** (3) Alvarado
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. Limited to juniors and seniors. <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. Limited to juniors and seniors. <Fall>
- *396. Cultural Ecology.** (3) Smith
View of human communities as elements in landscape systems; analyses of the relationship between environment, production systems, and social systems at different levels of evolution.
- *397. Music in Society.** (3)
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. <Offered upon demand>

- *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>
- *406. **Economic Anthropology.** (3) Smith
Introduction through case material to the forms of economic organization in non-Western societies; analyses of production, distribution, and consumption, the evolution of economic systems, and the relation of economy to society.
- *421. **Political Anthropology.** (3) Smith
Investigation of political organization in primitive societies, with emphasis on political processes. Prerequisite: 102. <Fall 1973 and alternate years>
- *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) Alvarado
Analysis of contemporary anthropological approaches to problems of social and cultural change. <Fall 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. <Offered upon demand>
- *584. **Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merx, Needler, Schwerin
(Also offered as Econ, Hist, 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. <Offered upon demand>

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>
- *318L. [418L] **Grammatical Analysis.** (3) Rigsby
(Also offered as Ling 318L.) 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>
- *352. **Verbal Art. [Primitive Literature]** (3) Weigle
Comparative study of non-Western oral traditions as cultural and aesthetic expressions. Special emphasis on narratives and proverbs.

- *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>
- *370. History of Linguistics.** (3) Spolsky, Oller
(Also offered as Ling 370.) A survey of methods and assumptions involved in the scientific study of language from antiquity to present day. An over-view of philosophical, prescriptive, mathematical (logical), and linguistics approaches to the study of language. Prerequisite: intro to Ling. <Fall>
- *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 South-western native languages. Prerequisite: 292 or 354, or equivalent. <Fall>
- *417L. Advanced Phonological Analysis.** (3) Rigsby
(Also offered as Ling 417L.) Survey of problems in generative phonology. Formalization of linguistic rules to generate specific phonological structures. Formal and substantive universals of phonological systems. Prerequisite: Anth 317L. <Spring>
- *418L. Advanced Grammatical Analysis.** (3) Oller, Young
(Also offered as Ling 418L.) A survey of problems in generative grammar. Alternative formalizations for generating specific structures. Formal and substantive universals of grammatical structures. Emphasis ranges from syntax to pragmatics. Prerequisite: 318L.
- *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>
- *469. Advanced Sociolinguistics.** (3) Spolsky, Rigsby
(Also offered as Ling 469.) Study of specific areas of sociolinguistics, e.g. pidgins, Creoles, language planning processes, and societal multilingualism. Prerequisite: Anth 459. <Fall>
- *554. Seminar: Linguistic Theory.** (3) Rigsby
(Also offered as Ling 554.) Current topics and issues in phonology, syntax, or semantics. Prerequisite: 317L, 318L or 418L or equivalent. <Offered upon demand>
- *555. Seminar in Linguistics and Language Pedagogy.** (1-3) Rigsby, Spolsky
(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. Beginning Museology.** (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. Advanced Museology.** (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 culture: identification and relationships. Prerequisite: 355 and 356 or permission of instructor. 2 lectures, 2 hrs. lab. <Offered upon demand>

***488. Formal and Numerical Methods in Anthropology. (3)** Harpending

Various formal and mathematical techniques for organizing and analyzing anthropological data are introduced, with an emphasis on computer usage and almost no treatment of statistics. Topics include multidimensional scaling, probability models, graphs and networks, and optimization.

***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. Cohlmeier; **ASSOCIATE PROFESSORS** R. Anderson, V. D. Hooker, M. L. Pillet; **ASSISTANT PROFESSORS** J. Borrego, E. Cherry, R. Eichorn, R. Nordhaus; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 310.

CURRICULA

See p. 261.

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: open only to students in degree-granting colleges. <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>

265. Land Use Planning. (3)

Exploration of land-use activities, transportation systems, municipal services, and taxation as related to the comprehensive planning process. <Fall>

281. Environment and Behavior. (3)

Series of studies through observation, tracking, and interviews in the way people behave in the man-made environment. <Fall>

- 282. Environmental Impact Review.** (3)
To acquaint students with widely-applicable principles and techniques of evaluating the impact of man-made structures on the environment. <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. The City in History.** (3)
(Also offered as Hist 338 and Soc 338.) An overview of the development of urban forms throughout history, with emphasis on modern times, which examines the causes of urban growth and change and the ways in which cities have affected the course of development of Western society.
- 361. Architecture Since 1750.** (3) Pillet <Fall>
- 362. Problems in Theory and Criticism.** (3) <Spring>
- 366. Urbanization and Housing.** (3)
Study of migration to urban areas with emphasis on housing in the United States and developing countries including a survey of available governmental programs. <Spring>
- °**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.** (1-3)‡ <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. Pre-registration open to architecture majors only. <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. Community Design Studio [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 two-semester studio which presents an overview of the architectural undergraduate curriculum. Prerequisite: for graduate students in architecture with degrees from other disciplines. <Fall, Spring>

° Open only to students enrolled in the professional curriculum in architecture.

- *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>
- *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.** (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, M. Butor, V. D. Coke, J. Kacere, C. Mattox, C. E. Paak, S. D. Smith; VISITING PROFESSOR B. Newhall; ASSOCIATE PROFESSORS T. Barrow, J. J. Brody, R. Ellis, C. Field, M. Howard, R. W. Lewis, B. Manley, H. Nadler, M. E. Smith, P. Walch; VISITING ASSOCIATE PROFESSOR R. Grow; ASSISTANT PROFESSORS N. Abdalla, J. Abrams, D. Evans, D. George, W. R. Lazorik; ADJUNCT PROFESSOR E. Boyd; LECTURERS 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. 310.

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. 262).
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. 263).
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>

142. **Drawing. (3)**
Introduction to descriptive drawing designed for students who do not plan to enter the pre-professional program in art. <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>
232. **Pre-Tutorial: Drawing. (6)**
Intensive instruction in drawing. Open only to students majoring in art or art education. Prerequisite: 123. <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>

†† Instructor and department chairman must approve repetition of this course. May be repeated twice.

- 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>
- 389. Topics in Photography. [Photo Communications.] (3)‡**
Concentrated practical and historical study of specific concerns in photography. Prerequisite: 386. <Offered upon demand>
- *405. Advanced Drawing. (3)††** Ellis, Nadler
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)††** Kacere, Lehrer, Nadler
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 EECS 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)††** Barrow, Coke
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. <Fall, Spring>
- *495. Tutorial Critique. (1-6)††** Lehrer
Advanced criticism of specifically directed individual problems. Prerequisite: 6 hours of 300 level courses with 3.0. <Fall, Spring>
- *499. Senior Thesis. (3)** Lehrer
Directed study in the major field, culminating in a written thesis. Open to students by faculty invitation only. <Spring>

‡‡ Instructor and department chairman must approve repetition of this course. May be repeated twice.

° 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)‡ Ellis, Nadler
Directed individual assignments. <Fall, Spring>
- *507. **Projects in Painting.** (3)‡ Antreasian, Kacere
Directed individual assignments. <Fall, Spring>
- *513. **Projects in Sculpture.** (3)‡ Mattox
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. <Fall, Spring>
- *587. **Projects in Photography.** (3)‡ Coke
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
<Spring>
- *304L. **Beginning Museology.** (3) Brody
(See Anth 304L.)
- *320. **African and Oceanic Art.** (3) M. E. Smith
<Fall 1974 and alternate years>
- *340. **Pre-Columbian Art.** (3) M. E. Smith
Art of Middle America prior to the 16th century. <Fall>
- *350. **Greek and Roman Art.** (3)
History of painting and sculpture from 1800 B.C. to the 6th century A.D. <Offered upon demand>
- *351. **Medieval Art I.** (3) Bunting
Survey of architecture, painting, and sculpture from the dissolution of the Roman empire to the 11th Century. <Fall 1973 and alternate years>
- *352. **Medieval Art II.** (3) Bunting
Survey of architecture, painting, and sculpture from the 12th Century through the 16th Century. <Spring 1974 and alternate years>
- *370. **History of the Graphic Arts.** (3) Hoppin
Drawing and printmaking from the 13th century to the present. <Fall>

- *380L. **Advanced Museology.** (3) Brody
(See Anth 380L.)
- *400. **Museum Practices.** (3)††
Practical and theoretical work in museum practices such as registration, conservation, exhibition, and cataloging works of art. <Fall, 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) Rodée
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.
- *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) Rodée
History of painting and sculpture from the late Rococo period through Courbet. <Fall>
- *482. **Foundations of Modern Art.** (3) Rodée
History of painting and sculpture from Manet through Post-Impressionism. <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>
- *492. **Art Criticism.** (3) Butor
Principles of criticism in the visual arts with emphasis on critical approaches to contemporary art. Prerequisite: 6 hours upper division in art history, literature, and/or philosophy. <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>
- *559. **Problems in American Indian Art.** (3)‡ Brody
<Offered upon demand>
- *560. **Problems in Pre-Columbian Art or African Art or Oceanic Art.** (3)‡ M. E. Smith
Prerequisites: 340 or its equivalent and reading knowledge of Spanish. <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. H. 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** C. S. Crawford, W. G. Degenhardt, G. V. Johnson, W. W. Johnson, D. E. Kidd, J. D. Ligon, M. L. Rosenzweig; **ASSISTANT PROFESSORS** J. S. Altenbach, L. Barton, E. W. Bourne, D. W. Duszynski, J. R. Gosz, P. R. Kerkof, D. Landau; **INSTRUCTORS** M. A. Bogan, M. T. Dilley; **ADJUNCT PROFESSORS** R. Conant, U. Luft, R. McClellan, G. Rypka; **ASSOCIATES** D. Lungren, R. Thomas; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 310.

MAJOR STUDY

B.S. Degree: (recommended for professional biologists and for those entering graduate programs and professional fields such as medicine). Biol 121L-122L, 400, 407 or 411L, 408, 409L, 429L, at least one course from two of the following three groups: Botanical—363L, 372L, 474L; Zoological—371L, 386L; Microbiological—253, 473L, 482L; plus sufficient added courses in biology to total 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, 407 or 411L, 408, 409L, 429L; at least one course from two of the following three groups: Botanical—363L, 372L, 474L; Zoological—371L,

386L; Microbiological—253, 473L, 482L; plus sufficient added courses in biology to total 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 121L-122L and 12 additional hours of biology. Grades of "C" or better are required in biology courses used for a minor.

MINOR STUDY IN PALEOECOLOGY

See p. 498.

CURRICULA PREPARATORY TO DENTISTRY, FORESTRY, MEDICAL TECHNOLOGY, OR MEDICINE

See pp. 188-191.

Note: Credit will not be allowed for both 324 and 429L; 136-139L and 236L; nor for both 254L and 255L.

110. Life Science for Non-Majors. (3) Degenhardt

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) Degenhardt

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) Altenbach

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) Altenbach

Heredity, development, and evolution. Prerequisite: 121L. 3 lectures, 3 hrs. lab. <Spring>

136. Human Anatomy and Physiology. (3) Landau

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) Landau

Laboratory work in elementary anatomy and physiology with emphasis on anatomy. Cannot be taken independently of 136. 3 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>

253. [233L, 393L] Introductory Microbiology [Paramedical Microbiology; General Bacteriology] (2) Barton

Anatomy, physiology, and ecology of bacteria. Host-parasite relationships. Principles of infection and immunity. Must be taken concurrently with either 254L or 255L. Prerequisites: 121L and 4 hrs. of chemistry. 2 lectures. <Summer, Fall, Spring>

254L. Introductory Microbiology Laboratory for Health Sciences. (2)

Microbial techniques and laboratory procedures for nursing, dental hygiene, dietetics, and health education majors. Must be taken with 253. 6 hrs. lab. <Fall>

255L. Introductory Microbiology Laboratory. (2)

Microbiology techniques and laboratory procedures for biology majors, pharmacy, pre-medical, and pre-dental students. Must be taken with 253. 6 hrs. lab. <Summer, Fall, Spring>

*324. Biochemistry. (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>
- 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. <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>
- *410L. [511L] **Arid Land Invertebrates.** [Insect Physiology] (4) Crawford
Biology of arid land invertebrates with emphasis on their roles in and adaptations to xeric ecosystems. Prerequisites: 371L and 407; 414L and 443L recommended. 3 lectures, 3 hrs. lab. <Spring 1974>
- *411L. **Population Biology.** (4) Rosenzweig
Evolutionary mechanics; population and evolutionary ecology. Prerequisites: 408 and one semester of calculus. 3 lectures, 3 hrs. lab. <Spring>
- *412L. **Comparative Embryology of the Vertebrates.** (4) Koster
Prerequisites: 371L, 386L or permission of instructor. 2 lectures, 6 hrs. lab. <Fall>
- *414L. **General Entomology.** (4) Crawford
Biology and classification of the insects. Prerequisite: 122L, 371L or permission of instructor. 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 1975 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 at cell and system levels. Prerequisite: 429L, or Chem 324 or Chem 481-482. 4 lectures, 3 hrs. lab. <Spring>
- *443L. **Comparative Physiology.** (4) Landau
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 1975 and alternate years>

- *454L. Pathogenic Bacteriology. (4)**
The properties and characteristics of disease-producing bacteria and their relationship to disease. Prerequisites: 253 and Chem 281 or 301-303L. 2 lectures, 6 hrs. lab. <Summer, Fall>
- *455. [555] Ethology: Animal Behavior. [Animal Behavior] (3) Ligon**
Adaptive significance of major behavioral patterns, with special emphasis on vertebrates; composition of behavior. Prerequisite: 386L. <Fall>
- *456L. Immunology. (4) Silverman**
Principles of antigen-antibody reaction, hypersensitivity, and auto-immune diseases. Laboratory preparation, detection, and measurement of antibodies. Prerequisites: 253 and Chem 302-304L. Chem 324 recommended. 2 lectures, 6 hrs. lab. <Spring>
- *457L. [556L] Ethology Laboratory: Animal Behavior. [Animal Behavior Laboratory] (1) Ligon**
Special laboratory and field projects in animal behavior. Optional. To be taken with, or subsequent to, 455. 3 hrs. lab. <Fall>
- *460L. Physiology of Bacteria. (4) Barton**
Cytology; growth and reproduction; fermentation, respiration, and other enzymatic activities of bacteria. Prerequisites: 253, 429L, and Chem 281 or 301-303L. 3 lectures, 3 hrs. lab. <Spring>
- *473L. Mycology and Plant Pathology. (4) Kiau**
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 253. 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 1975 and alternate years>
- *475L. Pharmacology I. (5)**
(See Pharm 475L.) Not allowed for undergraduate Biology credit. <Fall>
- *476L. Pharmacology II. (4)**
(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. Prerequisites: 429L, and 363L or 372L or permission of instructor. 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 1975>
- *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 1975 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 and 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 1975 and alternate years>
- *510. Genetics of Speciation.** (3) W. Johnson
Factors affecting the genetic composition of populations. Prerequisite: 408. <Spring 1974>
- *525. Current Concepts of Biology.** [Fundamental Concepts of Biology] (3) Duszynski.
Trends of present scientific thought. Emphasis on current developments and promises for the future.
- *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 1974 and alternate years>
- *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 1975 and alternate years>
- *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 1974 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, R. A. Lenberg, P. T. Mori, W. S. Peters, D. M. Slate, L. G. Winter; ASSOCIATE PROFESSORS K. Christman, R. H. Jehenson, J. A. Yeakel; ASSISTANT PROFESSORS D. A. Arthur, A. A. Blumenfeld, J. E. Champoux, J. C. Cooper, F. F. Newpeck, R. A. Reid, D. G. Simonson, W. A. Shinnick, W. R. L. Taylor; VISITING LECTURERS R. Beeson, J. Danclovic, D. Francis, R. Mayfield, M. Mondlick, P. Smyer, A. Steele, T. Tschetter, S. Van Hauen.

CURRICULA

See pp. 200-205.

- 202. **Introduction to Accounting.** (3)
An examination of the conceptual framework of accounting and the functions of accounting in a business-oriented society. Topics include: valuation theory and its application to assets and liabilities; concepts of business income; funds-flow analysis; problems of financial reporting. Prerequisites: two semesters of college level mathematics and one semester of Economics with a grade of C or better in each course. <Fall, Spring>
- 290L. **Business Statistics Laboratory.** (1)
Application of probability and statistics in business. Co-requisite: Math 102. <Fall, Spring>

Note: With the exceptions noted immediately below, the minimum prerequisites for all 300 and 400 level courses listed are: (1) the "Specific Requirements" listed as item 5 (b) under "Admission from the University College" (See the description of the Bachelor of Business Administration Degree in an earlier section of this catalog), and (2) **junior standing**. Individual courses may have other prerequisites as indicated in the course descriptions. The exceptions to this rule are courses numbered 340, 358, 359, and 361. The latter three courses are offered specifically to meet the needs of students not working toward a B.B.A. degree and may not be used to fulfill the requirements for that degree.

- 300. [329] **Management Science I.** [Quantitative Analysis for Management] (3)
Business and Administrative problem solving through the use of mathematical and statistical models and the logical and computational capabilities of computers. Ap-

proaches to model building; deterministic models for optimum scheduling, resource allocation, and inventory analysis; Bayesian statistics and business decisions; forecasting techniques. Prerequisites: "Specific Requirements," see above. <Fall, Spring>

301. **Management Science II.** (3)
Continuation of 300. Inventory control and waiting lines with uncertainty, design and execution of simulation studies, network analysis (including PERT-CPM), and introduction to computer based information systems. Prerequisite: 300 <Fall, Spring>
303. [225] **Accounting for Management Control.** (3)
Primary emphasis on the role of accounting in the processes of management decision-making for planning and control. Topics include: relevant cost analysis; standard costing and analysis of variances; budgeting and responsibility accounting planning capital expenditures. Prerequisite: "Specific Requirements," see above. <Fall, Spring>
306. [330] **Organizational Behavior I—Theory and Concepts.** [Organization Theory] (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. Prerequisites: "Specific Requirements," see above. <Fall, Spring>
307. **Organizational Behavior II—Applications.** (3)
Continuation of 306 with emphasis on applications of theories and concepts. Prerequisite: 306. <Fall, Spring>
308. **Organizational Environment.** (3)
The nature of environmental change on the structure and operation of the organization; social, political, economic, ethical, and technological systems are examined as they relate to each other and to the management of small and large scale organizations. Prerequisites: "Specific Requirements," see above. <Fall, Spring>
309. [306] **Man, Society, and Law.** (3)
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 periods of Hobbes, Locke, and Rousseau 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. Prerequisites: "Specific Requirements," see above. <Fall, Spring>
310. [307] **Law of Contracts.** (3)
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. Required for all accounting students. Prerequisites: "Specific Requirements," see above. <Fall, Spring>
322. [308] **Marketing Management.** [Principles of Marketing] (3)
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: "Specific Requirements," see above. <Fall, Spring>
326. [310] **Financial Management.** [Business Finance] (3)
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 use of short- and long-term funds, determination 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: 300, 303 or 304, Econ 300 and 315. <Fall, Spring>
- *340. [373] **Financial Accounting I.** [Intermediate Accounting I] (3)
Study of accounting theory with emphasis on financial reporting theory, applied financial accounting problems and contemporary financial accounting issues. Topics include: Detailed examination of the accounting cycle and conceptual bases for collecting, re-

coding, analyzing, and interpreting accounting data; asset valuation and income determination; accounting issues resulting from the corporate form of organization; current assets. Prerequisite: grade of C or better in 202. <Fall, Spring>

- *341. [374] **Financial Accounting II.** [Intermediate Accounting II] (3)
Continuation of 340. Problems relating to liabilities and non-current assets; the analysis and interpretation of financial statements including the impact of income taxes and changing price levels. Prerequisites: "Specific Requirements," see above and 340. <Fall, Spring>
- *342. [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. Prerequisites: "Specific Requirements," see above and 340, or permission of the instructor. <Spring>
- *346. [384] **Managerial and Cost Accounting.** (3)
Investigation of the concepts of procedures involved in the development, presentation and interpretation of accounting information as an aid to the 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 cost information; problems of cost estimation and allocation; standard costs; budgeting; cost-value relationships. Prerequisite: 341. <Spring>
- *348. **Legal Concepts for Accountants.** (3)
An intensive examination of the legal concepts underlying accounting theory and practice. Specific topics, contracts, agency, sales, and legal liability of accountants. Prerequisites: 340, 310. <Fall>
- 358. [306] **Man, Society, and Law.** (3)
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 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. **Not accepted as credit toward a B.B.A. degree.** <Fall, Spring>
- 359. [307] **Law of Contracts.** (3)
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. **Not accepted as credit toward a B.B.A. degree.** <Fall, Spring>
- 361. [330] **Organization Theory.** (3)
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. **Not acceptable as credit toward a B.B.A. degree.** <Fall, Spring>
- 436. **Productions and Operations Management.** (3)
Design and control of production and logistics systems. Facilities design, work sampling, quality control, time-motion studies, and other industrial engineering techniques. Case analyses of management science techniques applied to operations problems. Prerequisites: 300, 301. <Fall>
- 439. **Projects in Management Science.** (3)
Seminar involving class or group projects applying management science techniques to ongoing problems of business and administrative organizations. Special attention may be given to the use of computerized business games. Prerequisites: 300 and 301, or permission of the instructor. <Spring>
- *440. [421] **Financial Accounting III.** [Advanced Accounting I] (3)
Continuation of 340 and 341. Problems and theory related to advanced accounting topics including: partnership dissolution and liquidation; installment sales; and selected issues of a currently controversial nature. Prerequisite: 341. <Fall>

- *443. [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: 440. <Spring>
- *445. [487] Contemporary Accounting Topics. (3)**
An examination of selected theoretical issues related to current controversy in accounting. Prerequisite: 440. <Spring>
- *449. Accounting Information Systems. (3)**
An examination of the relationship between computer-based management information systems and accounting. Applications of M.I.S. techniques in the design and operation of accounting systems. Prerequisite: 301; pre- or corequisite: 346. <Spring>
- 451-452. Problems. (1-3 hrs. each semester)††**
Special permission of the adviser and of the Dean of the School of Business and Administrative Sciences required. Arrangements must be made with individual instructor before enrolling for Problems. <Fall, Spring>
- *464. [493] Labor Law and Collective Bargaining. (3)**
Case studies of common, statutory, and administrative law, with emphasis on modern labor legislation and related court and administrative agency decisions affecting labor-management relations. 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. Prerequisites: B average or higher in 306 and 307. <Fall>
- *466. [496] Advanced Concepts and Problems in Organizational Behavior. [Advanced Theory in Personnel Management] (3)**
Selected topics, problems, learning designs, and models in organizational behavior. Prerequisites: B average or higher in 306 and 307. <Spring>
- 470. [469] Money Management for Financial Institutions. [Monetary Theory and Credit Institutions] (3)**
The banking system and its regulatory and structural environment. Analysis of the monetary system, flow of funds and their influence on credit conditions and the implications for management lending, investment, and liquidity policies. The design of portfolios under risk including the behavior of the term structure of interest rates. Cyclical interruption of funds flows to financial institutions and implications for the management of liabilities. Prerequisite: 326. <Fall>
- 471. [363] Investment Analysis and Management. (3)**
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 institutions 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: 326. <Fall, Spring>
- 472. [366] Problems and Policies in Business Financial Management. (3)**
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: 326. <Spring>
- *480. [483] Marketing Research. (3)**
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. Prerequisite: 322. <Fall>
- 485. [305] Introduction to International Business. (3)**
Provides 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 on global business decision-making. Prerequisite: 322. <Spring>

***486. Marketing Logistics. (3)**

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: 300 and 322. <Spring>

***487. [410] Marketing Communication. (3)**

An investigation of communications theory including market, audience, and individual behavior; relationships of communication in the marketing mix; personal and non-personal forms of communications including sales management and advertising; problems of determining advertising appropriations, budgets, campaign strategy, media analysis, and evaluations of the communications effort of the firm. Prerequisite: 322. <Fall>

490-491-492-493. Special Topics in Business and Administrative Sciences. (3)

Selected offerings of business and administrative science topics not represented in the regular curriculum. Prerequisites: 301, 309, 322, 326. <Offered upon demand>

***495. Seminar in Small Business. [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 objectives of the course are to stimulate creative entrepreneurship in small business. It is devoted to consideration of the problems of initiating and/or acquiring, financing, organizing, operating, and marketing the product of small firms. Prerequisites: 301, 309 or 310, 322, 326. <Fall>

498. [492] Senior Seminar. (3)

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: 306, 309 or 310, 322, and 326 and second semester senior standing. <Fall, Spring>

***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 source 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: 500 and 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 Environment. [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 systems to organizational problems and decision-making; processes of adaptation to the external environment are analyzed in terms of information needs; underlying concepts and methodologies related to information requirements, sources, acquisition, protection, storage, analysis, reporting and dissemination and utilization are explored under conditions of change, risk and uncertainty. Emphasizes an appreciation for and an understanding of Environmental Scanning Processes, Management Information Centers (MIC) and Management Information Systems (MIS). <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. Prerequisites: 500 through 509. <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. Prerequisites: 500 through 509. <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: 500 through 509. <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: 520 or permission of instructor. <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. Prerequisites: 500 through 509. <Fall>

***532. Simulation. [Simulation in Management Science] (3)**

(Also offered as Cp Sci 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 EECS 336 or the equivalent; pre- or corequisite: 520. <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: 500, 501 and 505, or the equivalent. <Spring>

- *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: 500 through 509 and EECS 336 or the equivalent. <Fall>
- *544. Advanced Accounting Theory and Practice. (3)**
The application of advanced accounting principles to practical cases and accounting problems. Prerequisites: 500 through 509. <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. Prerequisites: 500 through 509. <Fall>
- *546. Seminar in Controllershship. (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. Prerequisites: 500 through 509. <Spring>
- *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. <Spring and alternate years>
- *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: 500 through 509. <Spring>
- *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. Prerequisites: 500 through 509. <Fall and alternate years>
- *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. Prerequisites: 500 through 509. <Spring and alternate years>
- *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. Prerequisites: 500 through 509. <Spring and alternate years>
- *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. Prerequisites: 500 through 509. <Fall 1973 and alternate years>
- *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. Prerequisites: 500 through 509. <Spring and alternate years>
- *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. Prerequisites: 500 through 509. <Spring and alternate year>

***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. Prerequisites: 500 through 509. <Fall>

***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. Prerequisites: 500 through 509. <Fall>

***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. Prerequisites: 500 through 509. <Fall and alternate years>

***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. Prerequisites: 500 through 509. <Fall>

***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. Prerequisites: 500 through 509. <Fall>

***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. Prerequisites: 500 through 509. <Fall and alternate years>

***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. Prerequisites: 500 through 509. <Spring>

***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. Prerequisites: 500 through 509. <Spring>

***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. <Spring>

***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. <Fall>

***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. <Spring>

***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. <Fall and alternate years>

***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. <Spring and alternate years>

***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. <Fall and alternate years>

***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. <Fall and alternate years>

***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. Prerequisites: 500 through 509. <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 and alternate years>

***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. <Fall and alternate years>

***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. <Spring and alternate years>

***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. <Spring and alternate years>

***596. Seminar in Applied Organizational Intelligence. (3)**

Intensive application of research methodology to organizational and business situations and problems. Prerequisites: 500 through 509. <Spring 1973 and alternate years>

***597. [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 Administrative, and Operations (Tactical) Plans as they relate to problems of programming. Pre- or corequisite: 598 or permission of the instructor. <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, U. Hollstein, W. M. Litchman, D. C. Neckers, E. P. Papadopoulos, R. E. Tapscott, N. E. Vanderborgh, E. A. Walters; ASSISTANT PROFESSORS F. S. Allen, W. F. Coleman, D. R. McLaughlin, D. L. VanderJagt; 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. 310.

The policy of the Department of Chemistry regarding enrollment under the Credit Grade Option is that CR (Credit) will be given only for grades of C or better.

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 324-498; or Chem 101L, 102L, 253L, 301, 302, 303L, 304L, 315L and at least 8 additional hours selected from courses numbered 324-498.

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 324-498; 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 324-498. The program must also include Physcs 160, 161, 163L, 262, 264L, Mathematics equivalent to 265, and German equivalent to 252 or 262. Only three credits of Chem 495-498 may be counted towards the B.A. or B.S. degree.

Physics and Mathematics courses required for the B.S. degree may not be taken on the credit grade option.

Students deciding on a B.S. after having taken Chem 301-304L may qualify for the B.S. by taking Chem 415L, 2 hrs of this course counting toward the 10 additional hours required selected from courses numbered 324-498.

Any deviation from the requirements prescribed above must be approved by the Department of Chemistry and must total a minimum of 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)

Nonquantitative and descriptive introduction to the worldview of the chemist with applications to problems at the science-society interface, such as, the energy crisis, air and water pollution, nuclear chemistry, household chemistry, etc. 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 a math placement index high enough to exempt student from Math 010. 3 lectures, 3 hrs. lab. <Fall>

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. <Spring, Summer>

121L. General Chemistry. (4)

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 strongly recommended for students intending to major in chemistry. 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)

One-semester course in general chemistry, especially for non-science majors in the health sciences except premedicine and medical technology. 3 lectures, 3 hrs. lab. (Credit not allowed for both 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)

Survey interrelating the major principles of organic chemistry and biochemistry with special emphasis towards interests of students in the health sciences. Prerequisite: 101L or 141L. (Credit not allowed for both 281 and 301). <Summer, 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. <Spring>

In the following courses numbered 301-310L the laboratory course must be taken concurrently with the corresponding lecture course. Students dropping the lecture prior to the 8th week of the semester must drop the corresponding lab; however, students dropping the lecture after that time may be allowed to continue the lab to completion provided that at the time of dropping the lecture the grade in the lab course was C or better.

****301. Organic Chemistry. (3)**

Chemistry of the compounds of carbon. Prerequisite: 102L or 122L. It is mandatory that 303L be taken concurrently. <Fall>

****302. Organic Chemistry. (3)**

Continuation of 301. Prerequisite: 301. It is mandatory that 304L be taken concurrently. <Spring, Summer>

****303L. Organic Chemistry Laboratory. (1)**

To be taken concurrently with 301. 3 hrs. lab. <Fall>

****304L. Organic Chemistry Laboratory. (1)**

To be taken concurrently with 302. 3 hrs. lab. <Spring, Summer>

****307. Organic Chemistry. (3)**

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.) <Spring>

****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, thermodynamics 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>

****314L. Physical Chemistry Laboratory. (1)**

Prerequisite: 311. 3 hrs. lab. <Spring>

****315L. Introductory Physical Chemistry. (4)**

One-semester survey of the fundamentals of physical chemistry with primary emphasis upon biological and biochemical applications. Prerequisites: 102L and 253L or 122L, Math 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. Biochemistry. (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 or for both 324 and Biol 429L.) <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 reactivities of nonmetal compounds, and transition metal complexes. Prerequisite: 102L or 122L. <Spring>
- **336L. Inorganic Synthesis. (1)**
The synthesis and characterization of inorganic compounds of the metals and nonmetals. Introduction to the laboratory techniques of inorganic chemistry. Pre- or corequisite: 335. 3 hrs. lab.
- 351. Advanced Quantitative Analysis. (3)**
Lecture survey of theory and practice of modern chemical analysis. Ionic equilibria, columnar separation theory, and introduction to instrumental and electroanalytical methods. 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 of organic syntheses, group transformations, construction of carbon skeletons, protective groups, stereochemical control, synthesis with isotopes, altering chain length, 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. 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>
- *466. Computers in Chemistry. (2)**
Introduction to the Fortran IV computer language with application to problems of chemical interest. <Spring>

- *481. Biological Chemistry. (3)**
(Also offered as Med Sc 481.) In depth survey of basic biochemical reactions within the cell with quantitative evaluation of the energy changes involved. Topics considered include structure and function of macromolecules, pH control, catabolic metabolism, free energy changes, enzyme kinetics, control mechanisms, and bioenergetics. Intended for students expecting to pursue advanced studies in chemistry. (Credit not allowed for both 324 and 481.) Prerequisites: 302 or 308 and pre- or corequisite 311 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. 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 1975 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 nitrogen, oxygen and sulfur heterocycles, polycyclic homo- and heterocyclic compounds, synthetic methods, degradative methods, macromolecular chemistry, stereochemistry, mechanisms, free radical chemistry, organometallics, quantum organic chemistry, isotope effects, organic mass spectrometry. Prerequisite: permission of instructor. <Fall>
- *514. Topics in Organic Chemistry. (1-3)‡**
Possible topics are as in 513. Prerequisite: permission of instructor. <Spring>
- *521. 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: permission of instructor. <Spring 1974 and alternate years>
- *523L. X-ray Crystallography. (4)**
(Also offered as Geol 506L.) Principles of X-ray diffraction, Debye-Scherrer, Weissenberg, and precession methods. Space group symmetry and its determination. Prerequisites: 311 or Math 264, and permission of instructor. 2 lectures, 6 hrs. lab.

- *524L. 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. EECS 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 1975 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 1974 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 1974 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 1975 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, Hollstein, Kahn, LeBaron, Litchman, Lofffield, McLaughlin, Neckers, Niemczyk, Omdahl, 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, Hollstein, Kahn, LeBaron, Litchman, Lofffield, McLaughlin, Neckers, Niemczyk, Omdahl, Papadopoulos, Reyes, Scailen, Smith, Tapscott, Vanderborgh, VanderJagt, Walters, Wild, Woodfin.
See the *Graduate School Bulletin* for total credit requirements.

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); ADJUNCT ASSOCIATE PROFESSORS M. E. McClellan, R. T. Wertz; ASSISTANT PROFESSORS D. J. Draper, R. B. Hood, W. J. Ryan; ADJUNCT ASSISTANT PROFESSOR K. W. Hattler; LECTURERS M. O. Ahern, B. D. Cox, J. B. Grainger, M. C. Miles, 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, 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>
- 338. **Pre-Clinical Training.** (1-3)
Introduction to basic clinical skills prerequisite for clinical practicum. Prerequisite: 302. <Summer, Fall, Spring>
- 350. [450] **Anatomy and Physiology of Speech and Hearing.** (4) Ryan
Structure and function of the speech and hearing mechanisms as they relate to normal and disordered communication. Prerequisite: permission of instructor. <Fall>
- *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 350. <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) Parch
Symbolic disorders of communication, including receptive and expressive speech and language problems. Prerequisites: 302, 430, and 450 or permission of instructor. <Spring>
- *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. **Neurological Foundations of Speech and Language.** (3) Ryan
Structure and function of the central and peripheral nervous systems as they relate to normal and disordered communication. Prerequisite: 350 or permission of instructor. <Fall>
- *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. **Experimental Phonetics.** [Physiologic Phonetics] (3)
Exploration of physiologic, acoustic, and perceptual phonetics with emphasis on major theories and relevant literature. Prerequisite: 320 and 350, 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. <Fall>
- *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), R. R. MacCurdy (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 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 (Languages).

250. The Study of Literature (3)

(See Engl 250.)

*334. Spanish American Literature in Translation. (3)

(See Span 334)

*335. French Literature in Translation. (3) Kolbert, Murphy

(See French 335)

*336. German Literature in Translation. (3) R. Holzapfel

(See German 336)

*337. Spanish Literature in Translation. (3) MacCurdy

(See Span 337)

*338. Russian Literature in Translation. (3) T. Holzapfel

(See Russ 338)

*341. Greek Mythology. (3) Smith

(See Greek 341)

*343. Soviet Literature in Translation. (3) Lindsey

(Also offered as Russ 343.) Readings in Russian literature since the revolution: Sholokhov, Maiakovski, Babel, Pasternak, Solzhenitsyn.

*344. Topics in Latin Literature in Translation. (3)† Mellon, Smith

(See Latin 344.)

*345. Topics in Greek Literature in Translation. (3)† Mellon, Smith

(See Greek 345.)

375. World Literature from Homer to Dante. (3) Kuntz, Zavadił

(See Engl 375.)

376. World Literature from Rabelais to Mann. (3) Dickey, Kuntz, Warner

(See Engl 376.)

400. Literary Movements. (3)

(See Engl 400.)

410. Literary Criticism. (3)

(See Engl 410.)

452. The Middle Ages. (3)

(See Engl 452.)

459. Irish Literature (3)

(See Engl 459.)

470. Contemporary Literature. (3)

(See Engl 470)

- *475. **Dante in Translation** [Dante] (3) White
(See Italian 475.)
- 481. **The Folktale in English.** (3)
(See 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. **Studies in Genre: Comedy, Epic, Satire, Tragedy, etc.** (3)
(See Engl 487.)
- *551. **Problems.** (1-6 hrs. per semester)‡
For M.A. candidates
- *580. **Seminar in Modern Languages and Literatures.** (1-6)‡
(Also offered as M Lang 580.) 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

PROFESSORS S. Bell, D. R. Morrison; ASSOCIATE PROFESSORS E. J. Gilbert, J. W. Ulrich; ASSISTANT PROFESSOR N. Moler; others to be appointed on full time and/or joint appointment.

MAJOR STUDY

Degree programs in Computing and Information Science are being developed. For current information on their status, consult the faculty listed above.

MINOR STUDY

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, 358, 375, 451, 452, 455, 456, 457, 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 a minor requirements.

- 105. **Survey of Computing.** (3)
Introduction to many of the basic ideas in computing, their history, applications, and impact on society. <Offered upon demand>
- 154. **Foundations of Computing Sciences.** (3)
Introduction to the formal concepts of computing science for the beginning student. Topics include induction, elementary logic, formal systems, and algorithmic processes. Recommended for students pursuing a major or minor in computing science. <Fall>
- 155. **Problem Solving with the Computer.** (3)
(Also offered as Math 155.) An elementary introduction to the art of computing. The object of the course is an understanding of the relationship between computing and solving problems in various disciplines. <Fall>
- 255. **Introduction to Computing Systems.** [Computers and Programming] (3)
Basic components of operating systems: loaders, assemblers, macro languages, and job control languages. Prerequisites: 155 or programming experience. <Fall>
- 256. **Programming Languages.** [Non-Numerical Programming] (3)
Comparative survey of the features and structures of common programming languages including Algol, Lisp, Snobol, Fortran, PL/1. Students will write programs in each of these languages. Prerequisites: 155 or programming experience. <Spring>
- 354. **What Computers Can and Cannot Do.** (3)
Exploration of the range of problems that computers can solve. Classical problems in solvability will be discussed using LISP as the Metalanguage. Prerequisite: 256. <Spring>

- *355. The Syntax & Semantics of Programming Languages.** [Programming Languages & Their Translation] (3)
Relation between form and meaning of programs will be explored with the use of phrase structured grammars. Student will write an interpreter for a simple programming language. Prerequisites: 154, 256. <Fall>
- *356. Compiler Construction.** (3)
Provides a detailed understanding of the techniques used in the design and implementation of the compiler. The students will construct a compiler for a moderately complex programming language. Prerequisites: 255, 355, or the equivalent.
- *357. Operating Systems Principles.** (3)
Experience in constructing basic software for operating systems. In addition to discussing general principles, students will be expected to first understand a simple supervisor and then to modify it. Prerequisite: 255 or permission of instructor.
- *358. Computer Sorting.** (3) Allen
This course offers an extensive explanation and analysis of all popular sorting techniques including those confined to internal memory, using magnetic tapes, and with disk or drum auxiliary memories. Prerequisites: 155, 256.
- *375. Introduction to Numerical Computing.** (3)
(Also offered as Math 375.) 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.
- 401. Modern Computer Architecture.** (3)
A study of the design concepts of major importance in modern computers. Topics will include data bases, microprogramming, language-directed computers, parallel processors, and pipeline computers. Emphasis will be placed on the relationship of hardware design to programming and data structuring. Students will be expected to design a small computer via micro-program using a simulator on the IBM System/360. Prerequisite: 255 and reasonable competence in at least one higher-level language.
- 402. Analysis of Algorithms.** (3)
Introduction to the techniques useful in the analysis of the efficiency of algorithms. Prerequisite: 154. <Spring>
- 451. Mathematical Theory of Formal Languages.** [Theory of Languages] (3)
(Also offered as Ling 451.) An examination of formal language theory, its relation to programming languages and automata theory. Prerequisite: 154 or permission of instructor.
- *452. Simulation.** (3)
(Also offered as B&AS 532.) Study of a variety of simulation methods as an aid to managerial decisions involving both micro- and macro-systems. Problems and projects involve active programming of simulations in at least one simulation language. Prerequisites: ability to write programs in some language and B&AS 501 or knowledge of elementary probability and statistics and introductory calculus. <Spring>
- *455. Mathematical Logic.** (3)
(Also offered as Math 455.) Formalization of mathematical reasoning. The notion of completeness and consistency will be developed within the context of the first order predicate calculus. The higher order calculus, or the theory of types, will be examined. Two alternative definitions of mathematical truth will be discussed. There are no prerequisites in particular, but the student should have a reasonably strong background in mathematics with a good intuitive feeling for what constitutes mathematical proofs. Prerequisite: permission of instructor. <Fall>
- 456. Non-Standard and Higher Order Logic.** (3)
(Also offered as Math 456.) Intuitionistic logic and modal theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory to types. Prerequisite: 455. <Spring>
- 457. Principles of Artificially Intelligent Machines.** (3)
Survey of artificial intelligence exclusive of pattern recognition. Heuristic search techniques, game playing, introduction of mechanical theorem proving. Prerequisite: 354. <Offered upon demand>

***475-476. Elements of Numerical Analysis. (3, 3)**

(Also offered as Math 475-476.) Theory and application of procedures for solving fundamental computational problems in mathematics including systems of linear equations, orthogonalization, interpolation, approximation, definite integral, roots of non-linear equations, ordinary differential equations. Prerequisites: Fundamentals of advanced calculus, systems of linear equation, ordinary differential equations. <475-Fall, 476-Spring>

***500. Foundations of Set Theory. (3)**

(Also offered as Math 500.) 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 dividing subroutines for the less commonly available functions. Prerequisites: 475-476 or equivalent, with permission of instructor. <Offered upon demand>

***554. Mathematical Theory of Computation. (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: Math 155, 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)†**

(Also offered as Math 557.) 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)**

(Also offered as Math 558.) 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. Exposure to current research dealing with the computational efficiencies of theorem proving computer program. Prerequisite: Mathematical Logic. <Spring>

***559. Topics in Computing. (1-3)‡**

Prerequisite: consent of instructor before registration. <Offered upon demand>

***650. Reading and Research. (1-6)‡**

Prerequisite: consent of instructor before registration. <Offered upon demand>

***677. Pattern Recognition. (3)**

(Also offered as Math 677.) 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>

CURRICULUM AND INSTRUCTION

See Education, Curriculum and Instruction.

DANCE

See Theatre Arts, Dance.

DENTAL HYGIENE

PROFESSOR M. Novitski², ASSOCIATE PROFESSORS W. Creighton (Director), M. L. duFault, ASSISTANT PROFESSOR L. Keffe; INSTRUCTOR C. Miera; ADJUNCT ASSOCIATE PROFESSORS M. Atkinson, D. Clifford, C. E. Cullen, W. Graham, M. Hunt, L. Issacson, D. Jello, I. Navarre, L. Sais, R. Sei, W. Thornberry, R. J. Walpole.

DENTAL HYGIENE

CURRICULUM

See p. 300.

100. **Orientation.** (2) Keffe, Miera
Survey of dental hygiene, dental assisting, dentistry, and related professions. Personal and oral health. Introduction to patient education. <Fall>
101. [101L] **Preclinical Dental Hygiene.** (1)
Didactic introduction to the clinical skills of dental hygiene.
- 102L. **Preclinical Dental Hygiene Laboratory.** (2)
Introduction to the clinical skills of dental hygiene. 6 hrs. lab. <Fall>
103. **Clinical Dental Hygiene.** (1)
Didactic instruction in the techniques of oral hygiene procedures.
- 104L. **Clinical Dental Hygiene Laboratory.** (2)
Techniques of oral hygiene procedures in a clinical environment. Prerequisites: 100, 102L, 111L. 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) Novitski
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 104L. Integration of dental hygiene sciences with experiences in clinical procedures. Prerequisite: 104L. 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, 253. <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: 104L. <Fall>
240. **Dental Hygiene Seminar.** (0)
Attendance at one-day dental hygiene seminar. <Spring>

- 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 upon 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 upon demand>
- 420L. Advanced Clinical Dental Hygiene.** (3) Cullen, Jelso, Novitski
Instruction and clinical practice in the administration of local anesthetic agents and in periodontal procedures including soft tissue curettage and root planing. 2 lectures, 3 hrs. lab. <Offered upon demand>
- 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 upon 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. 298.

- 100. Orientation.** (2) Keeffe, Miera
(See DH 100.)
- 110. Oral Anatomy.** (3) Novitski
(See DH 110.)
- 111L. Dental Anatomy.** (2) Novitski
(See DH 111L.)
- 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 G. Boyle (Chairman), S. Cohen, P. Gregory, D. Hamilton, G. Hufbauer, P. Jonas, N. Wollman; **ASSOCIATE PROFESSORS** P. Barth, S. Ben-David, P. Chung, M. Gisser, A. Parker, D. Tailby, P. Therkildsen, L. Zink; **ASSISTANT PROFESSORS** L. Brown, A. Church, W. Schulze.

Explanation of footnotes not indicated will be found on p. 310.

MAJOR STUDY

All programs leading to a major in Economics require a common core consisting of Principles of Economics (Econ 200, 201), Micro and Macro Econ-

omic Theory (Econ 300, 303), and 18 additional hours of economics. Although majors may select any economics courses to fulfill the 18 hours of electives, past experience indicates that majors specialize in one of the following four areas of interest which are listed for advisement only:

A. Pre-professional Economics—Pre-professional students should take the following economics courses: Money and Banking (315), Mathematical Methods in Economics (407), and History of Economic Thought (360). In the Mathematics Department, one year of calculus (Math 162, 163), Statistical Methodology and Linear Algebra with Applications are strongly recommended. This program prepares the student for graduate study in economics.

B. Pre-Law—Students wishing to prepare for law school are advised to select among: Statistical Analysis (289), Environmental Economics (342), Government Control of Business (332), History of Economic Thought (360), Public Finance (350), Comparative Economic Systems (450), Consumer Economics (330), and Labor Economics (320).

C. Business Economics—Students planning to enter employment in the private or public sector upon graduation are advised to select from among the following: Statistical Analysis (289), Money and Banking (315), Business Finance (310), Government Control of Business (332) as well as accounting, marketing and organization theory in the School of Business and Administrative Sciences.

D. Contemporary Economic Problems—The student interested in contemporary problems which are amenable to economic analysis and controversies in economics is advised to take the following courses: Radical vs. Conservative Economics (229), Consumer Economics (330), The Economics of Poverty (331), Urban Economics (341) and Environmental Economics (342).

DISTRIBUTED MINOR FOR ECONOMICS MAJORS. With the consent of the departmental 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>
- 229. Radical vs. Conservative Economics.** (3) Gisser, Church
The investigation and discussion of controversial socio-economic issues. Includes such topics as the economics of discrimination, distribution of wealth, power and income, economic imperialism, the role of government, minimum wage legislation, and the military-industrial complex. Study will be directed by two or more faculty members who will be advocates of the radical and conservative positions. Utilization of position papers by students, panel discussions, debate, and field work on local issues. Prerequisite: 201. <Fall>
- 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
Composition, fluctuations, growth, and distribution of national income. Prerequisites: 200, 201. <Fall, Spring>
- **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)** Cohen, Gregory
Labor force, unions, labor-management relations, legislation, wages, and level of employment. Prerequisites: 200, 201. <Fall, Spring>
- 326. [310] Financial Management. [Business Finance] (3)**
(See B&AS 326.)
- *330. Consumer Economics. (3)** Hamilton
The theory of consumption. Prerequisites: 200, 201, or consent of instructor.
- *331. The Economics of Poverty. (3)** Hamilton
Defines the scope of poverty problems, relates the problem to economic theory, and examines possible solutions. Prerequisites: 200, 201, or consent of instructor.
- *332. Government Control of Business. (3)** Parker
Government and social control of business enterprise, including public utilities; the economics of rate making in public utilities. Prerequisites: 200, 201, or consent of instructor. <Spring>
- 340. Transportation. (3)**
Principles and problems of transportation. Prerequisites: 200, 201.
- *341. Urban Economics. (3)** Church, Hufbauer, Schulze
Economic analysis of urban problems with a focus on housing, discrimination, local finances, deterioration of the environment, and other problem areas. Theoretical issues and the role of policy will be treated. Speakers will be invited from the community to discuss local problems. Prerequisites: 200, 201 or consent of instructor.
- *342. Environmental Economics. (3)** Schulze
Economics of "spaceship" earth; causes of environmental deterioration in market as well as non-market economics; role of economic policy in controlling pollution with special emphasis on water, air, and solid waste residuals. Prerequisites: 201 or consent of instructor.
- *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)** Gisser
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
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
Trade and balance of payments adjustments, theories of the gains from trade, policy issues. Prerequisites: 200, 201, or consent of instructor.
- *425. **Trade Unionism in the United States.** (3) Cohen, Gregory
History of American labor movement. The labor management relationship with emphasis on the economics of collective bargaining. Prerequisite: 320.
- *426. **Economics of the Labor Market.** (3) Gregory
Determinants of labor force, wage levels and structures, and employment; human capital theory and discrimination; economic consequences of trade union and government intervention. Prerequisite: 300.
- *427. **Labor and Public Policy.** (3) Cohen
Development of public policy toward industrial relatives and labor market problems. Emphasis upon economic implications. 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>
- *478. **Seminar in International Studies.** (3) Slavin
(Also offered as Geog, M&CL, Pol Sci and Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.
- *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)
Comparative statics, dynamics, and money flows. Prerequisites: 303, Math 180-181. <Spring>
- *506. **Advanced Macro-economic Theory.** (3)
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) Cohen, Gregory
Prerequisite: 320 or equivalent and permission of instructor.
- *521. **Comparative Labor Problems.** [Comparative Union Movements] (3) Cohen
Analysis of trade union movements and labor market problems in Western Europe, socialist states and underdeveloped nations.
- *526. **Seminar in European Economic History.** (3) Goldsmith
(Also offered as Hist 526.)
- *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-David, Kneese
Application of advanced economic analysis to current environmental problems. Prerequisite: 300 or equivalent. <Fall>
- *546. **Economic Education.** (2 or 4) Parker, Duxtator
(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)
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, Merx, Needler, Schwerin
(Also offered as Anth, Hist, Pol Sc, and Soc 584.) <Spring>
- *599. **Master's Thesis** (1-6 hrs. per semester).
See the *Graduate School Bulletin* for total credit requirements.
- *699. **Dissertation.** (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 Professor 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; Economics-Philosophy 485.

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.

CURRICULUM

See pp. 216-217.

MINOR STUDY

See pp. 216-217.

- 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>
- 211. **Creative Art K-9.** [Creative Art in Secondary School] (3) <Spring>
- 220. **Pre-teaching Experience in Art.** (3-6)††
Introductory art teaching. Required for screening into Art Education. <Summer, Fall, Spring>
- 247. **Topics** (1-3)
- 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>

†† May be repeated for a maximum of 6 hours.

- *429. **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 215 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.)
- *585. **Research Applications to Education. (3)** Cooper, Harris, Resta
(Also offered as Ed Fdn 500.) Application of research findings to educational problems. Emphasis is on the consumption of research rather than the production. <Summer, Fall, 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. **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. 215 of this catalog or consult the **Graduate School Bulletin**.
- *432. **Production and Utilization of Instructional Materials. [Production of Instructional Materials] (3)**
(Also offered as Lib Sc 432.) Includes training in the use of media production and display equipment, production of graphic materials, overhead transparencies, slides, 8mm motion pictures, audio recordings, basic principles of black and white photography, and criteria for effective design and use of media materials. Materials fee required. <Summer, Fall, Spring>
- *433. **[431] Audiovisual Methods and Technology. (3)**
(Also offered as Lib Sc 433.) Application of instructional design and development principles to the planning and production of mediated units of instruction. Includes: a

systematic approach to specifications of content and objectives; assessment of entering behavior; determination of strategy; organization of groups; allocation of time and space requirements; selection of appropriate media resources and evaluation of performance. Students will be required to produce one packaged unit of instruction. Materials fee required. Prerequisite: 432 or permission of instructor. <Summer, Fall Spring>

- *435L. **Remedial Reading Problems.** (3) Van Dongen, 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)
- *456. **Science, Technology, and Human Values: Implications for Education.** (3)
(Also offered as Ed Fdn 456, I Ed 456, Sec Ed 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.
- *460. **Organization and Administration of Media Centers.** [Organization and Operation of Media Center]. (3)
(Also offered as Lib Sc 460.) Study of the organization and management of media centers, of facility design and services related to the production and distribution of materials and equipment. <Spring, Summer>
- *480. **Second Language Pedagogy.** (3)
(Also offered as M Lang 480)
- *481. **Education Across Cultures in the Southwest** (3) Pfeiffer, 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, Pfeiffer, Spolsky, 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) 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) Ulibarri
(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: 535L and El Ed 531 and permission of instructor. <Spring, Summer 1973 and alternate years>
- *535L. **Practicum in Learning Disabilities (Reading).** (3) Van Dongen, Zintz
Tutoring severely disabled readers under supervision. Includes 3 hr. supervised laboratory each week. Prerequisites: 435L 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. <Spring 1973, Summer, and alternate years>
- *542. **Curriculum Theory Seminar.** (3) Mann
Deals with premises upon which the everyday practice of curriculum rests. Critical examination of the role and function of the curriculum worker. Prerequisite: permission of instructor. <Fall>
- *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>
- *580. **Curriculum Development for Bilingual/Bicultural Programs.** (3) Gonzales
Analysis of curriculum models and processes within the context of bilingual/bicultural education. Offered with either Spanish-English emphasis (competency in Spanish language required) or with Navajo-English emphasis. Prerequisite: permission of instructor. <Fall, Spring>
- *581. **Bilingual Education.** (3) Gonzales, Jaramillo, Pfeiffer, Spolsky, Zintz
Prerequisite: 481. <Spring, Summer>
- *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, P. V. Petty, R. Tonigan, C. C. Travelstead, H. Ulibarri; ASSOCIATE PROFESSORS J. Aragon, M. Burlingame, R. L. Holmon, H. Lavender; ASSISTANT PROFESSORS I. Cordova, J. Hale, H. Jaramillo, 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, Cordova, 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. 215 of this catalog or consult the **Graduate School Bulletin**. <Offered upon demand>
- *447. **Topics.** (1-3)
- *509. **Introduction to Educational Administration.** (3) Burlingame, Pohland
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. <Spring, Summer>
- *529. **Workshop in Educational Administration.** (1-4)
For degree restrictions consult the **Graduate School Bulletin**. <Offered upon demand>
- *530. **Adult Education.** (3) Ulibarri
(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. <Spring, Summer>
- *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, T. Zepper; ASSOCIATE PROFESSORS D. I. Bachelor, L. A. Dahmen, M. Harris, V. John-Steiner, W. P. Moellenberg, J. C. Moore, P. E. Resta (Assistant Dean), R. Trujillo (Assistant Dean), A. W. Vogel; ASSISTANT PROFESSORS D. Berch, P. Blackwell, D. Chavez, J. Fashing, R. Mazon, R. Serrano.

Explanation of footnotes not indicated will be found on p. 310.

247. **Topics.** (1-3)
251. **Problems.** (1-3)
284. **Afro-American History.** (3)
(Also offered as Hist 284.) Survey of Afro-American history beginning with Africa and continuing to contemporary Black America.
290. **Foundations of Education.** (3) Bachelor, Rosasco, Vogel, Zepper
An introduction to the philosophical, social, historical, and comparative foundations of education. <Summer, Fall, Spring>
292. **Introduction to the Study of Language.** (3 or 4)
(See Ling 292.)
300. **Human Growth and Development.** (1-3) Berch, Dahmen, Harris, John-Steiner, Moellenberg, Rosasco
Principles of growth and development and implications for the school curriculum. <Summer, Fall, Spring>
310. **Learning and the Classroom.** (3) Berch, Blackwell, Dahmen, Harris, John-Steiner, Rosasco
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) 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>
- *420. **Small Group Communication.** (3) Rosenfeld
(Also offered as Sp Com 420.) Theory and practice of human interaction in small groups, including role behavior, conflict resolution, nonverbal communication, and phases in group development; special application to the classroom.
- *421. **Sociology of Education.** (3) Bachelor, Fashing
(Also offered as Soc 421.) The comparative study of the structure and functioning of educational institutions in the developing and developed societies. <Summer, Fall, Spring>
- *422. **Education and Anthropology.** (3) 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. 215 of this catalog or consult the *Graduate School Bulletin*. <Offered upon demand>
- *447. **Topics.** (1-3)
- *456. **Science, Technology, and Human Values: Implications for Education.** (3)
(Also offered as C&I 456, I Ed 456, Sec Ed 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.
- *474. **Evaluation in the School Curriculum.** (3) Blackwell, Cooper, Moellenberg, Moore
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
(Also offered as Art Ed 585.) 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: 501L 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
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-Steiner, Oller
(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 discriminant analysis are applied to educational problems. Computer applications of these techniques will be stressed. Prerequisite: 501L or equivalent. <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, 432, 433, 437, 460 and at least 3 hours from the following: 351, 441, 451.

MINOR STUDY FOR UNDERGRADUATES IN ARTS AND SCIENCES

Lib Sc 424, 425, 427, 432, 433, 460, and either 429, 451 or 441.

LIBRARY SCIENCE

- 351. Problems.** (1-3) <Offered upon demand>
- *424. Fundamentals of Library Science.** (3)
A survey of the history of libraries and books; social forces that have and are affecting the purposes and functions of libraries; types of libraries; their roles in society; the role of the professional librarian. <Fall>

- *425. **Reference and Bibliography.** (3)
Study of materials and methods for locating information in general works, encyclopedias, dictionaries, indexes, biographical works, media guides, and other major tools in subject fields. <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>
- *432. **Production and Utilization of Instructional Materials.** [Production of Instructional Materials.] (3)
(Also offered as C&I 432.) Includes training in the use of media production and display equipment, production of graphic materials, overhead transparencies, slides, 8mm motion pictures, audio recordings, basic principles of black and white photography and criteria for effective design and use of media materials. Materials fee required. <Summer, Fall, Spring>
- *433. [431] **Audiovisual Methods and Technology.** (3)
(Also offered as C&I 433.) Application of Instructional Design and Development principles to the planning and production of mediated units of instruction. Includes: a systematic approach to specifications of content and objectives; assessment of entering behavior; determination of strategy; organization of groups; allocation of time and space requirements; selection of appropriate media resources and evaluation of performance. Students will be required to produce one packaged unit of instruction. Materials fee required. Prerequisite: 432 or permission of instructor. <Summer, Fall, Spring>
- *437. **Selection of Materials for Libraries and Media Centers.** (3)
Study of the principles of selection and evaluation for developing collections of print and non-print materials; includes acquisition policies, criteria and tools for selection. <Summer, Fall>
- *441. **Children's Literature.** (2)
(Also offered as EI Ed 441.) Pre- or corequisite: EI Ed 331L. <Summer, Fall, Spring>
- *451. **Books and Related Material for Young Adults.** (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. <Fall>
- *460. **The Organization and Administration of Media Centers.** (3)
(Also offered as C&I 460.) Study of the organization and management of media centers, of facility design and services related to the production and distribution of materials and equipment. Prerequisite: 432. <Spring, Summer>

EDUCATION, ELEMENTARY

ASSOCIATE PROFESSOR M. L. Jaramillo (Chairperson); PROFESSORS D. W. Darling, H. D. Drummond, B. Spolsky, M. V. Zintz; ASSOCIATE PROFESSORS K. Auger, D. Gonzales, C. E. Loughlin, D. Lange, J. S. Mann, A. Pfeiffer; ASSISTANT PROFESSORS D. Brodkey, R. Van Dongen.

CURRICULA

See pp. 219-221.

- §100. **Directed Experiences with Children for Auxiliary Personnel, Level I.** (1-6) Peterson
<Fall>
- §129. **Workshop: The Paraprofessional in the Classroom.** (1-6) Peterson
<Fall>
- §200. **Directed Experiences with Children for Auxiliary Personnel, Level II.** (1-6) Peterson
Prerequisite 100. <Fall, Spring>
- §229. **Workshop: Working with Children in Elementary Schools.** (1-6) Peterson
Prerequisite: 129. <Fall, Spring>
- 247. **Topics.** (1-3)†
- 251. **Problems.** (1-3) <Summer, Fall, Spring>

§ Open to students in the A.A. in Educ (Elem) program only.

300. **Bilingual Teaching Methods—Materials and Techniques.** (9) Gonzales
Involves theory and practice in bilingual education emphasizing the Spanish language and culture dimension of the bilingual program. Prerequisite: admission to Elementary Education Bilingual Minor Program.
305. **Teaching in the Kindergarten—Primary Years.** (3) Loughlin
Strategies and materials of effective learning experiences and classroom organization for young children. <Spring>
319. **Physical Education in the Elementary School.** (2) Hinger, Moolenizer
(Also offered as PE 319.) Four class meetings a week. <Summer, Fall, Spring>
- 321L. **Teaching of Social Studies in the Elementary School.** (3) Darling, Drummond, Mann, Van Dongen
3 lectures, 1 hr. lab. <Fall, Spring>
- 331L. **Teaching of Reading in the Elementary School.** (3) Auger, Darling, Drummond, Gonzales, Mann, Van Dongen, Zintz
3 lectures, 1 hr. lab. <Fall, Spring>
- 333L. **Teaching Oral and Written Language in the Elementary School.** (2) Darling, Drummond, Jaramillo, Loughlin, Mann, Van Dongen
2 lectures, 1 hr. lab. <Fall, Spring>
341. **Techniques of Literary Presentations.** (2-3) Gonzales
Exploration of the art and materials of storytelling in schools and recreation centers. Folk and fairy tales, myths, legends, fables, epics, and hero tales, and realistic stories will be studied, presented, and evaluated. <Offered upon demand>
351. **Problems.** (1-3) <Summer, Fall, Spring>
- *353L. **Teaching of Science in the Elementary School.** (3) Darling, Drummond, Mann, Tweeten, Van Dongen
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, Drummond, Mann, Van Dongen
Prerequisite: Math 111, 112, 2 lectures, 1 hr. lab. <Fall, Spring>
400. **Student Teaching in the Elementary School.** (3-6-9-12-15) Auger, Darling, Drummond, Loughlin, Mann, Van Dongen
Pre- or corequisite: 321L, 331L, 333L, 353L, 361L. See also additional requirements on p. 212. Special fee of \$10 is charged. <Fall, Spring>
- *405. **Curriculum for Early Childhood.** (3) Loughlin
Education of children 2-5. Prerequisite: H Ec 408L. <Fall, and upon demand>
- *421. **The Social Studies Program in the Elementary School.** (3) Drummond
Prerequisite: 321L. <Summer 1973 and alternate years, Fall>
- *429. **Workshop.** (1-4)
Carries Graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 215 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, Zintz
Prerequisite: 331L. <Summer, Fall, Spring>
- *433. **Oral and Written Language Program in the Elementary School.** (2-3) Loughlin, Jaramillo
Prerequisite: 333L. <Summer, Fall>
- *441. **Children's Literature.** (2) Gonzales
(Also offered as Lib Sc 441.) Prerequisite: 331L. <Summer, Fall, Spring>
- *447. **Topics.** (2 or 3)†
- *453. **The Science Program in the Elementary School.** (3) Tweeten
Prerequisite: 353L.
- *461. **The Mathematics Program in the Elementary School.** (3) Darling
Prerequisite: 361L. <Summer 1973, Fall 1974 and alternate years>
- *470. **Supervision of Student Teaching in Elementary Schools.** (3)
Overview of teacher preparation programs including program of 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. 207. <Fall, Spring>

- *505. **Seminar in Early Childhood Education.** (3-12) Loughlin
Current literature and research in early childhood education; implications for curriculum decision. Prerequisite: 405. <Spring 1973 and offered upon demand>
- *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 1974 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, Zintz
Prerequisite: 431. <Summer, Fall>
- *533. **Seminar in the Language Arts.** (3-12) Jaramillo, Zintz
Prerequisite: 433. <Summer 1973 and alternate years, Spring>
- *541. **Seminar in Children's Literature.** (3-12) Gonzales
<Summer, Fall 1974 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 Mathematics.** (3-12) Darling
Prerequisite: 461. <Spring 1974, Summer 1974, 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

GUIDANCE: PROFESSORS W. R. Maes (Chairman), G. L. Keppers; **ASSOCIATE PROFESSORS** W. R. Fishburn, M. J. Heisey, R. Micali, H. Whiteside, G. A. Zick; **ASSISTANT PROFESSORS** C. Abe, C. Geer, J. Rinaldi, G. Trujillo, T. Venardos, W. Winther; **INSTRUCTOR** R. Aleman

SPECIAL EDUCATION: ASSOCIATE PROFESSORS G. Adamson (Assistant Chairman), L. A. Bransford⁴, R. Kroth, R. L. McDowell, F. Papcsy, G. VanEtten, B. Watson; **ASSISTANT PROFESSORS** J. Everett, M. Works, R. Levin

GUIDANCE

- *410. **Rehabilitation Concepts and Process.** (3)
Provides the philosophical, historical, and legislative foundations of rehabilitation including an overview of rehabilitative services. Consideration of definitions of rehabilitation and handicapping conditions: physical, emotional, mental, social, and economic. Prerequisite: permission of instructor. <Fall>
- 413. **Career Development in the Classroom.** (3) Keppers
To familiarize the student with the world of work and career development and how to integrate this knowledge into the regular classroom, with emphasis on the group discussion approach. Appropriate for all levels of instruction. <Summer, Fall, Spring>
- *415. **Foundations of Counseling.** (3)
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.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions, see p. 215 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

- *430. Dynamics of Human Behavior. (3)**
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)**
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)**
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)**
(Also offered as Spc Ed 512.) 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)**
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)**
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)**
(Also offered as Spc Ed 515.) 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 with 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)**
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)**
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)**
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)**
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)**
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)**
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)**
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)**
Current problems and research in the field of counseling. Prerequisite: permission of instructor. <Fall>
- *621. Advanced Theories of Counseling and Psychotherapy. (3)**
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)**
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)**
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

CURRICULUM

See pp. 222-223.

- 250. Introduction to Special Education. (2)**
Work experience and seminars in Special Education settings. Required of all undergraduates. Corequisite: 271. <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. <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. Prerequisites: 250, 271. <Summer, 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)**
Prerequisite: permission of department. <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)
(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.** (1-4)
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. Prerequisites: 250, 271. <Summer, Fall, Spring>
- *444. **Characteristics of the Emotionally Disturbed Child.** (3)
An introductory course in the education of the emotionally handicapped child with emphasis on psychological, sociological and educational implications. <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. <Fall, Spring>
- 462. **Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15)
Prerequisite: permission of department. <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. <Spring, Summer>
- *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>
- *476. **Teaching the Neurologically Impaired.** (3)
A study of children who have learning disabilities due to neurological or unknown causes, and the techniques required for their education. Graduate students only. <Fall, Spring>
- 479. **Methods and Materials in Special Education.** (3)
Culminating experience to be taken in conjunction with student teaching. The interpretation, design, development, and implementation of methods and materials in Special Education. Prerequisite: permission of instructor. Undergraduates only. <Fall, Spring>
- *481. **Teaching Children with Learning Disabilities.** (3)
Identifying and educating children with learning disabilities. <Fall, Spring>
- *512. **Differential Diagnosis I.** (3)
(Also offered as Guid 512.) 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>
- *515. **Differential Diagnosis II.** (3)
(Also offered as Guid 515.) 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>

- *521. **Clinician Programs in Therapeutic Physical Education.** (3-6)
(Also offered as PE 521.) Clinical experience in motor skill learning for the mentally retarded child or child with learning disabilities. <Summer, Fall, 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.** (3)
A comprehensive study of the neurologically handicapped with a detailed emphasis on research and educational techniques. Prerequisite: 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. <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. <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 School 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 Paul Dearth, L. F. Diehm, F. J. Hinger, Kenneth Lersten (Program Coordinator, Graduate Studies), N. Moolenijzer, F. Papcsy, C. Piper;

ASSISTANT PROFESSORS H. Atterbom, J. Boaz, B. J. Bond, J. Gustafson, J. Hall, D. H. Hunt, M. Mickelsen, R. M. Mitchell, Janice Olson (Program Coordinator, Physical Education), J. Todor, D. Wilkie; INSTRUCTORS Linda Estes, R. Jacobsen, J. Mechem; ADJUNCT INSTRUCTOR D. Corbin.

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. 223-228.

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)
Exploration of the major areas of health information pertinent to understanding how to achieve, maintain, and promote positive health. Topics covered include mental health, drugs, human sexuality, prevention and control of diseases, nutrition, consumer health and ecology. <Summer, Fall, Spring>
212. [312] **Fundamentals of Human Sexuality.** [Fundamentals of Human Sex and Sex Education.] (3)
Basic knowledge about human sexuality including anatomical, physiological, psychosocial, and ethical components. Broad consideration of sexual behavior. Emphasis on discussion of viable topics from varying points of view. <Fall, Spring>
247. **Topics.** (1-3)
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>
345. **Professional Laboratory Experiences in Health Education.** (1-4)
<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)
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. 215 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)
<Fall, Spring>

- 462. Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15)
<Fall, Spring>
- ø469. Elementary School Health and Health Education.** (3)
Stress is placed on understanding current information related to health of elementary school children, planning and directing learning experiences in health and safety, promoting a 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>
- ø470. Secondary School Health and Health Education.** (3)
Development of needed competencies for teaching Health Education at the secondary level. Emphasis on planning, methodology and classroom techniques, observations, practice, and critical study of problem areas related to classroom instruction and healthful school environment. <Fall>
- *495. Studies in Community Health.** (3)
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 and permission of instructor. <Offered upon demand>
- *496. Investigations in School Health.** (3)
Analysis of current developments and problems in school health at national, state, and local levels. Special attention is directed to the individual and joint responsibilities of various school health personnel. Prerequisite: 469 or 470 or permission of instructor. <Offered upon demand>
- 497. Readings and Research in Honors.** (3-6)
Prerequisite: see p. 207.
- *504. Research Seminar.** [Research in Physical Education] (1)
(See PE 504)
- *506. Analysis of Health Concepts and Practices.** (3)
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)
Study of organizational, administrative, and supervisory functions inherent in school and community health programs. The interrelationship of school and community responsibilities in promoting health is stressed. <Offered upon demand>
- *516. Seminar in Health Education.** (3)
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. <Summer, 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.

PHYSICAL EDUCATION

PROFESSIONAL SERVICE COURSES—PHYSICAL EDUCATION

Most activity courses are offered every semester.

101. Beginning Swimming. (1)

ø Limited to juniors and seniors only.

102. Intermediate Swimming. (1)
103. Advanced Swimming. (1)
Sections include advanced skills, water polo, diving, synchronized (water ballet), or a combination of aquatic activities.
104. Lifesaving. (1)
Prerequisite: ability to swim.
105. Water Safety Instructorship. (2)
Prerequisite: Current Red Cross Lifesaving Certificate.
107. American Country Dance. (1)
108. Ballroom Dance. (1)
109. Modern Dance I. [Beginning Contemporary Dance.] (1) Waters, Glover
(Also offered as Dance 109.) The techniques and practice of basic motor skills and their application to aesthetic communication. <Fall, Spring>
111. Mexican & New Mexican Dance. (1)
112. International Folk Dance. (1)
115. Gymnastics. (Women Only) (1)
116. Apparatus Stunts. (Men Only) (1)
117. Individual Tumbling. (Men Only) (1)
118. Movement Fundamentals. (1)
119. Personal Defense. (1)
120. Wrestling. (Men Only) (1)
121. Weight Training. [Weight Lifting] (1)
123. Wilderness Experiences. (2)
124. Developmental Physical Education. (1)
Sections include aerobics and weight control.
125. Badminton. (1)
126. Beginning Golf. (1)
127. Intermediate Golf. (1)
128. Beginning Tennis. (1)
129. Intermediate Tennis. (1)
130. Bowling. (1)
Special Fees.
131. Horseback Riding. (1)
Special Fees.
132. Skin and Scuba Diving. (2)
Special Fees.
133. Advanced Tennis. (1)
134. Advanced Golf. (1)
135. Basketball-Softball. (1)
136. Field Hockey. (Women Only) (1)
137. Flickerball-Volleyball. [Flickerball-Bowling] (Men Only) (1)
138. Speedaway-Volleyball. (Women Only) (1)
139. Soccer. (1)
140. Volleyball. [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)
Special fees.
144. Beginning Judo. (1)
145. Casting and Angling. (1)
147. Topics. (1)
New activities to the curriculum offered on an exploration basis.
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)
Three class meetings per week. <Fall>
152. **Competency in Team Sports.** (1)
Three class meetings per week. <Fall>
160. **Physical Fitness Programs.** (2)
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)
The professional course in the coaching of football. 4 class meetings per week. <Spring>
163. **Swimming.** (2)
The professional course in swimming. Prerequisite: ability to swim. 4 class meetings per week. <Fall, Spring>
173. [373] **Introduction to Athletic Training.** [Treatment of Athletic Injuries] (2) <Fall, Spring>
201. **Gymnastics.** (2)
The professional course in gymnastics. Prerequisite: 117. 4 class meetings per week. <Fall>
202. **Theory and Practice of Baseball.** (2)
The professional course in the coaching of baseball. 4 class meetings per week. <Fall>
203. **Teaching of Wrestling.** (2)
The professional course in wrestling. 4 class meetings per week. <Spring>
204. **Theory and Practice of Track and Field.** (2)
The professional course in coaching of track and field. 4 class meetings per week. <Spring>
210. **Folk Dance.** (2)
Three class meetings per week. <Fall, Spring>
211. **Competency in Individual and Dual Sports.** (1)
Three class meetings per week. <Spring>
247. **Topics.** (1-3)
<Summer, Fall, Spring>
301. **Teaching of Team Sports.** (2)
The professional course in recreational sports. Prerequisite: M-160, W-152, or permission of instructor. 4 class meetings per week. <Fall>
302. **Teaching of Individual and Dual Sports.** (2)
Prerequisite: M-160; W-211; or permission of instructor. 4 class meetings per week. <Spring>
307. **Team Sports in the Secondary School.** (2)
Prerequisite: 152 or permission of instructor. 4 class meetings per week. <Fall>
308. **Individual and Dual Sports in the Secondary School.** (2)
Prerequisite: 211 or permission of instructor. 4 class meetings per week. <Spring>
309. **Teaching of Gymnastics.** (2)
Prerequisite: W-115; M-117; 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)
(Also offered as El Ed 319.) 4 class meetings per week. <Summer, Fall, Spring>
- 326L. **Physiology of Exercise.** (3)
(See Biol 326L.) <Fall, Spring>

- 345. Professional Laboratory Experiences in Physical Education.** (1-3)
For Physical Education Majors only. May be repeated to a maximum of 7 semester hours.
<Fall, Spring>
- 351. Problems.** (1-3) <Summer, Fall, Spring>
- 360. Officiating in Sports.** (2)†
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 Modern Dance.** [Teaching of Contemporary Dance] (2) Waters
(Also offered as Dance 366) Selection of methods and materials for teaching modern dance. Supervised practice teaching in local schools; elementary, junior, and high school levels. 3 class meetings per week. <Spring>
- 397. Kinesiology.** (3)
Science of human motion. Prerequisites: Biol 136, 139L. <Fall, Spring>
- 398. Principles of Physical Education.** (3)
The aims and objectives of physical education: physiological, psychological, and sociological principles which underlie practices in the profession. Prerequisite: permission of instructor. <Fall, Spring>
- 399. Organization and Administration of Physical Education.** (3)
Program building including criteria for the selection of activities and progression, and other factors affecting course of study such as facilities, equipment, budget, laws, policies, professional responsibilities. Prerequisite: permission of instructor. <Fall, Spring>
- 400. Student Teaching in the Elementary School.** (3-6-9, maximum total allowed 15)
Prerequisites: Ed Fdn 290, 300, 310, PE 319, 301, 302, 309, 310, and Biol 326L. <Fall, Spring>
- *429. Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 215 of this catalog or consult the Graduate School Bulletin. <Summer>
- 444. Teaching of Physical Education.** (3)
(Also offered as Sec Ed 444.) Prerequisites: Ed Fdn 290, PE 210 & 345, M-160, M-117. W-115, 151, 152, 211. <Fall>
- *447. Topics.** (1-3)
<Summer, Fall, Spring>
- 452. Organization of Sports Programs.** (3)
(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: 326L, 301, 302, 309, 310, 345, 444, and Ed Fdn 290, 300, 310. <Fall, Spring>
- 462. Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15)
Prerequisite: 319, 326L, 301, 302, 309, 310, 345, 444, and Ed Fdn 290, 300, 310. <Fall, Spring>
- 464. Theory of Football.** (3)
To review and enlarge the student's knowledge of the basic techniques of football and to acquaint him with the principles, techniques, and strategy of coaching football at the junior high, high school, and college levels. Prerequisites: 162 and senior standing. <Spring>
- 465. Theory of Basketball.** (3)
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. Prerequisites: 161 and senior standing. <Fall>
- 466. Special Physical Education.** (3)
The field of adaptive and corrective physical education and its relationship to the regular curriculum in PE. Prerequisite: 397. <Fall, Spring>
- *467. Survey of Physical Defects** (3)
(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)
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)
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)
Techniques to determine abilities, needs, and placement in the physical education program. <Fall, Spring>
- *490. **Supervision of Physical Education Programs.** (3)
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) <Summer, Fall>
- *492. **History of Physical Education.** (3) <Spring>
- *494. **Clinical Program for Corrective Therapy or Athletic Training.** [Clinical Program for Corrective Therapy] (3-6)
Lectures and actual clinical experience in corrective therapy or athletic training. <Summer, Fall, Spring>
- 497. **Reading and Research in Honors.** (3-6-9)
Prerequisite: see p. 207. <Summer, Fall, Spring>
- *504. **Research Seminar.** [Research in Physical Education] (1)
Designed to give graduate students in health, physical education, and recreation an opportunity to present research proposals for criticism and refinement.
- *505. **Foundations for a Philosophy of Physical Education.** (3)
Prerequisite: at least 3 hours in history, principles, or methods of physical education. <Summer, Fall>
- *510. **Curriculum Construction in Physical Education.** (3) <Spring, Summer>
- *514. **The Remedial Program in Physical Education.** (3) <Spring, Summer>
- *516. **Seminar in Physical Education.** (3) <Summer, Fall, Spring>
- *521. **Clinical Program in Therapeutic Physical Education.** (3-6)
(Also offered as Spc Ed 521) Clinical experience in motor skill learning for the mentally retarded child or child with learning disabilities. <Summer, Fall, Spring>
- *523. **Biomechanics.** (3)
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)
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)
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)
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. <Spring, Summer>
- *547. **Topics.** (1-3) <Summer, Fall, Spring>
- *551-552. **Problems.** (1-3 hrs. each semester)
- *570. **The Analysis of Teaching Physical Education.** (3)
(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)**
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. <Spring, Summer>
- *595. Facilities Planning, Construction, and Utilization. (3)**
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. <Spring, Summer>
- *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.

RECREATION

- 175. Foundations of Recreation. (3)**
History of leisure and recreation; concepts of play and recreation; major recreation agencies. <Fall, Spring>
- 247. Topics. (1-3) <Offered on demand>**
- 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. (3)**
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)**
The professional course in recreational sports. Prerequisite: permission of instructor. 3 class meetings per week. <Fall>
- 302. Recreational Sports. (2)**
Continuation of 301. <Spring>
- *311. Man and Leisure. [Education for Leisure] (3)**
Background in leisure problems of today with emphasis on the individual's role and relationship to those problems. <Fall, Spring>
- 321. Recreational Leadership (3)**
Methods and materials in recreational leadership; theory, principles, and practice. Prerequisites: 175, 290. <Fall, Spring>
- 345. Professional Laboratory Experiences in Recreation. (3)**
Must be taken in conjunction with 321. <Fall, Spring>
- 351. Problems. (1-3) <Summer, Fall, Spring>**
- 378. 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. 215 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)**
(Also offered as PE 452) Organization and administration of games and sports in intramural, interschool, and community recreation programs. Prerequisites: permission of instructor. <Fall, Spring>

- *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. (3-6)**
Prerequisite: 345. <Summer, Fall, Spring>
- 476. Field Work in Recreation. (3-6)**
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. <Spring>
- *479. Park Management. (3)**
The principles, practices, and problems involved in public park management, with emphasis upon facility design, maintenance, finance, and administration. Prerequisite: 454 or permission of instructor. <Spring>
- 480. Administration of Recreation Programs. (3)**
The organization, administration, and conduct of recreation programs on the community level. Prerequisite: 454. <Spring>
- *485. Interpretative Services in Outdoor Recreation Programs. (3)**
<Offered upon demand>
- 497. Reading and Research in Honors. (3-6)**
Prerequisite: see p. 207. <Offered upon demand>
- *504. Research Seminar. [Research in Physical Education] (1)**
(See PE 504.)
- *507. History and Philosophy of Recreation. (3)**
The historical development of recreation concepts and philosophies. <Fall>
- *508. Recreation Administration. (3)**
Organization and administration of public recreation, administrative practices, and techniques. <Spring>
- *516. Seminar in Recreation. (3)**
Current trends and issues in the field of leisure and recreation. <Spring>
- *524. Evaluation of Recreation Resources and Programs. (3)**
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. (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)**
Basic sociological and psychological concepts of leisure and their impact upon society. <Spring>
- *586. Principles of Therapeutic Recreation. (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 **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.

EDUCATION, HOME ECONOMICS

PROFESSORS E. Snell (Chairman); ASSOCIATE PROFESSOR R. B. Harris; ASSISTANT PROFESSORS I. H. McMurray, T. Olson, M. M. Smith, M. Pittman.

MAJOR STUDIES AND CURRICULUM

See pp. 228-230.

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, 218, 408L, 418.
2. Clothing and Textiles, 6 hours: H Ec 150L, 250, 252, 254L, 456L.
3. Foods and Nutrition, 6 hours: H Ec 120L, 125, 222L, 325.
4. Housing, 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, 3 hrs. lab., 1 hr. discussion. <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>
218. **Marriage and Personal Development.** (3) Olson
Development of specific interpersonal skills, with opportunities to practice behaviors and apply knowledge as related to marriage relationships. <Fall, Spring>
- 222L. **Meal Management.** (3)
Principles of selection and preparation of food. Meal planning and service. Prerequisite: 120L or equivalent. 1 lecture, 4 hrs. lab. <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. Consumer education related to textile products. <Fall, Spring>
- 254L. **Tailoring.** (3) McMurray
Construction of a wool suit or coat emphasizing fitting and techniques of finishing. 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. House and Its Environment.** [The House and Its Furnishings] (3) Pittman
Guides in the selection of a house and furnishings with emphasis upon the use of space for function, economy, and beauty. <Fall, Spring>
- 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, lab participation. <Fall, Spring>
- 418. Family Relationships.** (3) Olson
Basis for discussion of contemporary issues in family life are the historical roots of the family in the culturally pluralistic United States. <Fall, Spring>
- 427L. Large Quantity Food Production.** (3) Lockett
Standard methods of food production in quantity; food cost control; standardization of formulas, menu planning and food service. Prerequisites: 120L, 222L, 431L. <Spring 1975 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.
- *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.
- *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 306.
- 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, Spring>
- *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: advanced standing—majors and minors only. 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
Recent research 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. 215 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. 207. <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. Duxtator (Chairman), B. M. Crawford, W. H. Ivins, R. Kline, W. B. Runge;
ASSOCIATE PROFESSORS G. Hirshfield, A. W. Howard, G. Stoumbis, P. Tweeten, G. Watson,
R. White; **ASSISTANT PROFESSORS** R. Esparza, L. Macias, S. Mierzwa, L. Smith.

BUSINESS EDUCATION

ASSOCIATE PROFESSOR P. Loyd (Program Head), **ASSISTANT PROFESSORS** C. G. Sampley, C. McQueen, J. Warner.

INDUSTRIAL EDUCATION

ASSOCIATE PROFESSOR R. D. Nesbitt; **ASSISTANT PROFESSORS** G. Cunico⁴, F. Field, 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. 232-237.

Business Education, see pp. 217-218.

Industrial Education, see p. 230.

SECONDARY EDUCATION

Explanation of footnotes not indicated will be found on p. 310.

351. Problems. (1-3)

<Offered upon demand>

§§361. Pre-Student Teaching Experience I. (3)

Three hours seminar, six hours field work weekly. <Summer, Fall, Spring>

362. [361] Pre-Student Teaching Experiences II. (3)***429. Workshop. (1-4)**

Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 215 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 Fd 300 and/or 310.

- 432. Teaching of Social Studies. (3)** Doxtator, Esparza, Stoumbis
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, White
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)** Mierzwa, Mitchell
Prerequisite: 361. <Fall>
- 439. Teaching of Business Subjects. (3)** Loyd
(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, Macias
(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. (3)** Garrett, Loyd, 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)** Jespersion
(Also offered as German 445) Prerequisite: Sec Ed 361. <Offered upon demand>
- *447. Topics. (1-3)**
- *456. Science, Technology, and Human Values: Implications for Education. (3)**
(Also offered as C&I 456, Ed Fdn 456, I Ed 456) Examination of the continuing social impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.
- 461. Student Teaching. (3-6-9, maximum total allowed 15)**
Observation and teaching in 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. 211-213. <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)**
Prerequisites: see p. 207. <Offered upon demand>

§ Credit for undergraduate teaching majors and graduates in Education only.

- *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>
- *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, Doxtator, 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. <Spring, Summer>
- *503. Student Activities in the Secondary School.** (3) Doxtator, Ivins
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) Doxtator
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) Howard, Loyd, Nesbitt, Runge
<Offered upon demand>
- *510. Developments in Industrial and Vocational Education.** (3) Garrett, Loyd, Nesbitt, Runge
(Also offered as Bus Ed 510 and I 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. <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) White
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, 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, 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)† Tweenen
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, 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>

ø Available for graduate credit except for graduate majors in Economics or History.

- ø549. **History Education.** (3) Doxtator
(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) Doxtator
(Also offered as Hist 550.) Research related to issues and problems in the methods, materials and curricular emphasis in history education. <Summer only>
- *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) Sampley
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 Typewriting.** (3) Sampley, Warner
Business forms, correspondence and letter style, manuscripts, tabulation, speed building with individual goals. Prerequisite: knowledge of typewriter operation and keyboard. **Students who have had two years of typewriting in high school will not receive credit.** <Fall, Spring>
- §113. **Shorthand Theory.** (3) Sampley, Warner
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) Sampley, Warner
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.** <Fall, Spring>
117. **Office Machines and Filing.** (2) Warner
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) Sampley, Warner
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) Sampley
Development of the ability to apply secretarial skills to office duties and to handle efficiently the responsibilities of a secretarial position. Prerequisites: 112, 113, or equivalent. <Fall, Spring>

§ Maximum of 6 hrs. credit allowed in Arts and Sciences. No credit allowed in Pharmacy.

¶ No credit allowed toward degrees in Colleges of Arts and Sciences and Pharmacy.

ø Available for graduate credit except for graduate majors in Economics or History.

- 262. Advanced Typewriting.** (3) Sampley, Warner
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>
- 265. Business Communications.** (3) McQueen, Warner
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. <Fall, Spring>
- 351. Undergraduate Problems.** (1-3) Loyd
- 429. Workshop in Business Education.** (1-4) Loyd <Offered upon demand>
- 439. Teaching of Business Subjects.** (3) Loyd <Offered upon demand>
- *443. Coordination Techniques in Vocational Cooperative Programs.** (3) Garrett, Loyd, 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 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) Loyd, McQueen <Fall, Spring>
- 462. Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15) Loyd, McQueen <Fall, Spring>
- 463. Student Teaching in the Secondary School: Professional Education Block.** (6-15) Loyd, McQueen <Fall, Spring>
- *501. Foundations of Vocational Business Education.** (3) Loyd
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.** (3) Loyd
Analysis of research and literature and implications of findings for vocational Business Education <Offered upon demand>
- *510. Developments in Industrial and Vocational Education.** (3) Garrett, Loyd, Nesbitt, Runge
(Also offered as Sec Ed 510 and I Ed 510) <Summer only>
- *511. Instructional Trends and Research in Typewriting Education.** (3) Loyd
The principles, methods, procedures, and problems in the teaching of typewriting at all levels for all objectives. <Offered upon demand>
- *512. Instructional Trends and Research in Shorthand Education.** (3)
The principles, methods, procedures, and problems in the teaching of shorthand and transcription. <Offered upon demand>
- *513. Instructional Trends and Research in Bookkeeping and Accounting Education.** (3)
The principles, methods, procedures, and problems in the teaching of bookkeeping and accounting. <Offered upon demand>
- *514. Instructional Trends and Research in Socio-Business Education** (3) Loyd
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. Methods and Materials in Vocational Office and Distributive Education.** (3) Loyd, 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) Loyd
For degree restrictions see department chairman. <Offered upon demand>

φ*546. 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, Fall>

551-552. Graduate Problems. (1-3 hrs. each semester) Loyd*INDUSTRIAL EDUCATION**

Explanation of footnotes not indicated will be found on p. 310.

I. TECHNICAL <Courses in this section will also be offered upon demand in summer session>**101. Shop Computation. (3) Cunico**

Practical application of algebra, geometry, and trigonometry in the solution of applied problems found in the industrial arts. <Fall>

110L. Machine Woodworking. (3)

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. Industrial Graphics (Drafting) and Design I. [Drafting I.] (4) 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. Industrial Graphics (Drafting) and Design II. [Drafting II] (4) 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) Field

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)

The use of the various scales for solving technical problems. <Offered upon demand>

261L. Descriptive Geometry. [Drafting III.] (2) 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. Architectural Drafting. [Drafting IV] (2)

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)

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>

φ Available for graduate credit except for graduate majors in Economics or History.

285L. Welding. (3) Field, 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. <Fall, Spring>

315L. Hot Metal Processes. [Pattern Making and Foundry] (3) Field

Introduction to hot metal processes; covering basic foundry technology (pattern making, core boxes, and non-ferrous casting), forging, heat treatment of metal (casehardening, tempering, and annealing), and basic metallurgy. 2 lectures, 3 hrs. lab. Prerequisites: 110L and 120L; 111L recommended.

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) 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) Field

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) Field, 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)

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) Field

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)

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. (1)**

Seminar in history, philosophy, and current trends, including an orientation to industrial teacher preparation.

247. Topics. (1-3)**351. Problems. (1-3) <Fall, Spring>****429. Workshop in Industrial Education. (1-4)**

For degree restrictions, see p. 215 of this catalog. <Offered upon demand>

433. Teaching of Industrial Subjects (3) Field, 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) Field, 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.** (3) Garrett, Loyd, Runge
(Also offered as Sec Ed 443 and Bus Ed 443.) Development of present practices in work experience programs for secondary 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)
- *456. Science, Technology and Human Values: Implications for Education.** (3)
(Also offered as C&I 456, Ed Fdn 456, Sec Ed 456) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum, of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.
- *490. Measurement and Evaluation Techniques.** (3) Field, Nesbitt
Methods of measuring achievement in industrial subjects. Emphasis is given to evaluation of manipulative activities and technical knowledge.
- *492. Instructional Analysis.** (3) Field, 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, Loyd, 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. <Summer only>
- *511. Laboratory Planning and Design.** (3) Field, 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)† Garrett, Nesbitt
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.
- *547. Topics.** (1-3)
- *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. 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>

340. Electronics and Your World. (3)

Non-mathematical introduction to electronics and its interactions with the lives of individuals in the modern world. Topics include discussions of the basic operating principles involved in radio, television, the telephone, electronic musical instruments, computers, and the reproduction of sound (hi-fi, stereo, quadraphonic, etc.). Demonstrations will be provided where applicable. No prerequisites. <Fall>

****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. Computers and Society. (3)**

Interrelation between technology and society via computers. Logic structures underlying use of computers in design, analysis, communication, and control will be studied together with application to law, society, finance, art and technology. Basic knowledge of algebra will be assumed. Approach is non-mathematical. <Fall>

****362. Information and Communication. (3)**

What is information? Can it be measured? This course will answer these two questions and will develop ways to measure the information content of messages and data. These techniques will be applied to problems of storage and retrieval of information, coding of messages, and communication capacity of various types of communication channels. 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>

370. Materials in Today's Environment. (3)

Modern day devices and products from space vehicles to the tiniest transistor, from aluminum baseball bats to artificial hearts, owe their very existence to new materials. This course explores the technology which provides a wide range of materials in our technological age and discusses critically the societal impact: history of materials, basic materials science, concepts of material selection, and materials disposal and recycling. <Spring>

372. Chemical Technology. (3)

"Better things for better living . . . through chemistry." Examines critically the validity of this slogan. Life in the twentieth century has been influenced greatly by chemical technology: petroleum products, synthetic fibers, plastics, explosives, fertilizers, pesticides, and detergents. The societal impact of production, utilization and disposal of these and other chemical products is discussed. <Fall>

****380. 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>

390. Understanding Your Technological Environment. (3)

Operating principles, consumer economics, environmental impact, and safety for common technological devices. Typical topics: automobile, housing, recreational equipment, appliances. <Spring>

COOPERATIVE EDUCATION PROGRAM

Students enrolled in the Cooperative Education Program (see p. 240) 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 PROFESSOR** G. H. Quentin.

CURRICULUM

See p. 244.

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>

301. [401] Thermodynamics. [Principles of Thermodynamics I] (3)

Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physcs 161, Math 264, <Summer, Fall, Spring>

****302. [402] Chemical Engineering Thermodynamics. [Principles of Thermodynamics II] (3)**

Continuation of 301 with applications to chemical engineering processes; physical and chemical equilibria. <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>
- 370. [461] Engineering Materials Science. [Chemical Engineering Materials I] (3)**
Structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers. Prerequisite: 301; recommended prerequisite: CE 302. <Fall, 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>
- 450. [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>
- 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. [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, 302. <Fall>
- *470. Materials for Energy Production. [Materials for Nuclear Applications] (3)**
(Also offered as Nucl E 470) Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisite: 370 or equivalent. <Fall>

- *472. [462] Chemical Engineering Materials. [Chemical Engineering Materials II] (3)**
Modern theory of corrosion, electrochemical principles, and electrolytic processes with applications. Methods of production of polymers and effect of controlled structure on properties. Use of polymers as engineering material. <Spring>
- 481L. Chemical Engineering Process Laboratory I. (1)**
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, Spring>
- 482L. Chemical Engineering Process Laboratory II. (2)**
Continuation of 481L, but may be taken as an independent unit. Prerequisite: Chem 311. 6 hrs. lab. <Fall, Spring>
- *491-492. Special Topics in Chemical Engineering. (1-3, to a maximum of 6)†**
Advanced studies in various areas of chemical engineering. <Fall, Spring>
- **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: 301, 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>

- *571. Thermodynamics of Materials.** (3) Gauster, Yost
Elasticity (ordinary and rubber) and plasticity; thermodynamics of crystals; composite materials; nucleation in gases, liquids, and solids; special topics. Recommended prerequisite: 542 or equivalent. <Fall>
- *572.** [591] **Diffusion in Solids.** [Theoretical Physical Metallurgy] (3) Horak
Atomic theory of diffusion in metals, alloys and compounds, solution of the diffusion equations, physical and thermodynamic aspects of diffusion, thermal diffusion, electro-migration, experimental methods. Recommended prerequisite: 571. <Spring>
- *574.** [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; recommended: Chem 301. <Spring>
- *575.** [595] **Selected Topics in Material Science.** [Seminar in Materials.] (1-3)‡
<Offered upon demand>
- *576.** [592] **Strengthening Mechanisms in Solids.** [Physical Metallurgy of Alloys] (3) Hoover, Horak
Elasticity theory of dislocations and dislocation arrays, atomic and continuum treatments of strain, solid solution, defect, precipitation, dispersion, radiation and martensitic strengthening, relation of dislocations to properties. Recommended prerequisite: 571. <Fall>
- *577.** [597] **Phase Transformations in Solids.** [Crystalline Defects in Solids.] (3) Horak, Yost
Theory of nucleation and transformation in condensed systems, kinetics, and morphology of phase transformations with emphasis on precipitation, eutectoid and spinodal decomposition, martensite equilibrium and non-equilibrium effects. Recommended prerequisite: 571. <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.

ENGINEERING, CIVIL

PROFESSORS C. L. Hulsbos (Chairman), R. H. Clough, W. R. Gafford, R. G. Huzarski, J. E. Martinez, M. C. May, G. E. Triandafilidis; ASSOCIATE PROFESSORS R. L. Bleyl, J. B. Carney, Jr., M. M. Cottrell, R. L. Johnson, Jr., G. W. May, C. O. Varan; ASSISTANT PROFESSOR J. R. Matthews.

CURRICULUM

See p. 247.

- 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>

§ No credit allowed in College of Engineering.

- 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>
- 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) G. May**
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)**
Administration, planning, geometric design, development, economics, operation, and social impact of transportation systems. Prerequisite: junior standing. <Fall>
- *401. Advanced Mechanics of Materials. (3)** Johnson, G. May, Varan
(Also offered as ME 401.) State of stress and strain at a point, stress-strain relationships; topics in beam theory such as unsymmetrical bending, curved beams, and elastic foundations; torsion of 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 265. <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, 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, 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 316. <Spring>
- *430. Applied Hydrodynamics. (3)** Carney, Martinez
Principles of dimensional analysis, dynamic similarity, flow nets, irrotational flow, gravity flow, unsteady flow, boundary layer theory, separation, cavitation, drag; pumps and turbines. Prerequisite: 331L. <Offered upon demand>
- *431. Intermediate Hydrology. (3)** Carney, Martinez
Hydrometeorology, soil moisture, runoff cycle, losses, overland flow, flood routing, runoff routing, ground water flow. 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 1974 and alternate years>
- *436. [436L] Sanitary Engineering II. (3)** 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. <Spring>

- *437. **Water and Wastewater Analysis.** [Sanitary Engineering III.] (3) Matthews
Use of analytical methods to quantitatively define the character of water and wastewater. Water quality measurements applicable to the establishment of water and wastewater standards, design and control of treatment processes, and analysis of industrial waste. Prerequisite: 336L or permission of instructor. <Fall>
- *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) Bleyl
Applications of the theory of probability and statistics to engineering problems such as measurement errors, traffic flow, sanitary engineering, water resources, hydrology, construction management, yield and fracture strength of metals. Prerequisite: permission of instructor. <Fall>
- *451. **Engineering Analysis.** (3) Cottrell
Methods of theoretical analysis of typical engineering systems. Applications of ordinary and partial differential equations, finite differences and matrices to solve engineering problems. Prerequisites: Math 316 or equivalent and permission of instructor. <Offered upon demand>
- *452L. **Computer Applications in Civil Engineering.** (3) Bleyl
Use of digital computers to solve typical problems in various areas of Civil Engineering, including use of stored programs and preparation of original programs. Prerequisites: 102L or EECS 336, senior standing in Engineering. 2 lectures, 3 hrs. lab. <Spring>
- *453. **Numerical Methods in Civil Engineering.** (3)
Methods of discrete analysis of engineering systems. Applications of numerical techniques to solve engineering problems. Prerequisites: 102L or EECS 336, Math 316 or equivalent. <Offered upon demand>
- *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. <Fall>
- *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 <Fall>
- *463. **Intermediate Soil Mechanics.** (3) Carney, Clough, Triandafilidis
Soil-water relationships, shear strength, consolidation, introduction to physico-chemical properties of soils. Prerequisite: 360L. <Fall>
- *464. **Rock Mechanics.** (3) Triandafilidis
Geologic considerations; physical properties and engineering classification of intact rock; in situ behavior of rock masses; effect of geologic discontinuities on physical properties; application of rock mechanics principles to specific foundation problems; reinforcement of rock masses; controlled blasting and blast induced vibrations. Prerequisite: 360L. <Offered upon demand>
- *470. **Construction Methods and Equipment.** (3) Clough
Comprehensive study of the ownership and operating costs, production rates, and operating characteristics of the major construction equipment types. Prerequisite: senior standing. <Fall>
- *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; asphalt; design of bituminous paving mixtures. Prerequisite: senior standing in Engineering. 2 lectures, 3 hrs. lab. <Offered upon demand>

- *476. Highway and Airport Pavements.** (3) Martinez
Principles of highway and airport pavement design. Prerequisite: 360L. <Spring>
- *482. Traffic Engineering.** (3) Bleyl, M. May
Introduction to the concepts and techniques of highway traffic engineering including traffic characteristics, studies, geometric design, regulations, control, planning, and environmental considerations. Prerequisite: senior standing in engineering. <Spring>
- *483. Traffic Engineering Studies and Characteristics.** (3) Bleyl, M. May
Highway traffic speed, volume, capacity, accidents, origin-destination, and parking; the road users and vehicles in traffic; models and theories describing traffic flow. Prerequisite: 382 or permission of instructor. <Fall>
- *484. Seminar in Transportation Engineering.** (2) Bleyl, M. May
Guest lecturers on contemporary problems and issues related to transportation engineering. <Spring>
- 490. Professional Problems in Engineering.** (2)
Ethical and professional considerations in the engineer's relationship to other engineers, his clients, and society; contractual agreements common to engineering; professional economics. Prerequisite: senior standing in Engineering. <Fall>
- *491-492. Special Topics in Civil Engineering.** (1-3 to a maximum of 6)
Advanced studies in various areas of civil engineering.
- 493. Special Topics in Civil Engineering—Honors.** (1-3 to a maximum of 6)
Prerequisite: 3.2 grade-point average. <Offered upon demand>
- 494. Honors Seminar.** (3)
Prerequisite: 3.2 grade-point average. <Offered upon demand>
- *501. Advanced Structural Analysis.** (3) Johnson, G. May, 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. <Offered upon demand>
- *506. Prestressed Concrete.** (3) Hulsbos
Theoretical and practical aspects of behavior and design of prestressed concrete structures. Prerequisite: 411. <Spring 1975 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, 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. <Offered upon demand>
- *516. Theory of Plates.** (3) Cottrell, G. May, 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. <Offered upon demand>
- *517. Discrete and Macro Mechanics.** (3) 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. <Offered upon demand>
- *518. Elastic Stability.** (3) Cottrell, 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, Varan
(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. <Offered upon demand>
- *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. <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 1974 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. <Offered upon demand>
- *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. <Spring>

- *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>
- *581. **Highway Traffic Operations.** (3) Bleyl
Theory and application of traffic control devices and traffic regulations; operation of traffic signals and roadway networks; design of street lighting. Prerequisite: 382 or permission of instructor. <Fall>
- *582. **Highway Traffic Design.** (3) Bleyl
Basic principles and geometric design of roadways, interchanges, intersections, and parking facilities. Prerequisite: 483. <Spring>
- *583. **Urban Transportation Planning.** (3) Bleyl
Planning aspects of highway transportation including transportation goals, transportation forecasting techniques and models, selection between alternate solutions, financing improvements. Prerequisite: 483. <Spring>
- *599. **Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.
- *623. **Random Processes in Mechanics.** (3)
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 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), M. D. Bradshaw, W. J. Byatt, A. Erteza, W. W. Grannemann, S. Karni, R. D. Kelly, A. H. Koschmann, H. D. Southward; ASSOCIATE PROFESSORS: L. T. Boatwright, R. C. DeVries, J. Djuric, H. K. Knudsen, D. P. Petersen, D. Sparks, R. H. Williams; ASSISTANT PROFESSORS R. Colclaser, J. T. Cordaro, S. Gurbaxani, B. Peterson; VISITING ASSISTANT PROFESSOR C. F. Hawkins

CURRICULUM

See p. 249.

- 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 316. <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 264. <Summer, Fall, Spring>
- 231. Digital Computation in Electrical Engineering. (2) Sparks**
Application of computer methods to the solution of problems in electrical engineering. Topics covered—solutions of simultaneous linear equations, numerical differentiation and integration, elementary statistics and numerical solutions to ordinary differential equations. Prerequisites: CE 102L, Math 163; corequisite: 203 or permission of instructor. <Fall>
- 234L. Digital Systems Laboratory. (2) Erteza, Peterson, Sparks**
Corequisite: 238. 1 lecture, 3 hrs. lab. <Spring>
- 238. Digital Systems. (4) Erteza, Peterson, Sparks**
Basic digital systems concepts, data structures, digital and computer system attributes. Problem formulation and solution implementation. Corequisite: 234L. <Spring>
- **301. Electronic Applications. (3)**
Principles of basic electronic devices, circuits, and modules. Applications in sensors, measurements, instrumentation, and feedback systems. An introductory course primarily for advanced students interested in experimental techniques. Not for engineering majors. Prerequisite: permission of instructor. <Fall, Spring>
- **302. Clinical Instrumentation. (3) Williams**
A course for nurses that surveys the electrical and electronic instrumentation used in clinical medicine. Topics covered include basic principles of electricity, physiological effects of electrical shock, ECG, EEG, intensive care instrumentation, surgery instrumentation, and diagnostic instrumentation. Prerequisites: Biol 236L. <Offered upon demand>
- 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: "C" or better in 213. <Fall, Spring>
- **321. Electronics I. [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. Electronics II. [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, Peterson, Sparks**
Computer organization, Computer Logic, binary and decimal arithmetic units, coding and basic programming including use of the PDP-11 computer. Prerequisites: Math 163 or equivalent, 231 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>

§ Not available for graduate credit for students specializing in computers.

- *340. [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: 313. <Spring>
- 361. Electromagnetic Fields and Waves I.** (3) Bradshaw, Byatt
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, Byatt
Continuation of 361. Prerequisite: 361. <Fall, Spring>
- *370. Physical Properties of Electrical Engineering Materials.** (3) Colclaser, Southward
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 in Continuous and Discrete Systems Analysis.** [Methods for Systems Analysis.] (3)
Matrices and linear systems; computer matrix manipulation-rank, Gauss elimination, inversion, factorization. Transform methods in linear systems. Prerequisites: senior standing, programming knowledge. <Fall, Spring>
- *404. Biomedical Instrumentation.** (3) Bolie
Design of instruments for measuring medically important physiological parameters, with emphasis on biosensors, signal conversion, and display. Applications to artificial limbs and organs, intensive care systems, and closed-loop therapeutics. Prerequisites: 204 and senior standing, or permission of instructor. <Fall, 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 316. <Offered upon demand>
- **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>
- *412. Analysis of Nonlinear Systems.** (3) Karni
Phase-plane analysis; stability; limit cycles; graphical and numerical methods. Prerequisite: senior standing in EECS or equivalent. <Fall>
- *415. Minicomputer Techniques and Applications.** (3) Cordaro
Basic operation, assembly language programming and I/O interface problems. Emphasis on the use of minicomputers in digital communications, control, signal processing, and instrumentation. Prerequisite: 335 or permission of instructor. <Spring>
- *418L. Analog and Hybrid Computer Techniques.** (3) Bradshaw
Advanced analog computations; basic concepts of hybrid computers; parallel hybrid computer techniques. Solution of practical engineering problems. Prerequisites: senior standing or permission of instructor. 2 lecture, 3 hrs. lab. <Spring>
- *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), clamping, 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/I.** (3)
List processing, string and symbol manipulation using PL/I. Table searching and sorting techniques. DATA attributes of PL/I covered as well as the four classes of PL/I storage. Prerequisites: 336 and 431. <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 Design of Assemblers.** [Introduction to Assembly Language Programming.] (3) Erteza
Construction of Assemblers is studied, with modification of a skeleton assembler a major project in the course. Prerequisites: 335 and 337. <Fall>
- *436. **Advanced Engineering Programming.** (3)
Solving engineering problems using discipline-oriented special programs. Large scale problems are solved using programs such as CSMP (Continuous System Modeling Program), SCEPTRE, CINDA. Prerequisites: 335, 336 or equivalent. <Spring>
- *437. **Digital Computer Operating Systems.** (3) Sparks
Analysis of time-share operating systems, basic functions of the systems. The performance of operating systems is studied using a simulation model. Prerequisites: 336, 337. <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. Introductory Semiconductor Physics.** [Solid State Physical Electronics.] (3) Colclaser, Grannemann, Southward
For students who plan to pursue graduate study in solid state or related areas. Quantum and statistical mechanics concepts, crystal structure, thermal properties, bands, equilibrium and nonequilibrium carrier statistics, drift and diffusion. Prerequisite: 370. <Fall>
- *471. Device Physics and Models.** (3) Colclaser, Southward
Physical descriptions of semiconductor rectifying and amplifying devices, including diodes, transistors, and field effect devices. The relationships between the physical descriptions and small-signal, large-signal, and non-linear circuit models. Models suitable for computer aided design and circuit analysis. Frequency effects. Prerequisite: 370 or Physics 330. <Spring>
- *472. Microelectronics.** [Discrete and Integrated Semiconductor Devices.] (3) Colclaser
The technology of monolithic and MOS integrated circuits, and thick-film and thin-film hybrid microelectronics. Design philosophy and techniques. Computer aided design. Large scale integration and semiconductor memories. Prerequisite: 370 or Physcs 330. <Fall>
- *473. Theory and Applications of Field Effect Transistors.** (3) Grannemann
Surface phenomena, metal-insulator-semiconductor interfaces, theory of depletion and inversion, and thin film, enhancement mode, depletion mode field effect transistors; equivalent circuits, applications to microcircuits, simple circuit applications. Prerequisites: 370 or equivalent. <Fall>
- *474. Optoelectronic Devices and Applications.** (3) Gurbaxani
Topics in physical optics and devices in optoelectronic sources, amplifiers and sensors. Practical applications in communications, computer technology and contemporary display techniques using lasers, liquid crystals, LEDS, solid state vidicons, holograms and optical memories. Prerequisites: 370 or permission of the instructor. <Spring>
- *475L. Hybrid Microelectronics Laboratory.** [Solid State Experimental Techniques.] (2) Colclaser
Passive semiconductor device processing. Thick-film hybrid microelectronics design and fabrication. Prerequisite: senior standing. 1 lecture, 3 hrs. lab. <Fall>
- *476L. Active Semiconductor Device Fabrication Laboratory.** [Semiconductor Technology Laboratory.] (2) Colclaser
Design and fabrication silicon bipolar transistors, MOS transistors, and monolithic integrated circuits. 1 lecture, 3 hrs. lab. Prerequisite: senior standing. <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.** (1-6 hrs. per semester)[†]
Registration for more than 3 hrs. requires permission of department chairman. <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 dynamical systems. Analysis techniques for linear models in control systems, network theory, and signal processing. Continuous, sampled and discrete representations. Prerequisite: 400. <Fall>
- **502. Electrical Engineering Principles for Advanced Students. (3)**
Electrostatics, steady currents, Maxwell's equations. Lumped, linear circuits. Numerical solution of circuit equations using ECAP program. Modeling of electronic circuits. Not for students with BSEE. Prerequisite: knowledge of differential equations and computer programming. <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; problems of mathematical programming under uncertainty. Probabilistic and decision theoretic concepts applied in various systems engineering models, including queueing, inventory control, Markov processes, systems simulation, and parametric sensitivity analysis. Prerequisite: 506 or equivalent or permission of instructor. <Spring>
- *512. Modern Network Theory. [Linear Network Theory.] (3) Karni**
Graph theory applied to network analysis. Analysis of linear networks: analytic and numerical methods using computer programs (ECAP, SCEPTRE). Sparse matrix formulation for networks. Prerequisite: 500 or equivalent or permission of instructor. <Spring>
- *513. [611] Methods of Network Design. [Methods of Network Synthesis.] (3)**
Realizability conditions. PR conditions. Basic classical methods for lumped, linear, constant networks. Sensitivity and computer-aided design. Approximations and iterative numerical design. Prerequisite: 400. <Fall>
- *515. [615] Graph Theory and Applications. [Topology of Systems.] (3)**
Advanced topics in topology. Matrices and graphs. Topological analysis of networks. Flow graph techniques. Applications to problems in economics, game theory, communications, statistical mechanics, social sciences. Computer solutions of graph-theoretical problems. Prerequisites: 400 or permission of instructor. Programming knowledge. <Offered upon demand>
- *531. Error-Correcting Codes. (3) DeVries**
Linear codes; cyclic codes; convolution codes; arithmetic codes; coding and decoding using linear sequential logic. Prerequisite: 438. <Fall 1973 and alternate years>
- *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) Koschmann**
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**
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)**
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) DeVries
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. Computer Methods of Signal Analysis I.** [Scientific Computing for Engineers.] (3)
Review of numerical techniques for interpolation, integration, smoothing, linear algebra, digital filtering, time series analysis, etc. Prerequisites: knowledge of FORTRAN, advanced calculus, Laplace transforms. <Fall>
- *541. Random Signal Processing.** [Random Signals in Engineering Systems.] (3)
Statistical description of discrete and continuous signals in communication and control systems. Power spectrum analysis. Applications to filtering, interpolation and prediction problems. Prerequisites: 400, 340 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) Bolie
Semiconductor properties of biological fluids, membranes, and junctions. Partial differential equations of electrochemical inhomogeneities and transients. Cellular and gross 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. <Fall>
- *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. Quantum Theory of Solids I.** [Physical Basis of Solid State Engineering.] (3)
Schrödinger Equations, eigenfunctions and eigenvalues, harmonic oscillator, particle in a well, potential barriers, hydrogen atom, degeneracy. Time dependent and independent perturbations, matrix formulation and periodic lattices. Prerequisites: 370 or Physics 330. <Fall>
- *571. Quantum Theory of Solids II.** (3) Byatt
Crystal structure, energy bands in 2 and 3 dimensions; lattice vibrations, Hamilton's and Lagrange's equations, normal coordinates, phonons, creation and annihilation operators; statistics of electrons and phonons; continuum wave functions, phase shifts and scattering cross sections, scattering by impurities. Prerequisite: 570. <Spring>
- *572. Semiconductor Properties.** [Physics of Semiconductors.] (3) Southward, Grannemann, Colclaser
Surfaces, Crystal Defects, Elemental and Compound Semiconductors, Optical Properties, Band Structure. Prerequisite: 470. <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) Colclaser, Grannemann, Southward
Junction Theory, Junction Transistors, Field Effect Devices, Metal-Semiconductor devices and 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.
- *613. **Nonlinear Systems.** (3)
Stability of linear time-variant and nonlinear systems by the direct method of Liapunov, perturbation theory and classical techniques. Lure and Popov stability theory. Numerical methods (iteration, integration). Prerequisites: 500 <Fall 1974 and alternate years>
- *614. **Active Networks.** [Active Networks Synthesis.] (3)
Active RC synthesis. Gyrator circuits. NIC circuits. Non-reciprocal active two-port synthesis. Computer-aided active design. Prerequisite: 513. <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. **Computer Methods of Signal Analysis II.** [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) Bolie
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) 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; waveguide 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 1975 and alternate years>
- *664. **Advanced Electromagnetic Propagation.** (3) Byatt
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 in Solids.** [Charge Transport Phenomena in Solids] (3) Byatt, Grannemann
The Boltzmann equation and its moments; calculation of currents, conductivity, from the distribution function; thermoelectric effects; the Fermi surface, cyclotron resonance; additional special topics as requested. Prerequisite: 571. <Fall 1974 and alternate years>
- *672. **Quantum Electronics.** (3) Southward
Theoretical and experimental aspects of lasers and masers. Prerequisite: 570 or permission of instructor. <Spring 1974 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

Chairman to be appointed; PROFESSORS B. Albrecht, R. C. Dove, A. V. Houghton, F. D. Ju, V. J. Skoglund, M. W. Wildin; ASSOCIATE PROFESSORS W. E. Baker, K. T. Feldman, Y. C. Hsu, C. G. Richards, F. C. Wessling, Jr.; ASSISTANT PROFESSORS G. F. Cochrane, A. O. Lebeck.

CURRICULUM

See p. 251.

- 201L. **Introduction to Engineering Design.** (3)
This course deals with elements of engineering design; conception, feasibility, analysis, engineering drawing, materials, manufacturing methods, and selection of components. These design elements are used in shop exercises in which students design, construct, and test simple devices. Students use shop and laboratory facilities. Creativity and the design process are emphasized. Corequisite: CE 202L. 2 lectures, 3 hrs. lab. <Fall, Spring>
- 206L. **Dynamics.** (3)
Principles of dynamics. Kinematics and kinetics of particles, systems of particles, and rigid bodies. Prerequisite: CE 202L; corequisite: Math 264. 2 lectures, 3 hrs. lab. <Summer, Fall, Spring>
- 273. **Engineering Shop Practice.** (1)
Principles of and practice with hand and machine tools of the Mechanical Engineering Metal Shop. Measurements, drilling, welding, sawing, benchwork, grinding; and lathe milling machine, and sheet metal operations are covered. Course designed to meet the needs of engineering students for future course projects. Prerequisite: sophomore standing. 40 hrs. lab. <Offered upon demand>
- 300. **Mechanical Engineering Analysis.** (3)
Principles and applications of similitude and analysis of engineering systems. Prerequisite: junior standing in Engineering. <Fall>
- 301. **Thermodynamics.** (3)
(Also offered as ChE 301.) Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physcs 161, Math 265. <Summer, Fall, Spring>

- **302. Thermochemistry and Gas Dynamics. (3)**
Thermodynamics of reactions and requirements of equilibrium. Isentropic flow, thermodynamics of shock waves, supersonic characteristics of internal and external flow. Prerequisites: 301, 317 or permission of instructor. <Spring>
- 314L. Dynamics of Mechanical Systems. (3)**
Kinematic and kinetic analysis of machine elements and systems. Balancing of machine elements. Prerequisite: 206L. 2 lectures, 3 hrs. lab. <Fall>
- **317. Fluid Mechanics. (3)**
Basic concepts and principles of 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>
- 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. <Spring>
- **320. Heat Transfer. (3)**
Principles and engineering applications of heat transfer by conduction, radiation, and free and forced convection. Prerequisites: one semester of engineering thermodynamics and fluid mechanics, at least one-half semester of ordinary differential equations. <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>
- 352L. Mechanical Engineering Laboratory III. (2)**
Experimental engineering projects involving complex systems. Planning, fabrication, performance, analysis, and reporting of an original experiment. Prerequisite: 351L. 6 hrs. lab. <Offered upon demand>
- 355. Engineering Statistics and Quality Control. (3)**
Statistical methods applied to quality control problems; significance tests; correlation analysis; sequential sampling; analysis of variance; design of experiments. Prerequisite: senior standing. <Offered upon demand>
- 356. Industrial Engineering. (3)**
A survey of Industrial Engineering principles, methods, and techniques used to assist management in making sound operational decisions. Prerequisite: senior standing, or permission of instructor. <Offered upon demand>
- 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: 206L and at least half a semester of ordinary differential equations. <Spring>
- 358L. Design of Solid Systems. (3)**
Mechanics of materials applied to the design of machine elements such as bolts, springs, shafts, and gears. Methods of design for fatigue and combined stress are studied. Students design a simple machine. Prerequisite: CE 302. 2 lectures, 3 hrs. lab. <Fall>
- 359L. Mechanical Engineering Design. (3)**
Employs the methods and techniques of engineering design to design engineering systems, components, or products. Each student carries out a semester-long design project of his choice. Prerequisites: senior standing and permission of instructor. 1 lecture, 6 hrs. lab. <Offered upon demand>

- 363L. Analysis of Fluid Systems. (3)**
Engineering analysis of fluid systems based on the principles of fluid mechanics, heat transfer, and thermodynamics. Prerequisites: 302, 317, 320, or permission of instructor. 2 lectures, 3 hrs. lab. <Fall>
- **365. 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. <Offered upon demand>
- 370. Engineering Materials Science. (3)**
(Also offered as CE 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics and polymers. Prerequisite: CE 202L; corequisite: 301. <Fall, Spring>
- 373. Manufacturing Processes. (3)**
Introduction to mechanical and thermal processes used to form and join metallic and nonmetallic materials. Discussions of these processes are supplemented with demonstrations and field trips. Prerequisite: junior standing in engineering, or equivalent. <Offered upon demand>
- *401. Advanced Mechanics of Materials. (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. <Offered upon demand>
- *402. Tensor Analysis and Continuum Mechanics. (3)**
(Also offered as CE 402.) Tensor analysis in Euclidean space, kinematics of continua, the stress tensor, linear constitutive equations for elastic solids, compressible viscous fluids, and viscoelastic media. Prerequisites: CE 302, Math 265. <Fall>
- *414. Intermediate Dynamics. (3)**
Review of Newtonian mechanics, dynamic analysis in non-newtonian reference frame, Lagrangian equation of motion, introduction to dynamic systems such as orbital mechanics, gyro dynamics, and linear vibratory systems including multi-degree of freedom systems and excitation-response analysis. Prerequisites: 206L, Math 265, and senior standing or permission of instructor. <Offered upon demand>
- 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. <Offered upon demand>
- **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: one semester of engineering dynamics, thermodynamics and fluid mechanics, at least one-half semester of ordinary differential equations. <Offered upon demand>
- *482. Energy Conversion. (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. <Offered upon demand>
- *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: at least one semester of 400- or 500-level course work in solid or fluid mechanics. <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, Math 312, or permission of instructor; Corequisite: 503. <Spring>
- *503. Advanced Fluid Mechanics I. (3)**
General principles and applications of fluid mechanics. Prerequisites: 206L, 300, 301, or their equivalents. <Spring>
- *506. Advanced Thermodynamics I. (3)**
Precise development of thermodynamic definitions, principles, and analytical methods. Prerequisites: 300 and 301, 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: 300 or equivalent; corequisite: Math 312 or equivalent. <Spring>
- *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.
- *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. 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 316. <Fall>
- *423L. Radiation Measurements and Analysis. (1-3) 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: 430 or Physcs 330. 1 lecture, 6 hrs. lab. <Spring>

†† May be repeated once for credit.

- **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 Energy Production. [Materials for Nuclear Applications.] (3) Horak**
Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisite: ChE 370 or equivalent. <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>
- *513-514L. Nuclear Engineering Laboratory I & II. (1-3, 1-3)**
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. 1 lecture, 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: EECS 431. <Offered upon demand>
- *570. Materials for Nuclear Applications. [Radiation Effects on Materials.] (3) Horak**
Effects of radiation, temperature, structure, and chemistry on materials for fission and fusion reactors. Experience in existing systems and future research and development. Recommended prerequisite: 470 or equivalent. <Spring>
- *580. Plasma Science and Technology. (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)**

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 following courses are part of the College of Engineering's program in Medical Engineering Technology.

150. Introduction to Medical Engineering Technology. (2)

Introduction to the use of specialized electronic equipment employed in clinical medicine; study of electrically sensitive patient and hospital electrical safety. Prerequisite: permission of instructor. <Fall>

151. Fundamentals of Electrical Circuits. (4)

Introduction to basic electrical circuit parameters and circuits; methods of dc and ac circuit analysis. Designed for students in Medical Engineering Technology and others who do not intend to study engineering circuit analysis extensively. Prerequisite: Math 121 and 180, or permission of instructor. <Spring>

152L. Electrical Circuits Laboratory. (2)

For students in Medical Engineering Technology. Corequisite: 151. <Spring>

251. Electronics.

Basic course in electronic circuits including power supplies, amplifiers, oscillators, servo circuits, digital circuits, and measurements. Designed for students in Medical Engineering Technology and others who do not intend to study theoretical engineering electronics. Prerequisites: 151, or permission of the instructor. <Fall>

252L. Electronics Laboratory. (2)

Laboratory course for students in Medical Engineering Technology. Corequisite: 251. <Fall>

253. Medical Instrumentation. (4)

Basic theory and operation of electrical and electronic equipment used in clinical medicine. For students in Medical Engineering Technology. Prerequisites: 251, or permission of the instructor. <Spring>

254L. Medical Instrumentation Laboratory. (2)

Laboratory course for students in Medical Engineering Technology. Corequisite: 253. <Spring>

The following courses are offered in cooperation with the Albuquerque Technical-Vocational Institute as part of the TV-I program in Civil 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>

§ No credit allowed in College of Engineering.

The following courses are offered only at Los Alamos through the undergraduate center in support of the Instrumentation Engineering Technology Program.

- 132L. Introduction to Engineering Technology. (3)**
Role of engineering technician, codes, standards, ethics, job prospects. Tours and field trips.
- 133L. Measurements Laboratory. (5)**
Principles and instruments for measuring length, mass, force, time, temperature, pressure, and flow.
- 134L. Drawing Interpretation. (3)**
Drawing techniques. Reading drawings. Symbology of electrical, hydraulic, pneumatic, welding, mechanical, and planning drawings.
- 135L. Basic Electricity. (4)**
Electrical circuits, theory, basic components, and sources of power. Use of electrical test equipment.
- 142. Mechanics. (3)**
Principles and applications of engineering mechanics. Corequisite: Math 150.
- 145L. Machine Skills. (4)**
Shop skills and manufacturing processes. Bench tools, drill-press, lathe, milling machine, shaper, grinder, welder, precision measurements.
- 146L. Instrumentation with Applied Electronics. (5)**
Power supplies, semi-conductors, transducers. Trouble shooting. Fabrication skills, Instrumentation selection. Prerequisites: 133L, 135L.
- 232. Heat. (3)**
Principles and applications of thermodynamics. Corequisite: Math 151.
- 233L. Instrumentation with Applied Data Collection. (5)**
Transducer application and selection. Data Recording. Prerequisite: 146L.
- 241L. Instrumentation with Applied Control Systems. (5)**
Transducers, control systems, servo systems, signal transmission. Prerequisite: 233L.
- 244L. Fabrication and Materials. (3)**
Properties and fabrication of metallic and plastic materials. Prerequisite: 145L.

ENGLISH

ASSOCIATE PROFESSOR J. Zavadil (Chairman); PROFESSORS G. W. Arms, E. W. Baughman, E. Buchanan, F. M. Dickey, J. M. Kuntz, H. Trowbridge; ASSOCIATE PROFESSORS P. B. Davis, R. Fleming, G. Frumkin, P. Gallacher, D. Johnson, J. Jones, D. McPherson, I. P. Melada, R. Pickett, D. Remley, J. Thorson, F. B. Warner, M. B. Whidden, H. Witemeyer; 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, R. C. Rich, P. Smith, E. Spolsky, M. Tillotson; VISITING PROFESSOR L. Howard.

Explanation of footnotes not indicated will be found on p. 310.

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. 184-185 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.

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 such 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 Film.** (3)
(See Film 210.)
220. **Expository Writing.** (3)
An intermediate course with emphasis on rhetorical types, structure, and style. <Fall, Spring>
221. **Creative Writing: Prose Fiction.** (3)
<Fall, Spring>
222. **Creative Writing: Poetry.** (3) <Fall, Spring>
250. **The Study of 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.** (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.** (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. (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. (3)††**
Intermediate course with generally equal emphasis on writing and reading. Prerequisite: 222 or permission of instructor.
- *334. Spanish American Literature in Translation. (3)**
(See Span 334.)
- *335. French Literature in Translation. (3)**
(See French 335.)
- *336. German Literature in Translation. (3)**
(See German 336.)
- *337. Spanish Literature in Translation. (3)**
(See Span 337.)
- *338. Russian Literature in Translation. (3)**
(See Russ 338.)
- *341. Greek Mythology. (3)**
(See Greek 341.)
- *344. Topics in Latin Literature in Translation. (3)† Mellon, Smith**
(See Latin 344.)
- *345. Topics in Greek Literature in Translation. (3)† Mellon, Smith**
(See Greek 345.)
- 351. Chaucer. (3)**
<Fall, Spring>
- 352. Shakespeare: Histories and Comedies. (3)**
<Fall, Spring>
- 353. Shakespeare: Tragedies. (3)**
<Summer, Fall, Spring>
- 354. Milton. (3)**
<Fall, Spring>
- 360. Individual Authors. (3)††**
Study of a single author or of two or more authors. Titles of individual sections will vary as content varies. <Fall, Spring>
- 375. World Literature from Homer to Dante. (3)**
Masterpieces of European and Asiatic literature, including the Bible. <Fall>
- 376. World Literature from Rabelais to Mann. (3)**
Masterpieces of European literature. <Spring>
- 400. Literary Movements. (3)†**
Studies of major ideas, works, and figures that form a literary movement. Titles of individual sections will vary as content varies. <Spring>
- *410. Literary Criticism. (3)**
Study of the major critical attitudes toward literature or intensive study of selected individual critics or critical approaches. Prerequisite: 6 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>
- *421. Creative Writing: Workshop in Prose Fiction. (3)††**
Advanced workshop devoted primarily to student writing. Prerequisites: 221, 321, or permission of instructor.

†† May be repeated once for credit.

- *422. **Creative Writing: Workshop in Poetry.** (3)‡‡
Advanced workshop devoted primarily to student writing. Prerequisites: 222, 322, or permission of instructor.
436. **The Teaching of English.** (3)
(See Sec Ed 436.)
- *440. **Introduction to Linguistics.** (3)
<Fall>
- *441. **English Grammars.** (3)
Prerequisite: 440 or its equivalent. <Spring>
- *445. **History of the English Language.** (3)
Etymology, morphology, phonetics, and semantics of English; relation between linguistics and cultural change. <Fall, Spring>
- *450. **Survey of Earlier English Literature.** (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. **Survey of Later English Literature.** (3)
From 1700 to present. Broad comprehensive study of principal literary and intellectual movements, and selected writers and literary works. <Spring>
452. **The Middle Ages.** (3)‡‡
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. **The English Renaissance.** (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. **Seventeenth Century English Literature.** (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. **Restoration and Eighteenth Century Literature.** (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. **English Romanticism.** (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. **Victorian Literature.** (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. **Modern British Literature.** (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)
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>
- *460. **Colonial and Revolutionary 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. **American Romanticism.** (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>

‡‡ May be repeated once for credit.

- 462. American Realism. (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. Modern American Literature. (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. American Humor. (3)**
American humorists from 1830 to present. <Spring>
- 470. Contemporary Literature. (3)††**
Contemporary literature not confined to any one country or language, the study to be organized by genre, theme, or idea, or any other principle that affords special insights. Titles of individual sections will vary as content varies. <Fall, Spring>
- *475. Dante in Translation. [Dante] (3)**
(See Italian 475.)
- *480. Philosophy and Literature. (3)**
(See Eng-Ph 480.)
- *481. The Folktale in English. (3)**
Tradition of folk motifs and themes in development of the tale as a form of storytelling in English and American literature. <Fall>
- 485. Prose Fiction before 1800. (3)**
Reading of major works of prose fiction written before 1800. Investigation of ways in which novel achieved generic form and the development of certain techniques. <Fall>
- 486. Prose Fiction of the Nineteenth Century. (3)**
Reading of major works of prose fiction written since 1800. Emphasis will be upon the emergence of modern novel, refinement of techniques, central ideas. <Spring>
- 487. Studies in Genre: Comedy, Epic, Satire, Tragedy, etc. (3)†**
Study of best or of typical examples of any one genre. Structure and emphasis will vary. Titles of individual sections will vary as content varies. <Fall, Spring>
- 488. Interdisciplinary Studies. (3)**
Literature studied in connection with some other discipline. Titles of individual sections will vary as content varies. <Fall>
- 490. Senior Colloquium. (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. (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.)
- *510. Criticism. (3)**
Survey of history of criticism; or study of any school of criticism, any critic, group of critics, or critical approach. <Fall>
- *513. The Middle Ages. (3)**
Any selection of literature of Middle Ages. Emphasis or approach to be chosen by instructor. <Fall>
- *523. The Renaissance. (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>

†† May be repeated once for credit.

- *533. **The Seventeenth Century.** (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>
- *543. **The Eighteenth Century.** (3)
Any selection of literature of eighteenth century. Emphasis or approach to be chosen by instructor. <Spring>
- *551. **Problems for the Master's Degree.** (1-3 hrs. per semester)
- *553. **The Nineteenth Century.** (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. **American Literature.** (3)‡
Any selection of American literature. Emphasis or approach to be chosen by instructor. <Fall, Spring>
- *563. **The Twentieth Century.** (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. **Studies in American Literature.** (4)‡
- *610. **Studies in Criticism.** (4)‡
- *620. **Studies in British Literature.** (4)‡
- *630. **Studies in Language.** (4)
Phonology of English speech, linguistic structure, American dialect and regional vocabulary, related subjects.
- *640. **Special Studies: Types, Backgrounds, 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 Architecture, Art, Music, Theatre Arts)

490. Interdepartmental Proseminar. (3)†

Open to juniors and seniors with the requisite grade-point average. See p. 261 for specific requirements. <Fall>

FRENCH

See Modern and Classical Languages.

GENERAL STUDIES

PROFESSOR John L. Howarth (Physics), Director; Jean Hedberg, Counsellor-Lecturer (part-time).

General Studies courses are offered in the General Honors and Undergraduate Seminar programs, which are described on pp. 169-171.

Credit in these courses can normally be counted towards general graduation requirements in undergraduate degree granting colleges and, in some instances, towards Group Requirements of the College of Arts and Sciences. For information on such applicability the student should apply to the office of the dean of the appropriate college.

THE GENERAL HONORS PROGRAM

With the exception of courses 111-112, which are open to all freshmen, these courses are restricted to students enrolled in the General Honors Program.

Explanation of footnotes not indicated will be found on p. 310.

111-112. [101-102] Freshman General Studies Seminar. [Freshman Reading Seminar] (3, 3)

Broad, general reading and class discussion for freshmen with senior General Honors students acting as instructors and discussion leaders under faculty direction. <Fall, Spring>

299. Individual Study. (1-3)†

301-302. [302-401] Honors Seminar. (3, 3)‡

Selected seminar topics of an educationally broadening and generally interdisciplinary nature by staff of various departments. Instructors and topics will vary from section to section and from semester to semester. <Fall, Spring>

399. Individual Study. (1-3)‡‡**403-404. [402] Senior Honors Colloquium. (3, 3)‡‡**

Educationally broadening seminars of various kinds specially designed to meet the needs of senior students in the program. Specific course offerings are determined in discussion with seniors during previous semester. <Fall, Spring>

THE UNDERGRADUATE SEMINAR PROGRAM

Topics and instructors vary from section to section and from semester to semester. Open to all full-time undergraduate students. No prerequisites. Enrollment limited to 15 students per class. Grading on A/Cr/NC system. See p. 158.

331-332. Seminars in the General Area of the Humanities. (1, 1)‡

Various sections, various topics each semester.

333-334. Seminars in the General Area of the Sciences. (1, 1)‡

Various sections, various topics each semester.

335-336. Seminars in the General Area of the Social Sciences. (1, 1)‡

Various sections, various topics each semester.

337-338. Interdisciplinary Seminars. (1, 1)‡

Various sections, various topics each semester.

GEOGRAPHY

PROFESSORS R. E. Murphy (Chairman), I. Bennett, R. D. Campbell[§], R. E. Snead; **ASSISTANT PROFESSORS** E. M. Barrett[§], D. A. Dyreson, D. H. Gordon.

Explanation of footnotes not indicated will be found on p. 310.

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.

‡‡ May be repeated for credit with permission of program director.

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) Bennett
Regional geography of the United States and Canada. <Spring>
- *304. **Southwestern United States.** (3) Dyreson
Impact of man, past, present, and potential, on the southwestern United States viewed as a geographical ecosystem. <Fall>
- *330. **Southeastern Asia.** (3)
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) Gordon
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 1975 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, Sneed
Training in field mapping and other field techniques used in geography, with particular emphasis on studies of land utilization, physiography, urban geography, and micro-climatology. 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. **Man-Environment Systems: Evaluation.** [Environmental Systems] (3) Campbell
Using a systems model to analyze man-environment interactions; investigation of small scale systems; techniques and methods of systems analysis applied to man-environment systems. <Fall 1974 and alternate years>
- *472. **Man-Environment Systems: Design.** [Environmental Systems-Applications] (3) Campbell
Man-environment system design and redesign; computer simulation of design alternatives and changes in human behavioral outputs. <Spring 1975 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 1974 and alternate years>
- *478. **Seminar in International Studies.** (3) Slavin
(Also offered as Econ 478, M&CL 478, Pol Sc 478, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.
- *479. **Environmental Conservation.** (3) Dittmer
(See Biol 479.) Open to Geography majors and minors. <Summer, Spring>
- *481. **Geomorphology.** (3) Sneed
(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 1975 and alternate years. Taught as Geol 481 each alternate year>
- *483. **Physical Geography of North America.** (3) Sneed
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 1975 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 1975 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 J. F. Callender, G. R. Clark, G. 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. 310.

MAJOR STUDY

For the degree of Bachelor of Arts: Geol 101, 105L, 301L, 302L, 307L, 319L, 411L or 441L, 401, 490, and 6 additional hours in geology courses numbered above 300; Chem 101L, 102L, Math 162, 163, and Physcs 160, 161.

A student may obtain a distributed minor with the above program of study upon completion of 8 hours of courses, 6 of which must be numbered above 200, in any one of the following departments: Anthropology, Biology, Chemistry, Geography, Mathematics, Physics, or any department in the College of Engineering.

For the degree of Bachelor of Science: Geol 101, 105L, 301L, 302L, 307L, 319L, 411L or 441L, 401, 420L, 421L, 422L and 490; Chem 101L, 102L, 315L, Math 102, 162, 163, 264, Physcs 160, 161, 262, and EECS 336.

Students wishing to specialize in related fields such as paleontology may make limited substitutions in their program with the prior approval of the department chairman.

Students completing the above program will have a distributed minor.

Prospective majors are encouraged to begin their lower division requirements in mathematics, chemistry, and physics as early as possible.

DEPARTMENTAL HONORS

Students seeking Honors in Geology should consult with the department 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, at least 6 of which must be at the 300 level (300-399). No more than 2 hours of 401 (Seminar) may be credited toward the minor.

MINOR STUDY IN PALEOECOLOGY

See p. 498.

- 101. **Physical Geology.** (3)
Materials composing the earth, and work of agencies, both external and internal, modifying its surface. <Summer, Fall Spring>
- 102. **Historical Geology.** (3)
History of the earth; rise and succession of the various forms of life. Prerequisite: 101. <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. 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. 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>
- 225. **Oceanography.** (3) Clark, Jiracek, Kudo
The ocean as a physical feature and a dynamic process. Prerequisite: 101. <Spring>
- **301L. **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.** (4) Elston, Fitzsimmons, Kudo
Classification, hand-specimen identification, occurrence, and origin of rocks. Prerequisite: 301L; pre- or corequisite: Chem 102L. 3 lectures, 3 hrs. lab. <Spring>
- **304L. [404L] **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>
- **307L. **Structural Geology.** (4) Callender, Woodward
Nature and origin of rock structures and deformations; map and stereographic problems. Prerequisites: 105L, Math 162. 3 lectures, 3 hrs. lab. <Fall>
- **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>
- *410L. **Fundamentals of Geochemistry.** (3) Brookins
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. **Invertebrate Paleontology.** (4) Clark
General principles and familiarization with diagnostic features of fossils. Introduction to environmental implications. Prerequisite: 8 hrs. of Geol or Biol. 2 lectures, 6 hrs. lab. <Spring>
- *412L. **Index Fossils.** (3) Clark
Recognition and utilization of appropriate fossils in geochronology and paleogeography. Prerequisite: 319L or permission of instructor. 8 hrs. lab. <Spring>
- *420L. **Advanced Field Geology.** (3) Callender, 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. **Exploration Geophysics.** (4) Jiracek
Principles and applications of gravity, magnetic, seismic, electrical, and electromagnetic methods in subsurface exploration. Field investigations and interpretations. Prerequisites: 101, Math 163, Physcs 161. 3 lectures, 3 hrs. lab. <Fall>
- *427. **Solid Earth Geophysics.** (3) Jiracek
Structure, constitution, and deformation of earth as determined by gravity, magnetics, seismology, heat flow, and earth currents. Related aspects of plate tectonics. Prerequisites: 307L, Math 163, Physcs 161. <Spring>
- *429L. **Paleontological Techniques.** (3) Clark
Laboratory methods for the preparation of fossils for study and illustration. Prerequisite: 411L or equivalent. 6 hrs. lab. and field trips. <Fall>
- *431L. **Palynology-Micropaleontology.** (4) Anderson
Studies of the morphology, methods of identification, ecology and applications of pollen, spores, nannofossils, foraminifera and other microfossils. Prerequisite: 105L, some biology strongly recommended. 3 lectures, 3 hrs. lab. <Fall>
- *441L. **Stratigraphy and Sedimentology.** (4) Siemers
Origin, dispersion, deposition, diagenesis, classification, and general distribution of sedimentary materials; principles of physical stratigraphy and biostratigraphy. Prerequisite: 302L. 3 lectures, 3 hrs. lab. <Fall>
- *442. **Petroleum Geology.** (3) 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.
- *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) Trauger, Wengerd
Occurrence and development of water with special emphasis on the Southwest. Prerequisites: 105L and senior standing. 2 lectures, 3 hrs. lab.
- *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. **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: 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 1974 and alternate years>
- *490. **Geologic Presentation.** (1) Callender, Clark
Student reviews of geologic literature and critique. 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) Brookins
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. <Spring 1974 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 or 315L. 2 lectures, 3 hrs. lab. <Spring 1973 and alternate years>
- *504L. **Isotope Geochemistry I.** (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. Prerequisite: 302L; Chem 315L recommended. <Fall 1974 and alternate years>
- *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 1973 and alternate years>
- *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 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. EECS 336 is strongly recommended. 2 lectures, 3 hrs. lab. <Spring 1974 and alternate years>
- *510. **Advanced 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.** (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. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. <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; plate tectonics and vulcanism; tectonic setting and differentiation trends of igneous rocks in continental, oceanic, orogenic, and nonorogenic environments. Prerequisites: 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: 307L, 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>
- *554L. Sedimentary Petrology. (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, T. S. Floyd, E. Lieuwen, G. D. Nash, G. W. Smith; **ASSOCIATE PROFESSORS** R. N. Ellis, J. Roebuck, D. E. Skabelund, F. M. Szasz; **ASSISTANT PROFESSORS** R. M. Berthold, R. W. Kern, J. Porter, N. H. Pugach, R. G. Robbins, J. W. Spidle, C. R. Steen, D. D. Sullivan; **INSTRUCTORS** P. W. Brewer, C. F. Herbold, B. C. Pope, H. N. Rabinowitz, K. J. Seitz, R. W. Slenes; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 310.

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, Pope, Robbins, Roebuck, Seitz, Skabelund, Steen, 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.
- *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>
- 304. Revolution in History.** (3) Porter, Robbins, Steen
Examination of revolution and the revolutionary process in the modern world. Emphasizes the experience of France, Russia, and China.
- *305. 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>
- *307. European Social History: 1760-1848.** (3) Pope
Transition from traditional, pre-industrial society to "bourgeois" society. Major areas to be covered are the *ancien regime*, the French and Industrial Revolutions, working class culture and religion, and the problems of how and if the bourgeoisie was in power by 1848.
- *308. European Social History, 1848-1940.** (3) Pope
Analysis of the course and results of the revolutions of 1848, the development of working class movements, urbanization, and the rise of mass politics.
- 309. Historiography.** (3) Kern, Seitz, Spidle
Development of historical thought and writing. <Summer, Fall, Spring>
- *311. The Ancient Near East.** [Ancient Civilizations of the Near East] (3) Berthold
Survey of the pre-Classical civilizations of the Near East from the birth of civilization to the Achaemenid Persian empire. <Fall>
- *313. Greece.** (3) Berthold
Survey of the development of Greek civilization from the Bronze Age to the Hellenistic period; emphasis on political and social developments. <Fall>
- *314. Rome.** (3) Berthold
Survey of the development of Roman civilization from the founding of the city to the collapse of the Western empire; emphasis on political and social developments. <Spring>

§ May be taught at Los Alamos or other off-campus centers.

- *315. [201] **History of Women from Ancient Times to the Enlightenment.** (3) Pope
Study of sex roles in primitive societies, classic views of women, the Judeo-Christian treatment of women, medieval social roles, and the changes that came with the Renaissance and Reformation. Attention will be paid to the role of women in the family and to their economic function as well as to the less common activities of saint, witch, and revolutionary. <Fall>
- *316. [202] **Women in the Modern World.** (3) Pope
Study of western women from pre-industrial to contemporary society which will focus on Victorianism, familial roles, changes in work patterns, feminist movements, and female participation in fascist and revolutionary politics. <Spring>
- *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)
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) <Fall>
- *340. **Military History of Europe since 1790.** (3) <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>
- *360. **History of New Mexico.** (3) Cutter, Ellis
Survey from Cabeza de Vaca to the present. <Fall, Spring>
- *361. **American Urban History to 1870.** (3) Rabinowitz
Study of Urban America from colonial times to 1870, emphasizing the growth of pre-industrial and early industrial cities and their impact upon the development of the United States. <Fall>
- *362. **American Urban History since 1870.** (3) Rabinowitz
Continuation of 361, emphasizing the emergence, development, and role of the modern city. <Spring>
- *363. **The Old South.** (2) Rabinowitz <Spring>
- *364. **Political History of the United States.** (3) Smith
From 1860 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) 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>
- *410. **The Historian and the Museum.** (3)
Theory and practice in the administration and utilization of the historical museum, with attention to acquisitions, funding, exhibitions, and promulgation of information. This course does not give credit toward minimum requirements for Ph.D. <Fall, Spring>
- *426. **Social and Economic History of Europe to 1600.** (3)
<Fall>
- *427. **Social and Economic History from 1600.** (3)
<Spring>
- *428. **History of European Thought and Temper, 1760-1860.** [European Intellectual History, 1762-1870] (3)
The Enlightenment synthesis; Romanticism, positivism, socialism, liberalism; Voltaire, De Sade, Rousseau, Burke, Herder, Kant, Comte, Mill, Darwin, Marx.
- *429. **History of European Thought and Temper, 1860-Present.** [European Intellectual History, 1870-Present] (3)
The anti-positivist reaction; the decadent period and the crisis in values, scientific revolution; existentialism; Dostoevski, Nietzsche, Heinsenberg, Freud, Bergson, Kierkegaard, Sartre, Buber.
- *438. **European Diplomatic History.** (3) Spidle
Since 1815. Prerequisite: 102. <Fall>
- *442. **Germany.** (3)
From 1815 to present. Prerequisite: 102. <Fall>
- *443. **The Habsburg Empire, 1790-1918.** (3)
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.** (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>
- *481. **The Modernization of South America.** (2-3) Lieuwen
Economic development, social change, and political crises since 1850. <Fall>
- *482. **The Mexican Revolution.** (2-3) Lieuwen
Emphasis upon theory and interpretation. 3 hrs. cr. with term paper. <Spring>
- *483. **20th Century Social Revolutions in 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.** (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.
- 496. **Undergraduate Readings in History.** (1-3)
Permission of instructor required before registering. <Fall, Spring>

Departmental requirements provide that the following seminars may be repeated only once:

- *500. **Seminar in Historical Research Methods.** (2) 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>
- *526. **Seminar in European Economic History.** (3)
(Also offered as Econ 526.)
- *532. **Seminar and Studies in Early Modern European History.** (3) Steen <Fall>
- *537. **Seminar in European Imperialism.** (3) Spidle
- *540. **Seminar and Studies in European Intellectual History.** (3) Seitz <Fall>
- *542. **Seminar and Studies in Modern European History.** (3) <Spring>
- *545. **Seminar and Studies in British History.** (3) Roebuck <Spring>
- *547. **Seminar and Studies in Modern Russian History.** (3) Robbins
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) Robinowitz
- *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) <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 <Spring>
- *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,
Merckx, Needler, Schwerin
(Also offered as Anth, Econ, 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. 310.

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)† Floyd, Herbold, 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,
Merckx, Needler, Schwerin
(See Anth, Econ, Hist, Pol Sc, and Soc 584.) <Spring>
- *651-652. Problems. (1-3 hrs. each semester)
- *699. Dissertation. (3-9 hrs. per semester) Cutter, Floyd, Herron, T. Holzapfel, Lieuwen,
Nason, Tomlins, Ulibarrí
See the Graduate School Bulletin for total credit requirements.

INDUSTRIAL EDUCATION

See Education, Secondary.

ITALIAN

See Modern and Classical Languages.

JOURNALISM

PROFESSORS A. G. Hillerman (Chairman); L. L. Jermain; ASSOCIATE PROFESSORS C. Coates,
J. Hightower; ASSISTANT PROFESSORS J. P. Crow, G. M. Hunsley; LECTURERS L. Arquette,
R. Lawrence, E. McCrossen, M. Toppino.

MAJOR STUDY

Advertising-Management Sequence: 33 hours including 251, 252, 277, 311,
312, 322, 401, 469, and Sp Com 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 and 265.

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.
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>
254. **Broadcast Practice.** (1)† Coates
Open to staff members of KUNM-FM. May be taken three times. <Fall, Spring>
261. **News Photography.** (3) Lawrence
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. 2 lectures, 2 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 journalism from the pre-colonial beginnings through the developments to modern times. Prerequisite: permission of instructor. <Fall>
302. **Editorial and Special Writing.** (3) Hillerman
Writing of the editorial essay, the column, and other interpretive matters. Prerequisites: 252 and permission of instructor. <Spring>
311. **Copy-Editing and Makeup.** (3)
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) Jermain
Continuation of 311, with emphasis on wire copy, typography and newspaper design and analysis. Prerequisites: 311 and permission of instructor. 2 lectures, 2 hrs. lab. <Fall, Spring>
322. **Law of the Press.** (3) Jermain
Rights of the press; libel and defenses; contempt, invasion of privacy; copyright, advertising controls; broadcasting and the Federal Communications Commission. The legal controls. Prerequisite: permission of instructor. <Spring>
332. **Writing the Magazine Article.** (3) Arquette
Writing non-fiction for publication. Prerequisite: permission of instructor. <Fall>
340. **News Programming I.** (3) Coates
Introduction to broadcast news with practice in data collection, writing and editing. Prerequisite: 252. <Fall>
375. **Intermediate Reporting.** (3)
Emphasis on reporting more complex affairs and on the feature story. Prerequisite: 252. <Fall, Spring>
388. **Cinematic Photography.** (3)
(See Art 388.)
399. **Practicum in Journalism.** (3) Hightower
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>
- *402. **Advertising Campaigns.** (3) Toppino
Theory, strategy, and techniques applied to advertising campaigns. Prerequisite: 401, or permission of instructor. <Spring>

440. **News Programming II.** [News Programming] (3) Coates
Oral and visual news presentation, multi-channel communication problems, melding text with recordings and film in production of radio and television broadcasts. Prerequisite: 340, or permission of instructor.
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. <Offered upon demand>
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.
495. **The Mass Media as a Social Force in Latin America.** (3) <Spring>
- *496. **Individual Study.** (1-3 per semester, to a maximum of 6)
499. **Undergraduate Seminar.** (3)
Public affairs reporting and writing: the uses of interviews, news conferences, back-grounds, official leaks; their relationship to politics and policy-making in government. Problems of news judgment and writing style. Prerequisites: 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 or 356, 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, Merxx, Needler**

(See Anth, Econ, Hist, Pol Sc, and Soc 584.)

***599. Master's Thesis. (1-6 hrs. per semester)**

LAW

PROFESSORS F. Hart (Dean), W. Ellis, M. Fink, G. Flickinger (Visiting), L. Kanowitz⁴, H. Muir, G. Olivárez, C. Reynoso, A. Utton, J. Walden, H. Weihofen (Emeritus); **ASSOCIATE PROFESSORS** R. Desiderio (Associate Dean), L. Teitelbaum (Visiting), R. Walker; **ASSISTANT PROFESSORS** A. Bingaman, C. Daniels, J. Goldberg, W. MacPherson (Director, Clinical Law Program), P. Maxfield (Visiting), T. Parnall, L. Romero; H. Geer (Assistant Dean); P. Deloria, Director, American Indian Law Center and Special Scholarship Program in Law for American Indians, and Lecturer in Law; R. Bennett, Director, Special Projects, American Indian Law Center, and Lecturer in Law; T. Grossman, Attorney and Associate in Law, American Indian Law Center; G. O'Dowd, Director, Institute of Public Law and Services, and Associate in Law; H. Simson, Attorney and Associate in Law, Institute of Public Law and Service; M. Norwood, Attorney and Associate in Law, Clinical Law Program, P. Maxfield (Visiting), T. Parnall, L. Romero; H. Geer (Assistant Dean); J. Rainer, Director, National Indian Graduate Scholarship Program; Adjunct Lecturers in Law J. Beckley, R. Cole, J. Cooney, E. Curran, W. Dixon, C. DuMars, W. Gilstrap, B. Hall, B. Keith, H. Kelly, P. Minzner, T. Popejoy, J. Roach, W. Snead, E. Walterscheid; Adjunct University of New Mexico Faculty L. Marquez, P. Mori, R. Senescu.

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.

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 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)

#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.

Required.

- #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.
- 523. Commercial Transactions II. (2)**
Prerequisites: 622, 623, 624.
- 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.
- 622. Commercial Transactions IA. (1)**
Problems of sales, commercial paper, and security interests in personal property.
- 623. Commercial Transactions IB. (2)**
Problems of sales, commercial paper, and security interests in personal property.
- 624. Commercial Transactions IC. (3)**
Problems of sales, commercial paper, and security interests in personal property.

Procedure

- 512. Civil Procedure I. (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.
- 516. Civil Procedure II. (3)**
Continuation of 512 or 606.
- 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. Equitable Relief. [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)****606. Survey of Civil Procedures. (3)****632. Evidence-Trial Practice. (5)**

Property and Natural Resources

524. Community Property. (1)

The New Mexico community property system, and its relationship to common law property rights.

544. Oil/Gas. (3)**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. (1-3)

A survey of mining and public lands, oil and gas, and water law.

578. Land Transfers and Finance. (3)**580. Environmental Law. [Law and Control of the Environment] (2)****608. Property II. (3)**

Continuation of 508.

625. Wills. (2)**627. Future Interests. (2)**

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.

584. Indian Law. (2)

628. Regulated Industries. (2) Desiderio

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. Federal Estate and Gift Taxation. [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.

620. Taxation of Partnerships, Estates and Trusts. (2)

621. Taxation of Natural Resources Transactions. (2)

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)

645. Sex Roles in the Law. (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.

640. Applied Problems in Current Litigation. (2)

Seminars

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. (1)

Pre- or corequisite: 538

577. Legal Counseling. (2)

582. The Corporation and Society. (2)

583. International Legal Problems. (2)

586. Contracts. (2)

590. Commercial Law. (2)

592. Legal Education. (1)

593. Private Law Reform. (2)

594. Individual Research. (1-6)

595. Tax Policy. (2)

650. Pornography and the Law. (2)

655. First Amendment Rights: Use of Public Forums and Mass Media. (2)

660. Juvenile Law and Practice. (2)

690. Law and Medicine. (2)

691. Patent Law. (2)

692. Introduction to the American Jury System. (2)

695. Recent Legal Developments Affecting Minorities. (2)

Clinical Law Program

700. Criminal Practice Clinic. (3)

701. Spanish for Lawyers. (2)

702. Clinical Phase I. (1)

708. Practical Problems I. (1)

709. Practical Problems II. (1)

710. Pre-Trial Practice. (1)

711. Accounting for Lawyers. (1)

712. Human Behavior. (1)

713. Trial Practice. (1)

714. Law Office Management. (1)

715. Interviewing and Counseling. (1)

716. Appellate Practice. (1)

717. Jurimetrics. (1)

718. Negotiation. (1)

719. Prisoner Services. (3)

720. Law Office and Public Defender. (3)

721. Law Office Intern. (3)

722. Legal Aid. (3)

- 723. District Attorney. (3)
- 724. District Judge Intern. (2)
- 725. Field Experience. (3)
- 726. U.S. Public Defender. (3)
- 727. JAG. (3)
- 728. Women's Legal Services. (3)
- 729. U.S. Attorney. (3)
- 730. City Attorney. (3)
- 731. Centrolegal. (3)
- 732. U.S.D.A. Solicitor. (3)
- 733. N.M.C.L.U. (3)
- 735. Basic Skills. (1)
- 740. Clinical Half Semester. (8)
- #750. Clinical Staff—Ethics. (1)

LIBRARY SCIENCE

See Education, Educational Media.

LINGUISTICS

ASSOCIATE PROFESSOR J. W. Oller (Chairman); PROFESSORS B. Spolsky, F. Chreist (Communicative Disorders), M. Zintz (Elementary Education); ASSOCIATE PROFESSORS V. John (Educational Foundations), R. Mazon (Educational Foundations), R. Pickett (English), B. Rigsby (Anthropology), R. White (Secondary Education); ASSISTANT PROFESSORS G. Bills (Modern and Classical Languages), D. Brodkey (Elementary Education), C. Offir (Psychology), R. Young (Elementary Education); VISITING RESEARCH PROFESSOR R. W. Young.

The Department of Linguistics coordinates (in an advisory capacity) degree programs and course offerings in the College of Arts and Sciences and in the College of Education in the field of linguistics. Undergraduates may major or minor in linguistics.

MAJOR OR MINOR IN THE COLLEGE OF EDUCATION

For programs leading to Certification in TESOL, and Teaching Reading in the Secondary School, see Department of Secondary Education in the College of Education section of this catalog. For Composite Minor in Bilingual Education, also see Department of Elementary Education in College of Education section. It is also possible to major in Curriculum and Instruction with emphasis in Bilingual Education.

MAJOR OR MINOR IN THE COLLEGE OF ARTS AND SCIENCES

Students interested in majoring or minoring in Linguistics should see the Chairman of the Department.

292. Introduction to the Study of Language. (3 or 4)

Students wishing to major or minor in linguistics must complete work in weekly discussion groups in addition to the 3 hrs. of lecture. This course presupposes no background in linguistics and is intended to fulfill breadth requirements in any college. <Summer, Fall, Spring>

303. Phonetics. (3) Chreist

(Also offered as Sp Com 303 and Com Ds 303.) English phonetics as applied to the problems of articulation, pronunciation, rhythm, dialects, and to the teaching of speech, English, and speech correction. <Fall, Spring>

*313. Linguistic Field Methods. (3)

(See Anth 313L)

Required.

- *317L. Phonological Analysis.** (3) Rigsby
(Also offered as Anth 317L.) Phonetic principles and phonological theory, descriptive analysis of phonological systems, transcriptional practice and problems from selected languages. Prerequisite: 292. 2 lectures, 2 hrs. lab. <Fall>
- *318L. Grammatical Analysis.** (3) Rigsby
(Also offered as Anth 318L.) Principles of grammatical analysis and the theory of grammar, descriptive analysis of grammatical structures, problems from selected languages. 2 lectures, 2 hrs. lab. <Fall>
- *359. Language and Culture.** (3) Rigsby, Spolsky
(Also offered as Anth 359) An examination of the interrelations of language and speech with other selected aspects of culture. Prerequisite: 317L or equivalent. <Spring>
- *370. History of Linguistics.** (3) Spolsky, Oller
(Also offered as Anth 370.) A survey of methods and assumptions involved in the scientific study of language from antiquity to present day. An overview of philosophical, prescriptive, mathematical (logical), and linguistics approaches to the study of language. Prerequisite: 292. <Fall>
- *386. Survey of Multilingual Education.** (3) Spolsky
Survey of multilingual education throughout the world. Principles and practices. Prerequisite: 292. <Spring>
- *417L. Advanced Phonological Analysis.** (3) Rigsby
(Also offered as Anth 417L.) Survey of problems in generative phonology. Formalization of linguistic rules to generate specific phonological structures. Formal and substantive universals of phonological systems. Prerequisite: 317L. <Spring>
- *418L. Advanced Grammatical Analysis.** (3) Oller, Young
(Also offered as Anth 418L.) Survey of problems in generative grammar. Alternative formalizations for generating specific structures. Formal and substantive universals of grammatical structures. Emphasis ranges from syntax to pragmatics. Prerequisite: 318L. <Spring>
- *446. Introduction to Comparative Linguistics.** (3)
(Also offered as Anth 446.) The comparative method applied to Indo-European and to unwritten languages; other methods and techniques used in comparing languages. Prerequisites: 313L, 317L or permission of instructor. <Spring>
- 451. Mathematical Theory of Formal Language.** [Theory of Languages] (3)
(See Cp Sci 451.)
- *459. Language and Society.** (3) Spolsky
(Also offered as Anth 459.) An introduction to sociolinguistics, with special reference to language reflections of socio-cultural organization, multilingualism, and language planning. Prerequisite: course in linguistics. <Spring>
- *469. Advanced Sociolinguistics.** (3) Rigsby, Spolsky
(Also offered as Anth 469.) Study of specific areas of sociolinguistics, e.g., pidgins, Creoles, language planning processes, and societal multilingualism. Prerequisite: Anth 459. <Fall>
- *495-496. Undergraduate Problems.** (1-6)
<Offered upon demand>
- *497. Topics.** (1-3)
<Offered upon demand>
- *554. Seminar: Linguistic Theory.** (3) Rigsby
(Also offered as Anth 554.) Current topics and issues in phonology, syntax, or semantics. Prerequisites: 317L, 318L or equivalent. <Offered upon demand>
- *555. Seminar in Linguistics and Language Pedagogy.** (1-3)
Selected topics. Prerequisite: permission of instructor. <Offered upon demand>
- *595-596. Graduate Problems.** (1-6)
<Fall, Spring>

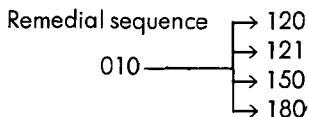
MATHEMATICS AND STATISTICS

PROFESSORS L. Koopmans (Chairman), J. Blum, D. Dubois, B. Epstein, R. Hersh, A. Hillman, W. Kyner, M. Mitchell, A. Steger; ASSOCIATE PROFESSORS, A. Carasso, R. Cogburn, J. Davis, R. DeMarr, G. Efroymsen, A. Gibson, R. Griego, D. T. Guinn, L. Hahn, S. Kao, J. Lewis, R. Metzler, C. Moler, P. Pathak, A. Stone, W. Zimmer; ASSISTANT PROFESSORS R. Allen, H. Davis, J. Ellison, B. Jones, C. Onneweer, S. Pruess; INSTRUCTOR R. Grassl.

Explanation of footnotes not indicated will be found on p. 310.

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

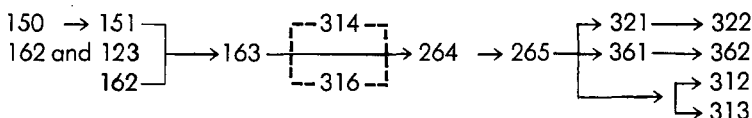
Business sequence

121 → 122

Calculus for social and biological sciences (These courses could be preceded by 120, 121, 150 or 123)

180 → 181

Sequence for students in mathematics, physical sciences or engineering.



Placement in courses will be by examination. Adviser will be assigned by Departmental Secretary, if desired.

MATHEMATICS FOR ELEMENTARY TEACHERS

Suggested are 111 and 112 or 213 and 214 for students with two or more years of high school mathematics.

MATHEMATICS FOR SECONDARY TEACHERS

264, 265, and 21 hours in courses 300 and above (selection may be made from II and III below.) Students interested in certification for teaching should refer to page 232, and must see an adviser in Secondary Education.

MAJOR STUDY

264, 265 and 21 hours in courses numbered above 300, approved by the Mathematics Department. 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: EECS 203, 206L, 213, 321, 361, plus 2 courses selected from EECS 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, 358, 375, 452, 455, 456, 457, 553, 554, 555, 556, 557, 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. Offered by Community College only. <Summer, Fall, Spring>

020. Basic Algebra. (0)

Functions, equations, inequalities, graphing, and related topics in elementary algebra. Special fee of \$25.00 is charged. Offered by Community College only.

030. Elementary Algebra. (0)

(Offered at Northern New Mexico Branch 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>

120. Intermediate Algebra. (3)

Algebra as an extension of arithmetic; exponents, radicals, linear and quadratic functions and equations, graphing; for students whose high school preparation in mathematics is insufficient for Math 121. <Summer, Fall, Spring>

§§121. College Algebra. (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: adequate score on placement test or a grade of C or better in 120. <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 Northern New Mexico Branch 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>

155. Problem Solving with the Computer. (3)

(Also offered as Cp Sci 155) Elementary introduction to computing science. Object of course is an understanding of the relationship between mathematics, computing, and problem solving. <Fall>

162. Calculus I. (4)

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. (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>

180. Calculus for the Social and Biological Sciences I. (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: adequate score on placement test, or grade of C or better in Math 121. <Fall, Spring>

181. Calculus for the Social and Biological Sciences II. (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 some knowledge of trigonometry or 123 (123 can be taken simultaneously with 181).

190-191. Freshman Honors Seminars. (1-3 hrs. each semester)

Pattern recognition and other problem solving techniques in calculus and pre-calculus mathematics. Prerequisite: permission of instructor. <191-Fall, 190-Spring>

264. Calculus III. (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. (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>

291-292. Sophomore Honors Seminars. (1-3 hrs. each semester)

Induction, analogy, and other problem solving techniques. Prerequisite: permission of instructor. <291-Fall, 292-Spring>

II. COURSES FOR TEACHERS AND EDUCATION STUDENTS

The following courses are intended primarily for undergraduate and graduate students in the College of Education, 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. (3)**

The intuitive and logical background of arithmetic; properties of sets; algorithms of arithmetic in base ten and other bases; properties of the integers. <Summer, Fall, Spring>

§112. **Mathematics for Elementary School Teachers II. (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 system; axiomatic approach to the real number system; functions. <Offered upon demand>

§214. **Elementary Geometry from a Modern Viewpoint. (3)**

Ideas of intuitive geometry; concepts of informal geometry with attention to precise terminology. <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>

¶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: 264 or equivalent. <Offered upon demand>

¶306. **College Geometry. (3)**

Famous theorems of geometry. Fundamentals of Euclidean geometry. Properties of triangles, quadrangles and circles. Highlights of non-Euclidean geometry. <Offered upon demand>

¶307. **Intuitive Topology. (3)**

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>

§ Math 111 and 112 (or 213, 214 for better prepared students) are suggested for fulfilling requirements in Elementary Education. See El Ed curriculum, p. 219.

¶ 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.

- ¶310. **Applications of Mathematics.** (1-4)
Applications of elementary mathematics to the physical, biological, and social sciences. Prerequisite: 265 or 309 or equivalents. <Offered upon demand>
338. **Mathematics for Secondary Teachers.** (3)
Topics from secondary mathematics presented from an advanced standpoint and designed to meet the needs of pre- and in-service teachers. Open only to students working toward teacher certification. <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>

III. UPPER LEVEL UNDERGRADUATE COURSES

- **312. **Advanced Engineering Mathematics I.** (3)
Infinite sequences and series of functions; uniform convergence; Taylor and Fourier expansions with applications to ordinary and partial differential equations; special functions. Prerequisite: 265 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: 265 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>
- **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: 265 or permission of instructor. <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, non-parametric methods, regression, analysis of variance, and applications. Prerequisite: one year of elementary calculus. <345-Summer, Fall, Spring; 346-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>

¶ 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.

- *375. Introduction to Numerical Computing. (3)**
(Also offered as Cp Sci 375) Topics covered will be interpolation, integration, solution of ordinary differential equations, solution of linear and non-linear 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.
- 391-392. [351-352] Advanced Undergraduate Honors Seminars. [Undergraduate Honors Seminar] (1-3 hrs. each semester to maximum of 8)**
Specialization, generalization, and other problem solving techniques. Prerequisite: permission of instructor. <Fall, Spring>
- *415. Foundations of Mathematics. (3)**
This course will consider the following questions and topics. What is a number? Do numbers exist? What is a set? Do sets exist? What is an axiom system? Does mathematical rigor exist? Formalists versus realists. Brouwer versus Hilbert. Godel's theorem, Banach-Tarski paradox. Prerequisite: serious interest in philosophical and historical aspects of modern mathematics. <Offered upon demand>
- *417. Combinatorial Analysis. (3)**
Permutations, combinations, recurrence 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)†**
- *455. Mathematical Logic. (3)**
(Also offered as Cp Sci 455) Formalization of mathematical reasoning. The notion of completeness and consistency will be developed within the context of the first order predicate calculus. The higher order calculus, or the theory of types, will be examined. Two alternative definitions of mathematical truth will be discussed. There are no prerequisites in particular, but the student should have a reasonably strong background in mathematics with a good intuitive feeling for what constitutes mathematical proofs. Prerequisite: permission of instructor. <Fall>
- *456. Non-standard and Higher Order Logic. (3)**
(Also offered as Cp Sci 456) Intuitionistic logic and modal theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory of types. Prerequisite: 455. <Spring>
- *461. Functions of a Complex Variable. (3)**
Analytic functions, Cauchy theorem and consequences, conformal mapping. Prerequisite: 361 or consent of instructor. <Offered upon demand>
- *462. Introduction to Ordinary Differential Equations. (3)**
Physical origins of differential equations, elementary methods of solution, existence theorems, series and asymptotic solutions, perturbation and numerical methods, phase-plane analysis, and elements of Sturm-Liouville theory. Prerequisite: permission of instructor. <Fall>
- *463. Introduction to Partial Differential Equations. (3)**
Classification of second-order partial differential equations; properly posed problems; separation of variables, eigenfunctions, and Green's functions; brief survey of numerical methods and variational principles. Prerequisite: permission of instructor. <Spring>
- *464. Applied Matrix Theory. (3)**
Determinants. Theory of Linear Equations. Matrix analysis of differential equations. Eigenvalues, eigenvectors, and canonical forms. Variational principles. Generalized inverses. Prerequisite: 314 or permission of instructor. <Offered upon demand>
- *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)**
(Also offered as Cp Sci 475-476) Theory and application of procedures for solving fundamental computational problems in mathematics including systems of linear equations, orthogonalization, interpolation, approximation, definite integrals, roots of non-

linear 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>

***498. Problems. (1-3 hrs. per semester to a maximum of 6)**

Admission by approval of Department Chairman.

***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. GRADUATE COURSES

Satisfactory completion of 321, 322 and 361-362, or evidence of equivalent preparation, is required for admission to any of the following courses.

***500. Foundations of Set Theory. (3)**

(Also offered as Cp Sci 500) General review of classical logic, Zermelo-Fraenkel axioms, the consistency and dependence of the continuum hypothesis, the consistency and independence of the axiom of choice. Prerequisites: 455, 456, and Cp Sci 451. <Offered upon demand>

***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 unbiased 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>

***548. Techniques of Statistical Consulting. (3)**

Provides experience in consulting on an actual problem at an advanced level. Problem may be experimental or theoretical but is not restricted to area of physical sciences. Student will meet with originator of problem and will consult with him until problem is completed at which time student receives grade and credit. Prerequisite: 6 hours 400 level statistics, or permission of instructor.

***549. Selected Topics in Probability and Statistics. (3)†**

***551-552. Problems. (1-3 hrs. each semester)†**

***557. Computational Mathematics. (3)†**

(Also offered as Cp Sci 557) 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)**

(Also offered as Cp Sci 558) 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. Exposure to current research dealing with the computational efficiencies of theorem proving computer program. Prerequisite: Mathematical Logic. <Spring>

***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>

***677. Pattern Recognition. (3)**

(Also offered as Cp Sci 677) 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, geometrics, information theory, harmonic analysis, and linear parallel predicates. <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, Jr.; ASSISTANT PROFESSORS W. G. Dail, Jr., L. S. Demski, S. E. Dietert, A. P. Evan, R. O. Kelley, R. E. Waterman; INSTRUCTOR P. E. Keen.

Biochemistry

PROFESSORS F. N. LeBaron (Chairman), R. B. Lofffield; ASSOCIATE PROFESSORS T. J. Scallen, L. F. Smith; ASSISTANT PROFESSORS A. C. Atencio, J. L. Omdahl, P. Reyes, D. L. Vanderjagt, G. C. Wild, B. M. Woodfin.

Family and Community Medicine

PROFESSOR (Chairman to be appointed); ASSISTANT PROFESSORS H. B. Brown, B. J. Eberle, C. C. Geil, W. A. Heffron, F. E. Mondragon, J. R. Mortimer, S. S. Obenshain, N. L. Quenk, R. A. Reid, W. H. Wiese; ADJUNCT ASSISTANT PROFESSOR F. J. Wall; VOLUNTEER FACULTY L. J. Gordon, R. L. Masters, B. D. Storrs, E. Wallen, R. J. Pendall, W. F. Rosenblatt, B. D. Tempest.

Medicine

PROFESSORS R. C. Williams, Jr. (Chairman), O. Appenzeller, R. H. Fitz, D. H. Law IV, G. D. Lubash, E. R. Simon; ASSOCIATE PROFESSORS R. P. Eaton, W. R. Hardy, J. W. Jenne, A. L. Kisch, E. L. Klingler, Jr., J. K. Leach, R. P. Messner, D. L. Palmer, E. B. Smith, R. G. Strickland, S. W. Thompson; ADJUNCT ASSOCIATE PROFESSOR J. B. Haeberlin, Jr.; ASSISTANT PROFESSORS J. Abrams, P. S. Avasthi, D. A. Bennahum, H. B. Brown, T. W. Chick, P. T. Cochran, R. J. Cronin, R. W. Griffiths, W. A. Heffron, A. S. King, D. J. Klepper, F. D. Lindstrom, P. H. Niklasson, G. T. Peake, N. L. Quenk, W. P. Reed, J. H. Saiki, A. Vall-Spinosa, R. S. Watts, K. H. Webster, J. K. Wheeler, W. H. Wiese, N. H. Zeller; ADJUNCT ASSISTANT PROFESSOR U. G. Hodgins, Jr.; INSTRUCTORS J. E. Johnson, J. F. Oser; LECTURER D. R. McKinney; VOLUNTEER FACULTY 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, W. S. Curran, R. E. Cutler, J. B. Farrell, R. C. Field, R. C. Friedenbergl, T. B. Gibbons, N. M. Goldberg, J. E. Goss, F. H. Hanold, D. D. Harville, R. W. Honsinger, Jr., O. D. Johnson, B. A. Kenny, J. C. Kraner, C. M. Kurtz, H. R. Landmann, L. Levin, B. Lowenstein, A. L. Maisel, C. L. Mengis, C. Merwin, C. J. Metzler, W. Mitchell, E. M. Mostyn, A. L. Muggid, J. Murphy, V. A. Muscarella, J. Nash, J. R. Norman, P. H. Noth, W. H. Nye, R. R. Pyle, M. A. Rajaeel, B. Ramo, J. Schulman, Jr., G. A. Simson, J. J. Stagnone, R. B. Streepel, R. W. Tatum, H. V. Terrill, J. W. Warren, C. L. Weed, A. W. Williams, J. L. Wilson, B. M. Wimer, H. B. Woodward II.

Microbiology

PROFESSORS L. C. McLaren (Chairman), J. V. Scaletti, J. A. Ulrich; ASSOCIATE PROFESSOR S. Tokuda; ASSISTANT PROFESSORS T. I. Baker, C. E. Cords, Jr., R. J. Radloff; INSTRUCTOR E. H. Goldberg; VOLUNTEER FACULTY D. E. Johnson.

Neurology

PROFESSORS (Chairman to be appointed), L. D. Amick, O. Appenzeller, J. M. Rhodes; ASSOCIATE PROFESSORS J. M. Bicknell, B. Parch, R. Snyder, S. W. Thompson; ADJUNCT ASSISTANT PROFESSOR M. Maccario; ADJUNCT INSTRUCTOR R. A. Atkinson; VOLUNTEER FACULTY S. Hollinger, M. L. Keely, M. Lane, R. J. Maier, S. D. Markowitz, M. E. McClellan, D. F. Seelinger, R. T. Wertz.

Obstetrics and Gynecology

PROFESSORS R. A. Munsick (on sabbatical leave to 9-30-73), H. Vorherr (on sabbatical leave to 2-28-74), E. A. Zimmermann; ASSOCIATE PROFESSORS P. A. Henderson (Acting Chairman), L. L. Morgenstern; ASSISTANT PROFESSORS R. W. Coen, L. H. Koplick, R. R. Murray; LECTURER E. T. Boneski; VOLUNTEER FACULTY J. A. Bennett, M. D. Bivens, C. C. Bollinger, F. Cohn, C. J. Eaton, W. C. Fowler, Jr., R. O. Gathings, R. E. Ghiglieri, J. R. Hutchison, A. P. Killiam, S. Krantz, D. McCarty, E. V. McCaughey, P. A. Miles, J. Neufeld, J. W. Pearson, L. L. Penney, B. R. Richman, W. H. Scragg, Jr., J. S. Shortle, I. A. Silberman, R. W. Swan, W. R. Thompson, A. H. Vanderhor, H. T. Wadstrom, J. W. Wiggins.

Orthopaedics

PROFESSOR G. E. Omer, Jr. (Chairman); ASSOCIATE PROFESSOR C. A. Garcia-Moral; ASSISTANT PROFESSOR W. C. Kilpatrick, Jr.; ADJUNCT ASSISTANT PROFESSOR D. H. Munger; INSTRUCTORS R. Hidalgo, R. L. McRoberts; VOLUNTEER FACULTY S. Adler, J. F. Boyd, G. D. Buker, R. Bush, H. F. Coffey, C. B. Conklin, E. A. Crowell, G. L. Dixon, Jr.,

S. H. Feagler, G. C. Freeman, J. F. Hollinger, W. K. Jones, C. A. Luekens, Jr., F. P. Maldonado, B. R. Maron, N. F. Moon, L. M. Overton, E. Parnall, R. A. Rock, D. E. Saye, P. D. Stern, R. S. Turner, J. K. Weaver.

Pathology

PROFESSORS R. E. Anderson (Chairman), R. S. Stone, J. A. Ulrich; ASSOCIATE PROFESSORS W. C. Black III, W. R. Hardy, R. E. Howard, S. W. Jordan, M. Kornfeld, T. S. McConnell, R. L. Sopher, G. M. Troup, K. S. K. Tung; ADJUNCT ASSOCIATE PROFESSOR W. Hentley; ASSISTANT PROFESSORS G. M. Bordin, P. W. Day, R. T. Goldhahn, Jr., C. R. Key, G. W. Long, J. C. Standefer, S. Weitzner, J. K. Wheeler; LECTURER P. J. Vichi; LECTURER J. H. Meadows; VOLUNTEER FACULTY G. A. Atkinson, P. Avasthi, S. Benjamin, T. B. Carmany, G. C. Chaney, T. L. Chiffelle, W. E. Droke, H. D. Ellis, A. G. Engberg, F. F. Hahn, E. B. Herring, P. D. Howard, R. K. Jones, A. J. Kalivoda, R. O. McClellan, J. D. Oates, S. V. Savino, L. A. Saxton, D. Rothfuss, G. W. Willis; and VISITING PROFESSOR M. Berthrong.

Pediatrics

PROFESSORS E. A. Mortimer, Jr. (Chairman), R. F. Castle; ASSOCIATE PROFESSORS A. H. Cushing, W. M. Michener, R. D. Snyder; ASSISTANT PROFESSORS R. W. Coen, C. C. Geil, R. A. Klein, P. M. Mershon, S. S. Obenshain, G. T. Peake, R. L. Snyder, Jr.; ADJUNCT ASSISTANT PROFESSORS W. K. Castle, G. Eisenberg, S. N. Stark; INSTRUCTORS S. B. Brown, J. P. Cardillo, R. Figueroa, B. J. Harr, V. M. Henderson, J. O. Howard, J. L. Lockwood, S. R. Missall, L. A. Papile; VOLUNTEER FACULTY G. W. Brown, J. M. Casebolt, D. J. Davis, J. K. Fisk, J. B. Gillespie, F. W. Heaton, D. E. Jelinek, W. H. Kidd, C. S. L'Hommedieu, L. G. McMurray, W. H. Milburn, M. Nabavi, D. C. Pinkerton, J. S. Saland, L. R. Schwartz, L. Shandler, R. G. Sullivan, O. Syme, M. A. Tandysh, J. T. Tyson, C. A. Weymuller, W. K. Woodard.

Pharmacology

PROFESSORS L. Hurwitz (Chairman), H. Vorherr (on sabbatical leave to 2-28-74); ASSOCIATE PROFESSOR D. V. Priola; ASSISTANT PROFESSORS W. C. Buss, E. C. Palmer, W. F. Woodside; ADJUNCT ASSISTANT PROFESSORS J. D. Bartlett, C. T. Spalding.

Physiology

PROFESSOR S. Solomon (Chairman); ASSOCIATE PROFESSORS D. V. Priola, A. Ratner; ASSISTANT PROFESSORS D. M. Feeney, W. R. Galey, Jr., K. G. Kastella, J. K. Leach, M. Pollay, R. Shannon, G. K. Weiss; ADJUNCT ASSISTANT PROFESSOR R. L. Barenberg; INSTRUCTOR H. A. Spurgeon; VOLUNTEER FACULTY J. D. Doss.

Psychiatry

PROFESSORS R. A. Senescu (Chairman), L. M. Libo; ASSOCIATE PROFESSORS J. F. Carlin, C. R. Fletcher, J. R. Graham, R. Kellner, J. Levy, B. K. Ruebush, W. W. Winslow; ASSISTANT PROFESSORS R. G. Blachly, J. G. Buchanan, J. P. Cardillo, A. Frank, S. I. Glover, M. A. Hickey, R. J. McCarthy, I. G. McNickle, G. D. Otis, S. R. Perls, A. T. Quenk, N. L. Quenk, L. Romero, T. S. Schuster, R. L. Snyder, Jr., J. W. Sterling, E. T. Suazo, M. Urdaneta; ADJUNCT ASSISTANT PROFESSORS R. Buie, C. N. Harris, V. D. Jones; INSTRUCTORS D. Arellano, A. Chakerian, V. M. Henderson, J. O. Howard, R. T. Kellogg, R. A. Klein, R. Levin, J. Lockwood, J. R. Mortimer, J. D. Murati, T. W. Payton, Jr., N. Romero, N. R. Scott, E. J. Thomas, D. J. Ward, D. A. West, J. Wilson; VOLUNTEER FACULTY T. Abel, J. B. Alexander, J. M. Andre, C. W. Archibald, R. Bergman, D. A. Bruzzese, H. M. Collins, G. Cowles, W. T. Davis, H. Diaz, J. Ellis, M. Gingras, B. K. Graham, A. Hovda, H. Hudson, J. Hughes, K. D. Koenig, M. Landau, E. Leyba, S. Libo, M. D. Muldower, M. Nordhaus, R. Norman, H. Paine, M. L. Pinsince, B. Prince, S. Roll, S. Rosenblum, D. Rosenstein, G. Ross, J. Schenkel, W. Sears, C. Smith, B. Steinau, W. Stennis, J. Talley, J. Torrens, I. Zyniewicz.

Radiology

PROFESSORS B. G. Brogdon (Chairman), M. M. Kligerman, R. D. Moseley, Jr.; ASSOCIATE PROFESSORS J. L. Howarth, C. F. Mueller, J. D. Shoop; ADJUNCT ASSOCIATE PROFESSORS C. G. Coin, D. F. Petersen; ASSISTANT PROFESSORS J. E. Antoine, J. E. Barnes, R. E. Keesee, D. M. Moody, J. L. Simon, C. J. Sternhagen, W. D. Stiehm; ADJUNCT ASSISTANT PROFESSOR H. A. O'Brien; INSTRUCTORS W. J. Baker, H. G. Pena; ASSISTANT INSTRUCTOR J. E. Seubert; LECTURER G. H. Trovato; ADJUNCT LECTURER M. R. Raju; VOLUNTEER FACULTY 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 W. R. Blakeley, J. R. Gay, R. J. Kaplan, L. E. Lamb, S. B. Leslie, J. M. Shuck,

D. E. Smith, D. V. Stephenson, Jr.; ASSISTANT PROFESSORS T. A. Borden, P. J. Clark, R. P. Fischer, R. L. Fulton, F. S. Herzon, C. E. Lewis, Jr., D. M. Moody, K. M. Nelson, A. W. Talley, R. A. Walsh; VOLUNTEER FACULTY J. H. Birch, C. M. Bovard, J. W. Bettman, Jr., M. W. Brown, H. J. Burress, R. R. Castillo, M. L. Clevenger, G. Colocho, P. G. Cornish III, R. C. Derbyshire, J. A. Dillahun, W. O. Edward, V. T. Floyd, A. H. Follingstad, H. S. Friedman, E. J. Gerety, B. M. Glover, K. P. Goldblum, W. C. Gorman, R. A. Gray, J. F. Griffin, F. T. Herhahn, F. G. Hesse, R. H. Intress, E. L. Johnson, R. M. Klebanoff, I. Klein, J. Kleinfeld, I. C. S. Knight, W. J. Langlois, D. C. Layman, B. Lerman, W. J. Levy, R. E. MacQuigg, J. Mainzer, Jr., P. U. Martinez, J. D. McCarthy, W. J. McIver, L. J. Miller, K. Moedl, F. Mora, H. Navarre, W. E. Nissen, J. P. O'Reilly, B. W. Parker, L. Parsons, Jr., O. A. Peloso, A. G. Powers, R. Raskind, J. B. Roberts, H. C. Rogers, T. R. Sadock, G. W. Scott, A. G. Simms II, R. D. Snyder, R. D. Spensley, D. E. Stinchcomb, A. C. Tenney, L. H. Wilkin-son, E. H. Wood, J. W. Ydens; VISITING PROFESSOR A. E. Walker.

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 for 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)**

An interdisciplinary study of biological principles basic to medicine with selected material from anatomy, biochemistry, genetics, physiology and microbiology; study of biological organization and function at all levels (molecule, cell, tissue, organ system and person); laboratory experiences designed to illustrate these principles and teach skills pertinent to medicine and medical biology; lectures, seminars, demonstrations, self-study exercises and laboratory. Course spans both semesters and is available to students admitted to the School of Medicine or through the Medical Science Program where it is offered as 590-591.

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)

Interdisciplinary study of biological principles basic to the manifestations of disease in human beings; a unified approach utilizing pertinent material from microbiology, immunology, pharmacology, pathology and the behavioral sciences; the interrelationships between altered structure and function are considered at the several levels of biological organization; pathophysiology and clinical aspects of diseases studied in subsequent introductory clerkships. Lectures, seminars, demonstrations, self-study exercises and laboratory experiences designed to illustrate experimentally these biological principles. Prerequisite: Medical Biology I (500-501 and 502L-503L). Course spans both semesters; also offered in Medical Science Program as 594-595 and 596L-597L.

528L-529L. Medical Biology II Laboratory. (6, 6)

Laboratory experience designed to illustrate experimentally those biological principles being considered in 526 and 527. Prerequisites: same as for 526 and 527.

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.

****302. Fundamentals of Cellular Physiology. (3) Moffat**

Cell physiology for non-biological scientific personnel, with emphasis on immunological response of the body to disease. Prerequisites: college physics, advanced algebra, inorganic chemistry, or permission of instructor. **Offered at Los Alamos Residence Center only.**

***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>
- *570. **Surgical Pathology Seminar—Elementary.** (1) Weitzner
Introduction to diagnostic surgical pathology. Prerequisites: 594 and permission of instructor.
- *571. **Diagnostic Cytology Seminar.** (1) Jordan
Introduction to diagnostic cytology. Prerequisites: 594 and permission of instructor. Students must take course two times (but register only once) to get 1 hr. credit.
- *572. **Clinico-Morphologic Correlation Conference.** (2) Key
Introduction to the autopsy in evaluation of disease. Prerequisites: 594 and permission of instructor.
- *573-574. **Clinical Pathology Seminar.** (2, 2) Howard
Introduction to clinical pathology methods and techniques. Prerequisites: 594 and permission of instructor.
- *575. **Pathobiology.** (8) Anderson
Course content overlaps with 594-595, and consists of 200 hours of instructional time by nationally known pathologists. Prospectus available. Offered only during summer session at the Given Institute, Aspen, Colorado. Prerequisite: see prospectus.
- *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>
- *583. **Clinical Chemistry.** (1-2) Standefer
Introduction to clinical chemistry instrumentation and methodology are presented in one semester with an emphasis on basic laboratory skills and common methodology. Advanced topics and clinical correlations are presented in a second semester with an emphasis on complex laboratory skills, new methods, and patient data correlation. Prerequisites: organic chemistry and biochemistry.
- *588-589. **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.** (1-8 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.** (1-6 hrs. each semester)
Same content as Med Bi 502L-503L. Prerequisites: same as for Med Bi 500-501.
- *594-595. Medical Biology II.** (1-12 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.
- *614. Research Techniques in Morphology.** (2-4)
An opportunity to learn modern research techniques in morphology in the laboratories of various members of the department. Prerequisites: 590-591 or equivalent. <Fall>
- *615. Current Topics in Morphology.** (1-2)
Continuing review of recent literature and of on-going research on a weekly basis. Prerequisites: 590-591 or equivalent. <Fall, Spring>
- *616. Selected Topics in Developmental Biology.** (1-2) Kelley, Waterman
Advanced treatment of cellular developmental biology. Topics will center on regulation of cell biosynthesis and differentiation. Prerequisites: Biol 412L or 429L or consent of instructor.
- *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, Lofffield, 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)‡ Lofffield, 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 steroids; biosynthesis and metabolism of cholesterol, adrenal steroids 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.
- *670. **Principles of Drug Action at the Cellular Level.** (2) Hurwitz
Seminars and discussions on the dynamic and molecular aspects of the interactions of drugs with receptors in biological tissues, the relationships that exist between drug-receptor interactions and the functional responses of living cells and tissues, and the interpretation of drug-response curves that result from the simultaneous actions of two or more pharmacological agents on biological tissue. Prerequisites: 590 and 591 or special permission of instructor. <Spring>
- *680. **Surgical Pathology Seminar—Advanced.** (1) Black
Advanced topics in diagnostic surgical pathology. Prerequisites: 570 and permission of instructor.
- *681. **Oncology Seminar.** (1) Black
Advanced topics in diagnostic surgical pathology. Prerequisites: 570 and permission of instructor.
- *682. **Pathology Research Seminar.** (1) Troup
Conference on pathology research topics. Prerequisite: permission of instructor.
- *683. **Immunology Seminar.** (1) Anderson, Tokuda
Conference on immunology research topics. Prerequisite: permission of instructor.
- *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 400 hours of didactic and 600 hours of student laboratory practice (January). Prerequisite: acceptance into Medical Laboratory Assistant Program.
- §020. **Practice in Laboratory Procedures (Clinical).** (0)
A supervised hospital laboratory experience to perfect skills learned in 010. Clinical experience will consist of 1000 hours of rotation through the sections of an approved, affiliated teaching hospital laboratory. Prerequisite: successful completion of 010.

§ Credit limited to students enrolled in Medical Laboratory Sciences Programs.

- §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: 100.
- §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 immuno-hematology. 5 hrs. lecture and 15 hrs. combined student laboratory and hospital laboratory experience. Prerequisite: 201.
- §203. 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 the following disciplines: hematology, clinical chemistry, medical microbiology, instrumentation, immuno-hematology, and serology. 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 para-professional 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.

§ Credit limited to students enrolled in Medical Laboratory Sciences Programs.

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 sequential growth and development of the human from conception through adolescence. Emphasis will be placed on observations of infants, children, pre-adolescents in a variety of settings such as nurseries, kindergartens, public schools, special education centers, recreation areas as well as homes.

149. Workshop in Human Service Problems. (1-3)

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."

RADIOLOGIC AND NUCLEAR MEDICINE TECHNOLOGIES

RADIOLOGIC TECHNOLOGY

010. **Journal Club.** (0) Seubert, Travato
Survey of literature related to research in the field of radiologic technology and radiology. <Fall, Spring>
020. **Film Critique.** (0) Seubert, Travato
Practical study in recognition of differences between diagnostic and poor quality radiographs and the reasoning governing such differences. <Fall, Spring>
101. **Basic Radiological Physics.** (4) Barnes
Introduction to basic principles of electrical and radiation physics, and operation of x-ray and auxiliary equipment, including demonstrations. <Spring>
103. **Professional Orientation and Ethics.** (2) Seubert, Travato
Introduction to field of radiologic technology, relation to the complete medical structure, nature and value of ethics, and professional conduct with the medical profession. <Summer>
105. **Medical Terminology.** (1) Seubert
Study of medical terminology as applied to the specialty of radiology. <Summer>
107. **Radiologic Technology.** (4) Seubert
Principles and theory of formulating x-ray techniques, exposure factors, and the generation and properties of x-radiation. <Fall>
- 108L. **Radiologic Technology Laboratory I.** (4)
Instruction and practice in the principles of radiographic exposure, formulae, and technique. <Summer, Fall, Spring>
111. **Radiologic Darkroom Chemistry.** (1) Seubert
Fundamental principles of the chemistry and processing of radiographs, the theory of the latent image, and planning, equipping, and operating processing areas in a department of radiology. <Spring>
121. **Radiological Nursing Procedures.** (2) Petty
Basic concepts and techniques in nursing specific to application in a department of radiology. Prerequisite: 103. <Spring>
151. **Human Anatomy and Physiology.** (3) Riechmann
Principles of anatomy and physiology as applied to the structure and functions of the human body. Prerequisite: 105. <Fall>
161. **Radiographic Positioning.** (3)
Art of radiographic positionings of the structures and organs of the human body utilized in obtaining diagnostic radiographs. Prerequisites: 107, 108L. <Fall, Spring>
- 162L. **Radiographic Positioning Laboratory I.** (4)
Principles of radiographic positioning of the human body utilizing an artificial phantom patient. Prerequisite: 161. <Fall, Spring>
163. **Intermediate Radiographic Positioning.** (3)
Radiographic positioning of the structures of the human body. Need for multiple views for maintenance of detail, correct proportion of body parts and their proper projection to avoid magnification, distortion, and superimposition. Prerequisites: 107, 108L. <Fall>
- 164L. **Intermediate Radiographic Positioning Laboratory.** (4)
Actual clinical radiographic positioning in a radiographic room under the supervision of a registered radiologic technologist. Prerequisite: 163. <Fall, Spring>
201. **Intermediate Radiological Physics.** (2) Barnes
Applied medical radiation physics; measurement of radiation dosages, detection of low-level activity, radioactive decay and interaction with matter, dosimetry, clinical nuclear and radiological instrumentation. Prerequisite: 101. <Summer>
205. **Radiation Protection.** (1) Barnes, Shoop
Natural and background radiation, radiation hazards, radiation protection survey procedures, and shielding factors, with problems. <Summer>
- 207L. **Radiologic Technology Laboratory II.** (8)
Continuation of 108L. Prerequisite: 107, 108L. <Fall, Spring>
209. **Basic Radiological Mathematics.** (2) Barnes
Mathematical and statistical relationships of primary interest to the field of radiologic and nuclear medicine technology. Prerequisite: 101. <Fall>

- 211. Introduction to Nuclear Medicine.** (1) Shoop
Medical use of radionuclides defined, procedural techniques, history of radioactivity, measurement of activity, radioactive emissions basic instrumentation, scanning factors, and gamma camera imaging components. Prerequisites: 101, 151, 205. <Fall>
- 212L. Nuclear Medicine Laboratory.** (3) Havey
Clinical nuclear medicine laboratory procedures in a department of nuclear medicine. Prerequisites: 101, 151, 205. <Fall>
- 221. Preventive Maintenance and Radiographic Instrumentation.** (1)
Practical care and maintenance of radiographic equipment including automatic processing apparatus, trouble shooting knowledge concerning radiographic equipment and causes of electrical break-downs. Prerequisites: 107, 108L. <Spring>
- 231. Intra-Oral Radiography.** (1) Seubert
Theory of dental radiography, intra-oral anatomy, positioning techniques, and the geometry of image formation applicable to radiographic intra-oral examinations. Prerequisites: 161, 162L. <Spring>
- 261L. Radiographic Positioning Laboratory II.** (8)
Continuation of 162L. Prerequisites: 161, 162L. <Summer, Fall, Spring>
- 271. Radiation Therapy.** (2) Kligerman
Low, medium, and high voltage therapy units, monitoring devices, protective measures, and the handling of radioactive materials. Prerequisites: 101, 151. <Fall>
- 272L. Radiation Therapy Laboratory.** (3)
Clinical radiation therapy laboratory procedures in a department of radiation therapy. Prerequisites: 101, 151. <Fall>
- 281. Special Radiographic Procedures.** (3)
Highly specialized procedures involving the administration of contrast media for the detection and diagnosis of pathologic and/or traumatic initiated conditions. Prerequisites: 161, 162L. <Fall>
- 314L. Clinical Nuclear Medicine Laboratory.** (3)
Laboratory practice in organ imaging, function studies, blood flow, and ventilatory function. Prerequisite: 291, or equivalent. <Summer, Fall>

NUCLEAR MEDICINE TECHNOLOGY

- 291. Survey of Medical and Surgical Diseases.** (4) Shoop
Nature and cause of diseases and the changes that occur with disease and injury. Prerequisites: 105, 121. <Spring>
- 301. Advanced Radiological Physics.** (2) Barnes, Shoop
Diagnostic and therapeutic radiation physics; nuclear physics, principles of radiologic and nuclear instrumentation. Prerequisite: 201. <Fall>
- 309. Basic Nuclear Laboratory Procedures.** (1) Mason
Principles of counting, counting statistics, venesection, and preparation of patient samples. <Summer>
- 310L. Basic Nuclear Procedures Laboratory.** (1)
Laboratory practice in venesection and preparation of patient samples. <Summer>
- 311. Intermediate Nuclear Laboratory Procedures.** (1) Baker, Havey
Principles of thyroid uptake measurements, *in vitro* thyroid studies, Schilling tests, and blood volume studies. Prerequisites: 309, 310L. <Fall>
- 312L. Intermediate Nuclear Procedures Laboratory.** (1)
Laboratory practice in thyroid, blood volume studies, etc. Prerequisites: 309, 310L. <Fall>
- 313. Clinical Nuclear Medicine.** (2) Shoop
Principles of performance and rationale for routine clinical nuclear medical procedures involving organ imaging, dynamic function studies, blood flow studies, and ventilatory function. Prerequisite: 291, or equivalent. <Summer, Fall>
- 321. Nuclear Radiation Biology.** (2) Barnes
Interaction of alpha, beta, gamma, and high LET particle radiations from nuclear interactions and disintegrations with biologic material. Prerequisite: 201. <Spring>
- 322. Radionuclide Therapeutics.** (1) Shoop
Principle and practice of therapy and benign and malignant disease with therapeutic radionuclide preparations. Prerequisites: 313, 314L. <Spring>

- 341. Nuclear Instrumentation.** (3) Barnes, Scoop
Principles and demonstrations of ionization chambers, G-M tubes, scintillation and solid-state detectors, pre-amplifiers, amplifiers, pulse height analysis, and read-out instrumentation. Prerequisite: 201. <Summer, Fall>
- 342L. Nuclear Medical Instrumentation Laboratory.** (4)
Laboratory practice in set-up, calibration, routine and special uses of standard nuclear medical instrumentation; computer processing of nuclear medical data. Prerequisite: 201. <Summer, Fall>
- 352L. Radioimmunoassay Laboratory.** (2) Heade, Standeger
Laboratory investigation of competitive binding assay and radioimmunoassay of hormones, mediators, and drugs. Pre- or corequisite: Pharm 416. <Fall, Spring>
- 391. Special Problems.** (1-3) Barnes, Keese, Shoop
Supervised investigation in radiopharmaceutical effects and tissue localization. Pre- or corequisites: 311-312L, 341-342L, Pharm 412. <Fall, Spring>

MODERN AND CLASSICAL LANGUAGES

PROFESSORS W. H. Roberts (Chairman), J. Kolbert, R. R. MacCurdy, M. R. Nason, A. Rodríguez, J. E. Tomlins, S. R. Ulibarri, J. E. White; ASSOCIATE PROFESSORS E. T. Book, G. L. Brower, R. Cobos, P. H. Fernández, R. Holzapfel (Associate Chairman of German), T. Holzapfel, R. C. Jespersen, C. M. Senninger; ASSISTANT PROFESSORS J. J. Bergen, G. D. Bills (Assistant Chairman), S. L. Guyler, B. Hanneman, R. D. Herron, E. E. Lamadrid, B. T. Lindsey, L. J. Márquez, P. S. Mellon, P. Murphy, P. K. Pabisch, G. F. Peters, W. S. Smith, J. T. Timm; LECTURER G. M. Slavin; INSTRUCTOR R. Welsh; PART-TIME INSTRUCTORS L. Hoshour, M. F. Sovereign.

Explanation of footnotes not indicated will be found on p. 310.

GROUP REQUIREMENTS

Courses taught in English and in the Modern Languages Division are not accepted toward fulfillment of Foreign Language group requirements.

LANGUAGE LABORATORY

The Department operates a Language Laboratory where students in beginning language classes go for weekly exercises. Any student having special difficulties may be assigned work in the Laboratory. No extra credit is allowed for this work which is done chiefly in connection with regular courses.

PLACEMENT OF FRESHMEN

Students who have studied FRENCH or GERMAN in high school and who intend to continue the same language at the University are expected to take a placement examination administered by the department. Normally students in other languages with 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. 350.

MODERN LANGUAGES

No major or minor study offered.

- 292. Introduction to the Study of Language.** (3 or 4)
(See Ling 292.)
- *457. Special Topics in Modern Languages.** (3)‡
- *478. Seminar in International Studies.** (3) Slavin
(Also offered as Econ 478, Geog 478, Pol Sc 478, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.
- *480. Second Language Pedagogy.** (3)
(Also offered as C&I 480)
- 497. Undergraduate Problems.** (1 to a maximum of 6)
- *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.
- *551. Problems.** (1-6 hrs. per semester)
For M.A. candidates.
- *555. Seminar in Linguistics and Language Pedagogy.** (1-3) Rigsby, Spolsky
(See Ling 555.)
- *580. Seminar in Modern Languages and Literatures.** (1-6)‡
(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.
- *651. Problems.** (1-6 hrs. per semester)
For Ph.D. candidates.

AMERICAN INDIAN LANGUAGES

NAVAJO

No major or minor study offered.

- 101-102. Elementary Navajo.** (3,3) <101—Fall, 102—Spring>
- ø103-104. 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>
- *401. Navajo Linguistics.** (3)
Study of selected aspects of the structure of the Navajo language. Emphasis on individual research. Prerequisite: 204, or permission of instructor.
- 497. Undergraduate Problems.** (1 to maximum of 6)
- *551. Problems.** (1-6 hrs. per semester)
For M.A. candidates.

QUECHUA

No major or minor study offered.

ø Offered at the University of Mexico-Gallup Branch only.

***311-312. Introduction to Quechua. (3, 3) Bills**

Emphasis on the grammatical structure of Bolivian Quechua. Permission of instructor is required and a working knowledge of Spanish is desirable. <Offered upon demand>

ZUNI

No major or minor study offered.

ø105. Reading and Writing Zuni. (3)

For native speakers of Zuni.

CLASSICS**MAJOR STUDY**

12 hours in Latin courses numbered above 250, including 303 and 304; 9 hours in Greek courses numbered above 250; Hist 313, 314; and two of the following: Phil 201, Art Hi 350, Anth 391.

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. 350.

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 expected to take a placement test administered by the department.

101-102. Elementary French. (3, 3) 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) 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.

ø Offered at the University of New Mexico-Gallup Branch only.

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)** Hoshour, Kolbert, Murphy, Senninger
Prerequisite: 254 or the equivalent.
- *335. French Literature in Translation. (3)** Kolbert, Murphy
Does not count for the French major or minor.
- *351-352. Survey of French Literature. (3, 3)** Murphy, Senninger, White
351: Origins to 1800; 352: 1800 to present.
- *401. French Stylistics and "Explication de Textes." (3)** Kolbert, Senninger
Analysis of texts of poetry, prose, and drama, and review of literary movements. Required for the M.A. degree.
- *405. French Phonology. (3)** Book
Phonetic and phonemic system of French. Required for the undergraduate major.
- *411. French Poetry of the Renaissance. (3)** Kolbert
Development of French poetry from Marot through M. Régnier with special stress on La Pléiade (Du Bellay and Ronsard).
- *412. French Non-Poetic Literature of the Renaissance. (3)** Kolbert, Murphy
Major concentration on Rabelais and Montaigne with briefer study of some of the minor prose-writers of the period.
- *422. French Dramatic Literature of the Classical Period. (3)** White
Representative plays of Corneille, Molière, and Racine.
- *423. French Non-Dramatic Literature of the Classical Period. (3)** White
Lyric poetry and prose from Pascal to the end of the reign of Louis XIV.
- *431-432. French Literature of the 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)** 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)** Book, Kolbert
The most representative novels of the Romantics, Realists, and Naturalists.
- *442. French Dramatic Literature of the 19th Century. (3)** Senninger
Survey of the drama from the melodrama and neoclassicism through the Théâtre d'art of Paul Fort.
- *443. Practicum in 19th Century French Theatre. (3)** Senninger
May be taken together with 442. Study through a live experience that reconstructs the theater as part of the political, sociological, and artistic context of the time.
- *451. French Prose of the 20th Century. (3)** Book, Kolbert
Selected novels from Gide and Proust through the Nouveau Roman.
- *452. French Dramatic Literature of the 20th Century. (3)** Book
Survey of leading plays of contemporary era, culminating with the theatre of the absurd.
- *453. Practicum in 20th Century French Theatre. (3)** Senninger
May be taken together with 452. Study through a live experience that reconstructs the theatre as part of the political, sociological, and artistic context in which it developed. 443 and 453 may not both be counted toward the French major.
- *460-461. Survey of French Poetry. (3, 3)** Kolbert, Senninger
460: to 1800; 461: since 1800.
- 497. Undergraduate Problems. (1 to a maximum of 6)**
- 498. Reading and Research for Honors. (3)**
Open to juniors and seniors approved by the Honors Committee.
- 499. Honors Essay. (3)**
Open only to seniors enrolled for departmental honors.
- *500. Teaching Practicum. (1)** Book
Required of all new teaching 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) Kolbert, Senninger
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 Provencal-Old Catalan.** (3) White
(See M Lang 516.)
- *517. **Comparative Romance Philology.** (3) White
(See M Lang 517.)
- *518. **Medieval Romance Lyric.** (3) Tomlins, White
(See M Lang 518.)
- *520. **French Thought** (3) Murphy, Senninger
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) Book, Kolbert
- *524. **Literature and Art in the 19th Century.** (3) Senninger
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 equivalent.

MINOR STUDY

15 hours in German courses numbered above 300.

PLACEMENT EXAMINATION AND EXAMINATIONS TO VALIDATE CREDIT FOR PREVIOUS WORK

Students who have had previous exposure to German in high school or elsewhere and who plan to continue at the University are expected to take a placement test administered by the Department. This examination is for advisement only, and no student will be forced to take a course for which he does

not feel qualified. A student, if he so desires, may take the beginning course (101) for credit. If a student places above 101, it is possible by additional testing to earn credit for those courses by-passed.

FIRST-YEAR PROGRAM

All beginning students should enroll in Basic German (101-102), which provides a foundation in reading, writing, listening, and speaking for all subsequent courses.

101 and 102 may each be supplemented by a 2-hour conversation course (103-104) and/or a 1-hour reading course (107-108). The supplemental courses are intended for those students who wish to develop a specific language skill more rapidly than the basic course permits. They are taught as parallel courses to 101-102, and students must either be concurrently enrolled in the basic course or demonstrate equivalent preparation.

101-102. Basic German. [Elementary German] (3, 3) Jespersen and Staff

Foundation course for all beginning students, whether they are primarily interested in reading or speaking. 101 may be supplemented by 103 and/or 107; 102 may be supplemented by 104 and/or 108.

103-104. Elementary German Conversation. [Elementary German—Conversational Emphasis] (2, 2) Peters and Staff

Supplementary course to German 101-102 for students interested in additional practice in speaking. Intensive use of German in the classroom based on a variety of audio-visual stimuli. Students not concurrently taking 101-102 must obtain permission of instructor to enroll.

107-108. Elementary German Reading. (1, 1) Pabisch and Staff

Supplementary course to German 101-102 for students interested in additional practice in reading. The course stresses individual study, using a variety of reading texts.

ELEMENTARY COURSES FOR GRADUATE STUDENTS

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. Undergraduates may not enroll without permission of instructor. <Offered upon demand>

106. Reading for Graduate Students. (3) Welsh

Continuation of German 105. Reading of German texts in the sciences and humanities. Undergraduates may not enroll without permission of the instructor. <Offered upon demand>

SECOND-YEAR PROGRAM

In the second year the student may take 203-204, which stresses the acquisition of speaking and listening skills, and/or 251-252, which emphasizes reading. Those intending to go beyond the second year should take 203-204.

203-204. Intermediate German—Oral Emphasis. (3, 3) Holzapfel and Staff

Emphasis on speaking and listening skills.

251-252. Intermediate German—Reading Emphasis. (3, 3) Welsh

254. German Conversation. (1-3)

Small informal conversation groups for students who want to improve speaking skills. It is recommended that this course be taken concurrently with 203-204 or 251-252. May be repeated to a maximum of 3 hours credit.

256. German Folksongs. (1-3)

Informal study and singing of German folksongs. 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) Pabisch

- 307. Introduction to German Literature.** (3) Peters
307 is a prerequisite for all literature courses listed below, except 336.
- *336. Special Topics in German Literature in Translation.** [German Literature in Translation]
(3)† R. Holzapfel, Jespersen, Peters
Topics will deal with individual authors, genres, or periods. 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) Pabisch
Phonetic and phonemic system of German.
- *445. Teaching of German.** (3) Jespersen
(Also offered as Sec Ed 445.) Does not count for the German major or minor.
- *450. Special Topics in German Literature.** (3)†
Topics will deal with individual authors, genres, or periods.
- *455. Medieval and Renaissance Literature.** (3) Pabisch
- *460. Age of Goethe.** (3) Peters
- *465. Romanticism.** (3) Jespersen, Peters
- *470. Realism and Naturalism.** (3) Jespersen
- *475. Contemporary Literature.** (3) R. Holzapfel, Pabisch
- *477. Modern German Drama.** (3) R. Holzapfel
- *480. The "Novelle."** (3) Jespersen
- *485. Lyric Poetry.** (3) Pabisch, Peters
- 490. Undergraduate Seminar.** (3)
- 497. Undergraduate Problems.** (1 to a maximum of 6)
- 498. Reading and Research for Honors.** (1 to a maximum of 6)
Open to juniors and seniors approved by the department honors committee.
- *551. Problems.** (1-6 hrs. per semester)

GREEK

MAJOR STUDY

Not offered.

MINOR STUDY

12 hours in courses numbered above 250, including 301 and 302.

- 101-102. Elementary Greek.** (3, 3) Smith
101: Introduction to Classical Greek; 102: Readings from simple prose, including the New Testament. (Alternates yearly with 301-302.)
- 301-302. Classical Greek.** (3, 3)
Prerequisite: 102 or equivalent.
- *341. Greek Mythology.** (3) Smith
Theory of origin and use of myths examined from point of view of psychologist, anthropologist, and religious historian.
- *345. Topics in Greek Literature in Translation.** (3)† Mellon, Smith
Topic will deal with individual authors, genres, or periods.
- 497. Undergraduate Problems.** (1 to a maximum of 6)
- *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.
- *307. Introductory Readings in Prose.** (3) Guyler
Prerequisite: 276 or equivalent.
- *308. Introductory Readings in Poetry.** (3) Guyler
Prerequisite: 276 or equivalent.

- *475. *Dante in Translation*. [Dante] (3) White
Principally the *Vita Nuova* and the *Divine Comedy*.
- 497. *Undergraduate Problems*. (1 to a maximum of 6)
- *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 two years' high school credit in Latin will take the second (102) semester course; students with three years will take the third (251) semester course; students with four 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.

*344. *Topics in Latin Literature in Translation*. (3)‡ Mellon, Smith

Topic will deal with individual authors, genres, or periods.

*351-352. *Latin for Language Students*. (3, 3)

A comparative study of Latin and its relationship to modern languages for upper-division and graduate students; the reading of selected classical and medieval texts.

497. *Undergraduate Problems*. (1 to a maximum of 6)

*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 two years college work in another foreign language (or reading knowledge).

MINOR STUDY

18 hours in Portuguese courses.

275-276. *Beginning Portuguese (Accelerated)*. (3, 3)

Prerequisite: 6 hrs. (or equivalent) of another 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>

*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, Romanticism, 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. **Portuguese Literature to 1600** [Camões and Gil Vicente] (3) Tomlins
Readings in the various medieval genres with special emphasis on Hispano-Arabic lyric and the Cancioneiros; the Cancioneiro Geral and the Italian modes; Gil Vicente and his school; Camões and the lyric, the drama, and the epic; Erasmus humanism.
- *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 6)
- *501. **History of the Portuguese Language.** (3) White
Evolution of Latin to Portuguese with selected medieval readings. Required for the M.A. degree. Prerequisite: Latin 351, or equivalent.
- *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 two years of high school Russian will take a second

(102) or third (251) semester course; the student with three 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.

***301. Advanced Russian. (3)**

Prerequisite: 252, or equivalent.

***302. Translating Russian. (3)**

Continuation of 301, with emphasis on problems of translating non-literary texts. Prerequisite: 252, or equivalent.

307. Introduction to Russian Literature. (3) Lindsey

Readings in the poetry of Pushkin, Lermontov, and Tjutchev 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.

***308. Russian Poetry. (3) Lindsey**

Prerequisite: 252, or the equivalent.

***338. Russian Literature in Translation. (3) T. Holzapfel, Lindsey**

***343. Soviet Literature in Translation. (3)**

(Also offered as Comp L 343.) Readings in Russian literature since the revolution: Sholokhov, Maiakovski, Babel, Pasternak, Solzhenitsyn.

***345. Russian Civilization. (3) Lindsey**

Required for the major in Russian Studies. A study of the major creative works in literature, music, art, and architecture from Kievan times to the present. In Russian.

***401-402. Contemporary Russia. (3, 3) Lindsey**

Current language and literature including samizdat.

***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 6)

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 two years' high school credit will take the second (102) semester course; students with three years will take the third (251) semester course; students with four 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 and Staff
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 and Staff
Prerequisite: 112 or the equivalent. <Fall, Spring>
- 251-252. Intermediate Spanish.** (3, 3) Bergen and Staff
Prerequisite: 102 or the equivalent.
- 254. Intermediate Spanish Conversation.** [Elementary Spanish Conversation] (3) Bergen and Staff
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.
- *315. Creative Writing for New Mexico Spanish-speaking Students.** (3) Ulibarri
Writing of original short stories and poems, with emphasis on the use of New Mexican Spanish.
- 401. Spanish Stylistics.** (3) Fernandez
Literary style, figurative language, literary genres and versification, aesthetics, text analysis. Good command of Spanish essential. <Fall>

II. LINGUISTICS, PHILOLOGY, AND METHODOLOGY

- *420. Spanish Linguistics for Elementary Teachers.** (3) Lamadrid
Selected aspects of Spanish phonology, morphology, and syntax; theory and application to bilingual teaching. Taught in Spanish. Does not count toward the Spanish major or minor. Prerequisites: 302, Ling 292, or equivalents. <Offered upon demand>
- *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.
- *453. **Spanish Phonology.** (3) Bills
Introduction to Spanish phonetics and phonemics. <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, Márquez
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
Study of recent research on the teaching of Spanish: cognitive code-learning theory, language testing, the language laboratory. Required for all candidates for the M.A.T.S. degree.
- *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
Introduction to linguistics and applied linguistics; Spanish morphology; bilingualism. Pre- or corequisite: 453.
- *556. **Spanish Linguistics: Problems of Language Instruction.** (3) Bergen
American structural and transformational analysis of Spanish syntax; their pedagogical utilization. Prerequisite: 554.
- *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. Prerequisite: Latin 351 or equivalent.

III. LITERATURE

A. Peninsular Literature

- 292. **Introduction to Spanish Literature.** (3) Ulibarri
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
Does not count for the Spanish major or minor.
- *350. **Nineteenth Century Spanish Novel.** (3) Fernández, Rodríguez, Ulibarri
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 *Alfa 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) Ulibarri
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) Fernandez
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 Quixote.** (3) MacCurdy
A detailed analysis of the *Quixote* and treatment of its place in world literature.
- *476. **Cervantes: Other Works.** (3) MacCurdy
Works other than the *Quixote* 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)† Fernandez
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) Fernandez
Emphasis on the 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)† Fernandez
Topic will deal with individual authors.
- *571. **Seminar in Spanish Poetry.** (3)† Ulibarri
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)
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.
- *357-358. **Survey of Spanish American Literature.** (3, 3) Brower, Nason, T. Holzapfel, 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. **Seminar in the Drama of Spanish America.** (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.
- *345. **Spanish Civilization.** (2) Fernández, Ulibarri
- *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

- 497. **Undergraduate Problems.** (1 to a maximum of 6)
- 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. **Research Methods, Literary Theory, and 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.
- *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.

110-111. **Introduction to Swahili.** (3, 3)

MUSIC

ASSOCIATE PROFESSOR W. Seymour (Chairman); **PROFESSORS** J. Batcheller, D. McRae, W. E. Rhoads, G. Robert, M. Schoenfeld; **ASSOCIATE PROFESSORS** F. Bowen, L. Felberg, H. Garcia, M. Madrid, J. Snow, J. Whitlow, W. Wood; **ASSISTANT PROFESSORS** A. Chavez, J. Clark, J. de Keyser, A. Edwards, W. Selby; **LECTURERS** E. Fellig, J. Grealish (part-time), J. Jacobs (part-time), L. McLeod, D. Randall, W. Sharp (part-time), B. Whiton (part-time), S. Wilkinson (part-time), F. Williams; 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. 264-267.

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. 494.

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.** [Music Appreciation A] (3)
Introduction to music. The basic materials and properties of music; media and forms. <Fall and alternate Summers>
140. **Music Appreciation.** [Music Appreciation B] (3)
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)
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)
From antiquity through the Baroque. Non-technical study of the forms, styles, schools, principal composers, and representative masterpieces of each era. <Fall>
372. **General History of Music.** (3)
The Classical, Romantic, and Modern eras. Non-technical study of the forms, styles, schools, principal composers, and representative masterpieces of each era. <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.** (1)
Open to all beginners in voice exclusive of voice majors. <Fall, Spring>
110. **Group Voice II.** (1)
Prerequisite: 109. <Fall, Spring>
111. **Group Piano I.** (1)†
Open to all beginners in piano exclusive of piano majors. <Fall, Spring>
112. **Group Piano II.** (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.** (1)
Open to all students. Prerequisite: 112. <Fall>
212. **Group Piano IV.** (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) Clark
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) Clark
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)‡‡ Clark
Open to all University students. <Summer, Fall, Spring>
- 230. Opera Studio.** (1)†
Basic training in techniques of music theater. Open by audition to singers, conductors, pianists, stage directors, and producers. <Fall>
- 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
Study and performance of marches and concert band literature. Appearance and performance in uniform at football games, Commencement, and other University functions. Marching band required of wind and percussion concentrates in music education during freshman and sophomore years. <Summer, Fall, Spring>
- 243. Concert Choir.** [A Cappella Choir] (1)‡‡ Clark
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)†
Advanced performance in Music Theater and Opera, culminating in major performances. Open by audition to singers, conductors, pianists, 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. <Offered upon demand>
- 375. Symphonic Literature.** (2)
A survey of the developments in orchestral music from Bach to the present. Prerequisites: 261, 262. <Fall>
- *411. Contemporary Period.** (2)
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 B.U.S., in the College of Fine Arts or College of Education, 4 hours in other colleges.

- *412. Baroque Period. (2)**
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)**
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)**
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)**
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) Clark**
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 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)**
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)†**
Individual student projects in research. Oral and written reports. Prerequisite: 531. <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. 103 and 104 must be taken concurrently. <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. 103 and 104 must be taken concurrently. <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 A. <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. <Spring, Summer>

- 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: adequate score on music theory placement test or completion of Music 104 with grade of A. <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 Analysis. [Form and Composition] (3)**
Analysis of the structural elements of music from Gregorian Chant to the present. Prerequisites: 206, 208. <Fall>
- *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: 309. <Fall>
- 410. Composition. (2) Wood**
Continuation of 409. For composition majors only. 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. Prerequisite: 309. <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. Prerequisite: 309. <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. Prerequisites: 388 and junior standing. <Spring>

PROBLEMS

391-392. Undergraduate Problems. (1-3 hrs. each semester)

Prerequisite: junior standing. <Summer, Fall, Spring>

***551-552. Problems. (1-3 hrs. each semester)**

SPECIALIZED COURSES

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)**599. Master's Thesis. (1-6 hrs. per semester)**

See the Graduate School Bulletin for total credit requirements.

MUSIC EDUCATION

CURRICULUM

See p. 266.

MINOR STUDY

2 hours in music theory;

4 hours in piano;

2 hours in eartraining;

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. Cultural Awareness Through Music Skills. [Music Skills for the Elementary Classroom Teacher] (2) Batcheller

Exploring the music of global ethnic groups. Emphasis placed on the musical skills needed to assist the elementary teacher toward relevant enrichment in teaching the humanities. <Summer, 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)

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)

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: 294, admission to student teaching, and junior standing in music. <Spring>

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)

See Department of Music Handbook for prerequisites. <Fall, Spring>

- *429. **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 216 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

Colonel J. R. O'Mara, USMC (Chairman), Commander V. D. Brockmann, USN, Major R. E. Ablowich, USMC, Lieutenant T. A. Gibson, USN, Lieutenant W. J. Irwin, USN, Lieutenant T. D. Stanley, USN.

CURRICULUM

See p. 308.

- 010. **Naval Professional Laboratory.** (0)
Drills and information for NROTC students. (30 hours each semester)
- 105. **Naval Ship Systems I.** (3) Stanley
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) Stanley
Continuation of 105. Prerequisite: 105. <Spring>
- 303. Navigation and Naval Operations.** (3) Gibson
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) Gibson
Continuation of 303. Prerequisite: 303. <Spring>
- 331. Evolution of Warfare.** (3) Ablowich, O'Mara
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, O'Mara
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) Ablowich, O'Mara
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 1974 and alternate years>

NUCLEAR ENGINEERING

See Engineering, Nuclear

NURSING

PROFESSORS B. L. Murray (Dean), V. Crenshaw, R. Kroska; ASSOCIATE PROFESSORS J. Baca, B. Hicks; ASSISTANT PROFESSORS Z. Bray, M. Carpenter, M. H. Carroll, J. Collier, S. Ferketich, B. Hill, H. Kee, M. Kordosky, E. Martin, A. Martinez, J. Maurin, M. McGann, INSTRUCTORS C. Burton, G. Gorman, S. Jones, J. Pelozo, S. Mantik, E. Rosenblum, E. Thomas; CLINICAL ASSOCIATE F. Truskowski

CURRICULUM

See p. 288.

- 129. Workshop.** (1-3)
An opportunity for nurses to update their knowledge and skills in nursing process in maintainal, preventive, therapeutic, and restorative health care.
- 201L. Introduction to Nursing Process.** (5)
Basic concepts in nursing care and the applications in nursing practice focused on care, comfort, cleanliness and safety needs of hospitalized patients. Prerequisites: 6 hours of communication arts including a course in expository writing, 16 hours of biological and physical sciences including 3-4 hours integrated organic and biochemistry, 6 hours of behavioral and social sciences including Psychology 102; co-requisites: 3 to 4 hours of microbiology or bacteriology. <Fall>
- 202. [202L] Nursing Process Continued.** [Determinants of Patient Care] (3)
Study of the patient in relation to the sick role, his family and community, and practice of nursing care measures related to the maintenance and/or restoration of homeostasis influencing the health-illness spectrum. Prerequisite: 201L; corequisite: 203L, 3-4 hours pharmacology and Biol 236L. <Spring>
- 203L. [202L] Nursing Process Continued.** [Determinants of Patient Care] (2)
Laboratory experience to provide implementation of knowledge and skill acquired in 202. Corequisite: 202. <Spring>
- 303. Medical-Surgical Nursing.** (5) McGann
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. Prerequisites: 202, 203L, completion of communication arts requirement, biological and physical sciences requirement and Psych 320; corequisite: 304L. <Fall, Spring>

304L. Medical-Surgical Nursing Laboratory. (5)

The application of knowledge and skills learned in 303 in a clinical setting. Corequisite: 303. 15 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: as listed for 303; corequisite: 321L. <Fall, Spring>

321L. Pediatric Nursing Laboratory. (3)

Clinical practice in selected facilities to increase skill in the use of nursing process in assessing, planning, implementing, and evaluating care necessary to meet the needs of the child and his family. Corequisite: 320. 9 hrs. lab. <Fall, Spring>

330. Maternity Nursing (3) Carroll

A family-centered approach to the study of human reproduction, pregnancy, birth, and infancy. Includes a study of gynecological nursing. Prerequisites: as listed for 303; corequisite: 331L. <Fall, Spring>

331L. Maternity Nursing Laboratory. (3)

Clinical practice in selected facilities to increase skill in the use of the nursing process in assessing, planning, implementing, and evaluating care necessary to meet the needs of the childbearing family. 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 patient; further development of sensitivity to people. Prerequisite: sophomore standing in the College of Nursing. <Fall, Spring>

352. Fundamentals of Community Health Nursing. (2) Baca

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 diseases, vital statistics, and health of the environment. Some field assignments. Prerequisites: 3-4 hours microbiology or bacteriology, junior standing in the College of Nursing, or majoring in health education. <Fall, Spring>

***429. Workshop. (1-6)**

<Offered upon demand>

450. 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: all 300 level nursing courses; corequisite: 451L. <Fall, Spring>

451L. Psychiatric Nursing Laboratory. (4)

Clinical practice in selected facilities for application of knowledge and skills learned in 450. Prerequisite: completion of all 300 level nursing courses; corequisite: 450. 12 hrs. lab. <Fall, Spring>

452. 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: completion of all 300 level nursing courses; corequisite: 453L. <Fall, Spring>

453L. Community Health Nursing Laboratory. (5)

Clinical practice in selected facilities for application of knowledge and skills learned in 452. Prerequisite: completion of all 300 level nursing courses. Corequisite: 452. 15 hrs. lab. <Fall, Spring>

462. Senior Seminar. [Nursing Seminar] (5) Crenshaw

Content is selected by students and instructor from major societal health problems, alternative ways of dealing with problems and dominant movements. Students conduct and report projects. Prerequisite: completion of all 300 level nursing courses; <Fall, Spring>

463. Senior Nursing Practicum. (3) Bray

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. <Fall, Spring>

464L. Senior Nursing Practicum Laboratory. (3)

Clinical practice in selected facilities for application of knowledge and skills learned in 463. Corequisite: 463. 9 hrs. lab. <Fall, Spring>

497. Independent Study. (1-3)

Prerequisites: Senior standing and permission of instructor. <Fall, Spring>

498. Honors Study. (3) Murray

First part of two courses in Departmental Honors. Prerequisites: junior standing in the College of Nursing and a 3.2 or better grade point average. <Fall, Spring>

499. Honors Study. (3) Murray

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 Paleoeology 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 "Paleoeology 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 366F, 303L, 307L

Biol 121L, 122L, 253, 363L, 371L, 372L, 407, 408, 484L, 487L, 489L

Chem 101L, 102L or 122L, 253L, 301, 302, 303L, 304L, 311, 312

Geol 101-102-105L-106L, 301L, 302L, 421L, 431L, 441L, 501L

Math 345-346, 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.

451-452. Problems in Paleoeology. (2, 2)***539. Environmental Reconstruction. (3) Anderson**

(Also offered as Geol 539.) Concepts and methods of reconstructing sedimentary environments and ancient ecosystems, from the standpoint of variability of physical, biological and geochemical parameters. Prerequisite: permission of instructor. <Spring 1973 and alternate years>

***551-552. Problems. (2-3 hrs. each semester)**

PHARMACY

PROFESSORS C. A. Bliss (Dean), W. C. Fielder, K. H. Stahl; ASSOCIATE PROFESSOR J. Shoop; ASSISTANT PROFESSORS D. F. Calvert, J. F. Grogan, W. M. Hadley, D. A. Hurwitz, W. H. Jeffrey, R. E. Keesee, J. W. Levchuk, N. R. Strahl; INSTRUCTOR H. L. Bober (Assistant Dean).

Explanation of footnotes not indicated will be found on p. 310.

CURRICULUM

See pp. 294-297.

231. **Pharmacy Orientation.** (2) Levchuk
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, 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 or permission of instructor. <Spring, Summer>
234. **History of Pharmacy.** (2) Fiedler
Historical development of pharmacy as a profession. Prerequisite: enrollment in the first professional year. <Spring, Summer>
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, anti-tussives, internal analgesics, external analgesics, laxatives, vitamins, dentifrices, and anthelmintics. Prerequisite: 231. <Spring, Summer>
276. **Principles of Pharmacology.** (3) Hurwitz
Actions of drugs on living tissue and the basis upon which drugs are classified for their therapeutic usefulness. Includes the sub-division of pharmacology: Pharmacodynamics, posology, toxicology, and pharmacy. Prerequisite: Chem 281; pre- or corequisite: Biol 136-139L or 236L. (Open only to students in the College of Nursing and in the Dental Hygiene Program.) <Spring, Summer>
280. **Pharmaceutical Services and Indian Health Programs.** (1-2) Levchuk
Individualized program of studies in the analysis of pharmaceutical services in context with a field study of health care programs for Southwestern Indian populations. Prerequisites: 232 and permission of instructor. <Offered on demand>
- 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>
345. **Clinical Pharmacy I.** (3) Calvert, Grogan, Jeffrey
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, Grogan, Jeffrey
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
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. Corequisites: Biol 430L and Chem 324. <Spring>
380. **Animal Health.** (1) Day
Introduction to animal husbandry and animal health problems. The interrelationship of pharmacy and veterinary medicine and the social and economic relationships between men and animals. Prerequisite: third-year standing. <Spring>
- 412L. **Radiopharmacy.** (4) Keesee
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) Shoop
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. Prerequisite: 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. Prerequisite: 231. <Spring>
- 423. Pharmacy Management.** (3) Bober
Management activities involved in the organization, control, and operation of retail pharmacies. Prerequisite: 421 or permission of instructor. <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
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. Physical Pharmacy.** (4) Strahl
A continuation of 342L with emphasis on the application of physicochemical principles to the study of pharmaceutical dosage forms and the technology involved in this formulation. Prerequisites: 342L, grade of C or better in 343, and Physcs 102 and Physcs 153L or equivalent as determined by instructor. 3 lectures, 3 hrs. lab. <Fall>
- 444. Biopharmaceutics.** (3) Strahl
Introduction to the relationship of the physical aspects of drug formulation to drug absorption. Elements of drug metabolism, accumulation and elimination are also discussed. Prerequisite: 443L. 3 lectures. <Spring>
- 445L. Clinical Pharmacy III.** (4) Calvert, Grogan, Jeffrey
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, Grogan, Jeffrey
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)
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: 444, 476L. 3 lectures. 6 hrs. lab. **NOTE: This course offered only for Fall 1973.** <Fall>
- 447L. Clinical Pharmacy V.** (5-8) Calvert
A directed experience with the student working at an intermediate level as a member of the health care team in a varied environment. Prerequisite: 446L or permission of instructor. **NOTE: This course offered effective Fall, 1974.** <Fall>
- 448L. Dispensing Pharmacy II.** (5)
A continuation of 447L. 3 lectures, 6 hrs. lab. Prerequisite: 447L. **NOTE: This course offered only for Spring 1974.** <Spring>
- 448L. Clinical Pharmacy VI.** (9-15) Calvert
A directed individualized experience with the student functioning at a professional level as a member of the health care team in a varied environment. Prerequisite: 447L or permission of instructor. **NOTE: This course offered effective Spring, 1975.** <Spring>
- 450. Clinical Pharmaceutics.** (3) Strahl
Selected aspects of Pharmaceutics which are of clinical significance are discussed. Prerequisite: 444. <Spring, Summer>

451. **Institutional Pharmacy Practice.** (3) Levchuk
Objectives, principles, and methods for the provision of comprehensive pharmaceutical services in meeting modern patient care goals in hospitals, nursing homes, and extended care facilities. Prerequisite: 5th year standing or permission of instructor. <Fall>
452. **Institutional Pharmacy Management.** (3) Levchuk
Administrative and managerial processes and decision-making in the organization, control, operation and evaluation of pharmacies or drug rooms in hospitals, nursing homes, or extended care facilities. Prerequisite: 451. <Spring>
453. **Seminar in Hospital Pharmacy Administration.** (2) Levchuk
Study of administrative problems and current concepts affecting hospital pharmacy practice, using the case study approach. Prerequisite: 451. <Fall>
456. **Research Design and Statistical Methods for Pharmacy Practice.** (3) Levchuk
Methods, techniques, and designs for research problems in pharmacy practice. Elementary methods for dealing quantitatively with administrative, clinical and hospital data, and data resulting from experimental investigations. Prerequisite: 5th year standing. <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.** (3) Stahl
The synthesis and analysis of representative organic compounds used as drugs. Prerequisite: Chem 253L; pre- or corequisite: 463. 1 lecture, 6 hrs. lab. <Fall>
- 466L. **Organic Pharmaceutical Chemistry Laboratory II.** (3) Stahl
Synthesis and analysis of representative organic compounds used as drugs. Prerequisite: Chem 253L; pre- or corequisite: 464. 1 lecture, 6 hrs. lab. <Spring>
- *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>
- *476L. **Pharmacology III.** (4) Hurwitz
A continuation of 475L. Prerequisite: 475L. 3 lectures, 3 hrs. lab. <Spring>
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 1973 for those students who have completed third professional year under the 1971-72 program.
479. **Psychopharmacology.** (1) Hurwitz
Study of mental disease state utilizing films and site visitations to state mental institutions. Prerequisites: 476L and permission of the instructor. Class enrollment limited to six (6). <Fall>
482. **Drug Education.** (2-4) Levchuk
Interdisciplinary approach in the development of knowledge and skills related to the planning and provision of comprehensive community-based drug abuse/misuse programs, utilizing seminars and off-campus learning experience. <Spring>
483. **Introduction to Toxicology.** (3) Hadley
Study of the toxicities produced by household, environmental, and industrial chemicals with emphasis placed on symptomology and treatment. Special emphasis will be directed toward industrial, economic, and therapeutic toxicity problems encountered by the hospital and community pharmacist. Drug interactions, toxic side effects, and idiosyncratic reactions will be considered. Prerequisites: 475L and 476L or permission of instructor. <Summer, Fall>
484. **Advanced Toxicology.** (3) Hadley
Study of biochemical and physiological mechanisms of action of poisons and antidotes. Chronic exposure to environmental contaminants and acute exposure to higher concentrations of chemicals will be considered. Prerequisite: 475L and 476L or permission of instructor. 2 lectures, 3 hrs. lab. <Spring>
- 485L. **Biochemical Pharmacology.** (3) Hadley
Study of drug metabolism and the biochemical changes produced by drugs. Both the lecture and the laboratory will be directed towards methods used in biochemical pharmacology. Prerequisite: permission of instructor. 1 lecture, 6 hrs. lab. <Fall>

497. Pharmacy Problems. (1-5)††

Experimental and library problems in some phase of pharmacy, pharmacology, toxicology, 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, toxicology, pharmacognosy, pharmaceutical chemistry, pharmacy administration, institutional pharmacy, clinical pharmacy or radiopharmacy. Prerequisite: permission of instructor. <Spring>

PHILOSOPHY

(Chairman to be appointed); **PROFESSORS** H. Alexander, M. Evans, P. Schmidt; **ASSOCIATE PROFESSORS** H. Eilstein, C. McDermott, H. Tuttle; **ASSISTANT PROFESSORS** M. Casalis, R. Goodman, D. Lee, B. O'Neil, 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. 310.

MAJOR STUDY

30 hours, which may include 6 hours at the 100 level if taken at the beginning, and of which 24 hours must be distributed as follows: 201 and 202, 6 hours; 256, 257, 3 hours; 358, 3 hours; 441 and 442, 6 hours; one course taken from 352, 354, 356, 385, 3 hours; and one course taken from 365, 367, 380, 445, 455, 465, 470, 3 hours.

MINOR STUDY

15 hours in courses numbered 200 and above.

MINOR IN RELIGIOUS STUDIES

18 hours, of which 9 must be in Philosophy, and 9 must be distributed among three other departments. Courses that will satisfy this minor are: Phil 263-64, 304, 334, 336, 365, 431, 432, 441 (when topic is appropriate), 442 (when figure is appropriate); Anth 398, 399; Arch 261; Art Hi 270, 351, 352; Engl 341; Hist 311, 325, 337; Greek 101-102; Music 476; Soc 422. (Sanskrit and Hebrew will also satisfy when they become available at UNM.)

DEPARTMENTAL HONORS

Consult department adviser.

PERIOD MINOR

For requirements, see Comparative Literature, p. 350.

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>

105. Introduction to Chicano Thought. (3) Mondragon

Backgrounds of Chicano Culture, including Spanish, Indian, French, and Anglo philosophical orientations.

- 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>
- 253. Introduction to Philosophy of Science.** (3)
Elements of logic, theory of probability, theory of information; introduction to philosophical problems of science. <Fall>
- 254. Philosophy of Science.** (3)
Selected ontological and methodological problems of empirical sciences. Prerequisite: 253, or 255, or 257. <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>
- 257. Introduction to Symbolic Logic.** (3)
Methods and techniques of modern logic. <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. Prerequisite: one previous Philosophy course. <Fall>
- *346. Contemporary Philosophy.** (3)†
Twentieth Century philosophies. Prerequisite: 100 or 202 or 256 or 356 or permission of instructor. <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. <Spring, Summer>
- *352. Theory of Knowledge.** (3)
Problems and theories of epistemology. Prerequisite: 100 or 202 or 256 or 356, or permission of instructor. <Offered upon demand>
- *354. Metaphysics.** (3)
Theories of reality. Prerequisite: 201 or 202 or 256 or permission of instructor. <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. Prerequisite: 257. <356-Fall, 357-Spring>.

- *358. **Ethical Theory.** (3)
Inquiry concerning goodness, rightness, obligation, justice and freedom. Prerequisite: one previous Philosophy course. <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. Prerequisite: one previous Philosophy course. <Fall>
- *385. **Philosophy of Mind.** (3)
A study of certain issues connected with the nature and status of minds. Prerequisite: 201 or 202 or 256 or 356 or permission of instructor. <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>
- *431-432. **Biblical Theology.** (3, 3) Casalis
Old Testament; New Testament. Hermeneutic analysis of Scripture. Prerequisite: permission of instructor. <431-Fall, 432-Spring>
- *441. **Philosophical Movements.** (3)‡
Topic varies. <Summer, Fall, Spring>
- *442. **Individual Philosophers.** (3)‡
Figure varies. <Summer, Fall, Spring>
- *443. **Philosophical Problems of Physics.** (3)‡ Eilstein
Mainly problems concerning space, time, causality. Selected epistemological problems. Prerequisite: 253 or 254 or Math 102 or Physcs 102. <Fall, Spring>
- *445. **Philosophy of Language.** (3)
Philosophies of meaning with special attention to the relations between language and thought. Prerequisite: 145 or 201 or 202 or 257 or 356 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.** (1-3)† <Offered upon demand>
- 499. **Senior Thesis.** (3)†
For departmental honors. <Offered upon demand>
- *501. **Interdepartmental Seminar in the Culture of the United States.** (3)
(See Am St 501.)
- *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>

- *543. Seminar on the Problems of Space, Time, Causality (3)‡
The views of prominent modern philosophers and physicists on topics from the above domain. Prerequisite: 253, or 254 or 354 or 443 or Math 102, or Physcs 102. <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, D. M. Wolfe; ADJUNCT PROFESSORS J. W. Evans, J. Linsley; LECTURERS C. L. Hyder, J. G. Breiland.

Explanation of footnotes not indicated will be found on p. 310.

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 312, 316, or 361, 362; Chem 101L, 102L.

MINOR STUDY IN PHYSICS

Four courses selected from Physcs 301, 302, 303, 304, 305, 306; Math 316 or 361.

§ Not required for the minor study in Astrophysics.

MAJOR STUDY IN ASTROPHYSICS

Physcs 301, 302, 303, 304, 305; Astr 270, 271, nine hours of Astronomy courses numbered above 299; Math 316 or 361.

MINOR STUDY IN ASTROPHYSICS

Physcs 302; Astr 270, 271, three hours of Astronomy courses numbered above 299; Math 316 or 361.

GRADUATE STUDY

Prerequisite for all courses numbered 500 and above: an undergraduate major in Physics equivalent to that outlined above.

GENERAL INTEREST COURSES IN PHYSICS AND ASTRONOMY

Astr 101. Introduction to Astronomy. (3) Hyder, King, Peterson

An elementary course, primarily for non-science majors, including observations with the telescope. <Fall, Spring>

Physcs 102. Introduction to Physics. (3) Howarth, Regener, Wolfe

An elementary course, primarily for non-science majors, including demonstrations. <Summer, Fall, Spring>

Physcs 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>

Physcs 104. Introduction to Environmental Physics. (3) Hyder

An elementary course addressed to the physical aspects of environmental problems. <Offered upon demand>

Physcs 106. Light. (3) Bryant, Dean

Elementary course, primarily for non-science majors, including demonstrations. The nature of light, color, optical systems, photography, lasers, solar energy applications. <Fall, Spring>

Physcs 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>

PHYSICS

102. Introduction to Physics. (2) Howarth, Regener, Wolfe

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>

106. Light. (3) Bryant, Dean

Elementary course, primarily for non-science majors, including demonstrations. The nature of light, color, optical systems, photography, lasers, solar energy applications. <Fall, Spring>

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, pre dental, 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>
- 155. General Physics. (3)**
Special relativity, atomic and nuclear physics. Prerequisite: 152. <Fall>
- 157. Problems in General Physics. (1)**
Problem solving and demonstrations related to 151. <Fall, Spring>
- 158. Problems in General Physics. (1)**
Problem solving and demonstrations related to 152. <Fall, Spring>
- 160. General Physics. (3)**
Mechanics, sound. The sequence 160, 161, 163L, 262, 264L is required of students planning to major in certain sciences and in engineering. Pre- or corequisite: Math 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>
- 167. Problems in General Physics. (1)**
Problem solving and demonstrations related to 160. <Fall, Spring>
- 168. Problems in General Physics. (1)**
Problem solving and demonstrations related to 161. <Fall, Spring>
- 262. General Physics. (3)**
Optics, modern physics. Prerequisite: 161; pre- or corequisite: Math 264. <Summer, Fall, Spring>
- 264L. General Physics Laboratory. (1)**
Electricity, magnetism, optics. Pre- or corequisite: 262. 3 hrs. lab. <Summer, Fall, Spring>
- 267. Problems in General Physics. (1)**
Problem solving and demonstrations related to 262. <Fall, Spring>
- **301. Heat and Thermodynamics. (3)** Alpert, Bryant, Dean, Green, Howarth, Thomas
Kinetic theory; specific heats; conduction, convection, radiation; change of state; classical thermodynamics. Pre- or corequisite: Math 316. <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 316. <Spring>
- **303-304. Analytical Mechanics. (3, 3)** Alpert, Bryant, Dean, Green, Leavitt, Thomas
Statics and dynamics of particles and rigid bodies; introduction to Lagrange's method. Pre- or corequisites: Math 312, 316. <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 312, 316. <305-Fall, 306-Spring>
- **307L-308L. Junior Laboratory. (2, 2)** Alpert, Bryant, Dieterle
Heat, electricity, electronics, optics. 1 lecture, 3 hrs. lab. each semester. <307L-Fall, 308L-Spring>
- **330. Atomic and Nuclear Physics. (3)** Ahluwalia, Alpert, Bryant, Dean, Dieterle, Green, Leavitt, Swinson
Special relativity, quantum effects, atomic structure, X-rays, nuclear structure and nuclear reactions, instruments of modern physics. Prerequisite: 262 or equivalent. <Fall, Spring>
- *400. Seminar. (1 hr. per semester)** <Fall, Spring>
- *403. Acoustics. (3)** Dean
General wave phenomena, studied through applications in acoustics. Topics in radiation, absorption, interference, acoustical holography. <Offered upon demand>
- *430. Physics of Matter. (3)** Dean, Green, Leavitt
Structural, mechanical, thermal, electrical, and optical properties of various states of matter including gases, weakly ionized gases, plasmas, and especially solids as observed experimentally and as deduced from fundamental laws and principles. Prerequisite: 330 or equivalent. <Fall>

- *434. **Radiological Physics.** (3) Howarth
Radiation dosimetry, applications to diagnostic and therapeutic radiology, the use of radioactive materials in biology and medicine. <Offered upon demand>
- *435. **Introduction to Plasma Physics.** (3) Ahluwalia
Adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves in plasmas, pinch effect, dimensionless parameters, applications. <Offered upon demand>
- *436. **Atmospheric Optics.** (3) Peterson
(Also offered as Astr 436) Transmission, absorption, and scattering in clear air. Color phenomena of celestial objects. Aerosols and aureoles. The rainbow, haloes, glory, and cloud coronae. <Offered upon demand>
- *437. **Introduction to Space Physics.** (3) Ahluwalia, Leavitt, Peterson
(Also offered as Astr 437) Solar activity and the solar wind, interplanetary particles, solar-terrestrial effects, the earth's magnetosphere and radiation belts, lunar and planetary measurements, cosmic radiation in space. <Offered upon demand>
- *440. **Atmospheric Physics.** (3) Dean
Atmospheric gases; cloud physics; the high atmosphere; radiation, atmospheric motions and turbulence; aerosols.
- *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
Introduction to special relativity and quantum mechanics; atomic and nuclear physics, cosmic rays. <491-Fall, 492-Spring>
- *493L-494L. **Contemporary Physics Laboratory.** (2, 2) Bryant, Swinson, Wolfe
Spectrographic methods; lasers; atomic structure; natural and artificial radioactivity; cosmic rays. 6 hrs. lab. <Spring>
- *495. **Theory of Special Relativity.** (3) Ahluwalia, Finley
Relativistic kinematics and dynamics, relativistic electromagnetism, applications to nuclear physics and astrophysics. <Offered upon demand>
- *500-501. **Advanced Seminar.** (1-3, 1-3) <Fall, Spring>
- *503. **Classical Mechanics I.** (3) Chandler, Finley, Green, Thomas
Lagrangian dynamics, rigid bodies, oscillations, continuous systems. <Fall 1974 and alternate years>
- *504. **Classical Mechanics II.** (3) Chandler, Finley, Thomas
Hamiltonian dynamics, canonical transformations, Hamilton-Jacobi theory, applications of mechanics. <Spring 1975 and alternate years>
- *505. **Statistical Mechanics and Thermodynamics.** (3) Thomas
Classical and quantum statistics with applications to molecules and elementary particles. <Spring 1975 and alternate years>
- *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 1974 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, 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) Dieterle, 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, Dieterle, Finley, Leavitt
S-matrix theory, field theory, symmetries, weak interactions, electromagnetic interactions, hadron resonances. Prerequisite: 521. <Offered upon demand>
- *547. **Selected Topics in High Energy Astrophysics.** (3)† Ahluwalia, Finley, King
(Also offered as Astr 547.) Supernovae; pulsars; radio, x-ray, and gamma-ray sources; black holes; quasars; origin of cosmic rays. <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
Tensor analysis and Riemannian geometry, selected topics in general relativity and cosmology. 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>
- 270-271. **General Astronomy.** (3, 3) King, Peterson
The solar system, stellar astronomy, the galaxy, extra-galactic systems, cosmology. Prerequisite: Math 150 or 162. <270-Fall, 271-Spring>

272L-273L. General Astronomy Laboratory I and II. (1, 1) King, Peterson, Regener
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, Regener

***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>

***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>

***547. Selected Topics in High Energy Astrophysics.** (3)† Ahluwalia, Finley, King
(Also offered as Physcs 547.) Supernovae; pulsars; radio, x-ray, and gamma-ray sources; black holes; quasars; origin of cosmic rays. <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 P. A. Lupsha, H. V. Rhodes, R. J. Sickels, H. P. Stumpf; ASSISTANT PROFESSORS B. C. Ames, J. S. Conway, J. R. Ehrenberg, F. C. Garcia, P. L. Hain.

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. *American Politics*. (3)

Survey of American politics including political behavior of the American electorate, the theory of democracy, the structure and function of American political institutions, and contemporary issues. <Fall, Spring>

220. *Comparative Politics*. (3)

Designed to give students the ability to understand and evaluate political regimes by focusing on the political history, socio-economic structure, and contemporary political institutions and behavior. Includes consideration of European, Communist and developing systems. <Fall, Spring>

240. *International Politics*. (3)

Analyzes significant factors in world politics, including nationalism, "national interest," ideology, international conflict and collaboration, balance of power, deterrence, international law, and international organization. <Fall, Spring>

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 and Policy*. [Urban Politics] (3) Lupsha

Introduction to urban politics and policy, including survey of governmental forms, political processes, and the interaction of urban institutions and policies. Prerequisite: 200. <Fall>

*302. *Comparative State Politics*. (3)

Analysis of the similarities and variations of American state politics with emphasis on policy outputs. Prerequisite: 200. <Spring>

*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-Americans, Mexican-Americans, and Native Americans. <Spring>

*308. *Politics in Action*. (3) Rhodes

Current political action: local campaigns, primaries, legislative programs, lobbying. Prerequisite: 200.

309. *Black Politics*. (3) Criddle

Focus will be on political actions and thought of Black America. May not be counted toward departmental major or minor. <Fall>

- *310. The Policy-Making Process.** (3) Lupsha
Provides the conceptual and analytical tools for understanding the policy-making process. Emphasis is on underlying decisional processes and political models regarding policy implementation. Prerequisite: 200. <Spring>
- *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>
- *314. Elections and Voting Behavior.** (3) Conway
Analysis of the electoral process, covering voting behavior, elections as institutions, the impact of electoral laws, and the relationship between elections and public policy. Major emphasis is on U.S., but some comparative material included. Prerequisite: 200 or permission of instructor. <Fall>
- *342. American Foreign Policy.** (3) Hoyt, Sorenson
Prerequisite: 240. <Fall>
- *350. Public Finance.** (3)
(Also offered as Econ 350.) Taxation, government borrowing, financial administration, and public expenditures. Prerequisite: Econ 201.
- *351. Comparative Politics: Developing Countries.** (3) <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. May not be counted toward departmental major or minor. <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
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)
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>
- *381. Psychology and Politics.** (3) Lupsha
Examines the relationship of psychological theory and experiments to understanding politics and political behavior. Motivation, frustration-aggression, personality, learning and development, and stimulus-response theories will be analyzed in relation to politics, political personality, and political behavior. <Spring>
- *382. Group Politics.** (3) Garcia, Hain
Theories and research on the roles played by interest groups (economic, social and ethnic) on different arenas of government (electoral, legislative, judicial, and executive) principally in the United States. Prerequisite: 200. <Fall>

- *384. **Chicano Politics.** (3) Garcia
The status, role, and activities of Mexican Americans in the American political system. Prerequisite: 200, and 307 recommended <Spring>
- *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>
- *430. **Political Violence.** (3) Lupsha
Examines political violence cross-culturally and cross-temporally. Emphasis is placed on theories, models, and explanation of the phenomenon. <Spring>
- *440. **International Conflict, Arms Control, and Disarmament.** (3) Sorenson
Systematic examination of political, technological, strategic, and economic dimensions of arms control and disarmament in a nuclear missile era. Prerequisites: 200 and 240.
- *442. **International Politics II.** (3)
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)
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)
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>
- *478. **Seminar in International Studies.** (3) Slavin
(Also offered as Econ 478, Geog 478, M&CL 478, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.

- *479. **Civil Liberties.** (3) Sickels
Analysis of the current meaning and impact of the Bill of Rights. The freedoms of speech, press, religion, the rights of privacy, due process, etc. Prerequisite: 100 or 200. <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. **Introduction to Empirical Research.** [Research Techniques] (3) Conway
Introductory course in research methodology. Does not assume knowledge of mathematics or statistics. Covers the role of empirical analysis in Political Science, the logical foundations of empirical analysis, an introduction to statistics, elementary research techniques, and research design. <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>
- *512. **Topics in American Government and Politics.** (3)‡
Selected topics in American Government and Politics. Exact content will be designated by instructor. May be repeated for credit. <Fall>
- *520. **Pro-Seminar: Comparative Government and Politics.** (3) <Offered upon demand>
- *521. **Research Seminar in Comparative Government and Politics.** (3) <Offered upon demand>
- *522. [422] **The Administrative Process.** (3) Connerley, Smithburg
(Also offered as Pub Ad 522) 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. <Spring>
- *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. **Methods of Empirical Political Analysis.** [Advanced Research Techniques.] (3) Conway
A detailed examination of techniques and strategies of empirical analysis. Some statistics required. Covers computer utilization, scaling, factor analysis, contingency table analysis, correlation and regression, as well as research design and some data collection techniques. <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.

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, R. J. Harris, P. J. Johnson, K. P. Koenig, L. E. Price, B. K. Ruebush; ASSISTANT PROFESSORS D. M. Feeney, T. P. Friden, J. P. Gluck, M. H. Irwin, P. D. Kottler, C. E. Offir, S. Roll.

AFFILIATED FACULTY: PROFESSOR L. M. Libo; ADJUNCT ASSOCIATE PROFESSOR A. Bruner; ASSISTANT PROFESSORS J. P. Cardillo, L. J. Miller, A. T. Quenk.

Explanation of footnotes not indicated will be found on p. 310.

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. Students participating in this program are eligible to graduate with Departmental Honors if recommended by the faculty on the basis of outstanding performance.

101. **General Psychology I.** (3) Ferraro, Gluck
An introduction to the areas of learning, motivation and comparative-physiological psychology. <Fall, Spring>
102. **General Psychology II.** (3) Norman, Rhodes, 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, Kottler
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. Pre-requisite: 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) Irwin, Rosenblum
An overview of the contributions of psychological theory, research and methods to our understanding of the educational process. Prerequisite: 101 or 102. <Fall>
211. **Applied Psychology.** (3) Norman
Topics in applications to everyday life, such as personnel selection, consumer psychology, and environmental problems. Prerequisite: 101 and 102. <Spring>
230. **Psychology of Adjustment.** (3) Benedetti, Rhodes
An introduction to concepts of psychological health, mental illness, adjustment problems and adaptive processes. Prerequisite: 102. <Summer, Fall, Spring>
240. **Physiological Psychology.** (3) Feeney
A general survey of the biological foundations of behavior. Emphasis is on the central nervous system. Prerequisite: 101 or 102, or Biol 121L. <Fall>
260. **Psychology of Learning.** (3) 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. Pre-requisite: 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>
- 271. Psychology of Sexual Identity. (3) Offir**
Exploration of the ways in which sexual identity influences or fails to influence intellectual, emotional, and social behavior. <Fall>
- *300. Intermediate Statistics. (3) Friden, Harris, 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) Irwin, Rosenblum**
Description of the more salient aspects of the behavior and development of children and adolescents. Particular emphasis is placed on pertinent psychological research and practical applications to life situations. Prerequisite: 102. <Fall, Spring>
- *321. Introduction to Child Research. (3) 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**
Students attend the lectures of Psych 240 and meet for additional advanced discussion. Class is limited to 10 students who must have permission of the instructor. Credit cannot be received for both 240 and 340. <Fall>
- *361. Learning: Human Skills. (3) Ellis, Johnson**
Traditional and contemporary research and theory in human learning, transfer and memory. Focus is on the extent to which various human skills can be understood in terms of basic principles. Prerequisite: 260. <Fall>
- *362L. Human 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>
- *367. Introduction to Psycholinguistics. [Language and Thought] (3) Offir**
Survey of broad range of topics in psycholinguistics, with special emphasis on language acquisition; speech perception; memories for linguistic material, language and reasoning. Prerequisite: 101 or 102. <Fall>

- *368. Sensation.** (3) Friden
Exploration of sense organ operation with emphasis on both behavioral and physiological data. Prerequisite: 260. <Fall 1973 and alternate years>
- *371. Social Psychology.** (3) Harris
Introduction to the behavior of organisms (primarily humans) as affected by the mutual interdependence among organisms. Emphasis is on mathematically stated hypotheses about social interaction, including judgment of oneself and others, attitude change, leadership and conformity. Prerequisite: 230 or 260. <Fall>
- *372L. Social Psychology Laboratory.** (2) Harris
Laboratory projects relevant to topics in 371. Prerequisite: 200 or 201; corequisite: 371. 4 hrs. lab. <Fall>
- *373. Cross-cultural Psychology.** (3) 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) Gluck, 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 1974 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: 200 or 201 or equivalent. <Spring>
- *410. Psychological Testing.** (3) Norman
Problems related to mental measurement; review of various types of tests and their practical applications. Emphasis is on the pragmatic and theoretical issues in the assessment of individual 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 1974 and alternate years>
- *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) Irwin, Johnson
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 retardation. Prerequisite: 102. <Fall 1974 and alternate years>

- *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. **Brain Mechanisms of Information Processing and Storage.** [Advanced Physiological Psychology] (3) Kottler
An advanced course in basic electrical and chemical processes of the brain and their relation to information input, coding, storage, and output. Prerequisite: 240 or 340. <Spring>
- *442L. **Advanced Physiological Psychology Laboratory.** (2) Kottler
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: 240 or 340 and permission of instructor. <Fall>
- *445. **Comparative Psychology.** (3) Gluck
Heredity, maturation, learning and the higher mental processes as revealed in various animals. Prerequisite: 260. <Fall>
- *446L. **Comparative Psychology Laboratory.** (2) Gluck
Laboratory projects related to topics in 445. Prerequisite: 200 or 201; corequisite: 445. 4 hrs. lab. <Fall>
- *447. **Psychochemistry.** (3) Kottler
Basic chemical principles of neuronal conduction and synaptic transmission. Biochemical bases of memory consolidation and affective disorders. Prerequisites: 102 and permission of instructor. <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 instinct, hunger and sexuality. Prerequisite: 240 or 340. <Spring>
- *462L. **Motivation Laboratory.** (2) Feeney
Laboratory projects related to topics in 461. Prerequisites: 103L and 200 or 201; corequisite: 461. 4 hrs. lab. <Spring>
- *463. **Cognitive Processes.** [Learning: Conceptual Processes] (3) Johnson
Discussion of methods, research, and theories of thought processes; i.e., what is thinking, how do we study it, and what do we know about it. <Spring>
- *464L. **Cognitive Processes Laboratory** [Conceptual Processes Laboratory] (2) Johnson
Laboratory projects related to topics in 463. Prerequisite: 200 or 201; corequisite: 463. 4 hrs. lab. <Spring>
- *467. **Advanced Psycholinguistics.** (3) Offir
Current theory and research in the psychology of language. Prerequisite: 367 or permission of instructor. <Spring>
- 491. **Senior Honors Seminar.** (3) Logan
Experimental methods and laboratory techniques. Senior thesis based on independent research. Prerequisite: 392. <Fall>
- 492. **Senior Honors Seminar.** (3) Ellis, Logan
Continuation of 491. Prerequisite: 491. <Spring>
- 499. **Undergraduate Problems.** (1-3 hrs. each semester; maximum 6)
Prerequisite: permission of instructor.
- *501. **Advanced Statistics.** (3) Friden
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 1973 and alternate years>
- *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>
- *525. Seminar on Piaget.** (3) Irwin
In depth study of Piaget's contribution to our understanding of cognitive development and thought, including practical experience in Piagetian testing. <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)† Ruebush
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) Norman
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>
- *534L. Assessment of Cognitive Functions Laboratory.** (2) Roll
Projects related to and taken concurrently with Psychology 533. Prerequisite: permission of instructor. <Fall>
- *535. [534] Psychological Evaluation: Personality Functions.** (3) Roll
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>
- *536L. Assessment of Personality Functions Laboratory.** (2) Roll
Projects related to and taken concurrently with Psychology 535. Prerequisite: permission of instructor. <Spring>
- *537. [536] Seminar in Developmental Abnormalities.** (3) Rosenblum
Learning problems among children and youth, including working directly with children manifesting such disabilities. Prerequisite: 432. <Spring>
- *538. Seminar in Psychoanalytic Ego Psychology.** (3) Roll
An examination of theory and research relevant to psychoanalytic ego psychology with a focus on recent contributions. Prerequisite: permission of instructor. <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>
- *547. **Seminar in Psychochemistry.** (3) Kottler
Advanced discussion of topics in psychochemistry such as behavioral role of synaptic transmitters, biochemical basis of memory, psychopharmacology and biochemistry of affective disorders. Prerequisite: permission of instructor. <Spring>
- *551. **Graduate Problems.** (1-3)††
Prerequisite: permission of instructor.
- *560. **Seminar in Child Language.** (3) Offir
Examination of current research and issues in the study of language acquisition. <Spring 1974 and alternate years>
- *561. **Theories of Learning.** (3) Ferraro, Logan
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 1974 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 1974 and alternate years>
- *569. **Seminar in Semantics.** (3)† Offir
Linguistic and psychological approaches to various topics in semantics, including comprehension and memory for meaning in adults and development of semantic competence in children. Prerequisite: permission of instructor. <Spring>
- *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)‡ Feeney, Rhodes
Examination of current research and issues. Prerequisite: permission of instructor. <Fall>
- *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), D. W. Smithburg, 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) Smithburg
(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>
- *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) Rosenthal
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. <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) Smithburg
An examination of the knowledge which is essential to the positive and constructive behavior of the public executive.
- *522. [422] **The Administrative Process.** (3) Smithburg
(Also offered as Pol Sc 522) 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. <Spring>

- *525. [425] **Public Personnel Administration** (3) Rosenthal
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. <Spring>
- *551-552. **Problems.** (1-3 hrs. per semester, to a maximum of 6) Rosenthal, Smithburg, Connerley
A problem in Federal, state or local government is selected, in conjunction with the faculty adviser, and a research paper is prepared by each student.
- *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.
- *599. **Thesis.** (1-6 hrs. per semester) Rosenthal, Smithburg
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 student 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 P. David (Chairman), T. Abel (Scholar-in-Residence), K. T. Erikson (Scholar-in-Residence), G. A. Huaco, R. F. Tomasson; **ASSOCIATE PROFESSORS** D. Bachelor, H. C. Meier, G. A. Merkx, C. E. Woodhouse; **ASSISTANT PROFESSORS** D. Alvi rez, J. A. Blake, J. Fashing, F. L. Gehlen, P. H. McNamara, C. Onwubu, P. Stratman.

Explanation of footnotes not indicated will be found on p. 310.

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) Meier

To be taken in conjunction with 102. Prerequisite for 481. Required for all Sociology majors. May be taken concurrently with 481 two hour session. <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) Blake, Fashing

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) Alvi rez, McNamara, Merkx, Onwubu

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) Merckx
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) Stratman
The nature of juvenile delinquency, its prediction, prevention and control.
- *313. Criminology.** (3) David, Stratman
The nature of crime, types of criminal behavior, and explanations of crime. <Fall, Spring>
- *314. Sociology of Corrections.** (3) Stratman
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) Fletcher
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, Gehlen
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. The City in History.** (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) Alvi rez
(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, T nnies, Simmel, and Weber. <Fall, Spring>
- 381. Sociology of Science.** (3)
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) Stratman
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 sub-cultural 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) Bachelor, Fashing, F. Gehlen
(Also offered as Ed Fdn 421.) 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
The study of the development, structure, and functioning of religious institutions in both western and non-western societies. <Spring>
- 425. Latin American Institutions.** (3)
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) Alvi rez
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) Antoniadou
(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) Huaco, Merckx
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>
- *478. **Seminar in International Studies.** (3) Slavin
(Also offered as Econ 478, Geog 478, M&CL 478, Pol Sc 478) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.
- 481L. [481] **Research Methods in Sociology.** (4) 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 Mexicano-Americana.** (3) Merckx
El análisis de investigaciones empíricas sobre la organización, cultura, y ecología de la sociedad mexicano-americana en el suroeste. El curso comprenderá también la formulación de proyectos de investigación empíricos. Cada estudiante llevará a cabo un trabajo de investigación en el campo. La lengua de instrucción del curso será 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) Álvarez, Blake, David, Fashing, F. Gehlen, Huaco, McNamara, Meier, Merckx, Onwubu, Stratman, Tomasson, 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.)
- *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
The development and formalization of various contributions to complex organization theory.
- *506. **Seminar: Comparing Nations.** (3) Merckx, Tomasson
Comparative study of the structure and functioning of various institutions in the developed societies. Topics will change from year to year. <Fall>
- *507. **Sociological Theory: Selected Topics** [Seminar: Sociological Theory] (3)† Abel, Huaco, McNamara
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)
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.

§ Limited to students with competence in Spanish.

- *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; normally taken during student's first semester as a graduate student. <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, Merkk, Onwubu, Stratman, Tomasson, 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, Merkk, Needler, Schwerin
(Also offered as Anth, Econ, Hist, and Pol Sc 584.) <Spring>
- *599. Master's Thesis.** (1-6 hrs. per semester) Alvírez, Blake, David, Fashing, Gehlen, Huaco, McNamara, Meier, Merkk, Stratman, Tomasson, 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

PROFESSORS R. Wayne Pace (Chairman), W. C. Eubank; **ASSOCIATE PROFESSOR** R. C. Dick; **ASSISTANT PROFESSORS** G. M. Goldhaber, J. L. Hoban, R. M. Krause, L. B. Rosenfeld, R. D. Snell; **LECTURERS** S. L. Corless, H. Horan; **CONSULTANT:** F. C. Hempen (Telecommunication).

MAJOR STUDY

36 hours in Speech Communication, including 101; 18 hours must be 300-level or above courses. The Department recommends that students take a course from each of the following areas: Interpersonal, Public, and Telemediated Communication.

Courses in complementary departments are advised; consult the Chairman of Speech Communication for details.

Majors should minor in other departments of the College of Arts and Sciences or departments of other colleges in the University, such as Fine Arts,

Business and Administrative Sciences, or Education. For advice on specific course patterns, consult the Chairman of Speech Communication.

MINOR STUDY

18 hours in Speech Communication courses, including 101; 9 hours must be 300-level or above courses.

- 101-102. **Introduction to Speech Communication.** [Fundamentals of Speech Communication] (3, 3)
Principles and concepts of communicative behavior; demonstrations and laboratory experiences. <Summer, Fall, Spring>
200. **Forensics.** [Intercollegiate Debating] (1 per semester to a maximum of 4)
Participation in intercollegiate, campus, and community activities. <Fall, Spring>
201. **Interpersonal Communication.** (3)
Interaction with others through symbols and nonverbal messages; designed to develop competencies in interpersonal relations. **Credit not allowed for both 201 and 256.** <Summer, Fall, Spring>
212. **Communication in Organizations.** (3)
Review of current literature on relationships among communication, organization networks, and human resources variables. <Fall, Spring>
240. **Intercultural Communication.** (3)
Problems and practices of communication across cultural and national boundaries, but especially Chicano-Anglo, Black-White, Native American-Anglo relationships. <Fall>
250. **Parliamentary Procedure.** (1)
Study and practice of the rules governing the proceedings of groups and deliberating assemblies. <Fall, Spring>
251. **Telecommunication.** [Introduction to Broadcasting] (3)
Survey of theoretical approaches to the processes and effects of the telecommunication media. History, ethics, regulation, and evaluation. <Fall, Spring>
255. **Public Speaking.** (3)
Preparation and presentation of speeches; emphasis on audience analysis and adaptation, organization and delivery. <Summer, Fall, Spring>
256. **Communication for Teachers.** (3)
Theory and practice of oral communication adapted to the special needs of classroom teachers. Prerequisite: Education majors only. **Credit not allowed for both 256 and 201.** <Summer, Fall, Spring>
260. **Oral Interpretation.** (3)
Analysis and oral presentation of written materials. <Fall, Spring>
265. **Telecommunication Production.** [Telecommunication Production Procedures] (3)
Survey of the various approaches to media production. Contributions of radio, television, motion picture and still photography, theatre, and multi-media-concepts to contemporary media production. 2 hrs. lecture, 2 hrs. video lab. <Fall, Spring>
277. **Problem Solving, Creativity, and Communication.** [Discussion and Leadership Training] (3)
Analysis and application of creative and communicative abilities to solving problems in groups. <Spring>
278. **Argumentation:** [Argumentation and Debate] (3)
Theory and practice of principles of argumentative speaking aimed at training the student to be a more effective advocate in the public forum. <Fall, Spring>
280. **Scientific Bases of Speech.** (3)
(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)
300. **Advanced Forensics.** (1 per semester to a maximum of 4)
Intensive study and participation in campus, community, and intercollegiate activities. <Fall, Spring>
303. **Phonetics.** (3)
(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)**
Analysis, preparation, and presentation of specialized forms of public speeches. <Fall, Spring>
- 306. Rhetoric of Dissent, Agitation and Revolution. (3)**
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>
- 307. Rhetorical Strategies in Movements and Campaigns. (3)**
Study of rhetorical tactics used by speakers and groups in political campaigns and social movements. <Spring>
- 312. Communication Audit (3)**
Philosophy, methods, and designs for studying the communication system of and practices in a complex organization. <Fall>
- 315. Problems of Interpersonal Communication. (3)** Goldhaber
Application of transactional analysis as a model of dyadic and small group relationships in the family, church, and community. <Fall, Spring>
- 320. Nonverbal Communication. (3)**
Body motion, paralanguage, proxemic, and other non-language codes and modes of communicating. <Fall>
- 341. Telecommunication Evaluation. (3)**
Methods in analysis of telecommunication media; cross-national evaluation, assessment of social responsibility, criticism of electronic mass media fare and of telecommunication economics and policy. <Spring>
- 346. Introduction to Empirical Research. (3)**
Basic principles, methods and techniques of conducting empirical research in speech communication. <Spring>
- 347. Introduction to Rhetorical Criticism. (3)**
Nature, forms, and functions of rhetorical criticism. <Spring>
- 350. General Semantics. (3)**
Influence of perceptions and language habits on evaluations, decisions, and interpersonal relations. <Spring>
- 351. Television Drama Production. (3)**
(See T A 351.)
- 352. Advanced Television Drama Production. (3)**
(See T A 352.)
- 354. The Nature of Language. (3)**
(See Anth 354)
- 359. Language and Culture. (3)**
(See Anth 359)
- 360. Advanced Oral Interpretation. (3)**
Theory and techniques involved in the interpretation of prose and drama. Prerequisite: 260 or permission of instructor. <Fall, Spring>
- 365. Tele-media Film Production. [Television Film Production] (3)**
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. Telecommunication Methods. [Television Studio Production] (3)**
Video, film and audio production methods for telecommunication application. Emphasis placed upon formulation of criteria for evaluation and experience in group media production activities. Prerequisite: 265. <Fall>
- *411. Theories of Communication. (3)**
Critical analysis of contemporary theories, concepts, models, and empirical research relevant to communicative processes. <Fall>
- *412. Strategies of Organizational Communication. [Organizational Communication] (3)**
Consulting for planning and implementing a program for improving communication in a complex organization. <Spring>
- *413. Internship in Speech Communication. (1-6 per semester)**
Student placement in field assignments for application of speech communication principles and practices in media, analysis, research, and training. <Fall, Spring>

- *414. **Communication Practices in Professions** (3)
Oral reporting, interviewing, and group discussions in business, industry, and professional organizations. <Fall>
- *415. **Interviewing.** [Advanced Interpersonal Communication] (3)
Theory and practice of dyadic communication in informational, employment, and decision-making situations. <Fall>
- *420. **Small Group Communication.** (3)
(Also offered as Ed Fdn 420) Theory and practice of human interaction in small groups, including role behavior, conflict resolution, nonverbal communication, and phases in group development; special application to the classroom. <Spring>
- 440. **Undergraduate Problems.** (1-3 per semester to a maximum of 6)
Prerequisite: permission of departmental chairman. <Summer, Fall, Spring>
- *445. [403] **History of the English Language.** (3)
(See Engl 445)
- *451. **Telecommunication Strategies.** (3)
Group and individual projects to explore strategies in media use; television in political campaigns, mass media and minorities; organizational implications of the telemedia. <Spring>
- *460. **Oral Interpretation: Program Building.** (3)
Theory and techniques involved in building the lecture recital and multiple readings. Students will build and present an interpretation program. Prerequisite: 360 or permission of instructor. <Fall, Spring>
- *466. **Writing for the Telecommunication Media.** (3)
Theory, analysis and practice in writing for radio, television, and television film. Prerequisite: 265. <Fall, Spring>
- *470. **Speech Communication in the Secondary Schools.** [Teaching Speech in the Schools] (3)
Course content, instructional objectives, and teaching materials for speech communication as an academic subject. Prerequisite or corequisite: student teaching. <Fall>
- *471. **Current Developments in Speech Communication Education.** (3)
Review of recent developments in course content, teaching materials, and instructional strategies; simulated classroom experience with analysis of teaching behavior using media. <Spring>
- *475. **Tele-Mediated Instruction.** (3)
Analysis of the values and use of video materials in instructional applications. <Fall, Spring>
- *485. **Advanced Telecommunication Methods.** [Advanced Telecommunication Production Procedures] (3)
Non-print media communication emphasizing purposive integration of media. Application of theories of media effectiveness in individual and team projects. <Fall>
- *490. **Administration of the Forensic Program.** (3)
Problems and methods of directing forensics, managing tournaments, and coaching competitive and non-competitive activities. <Spring, Summer>
- *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)
(See Engl 440)
- 493. **Reading and Research in Honors.** (3) <Summer, Fall, Spring>
- 494. **Senior Thesis.** (3) <Summer, Fall, Spring>
- *495. **Rhetoric on American Issues.** [American Public Address] (3 per semester to a maximum of 6)
Study of speechmaking as a force in political and intellectual history; selected speeches in relation to social, political, and economic issues. <Fall, Spring>
- *497. **Topics in Minority Rhetoric.** (3 per semester to a maximum of 6)
Issues and spokesmen in Afro, Chicano and Native American intellectual history studied from the perspective of rhetorical influence. <Fall, Spring>
- *498. **Persuasion.** (3)
Application of principles of attitude change in practical persuasion. <Spring>
- *499. **Rhetorical Theory.** [Classical Rhetoric] (3 per semester to a maximum of 6)
Historical survey of major contributors and contributions to the development of contemporary rhetorical theory. <Fall, Spring>

- *500. Introduction to Graduate Study** (3)
An investigation of the various areas within the field, with emphasis on scholarly techniques and synthesis. Required of all graduate students. <Fall>
- *501. Teaching the Basic Course.** (1)
Problems, materials, and methods of teaching the basic course in speech communication. Required of all graduate students assisting with basic course; open to all graduate students. <Fall, Spring>
- *520. Seminar: Telecommunication Processes and Effects.** [Seminar in Telecommunication] (3)
Theory and research on processes, functions, and effects. <Summer, Fall>
- *524. Seminar: Telecommunication Policy and Regulation.** (3)
Theories of social responsibility applied to the telecommunication media; analysis of telecommunication economics, regulation, and policy formation. <Spring, Summer>
- *529. Seminar: Persuasion.** [Workshop in Basic Communication] (3)
Theories and research on the processes by which attitudinal and behavioral changes are produced through communication. <Summer, Fall>
- *540. Seminar: Reasoned Discourse.** [Renaissance and Modern Rhetoric] (3)
Contributions to theories of rhetorical argument. <Spring, Summer>
- *541. Contemporary Rhetoric.** (3)
Critical consideration of rhetorical thought in the 20th century. Focus on theorists such as I. A. Richards, Kenneth Burke, A. J. Ayer, and Stephen Toulmin. Prerequisite: permission of instructor. <Spring, Summer>
- *543. Seminar: Interpersonal Communication.** (3) <Summer, Fall>
- *544. Seminar: Organizational Communication.** (3) <Spring, Summer>
- *545. Seminar: Public Address.** (3) <Spring, Summer>
- *546. Communication Research.** (3)
Critical consideration of the nature and selection of research problems in speech communication, with special emphasis on measurement methodologies, techniques of data collection and analysis, and interpretation of results. <Spring>
- *547. Seminar: Rhetorical Criticism.** (3)
Study and application of principles of rhetorical criticism and methods of research. Critical analysis and evaluation of political and legislative speaking. <Summer, Fall>
- *550. Seminar: Language Behavior.** (3)
Advanced study in pragmatics, including general semantics and other approaches to normal language uses in communication. <Fall>
- *551-552. Problems.** (1-3 hrs. each semester) <Summer, Fall, Spring>
- *555. Seminar in Linguistics and Language Pedagogy** (1-3)
(See Ling 555)
- *570. Seminar: Communication Education.** (3)
Problems, methods, and research on instructional objectives and strategies in speech communication. <Spring>
- *580. Seminar: Intercultural Communication.** (3)
Analysis of theory and research on communication across national and cultural groups. <Summer, Fall>
- *599. Master's Thesis.** (1-6 hrs. per semester)
<Summer, Fall, Spring>

STATISTICS

See Mathematics & Statistics.

THEATRE ARTS

PROFESSORS R. Hartung (Chairman); N. Blackburn, W. Martin, E. Snapp, J. Yell; ASSOCIATE PROFESSORS C. Karkosh, E. Waters; VISITING ASSOCIATE PROFESSOR J. Young; ASSISTANT PROFESSORS P. Buchan, G. Schreiber; LECTURERS W. Bergman (part-time), G. Glover (part-time), I. Jaffe; and new appointments to be made.

MAJOR STUDY

College of Fine Arts: See p. 267.

College of Education: TA 103 and 104, 125 and 126, 129 and 130, 285 and 286, 305 and 306, 315 and 317, and Engl 352 or 353 or 487. Total 39 hours.

MINOR STUDY

Arranged by consultation with the chairman of the Theatre Arts Department.

101. **Voice and Diction.** (3)
Training for the effective use of the speaking voice; basic principles of voice production, diction, and phonetics. <Fall, Spring>
102. **Voice and Diction.** (3)
Continuation of 101. Specialized training in the use of the voice for oral interpretation and for students preparing to enter speech-oriented careers. Prerequisite: 101 or equivalent. <Spring>
103. **Voice Technique for the Theatre.** (3)
Specialized training in all aspects of voice production for actors. TA majors only; required for TA majors. <Fall>
104. **Voice Technique for the Theatre.** (3)
Continuation of 103. Prerequisite: 103. Required for TA majors. <Spring>
115. **Theatre Appreciation.** (3)
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)
Continuation of 115. Prerequisite: 115. <Spring, Summer>
125. **Theatre Practice I.** (3) \
To provide students of drama with a working knowledge of theatre. Participation in departmental productions required. Required for TA majors. <Fall>
126. **Theatre Practice II.** (3)
Continuation of 125. Prerequisite: 125. Required for TA majors. <Spring>
129. **Stagecraft.** (3)
Methods, materials, and techniques of stage carpentry. Participation on scenic crews for departmental productions required. <Fall, Spring>
130. **Stagecraft.** (3)
Continuation of 129. Prerequisite: 129. <Fall, Spring>
140. **Makeup.** (3)
A practical course in the art of makeup for the stage and television, covering both basic principles and specific techniques. Participation on makeup crews for departmental productions required. Prerequisite: 126, or equivalent. <Fall, Spring>
255. **Stage Lighting.** (3)
Theory and practice of present-day methods of lighting for the stage. Participation on lighting crews for departmental production required. Prerequisite: 126 or equivalent. <Fall>
256. **Stage Lighting.** (3)
Continuation of 255. Prerequisite: 255. <Spring>
260. **Oral Interpretation.** (3)
(See Sp Com 260) Prerequisite: 101. <Fall, Spring>
275. **Technical Production.** (3)
Analysis, planning, and construction of stage scenery and properties; study of the theatre plant. Participation on scenic crews for departmental productions required. Prerequisites: 126 and 130. <Fall>
276. **Technical Production.** (3)
Continuation of 275. Prerequisite: 275. <Spring>
285. **Acting Technique.** (3)
Basic methods of interpretation for the stage, television, and screen. Prerequisites: 104, 126, 163, or equivalent. <Fall>
286. **Acting Technique.** (3)
Continuation of 285. Prerequisite: 285. <Spring>
290. **Professional Theatre Tour.** (1-3)†
A comprehensive three-week tour of the commercial theatre under faculty supervision. Theatre-going and cultural exchange with students from other universities. Post-trip critique required. Tours to London and New York in alternate years, during January intersession. <Offered upon demand>
299. **Theatre Workshop.** (1-3)‡
For theatre students who participate in a prearranged series of scheduled workshop productions under faculty supervision. <Summer, Fall, Spring>

- 305. Rehearsal and Performance. (3)**
Techniques for the director in both rehearsal and performance. Prerequisite: 286. <Fall>
- 306. Rehearsal and Performance. (3)**
Continuation of 305. Prerequisite: 305. <Spring>
- 315. Theatre Production for Teachers: Acting and Directing. (3)**
Essentials of acting, directing, and technical production; rehearsal methods and production organization. May not be taken by TA 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)**
The organizing and teaching of drama and dramatic activities in the junior and senior high schools. Special emphasis is 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)**
The development of theatre from the Greeks, with a study of historical backgrounds of dramatic thought and with special emphasis on production techniques. <Fall>
- 336. Theatre History. (3)**
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. Participation in departmental productions required. Prerequisite: 126 and upper-division standing. <Fall, Spring>
- 351. Television Drama Production. (3)**
Basic directing techniques for the dramatic television program. Workshop, 3 lectures, 3 hrs. lab. Prerequisites: 104, 126, and Sp Com 265. Alternate years with 355. <Fall>
- 352. Advanced Television Drama Production. (3)**
Advanced directing techniques, adapting and editing the dramatic television program. Workshop, 3 lectures, 3 hrs. lab. Prerequisite: 351. Alternate years with 356. <Spring>
- 355. Playwriting. (3)**
Writing, reading, and analysis of student plays is supplemented by a critical examination of the playing qualities as revealed in workshop performances before invited groups. Prerequisite: upper-division standing. 2 lectures, 2 hrs. lab. Fall 1973 and alternate years with 351. <Fall>
- 356. Playwriting. (3)**
Continuation of 355. Prerequisite: 355. Spring 1974 and alternate years with 352. <Spring>
- °360. Advanced Oral Interpretation. (3)**
(See Sp Com 360) Prerequisite: Sp Com 260. <Spring>
- °361. Advanced Rehearsal and Performance. (3)**
Advanced study of directing techniques; analysis of scripts and methods of interpretation in production. Prerequisite: 306. <Fall>
- 362. Advanced Rehearsal and Performance. (3)**
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 production. Participation on scenic crews for departmental productions required. Prerequisite: 276 or equivalent. <Fall>
- 376. Scene Design. (3)**
Continuation of 375. Prerequisite: 375. <Spring>

° Undergraduate students not enrolled in the professional curricula or teacher education curricula may take this course only with permission of the department chairman.

- 385. Costume Design. (3)**
Historic, modern, and stylized costume design for the stage. Students execute costumes for production. Participation on costume crews for departmental productions required. Prerequisite: upper-division standing. <Fall>
- 386. Costume Design. (3)**
Continuation of 385. Prerequisite: 385. <Spring>
- *414. Experimental Music Theatre. (1-4)†**
The content and form of this course will vary each time it is offered. Group improvisations, movement, voice training, acting technique, and technical production; normally culminating in a public performance involving both the departments of music and theatre arts. To be offered on demand. <Spring>
- 491. Professional Apprenticeship. (1-6)†**
Qualified students will be accepted by the Santa Fe Opera Company for crew assignments on the technical production staff under faculty supervision. Prerequisites: 130, 256, 276, an average of 3.0 or better in theatre arts and approval of the chairman. <Summer>
- 499. Thesis. (1-6)†**
Directed study in any major field of theatre arts. Prerequisite: an average of 3.0 or better in theatre arts. <Summer, Fall, Spring>

DANCE

MAJOR STUDY

Although a formally structured major in dance is not offered, such a concentration would be possible within the program leading to the B.U.S. degree.

MINOR STUDY

24 hours including Music 139 and 140, TA 125 and 140, Dance 262 and 263 plus 8 hours selected from Dance 109, 259, 309, 359, 366 or 368.

- ¶109. Modern Dance I. [Beginning Contemporary Dance] (1)**
(Also offered as PE 109) The techniques and practice of basic motor skills and their application to aesthetic communication. <Summer, Fall, Spring>
- 159. Stage Movement I [Stage Movement] (3)**
Movement training for the actor. Basic exercises designed to effect alertness and responsiveness on the stage and to induce relaxation and sensory awareness. Combatics offered. TA majors only. <Fall>
- 160. Stage Movement II (3)**
Continuation of 159. Prerequisite: 159. <Spring>
- ¶259. Modern Dance II [Modern Dance] (2)‡‡**
Exploration of various techniques in modern dance in America; e.g. Graham, Humphrey, Weidman, and Limon. Prerequisite: 109. Audition required. <Fall, Spring>
- 262. History of Dance I. (2)**
The cultural influences on dance throughout western civilization: primitive, ancient, and medieval, 2 lectures, 1 hr. lab. <Fall>
- 263. History of Dance II. (2)**
Continuation of 262: Renaissance to the present day. 2 lectures, 1 hr. lab. Prerequisite: 262. <Spring>
- ¶309. Modern Dance III. (2)‡‡**
Prerequisite: 259. Dance minors and/or by audition. <Fall, Spring>
- ¶359. Dance Workshop. (1-3)‡‡**
Participation in a prearranged series of scheduled workshop productions under faculty supervision. <Summer, Fall, Spring>
- ¶366. Teaching of Modern Dance. [Teaching of Contemporary Dance] (2)**
(Also offered as PE 366) Selection of methods and materials for teaching modern dance. Supervised practice teaching in local schools; elementary, junior, and high school levels. 3 class meetings per week. <Spring>

‡‡ Instructor and department chairman must approve repetition of this course. May be repeated twice.

¶ Students in the College of Arts and Sciences are limited to a maximum of 8 hours in Dance. These hours may be substituted for 4 hours of activity PE and 4 hours of Ensemble Music.

¶368. **Ethnic Dance.** (2)‡

Movement experiences in various ethnic dance forms indigenous to the Southwest. Film viewing and analysis of dance works. Dance minors only. <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 communications, and theatre arts. Such a concentration would be possible within the program leading to the B.U.S. degree.

MINOR STUDY

21 hours including the following courses plus Art 287, which is a prerequisite to Art 388:

210. Introduction to the Film. (3)

Historical and critical survey, with examples, of major tendencies in the development of the motion picture as an art form. <Fall, Spring>

***327. History of the Film.** (3)

The history of the motion picture from its beginning up to the era of sound. <Fall>

***328. History of the Film.** (3)

Continuation of 327 to the present day.

Prerequisite: 327. <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.

§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.

‡‡ Instructor and department chairman must approve repetition of this course. May be repeated twice.

¶ Students in the College of Arts and Sciences are limited to a maximum of 8 hours in Dance. These hours may be substituted for 4 hours of activity PE and 4 hours of Ensemble Music.

ENROLLMENT AND DEGREE STATISTICS

*ENROLLMENT FOR 1972-73

	Men	Women	Total
Semester I, 1972-73	11,252	8,385	19,637
Semester II, 1972-73	10,769	8,083	18,852
Summer Session, 1972 (including workshops)	3,310	3,277	6,587

SUMMARY OF DEGREES CONFERRED 1901-1972

Earned Degrees					Total Earned Degrees	Honorary Degrees
Bachelor's	Master's	Law	Medicine	Doctor's		
24,587	7,288	573	122	992	33,562	122

* Exclusive of independent study, extension, and non-credit courses.

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