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

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

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

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

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

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

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

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

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

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

SUMMER SESSION ........................................................................ Dean of Admissions

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

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

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

HOUSING INFORMATION—DORMITORIES AND MARRIED HOUSING Housing Director

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

STUDENT EMPLOYMENT .......................................................... Director of Student Aids

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

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

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

EXPENSES ................................................................................ Comptroller

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

STUDENT AFFAIRS ................................................................... Vice President for Student and Campus 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.
CONTENTS

Directions for Correspondence .................................................. 2
Academic Calendar ................................................................. 4-5
The Regents of the University ................................................. 6
Administrative Offices and Officers ........................................ 6-12
General Information .............................................................. 13-16
Admission and Registration ................................................... 17-28
Student Expenses ................................................................. 29-32
Student Housing ................................................................. 33-34
Financial Aid ................................................................. 35-40
Student Services ............................................................... 41-46
General Academic Regulations ............................................. 47-59
University College ............................................................. 60-67
Bachelor of University Studies; Associate of Science Degree in Laboratory Technology; Two-Year Secretarial Program
College of Arts and Sciences .................................................. 68-78
Division of Inter-American Affairs, Departments of Anthropology, Biology, Chemistry, Communicative Disorders, Economics, English, Geography, Geology, History, Journalism, Mathematics and Statistics, Modern and Classical Languages, Philosophy, Physics and Astronomy, Political Science, Psychology, Sociology, Speech Communication
School of Business Administration Sciences ......................... 79-89
Bachelor of Business Administration Program; Three-Two Program
College of Education ............................................................ 90-124
College of Engineering ......................................................... 125-144
Departments of Chemical Engineering, Civil Engineering, Electrical Engineering and Computer Science, Mechanical Engineering, Nuclear Engineering
College of Fine Arts .............................................................. 145-154
Departments of Architecture, Art, Music, Music Education, Theatre Arts
The Graduate School ........................................................... 155-156
School of Law ................................................................. 157
School of Medicine ........................................................... 158-165
College of Nursing ........................................................... 167-172
College of Pharmacy .......................................................... 173-186
Pharmacy, Dental Programs
Other Divisions of the University ........................................ 187-193
Division of Continuing Education, Community College, Off-Campus Branch Colleges, and Residence Centers, Division of Computing and Information Science, Division of Public Administration, Air Force ROTC, Naval ROTC
Courses of Instruction (listed alphabetically by departments) .......... 194-405
Campus Maps ................................................................. 406-409
Index ................................................................. 410-416
1974-75 ACADEMIC CALENDAR

1974 SUMMER SESSION

LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATIONS AND CREDENTIALS OR APPOINTMENT REQUEST FOR ASSURANCE OF JUNE 8 REGISTRATION

June 1, Sat. Noon

New Student Orientation

June 7, Fri.

Advisement and Registration

June 8, Sat.

Instruction begins; Late Registration Fee applies

June 10, Mon.

Late Registration closes; last day for additions to programs

June 14, 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 21, 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 19, Fri., 5 p.m.

Session ends

August 2, Fri., 10 p.m.

1974 ANTHROPOLOGY FIELD SESSION

Registration

June 8, Sat.

Field Session ends

July 26, Fri.

DEADLINE FOR RECEIPT OF ADMISSION APPLICATIONS AND CREDENTIALS FOR FALL SEMESTER

Aug. 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 FALL SEMESTER

New Student Orientation Period

Aug. 21, Wed.-Aug. 22, Thu.

Walk-through Registration

Aug. 23, Fri.

Instruction begins; Late Registration Fee applies

Aug. 26, Mon.

Late Registration closes

Aug. 30, Fri., 5 p.m.

Labor Day, holiday

Sept. 2, Mon.

End of Second Week; last day for additions to programs of registered students

Sept. 6, 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. 20, Fri., 5 p.m.

Homecoming, holiday

Oct. 12, Sat.

Midsemester

Oct. 18, Fri.

End of Twelfth Week; last day for withdrawal from course without college or school approval

Nov. 15, Fri., 5 p.m.

Thanksgiving Recess begins

Nov. 27, Wed., 10 p.m.

Classes resume

Dec. 2, Mon., 7:30 a.m.

*Closed Period:

Dec. 9, Mon.-Dec. 21, Sat.

*Pre-examination Week

Dec. 9, Mon.-Dec. 15, Sun.

*Semester Final Examinations

Dec. 16, Mon.-Dec. 21, Sat.

Semester ends; last day for removal of Incomplete grade (5 p.m.); Mid-year Recess begins

Dec. 21, Sat., 10 p.m.

DEADLINE FOR RECEIPT OF ADMISSION APPLICATIONS AND CREDENTIALS FOR SPRING SEMESTER

January 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.

*Pre-Examination Week and Semester Final Examination Week are closed to extracurricular and social campus activities.
1975 SPRING SEMESTER

Walk-through Registration ........................................ Jan. 17, Fri.
Instruction begins; Late Registration Fee applies ............. Jan. 20, Mon.
Late Registration closes ........................................ Jan. 24, Fri., 5 p.m.
End of Second Week; last day for additions to programs .... Jan. 31, 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. 14, Fri., 5 p.m.
Midsemester .................................................................. March 14, Fri.
Spring Recess begins ................................................. March 22, Sat., 10 p.m.
Classes resume ......................................................... March 31, 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. 18, Fri., 5 p.m.
*Closed Period: ......................................................... May 5, Mon.-May 17, Sat.
*Pre-examination Week ............................................... May 5, Mon.-May 11, Sun.
*Semester Final Examinations ....................................... May 12, Mon.-May 17, Sat.
Semester ends, last day for removal of Incomplete grade (5 p.m.);
Summer Recess begins ............................................... May 17, Sat., 10 p.m.
Commencement ......................................................... May 18, Sun., 7:30 p.m.

1975-76 ACADEMIC CALENDAR

1975 SUMMER SESSION

LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATIONS  
AND CREDENTIALS OR APPOINTMENT REQUEST  
FOR ASSURANCE OF JUNE 7 REGISTRATION .................. May 31, Sat. Noon
New Student Orientation ............................................ June 6, Fri.
Advisement and Registration ...................................... June 7, Sat.
Instruction begins; Late Registration Fee applies ......... June 9, Mon.
Late Registration closes, last day for additions to programs  
of registered students ............................................ June 13, 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 20, Fri., 5 p.m.
Independence Day, holiday ......................................... July 4, Fri.
End of Sixth Week; last day for withdrawal from  
course without college or school approval ................... July 18, Fri., 5 p.m.
Session ends ........................................................... August 1, Fri., 10 p.m.

1975 ANTHROPOLOGY FIELD SESSION

Registration ............................................................ June 7, Sat.
Field Session ends ................................................... July 25, Fri.

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

THE HONORABLE BRUCE KING, Governor of New Mexico, ex officio Santa Fe

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

CALVIN HORN, President Albuquerque

AUSTIN E. ROBERTS, Vice President Farmington

MRS. FRANK A. MAPEL, Secretary-Treasurer Albuquerque

HENRY JARAMILLO, JR. Belen

ALBERT G. SIMMS II Albuquerque

ADMINISTRATIVE OFFICES AND OFFICERS, 1973-74

FERREL HEADY, Ph.D. ........................................... President

INSTITUTIONAL RESEARCH

MORRIS S. HENDRICKSON, Ph.D. ........................................... Director

THOMAS M. RAWSON, M.S. ........................................... Assistant Director

INTERCOLLEGIATE ATHLETICS

PAUL EDWARD McDAVID, M.S. ........................................... Director of Athletics

LAYON J. MCDONALD, M.A. ........................................... Director of Athletics

ROBERT LEE KING, M.A. ........................................... Assistant Director of Athletics

ROBERT J. DoBELL, B.S. ........................................... Business Manager of Athletics

IKE SINGER, JR. ........................................... Athletic Coordinator

SECRETARY’S OFFICE

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

UNIVERSITY COUNSEL

D. PETER RASK, J.D. ........................................... University Counsel

UNIVERSITY RELATIONS

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

ADMINISTRATION AND DEVELOPMENT

SHERMAN EVERETT SMITH, Ph.D. ........................................... Vice President for Administration and Development

ROBERT GENE LALICKER, M.A. ........................................... Assistant to the Vice President for Administration and Development

1 Retired as Director of Athletics February 1, 1974.
2 Appointment effective January 14, 1974.
3 Appointment effective October 1, 1973.
ALUMNI OFFICE

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

UNIVERSITY ARCHITECT'S OFFICE

VAN DORN HOOKER, B.Arch. .................. University Architect
EDWARD B. T. GLASS, B.Arch. .............. Assistant to University Architect
JOE C. MCKINNEY, B.Arch. ................. Planner
ROBERT J. SCHMIDT, M.S. ................. Project Engineer

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

COMPUTING CENTER

VAN DORN HOOKER, B.Arch. .................. University Architect
EDWARD B. T. GLASS, B.Arch. .............. Assistant to University Architect
JOE C. MCKINNEY, B.Arch. ................. Planner
ROBERT J. SCHMIDT, M.S. ................. Project Engineer

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

DEVELOPMENT OFFICE

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

POPEJOY HALL

JESS E. PRICE, B.A. .......................... Director

PUBLIC INFORMATION OFFICE

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

STATION KNME-TV

ACADEMIC AFFAIRS

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

COLLEGE OF ARTS AND SCIENCES

NATHANIEL WOLLMAN, Ph.D. .................. Dean
HOWARD J. DITTMER, Ph.D. .................. Associate Dean
RALPH D. NORMAN, Ph.D. .................. Associate Dean
ROBERT C. JESPERSEN, Ph.D. ............... Assistant Dean
MARSHALL R. NASON, Ph.D. ................ Director, Latin American Center
NICK DEAN MILLS, JR., Ph.D. ................ Resident Director, Andean Study and Research Center
NELSON DAVILA VILLAGOMEZ, Lic. en Derecho Int. ........ Associate Director

SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES

ROBERT RICHARD REHDER, Ph.D. ............... Dean
RALPH LEMON EDGE, M.B.A. ................ Associate Dean

COLLEGE OF EDUCATION

DAVID WAYNE DARLING, Ed.D. ............... Dean
RONALD EUGENE BLOOD, Ph.D. ............... Acting Associate Dean for Curriculum and Instruction
RUPERT A. TRUJILLO, Ed.D. .................. Assistant Dean for Student Affairs
PAUL E. RESTA, Ph.D. .......................... Assistant Dean for Special Projects
JOHN ANTHONY ARAGON, Ed.D. ............... Director, Cultural Awareness Center

COLLEGE OF ENGINEERING

RICHARD CHARLES DOVE, Ph.D. ............... Dean
ROBERT LEROY LONG, Ph.D. .................. Assistant Dean
THOMAS TELEPHONE CASTONGUAY, Ph.D. .......... Director of Industrial Relations
KARL THOMAS FELDMAN, Ph.D. ............... Director, Cooperative Education Program

6 Appointment effective January 1, 1974.
CLINTON ADAMS, M.A. .................................................. Dean
DONALD CHRISTOPHER McRAE, M.A. ................................ Associate Dean
NADENE SIMON BLACKBURN, M.A. ................................. Assistant Dean

WILLIAM HENRY HUBER, JR., J.D. ................................. Dean
E. BRUCE POTTER, Ph.D. ............................................ Assistant Dean
JAMES C. MOORE, Ph.D. ............................................. Director of Testing

DAVID THEODORE BENEDETTI, Ph.D. .................. Acting Dean
SHIRLEY A. EARICKSON, B.A. ...................... Assistant Dean for Administration and Records
ROY LINTON JOHNSON, JR., Ph.D. .............................. Assistant Dean
JOHN THOMAS ZEPPEr, Ed.D. ................................. Assistant Dean
RICHARD CRENSHAW ALLEN, JR., Ph.D. .................. Director, Los Alamos Graduate Center
EDMUND B. KASNER, B.A. ........................................ Director, Research and Fellowship Services

FREDERICK MICHAEL HART, J.D. .............................. Dean
ROBERT J. DESIDERIO, J.D. ...................................... Associate Dean
HUNTER LEE GEER, J.D. ........................................ Assistant Dean
MYRON FINK, LL.M. .............................................. Law Librarian
PHILIP S. DELORIA, B.A., ........................................ Director, American Indian Law Center

EDMUND PETER PALKO, Lt. Col. U.S.A.F., M.S. ........... Director, Aerospace Studies
NOEL F. AUSTIN, Capt., U.S.A.F., M.Ed. .................. Assistant Director, Aerospace Studies

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

HAROLD DEAN SOUTHWARD, Ph.D. ...................... Director

DONALD ROSS MORRISON, Ph.D. ............................... Director

MORRIS H. McMICHAEL, Ed.D. ............................. Director; Director, Undergraduate Division, Los Alamos Residence Center

JOHN DAVID GIESLER, M.S. ................................... Associate Director
WILLIAM C. NAYLOR, M.Ed. .................................. Assistant Director
ILSE JENKINS GAY, M.A. ........................................ Assistant Director
CALVIN O. HALL, Ed.S. ........................................ Director, Branch College at Gallup
EUGENE PAUL LeDOUX, Ph.D. ................................. Director, Northern Branch College
STEPHEN R. BROGDEN, M.L.S. ................................. Director, Harwood Foundation
VERLE T. SIMPKINS ............................................. Director, Civil Defense University Extension Program
JOHN W. BENTON, M.A. ........................................ Director, Civil Defense Education Program

CHARLES BECKNELL, M.A. ........................................ Coordinator, Afro-American Studies
JOSE ANTONIO MONDRAGON, M.A. Equivalent for Admin. .......... Coordinator, Chicano Studies
HARVEY DUKE PAYMELLA .......................................... Coordinator, Native American Studies

JOHN LEE HOWARTH, Ph.D. ..................................... Director
ADMINISTRATIVE OFFICERS, 1973-74

GENERAL LIBRARY

JOHN FREDERICK HARVEY, Ph.D. ........................................ Dean of Library Services

ARTHUR LEON DEVOLDER, M.A. ........................................ Chief, Technical Services Division; Assistant Dean for Technical Services

HAROLD WILLIAM APEL, M.L.S. ........................................ Chief, Readers' Services Division

ALICE SANDELL CLARK, M.S.L.S. ..................................... Assistant Dean for Readers' Services

GEORGE BERTRAM MILLER, JR., M.S. ................................. Assistant Dean for Collection Development

INSTITUTE OF METEORITICS, DEPARTMENT OF GEOLOGY

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

INSTRUCTIONAL MEDIA SERVICES

ROBERT D. KLINE, Ph.D. .............................................. Director

JOURNAL OF ANTHROPOLOGICAL RESEARCH

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

NATURAL RESOURCES JOURNAL

ALBERT EDGAR UTTON, M.A. (Juris.) ................................. Editor

NAVAL RESERVE OFFICERS TRAINING CORPS UNIT

JAMES RAYMOND O'MARA, Col., U.S.M.C., M.A. ................ Commanding Officer

BENNIE L. CORLEY, Cdr., U.S.N., M.S. ............................... Executive Officer

NEW MEXICO HISTORICAL REVIEW

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

DIVISION OF PUBLIC ADMINISTRATION

ALBERT H. ROSENTHAL, Ph.D. ......................................... Director

UNIVERSITY PRESS

HUGH W. TREADWELL, M.A. ........................................... Director

ERIC H. WANG CIVIL ENGINEERING RESEARCH FACILITY

DELMAR E. CALHOUN, M.S.C.E. .................................... Director

WOMEN'S STUDIES

GAIL BAKER, Ph.D. .................................................. Coordinator

HEALTH SCIENCES

ALBUQUERQUE VETERANS ADMINISTRATION HOSPITAL

PAUL N. SCHMOLL, M.S. ............................................ Hospital Director

BERNALILLO COUNTY MEDICAL CENTER

FRED E. MONDRAGON, M.B.A. ...................................... Administrator

MICHAEL POLLAY, M.D. .............................................. Medical Director

BERNALILLO COUNTY MENTAL HEALTH/MENTAL RETARDATION CENTER

WALTER W. WINSLOW, Ph.D. ...................................... Director

CANCER RESEARCH AND TREATMENT CENTER

MORTON M. KLIGERMAN, M.D. .................................... Director

SCHOOL OF MEDICINE

LEONARD M. NAPOLITANO, Ph.D. ..................................... Dean

JAMES ROWLAND GAY, M.D. ........................................ Assistant Dean; Coordinator, Regional Medical Program

ALONZO C. ATENCIO, Ph.D. ......................................... Assistant Dean for Student Affairs

DIANE JENNINGS KLEPPER, M.D. ................................ Assistant Dean for Admissions and Student Affairs

WILLIAM STERLING EDWARDS, M.D. ........................... Assistant Dean for Graduate Medical Education

S. SCOTT OBENSCHAIN, M.D. ........................................ Assistant Dean for Undergraduate Medical Education

ROBERT T. DIVETT, Ed.D. .......................................... Librarian, Library of Medical Sciences

Appointment effective February 1, 1974.

Resignation effective December 1, 1973.

10  ADMINISTRATIVE OFFICERS, 1973-74

COLLEGE OF NURSING
B. LOUISE MURRAY, Ed.D. ............................................ Dean
HELEN K. KEE, M.S. ........................................... Associate Dean

COLLEGE OF PHARMACY
CARMAN A. BLISS, Ph.D. ........................................... Dean; Acting Director, Dental Programs
HAROLD LEWIS BOBER, M.S. .................................. Assistant Dean

RESEARCH
PAUL HYMAN SILVERMAN, Ph.D. .................................. Vice President for Research

INSTITUTE FOR SOCIAL RESEARCH AND DEVELOPMENT
GRACE OLIVAREZ, J.D. ........................................... Director
ROBERT S. LANDMANN, M.A. ........................................ Associate Director
LEE BERKEY ZINK, Ph.D. ......................................... Director, Bureau of Business Research
EDWIN H. CAPLAN, Ph.D. ......................................... Director, Bureau of Revenue Training Program
RICHARD ALAN ANDERSON, Ph.D. ................................ Director, Center for Environmental Research and Development
LUCIEN E. ROBERTS, M.A. ........................................ Director, Center for Human Resources Development
ELMER ARTHUR SCHOLER, Ph.D. ................................ Director, Center for Leisure and Recreation
DAN D. CHAVEZ, Ph.D. ........................................... Director, College Enrichment Program
WILLIAM R. PARTRIDGE, M.B.A. ................................... Director, Criminal Justice Program
PETER ANTHONY LUPSHA, M.A. ................................... Director, Division of Government Research
LUCIAN E. ROBERTS, M.A. ........................................ Director, Center for Human Resources Development
ELMER ARTHUR SCHOLER, Ph.D. ................................ Director, Center for Leisure and Recreation
DAN D. CHAVEZ, Ph.D. ........................................... Director, College Enrichment Program
WILLIAM R. PARTRIDGE, M.B.A. ................................... Director, Criminal Justice Program
PETER ANTHONY LUPSHA, M.A. ................................... Director, Division of Government Research

INTERNATIONAL PROGRAMS
GERALD M. SLAVIN, Ph.D. ........................................... Director

OFFICE OF RESEARCH AND FELLOWSHIP SERVICES
EDMUND B. KASNER, B.A. ........................................... Director

RADIOLOGICAL SAFETY
WILBUR LLOYD TABOR, B.S. ........................................ Radiological Safety Officer

STUDENT AFFAIRS

36 HAROLD WADE LAVENDER, Ph.D. .................................. Vice President for Student Affairs
37 KAREN M. GLASER, M.S.Ed. .................................. Acting Vice President for Student Affairs
38 JOHN S. BAKAS, M.A. ........................................... Coordinator of Orientation and Advisement

ADMISSIONS AND RECORDS OFFICE
ROBERT M. WEAVER, M.A. ........................................... Dean of Admissions and Records
LUCILLE H. MOWROR, B.A. ........................................ Associate Dean of Admissions
39 JOHN S. BAKAS, M.A. ........................................... Assistant Dean of Admissions
WILLIAM L. WALTER, B.A. ........................................ Assistant Dean of Admissions
FRED M. CREIST, JR., M.B.A. ..................................... Registrar
HELEN G. JACKSON, B.A. ........................................ Assistant Registrar
34 NELLE C. MITCHELL, B.A. ...................................... Assistant Registrar

36 On leave until September 1974.
37 Position discontinued January 1, 1974.
38 Appointment effective January 1, 1974.
39 Resignation effective February 11, 1974.
40 On sabbatical leave for six months during period from January 1 to September 1, 1974.
35 Appointment effective during Dr. Lavender's sabbatical.
### Administrative Officers, 1973-74

**Campus Security**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred Lewis White, B.S.</td>
<td>Director of Campus Security</td>
</tr>
<tr>
<td>Berry Dean Cox, M.A.</td>
<td>Director of Campus Security</td>
</tr>
</tbody>
</table>

**Career Services Center**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Reese Smith, B.S.</td>
<td>Director</td>
</tr>
<tr>
<td>James M. Palmer, B.S.</td>
<td>Associate Director</td>
</tr>
</tbody>
</table>

**Counseling Center**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sven F. Winther, Ed.D.</td>
<td>Director</td>
</tr>
</tbody>
</table>

**International Services**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gerald M. Slavin, Ph.D.</td>
<td>Director</td>
</tr>
</tbody>
</table>

**New Mexico Union**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>Theodore Martinez, B.A.</td>
<td>Director</td>
</tr>
<tr>
<td>Betty G. Neher</td>
<td>Associate Director</td>
</tr>
</tbody>
</table>

**Student Aids Office**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles Jack Sheehan, M.A.</td>
<td>Director</td>
</tr>
<tr>
<td>Lavon J. McDonald, M.A.</td>
<td>Associate Director</td>
</tr>
<tr>
<td>Harold Gordon, M.A.</td>
<td>Assistant Director</td>
</tr>
<tr>
<td>George Sandoval, B.A.</td>
<td>Assistant Director</td>
</tr>
</tbody>
</table>

**Student Health Center**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael A. Hickey, M.D.</td>
<td>Director</td>
</tr>
<tr>
<td>Joseph S. Beres, M.D.</td>
<td>Assistant Director</td>
</tr>
<tr>
<td>Claude H. B. Brown, M.P.H.</td>
<td>University Physician</td>
</tr>
<tr>
<td>Olga M. Eaton, M.D.</td>
<td>University Physician</td>
</tr>
<tr>
<td>Joseph A. Haddon, M.D.</td>
<td>University Physician</td>
</tr>
<tr>
<td>Dennis M. Jackson, M.D.</td>
<td>University Physician</td>
</tr>
<tr>
<td>Jack M. McCabe, M.D.</td>
<td>University Physician</td>
</tr>
<tr>
<td>Effie E. G. Medford, M.D.</td>
<td>University Physician</td>
</tr>
</tbody>
</table>

**Student Personnel**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karen M. Glasser, M.S.Ed.</td>
<td>Dean of Students</td>
</tr>
<tr>
<td>Charles Paul Roberts, M.S.</td>
<td>Associate Dean of Students</td>
</tr>
<tr>
<td>Larry Mangus, Ed.D.</td>
<td>Associate Dean of Students (Housing)</td>
</tr>
<tr>
<td>Karen Abraham, Ed.D.</td>
<td>Associate Dean of Students (Student Activities)</td>
</tr>
<tr>
<td>Richard Charles Fosco, M.Ed.</td>
<td>Assistant Dean of Students</td>
</tr>
<tr>
<td>M. Olga Gandara, M.A.</td>
<td>Assistant Dean of Students</td>
</tr>
<tr>
<td>Linda Ellen Friedman, M.A.</td>
<td>Assistant Dean of Students (Housing)</td>
</tr>
<tr>
<td>Carroll Lee Hall, M.A.</td>
<td>Assistant Dean of Students (Housing)</td>
</tr>
<tr>
<td>Mary Morell, M.A.</td>
<td>Assistant Dean of Students (Housing)</td>
</tr>
</tbody>
</table>

**Women’s Coordinating Center**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veronica Jean Frakes, B.A.</td>
<td>Coordinator</td>
</tr>
</tbody>
</table>

**Business and Finance**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Pero维奇, M.B.A.</td>
<td>Vice President for Business and Finance</td>
</tr>
</tbody>
</table>

**Auxiliaries and Services**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Robert Bierbaum, B.S.</td>
<td>Director</td>
</tr>
<tr>
<td>Jack E. Lockett, R.D., M.B.A.</td>
<td>Assistant Director of Auxiliaries and Services—Food Services</td>
</tr>
<tr>
<td>Robert A. Schulte, M.B.A.</td>
<td>Assistant Director, Housing</td>
</tr>
<tr>
<td>Richard McGuire, B.S. in Ed.</td>
<td>Director of Golf Courses</td>
</tr>
<tr>
<td>Edwin James Schodorf</td>
<td>Director, Printing Plant</td>
</tr>
</tbody>
</table>

**Notes:**
- Resigned position as of January 14, 1974.
- Appointment effective February 10, 1974.
BUDGET OFFICE

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

OFFICE OF THE COMPTROLLER

CARROLL J. LEE, M.A., C.P.A. .................................................. Comptroller
ELEANOR L. MANSON, B.A. .................................................. Assistant Comptroller for Administrative Services
EUGENE H. BERGMAN, B.B.A. .................................................. Assistant Comptroller for Student Accounting
JAMES A. WIEGMANN, B.S. .................................................. Assistant Comptroller for Auditing and Accounting Systems
DOYLE H. KIMBROUGH, B.B.A. .................................................. Assistant Comptroller for Medical School Accounting
WARREN D. BAUR, B.S. .................................................. Purchasing Agent

ELEANOR L. MANSON, B.A. .. Assistant Comptroller for Administrative Services
EUGENE H. BERGMAN, B.B.A. .. Assistant Comptroller for Student Accounting
JAMES A. WIEGMANN, B.S. .. Assistant Comptroller for Auditing and Accounting Systems
DOYLE H. KIMBROUGH, B.B.A. .. Assistant Comptroller for Medical School Accounting
WARREN D. BAUR, B.S. .. Purchasing Agent

DATA PROCESSING CENTER

LOUIS RICHARD LEURIG, B.A. ........................................ Director
WILLIAM R. DARLING, M.S. .................................................. Associate Director
ALFRED L. V. INGRAM, SR., M.A. .................................................. Assistant Director for Administrative Systems
BRYAN W. DERSHEM .......................................................... Assistant Director for Student Record Systems
JOHN L. JENKINS .......................................................... Assistant Director for Data Services
DORIS B. WAKELAND, B.S. .................................................. Assistant Director for Information Systems
WILLIAM R. RUSSELL .................................................. Assistant Director for Financial Systems

PERSONNEL

PHILLIP M. ALARID, B.B.A. ........................................ Director, EEO Coordinator
RAY SANDERS BARNARD .......................................................... Assistant Director—Compensation and Benefits
BERNIE S. SANCHEZ, B.B.A. .................................................. Assistant Director—EEO and Training
NARCISO GALLEGOS .......................................................... Labor Relations Manager
WALTER B. LEWIS .......................................................... Manager, Campus Safety and Workmen’s Compensation
RENEE M. MASON .......................................................... Employment Manager
ROMEO ORTIZ, B.A. .......................................................... Personnel Manager, School of Medicine

PHYSICAL PLANT DEPARTMENT

MYRON FICKAS FIFIELD, B.S. in C.E. ........................................ Director
FLOYD B. WILLIAMS, JR., B.S. in C.E. ........................................ Associate Director; Manager, Construction and Maintenance Division
PATRICK ROMERO, B.A. .......................................................... Manager, Custodian Division
HYMAN S. ADLER .......................................................... Manager, Services and Medical Plant Division
JAMES ROSS CALLAHAN .......................................................... Acting Manager, Utilities Division
GENERAL INFORMATION

GOALS OF THE UNIVERSITY

THE UNIVERSITY of New Mexico has as its primary responsibility the task of serving the citizens of the State of New Mexico by providing the opportunity of a well-rounded education at the higher level. The ultimate goal of university education is to equip the maximum number of citizens with the understanding and wisdom necessary to becoming useful and responsible members of society.

To this end the University stresses the presentation of a liberal education in such a fashion that skills of reasoning and critical thinking are brought to bear, by the student, on the present development of his cultural heritage. Furthermore, the University exists to provide opportunities for training in scholarly and technical fields which allow the student to become a productive member of his society.

Finally, in its capacity as a state institution, the University stresses engagement in research activities which function to keep abreast of the changing times, adult education programs whose students supply an indication of the changing needs of the surrounding communities, and exhibits, lectures, forums, and concerts on campus which make significant contributions to the cultural life of the State.

ACCREDITATION


THE ENVIRONMENT

The University of New Mexico was created by an act of the Territorial Legislature in 1889. Since that time the 20 acres comprising the original campus have become more than five hundred; buildings have increased from a single structure to 120. Although situated in the center of metropolitan Albuquerque, the University has remained in touch with its roots in the cultural multiplicity of the State. The distinctive architectural style, contemporary in treatment but with strong influence from the Spanish and Pueblo Indian cultures, is characterized by protruding vigas, patios, balconies, portals, and earth-color walls slightly inclined to recall ancient adobe houses. Surrounded by giant cottonwood trees, elms and mountain evergreens, the campus embodies the life style fostered by the mild, sunny climate.
University administrators have for many years realized that the situation of the University of New Mexico provides it with a wealth of source material in the historical background of the nation, and that its proximity to the Indian, Spanish-American, and Mexican cultures makes it a natural place for the study and appreciation of those cultures. They have, therefore, encouraged the development of Southwestern and Latin American studies and research. Some of the results of this emphasis have been the offering of a major in Latin American Studies, the annual field session in Anthropology, and the various paintings, carvings, and weaving to be found throughout the campus buildings.

LIBRARIES

More than 800,000 volumes make up the University’s holdings in all libraries. The collection is expected to exceed one million volumes within the next few years as a result of a 1972 New Mexico bond issue series which made $10,000,000 available for library material purchases for all of the state’s public colleges and universities.

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

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

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

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

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

MUSEUMS

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

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

The University Art Museum houses the University’s permanent collection of art works and is the scene of several noteworthy special exhibitions each year. The Museum also exhibits the work of faculty and students of the Department of Art. It is open to the public on a regular basis.

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

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

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

POPEJOY HALL

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

HARWOOD FOUNDATION

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

JONSON GALLERY

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

ISRAD (INSTITUTE OF SOCIAL RESEARCH AND DEVELOPMENT)

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. The Institute functions through a series of operating agencies which provide three distinct, but interrelated, kinds of services.

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

Covering a wide range of social and environmental concerns particular to the state are the Center for Environmental Research and Development, the Center for Leisure and Recreation, the Division of Government Research, and The Criminal Justice Program. The activities of these agencies include providing technical assistance and consulting services to community and governmental agencies working with urban and rural environmental planning problems, recreational development, intergovernmental relations, and the causes and consequences of crime in the community.

The College Enrichment Program aids graduating seniors from low-income backgrounds who have the potential for college success but who need motivation, financial aid, and tutoring and counseling services. Also concerned with providing tutoring services to undergraduate students from disadvantaged backgrounds, The Special Services Program attempts to increase the rate at which students are retained at the University by helping them deal with the institutional and personal pressures that lead to dropping out. Finally, the Center for Human Resources Development operates two programs, New Careers and the Home Improvement Project, designed to provide specific, job-oriented training to people recruited from low income areas.
ADMISSION AND REGISTRATION

APPLICATION AND CREDENTIALS

ALL COMMUNICATIONS regarding admission to the undergraduate colleges of the University should be addressed to the Dean of Admissions. Applicants for the Graduate School, the School of Law, or the School of Medicine should correspond directly with those schools. Deadlines for the receipt of applications are August 1 for the fall semester and January 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. A number of specialized programs with limited enrollments require applicants to have met all admission requirements considerably earlier than the all University deadline. Applicants for such programs should see appropriate sections of the catalog for possible early deadlines.

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

AMERICAN COLLEGE TESTS (ACT)

The ACT Test 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 who have completed high school may obtain a test registration form from a nearby high school or college testing office or by writing for information to: ACT Registration Unit, P.O. Box 414, Iowa City, Iowa 52240. ACT standard scores or percentiles appearing on transcripts do not fulfill University requirements. Only the complete packet of test information containing predictive data as well as test scores mailed directly to the University by ACT will meet this need.

APPLICATION FEE

A non-refundable Application Fee of $15 is payable when the application for admission is submitted. 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 the one year time limit.

FRESHMEN

HOW TO APPLY

Each freshman applicant is required to submit:

1. An Application for Admission.
2. Application Fee.
3. ACT Scores.
4. An official transcript of academic record sent from high school.
When these items have been received, the Office of Admissions will send to the applicant notice of acceptance or denial. When the student applies early in his senior year, a notice of eligibility is issued as soon as processing is completed. This preliminary notice is firm for the student's planning purposes subject only to completion of his high school program. Final notifications of admission are accompanied by registration information.

WHEN TO APPLY

A 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.

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.

ADMISSION BY CERTIFICATE

The standard of preparation for admission to freshman status in the University is the four-year high school course.

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.

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.

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 preparation in a substantial number of the college preparatory courses available in 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 college studies in order to complete the prescribed curriculum without a loss of time:

Engineering or Architecture. Two years of algebra, one year of plane geometry, and one-half year of trigonometry or college preparatory mathematics.
Mathematics and Statistics. Two years of algebra and one year of geometry. More advanced courses, particularly trigonometry, are desirable for students planning to take calculus.

Pharmacy. One year of chemistry, one year of biology, one year of physics, at least two years of algebra and one year of geometry and trigonometry, four years of English and one year of social sciences and/or humanities.

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

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

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

Latin American Studies. Two years of high school Spanish.

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

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 the principal or headmaster, and have achieved a score satisfactory to the University on the American College Test. A personal interview with the Dean of Admissions is usually 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 on the basis of 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.

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 and is a test center for 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 as indicated on 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.)

<table>
<thead>
<tr>
<th>CLEP Subject Examination</th>
<th>Equivalent UNM Course</th>
<th>Credit Granted (Semester hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Biol 110-111</td>
<td>6</td>
</tr>
<tr>
<td>Introduction to Business Law (Minimum Score of 60 required)</td>
<td>B&amp;AS 310 or 359</td>
<td>3</td>
</tr>
<tr>
<td>General Chemistry</td>
<td>Chem 101L-102L</td>
<td>8</td>
</tr>
<tr>
<td>Principles and Problems of Economics</td>
<td>Econ 200-201</td>
<td>6</td>
</tr>
<tr>
<td>Money and Banking</td>
<td>Econ 315</td>
<td>3</td>
</tr>
<tr>
<td>English Composition</td>
<td>Engl 101</td>
<td>3*</td>
</tr>
<tr>
<td>Analysis and Interpretation of Literature</td>
<td>Engl 102</td>
<td>3*</td>
</tr>
<tr>
<td>American Literature</td>
<td>Engl 280</td>
<td>3*</td>
</tr>
<tr>
<td>English Literature</td>
<td>Engl 280</td>
<td>3*</td>
</tr>
<tr>
<td>Afro-American History</td>
<td>Hist 284</td>
<td>3</td>
</tr>
<tr>
<td>Western Civilization</td>
<td>Hist 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Elementary Computer Programming—Fortran IV</td>
<td>Math 155</td>
<td>2</td>
</tr>
<tr>
<td>College Algebra</td>
<td>Math 121</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>Math 102</td>
<td>3</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>Math 123</td>
<td>1</td>
</tr>
<tr>
<td>American Government</td>
<td>Pol Sc 200</td>
<td>3</td>
</tr>
<tr>
<td>General Psychology</td>
<td>Psych 107</td>
<td>3</td>
</tr>
<tr>
<td>Tests and Measurements</td>
<td>Psych 410</td>
<td>3</td>
</tr>
<tr>
<td>Human Growth and Development</td>
<td>Psych 320</td>
<td>3</td>
</tr>
<tr>
<td>Educational Psychology</td>
<td>Psych 210</td>
<td>3*</td>
</tr>
<tr>
<td>Sociology</td>
<td>Soc 101</td>
<td>3*</td>
</tr>
</tbody>
</table>

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

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

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 informa-
tion: name and social security number; date (month and year) on which test was written; name and address of Test Center where you wrote the examination. Request mailing to: Dean of Admissions, The University of New Mexico, Albuquerque, New Mexico 87131.

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). The student must also request that each institution attended send an official transcript of his record to the Dean of Admissions. Summaries of coursework at several colleges on one transcript will not be sufficient. A student who is applying with fewer than 26 semester hours of college credit acceptable by this University must also have official scores on the American College Tests (see p. 17) and a complete official transcript of high school work sent to the Dean of Admissions. No application will be processed until all required items are on file.

A student currently enrolled in another institution at the time of application and who is applying for admission for the following session to one of the undergraduate colleges of this University should arrange to have 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 subject only to receipt of the final transcript, thus enabling the student to make definite plans for transfer.

The student must indicate on the application all previous college attendance. Applicants are not permitted to ignore previous college attendance or enrollment even though they may prefer to repeat all previous college courses. Students found guilty of non-disclosure or misrepresentation in filling out the admission application forms, or students who find after admission or enrollment that they are ineligible for academic or any other reason to return to their last institution and who fail to report this immediately to the Admissions Office, will be subject to disciplinary action, including possible dismissal from the University.

WHEN TO APPLY

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

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. 60).

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

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

ADMISSION PROCEDURE

When the application, Application Fee, and all required credentials have been received, the Office of Admissions will send to the applicant a notice of acceptance or denial.

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

REGULATIONS

The minimum qualitative requirement for University admission is a grade average of C in all previous college work attempted.

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

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

Students from fully accredited institutions ordinarily will be given full credit for work transferred, insofar as the courses taken are the same as, or equivalent to, courses offered in the college in which the student enrolls in this institution. Courses in which grades of D are earned in other institutions are not acceptable for credit in the University of New Mexico. 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.

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

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

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

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

Independent study and extension credit from institutions not accredited by regional accrediting associations is not accepted for transfer. A student who has completed such correspondence or extension work in a course comparable to one offered by this University has the privilege of establishing credit here under the regulations governing special examinations to establish credit.

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

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

READMITTED STUDENTS

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

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

Although credit earned during suspension from this University will not be accepted for transfer, attendance at another institution during suspension must be indicated on the student's application for readmission and an official transcript of record must be furnished.

UNIVERSITY COLLEGE

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

The readmitted student in regular status who has completed 26, but fewer than 64, semester hours of acceptable college credit and who is found readmissible but who does not meet the special admission requirements of the degree-granting college to which the student is seeking readmission may be required to enroll in the University College until qualified for transfer to the degree-granting college. (See the respective college sections of this catalog for admission requirements.)

The University College will not accept students who have attempted 72 or more academic semester hours (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, but who do not plan to work toward a degree in this University, may apply for non-degree status in the University's Division of Continuing Education within the following regulations.

The applicant must be at least 21 years of age. (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 must apply after an absence from the University for readmission to regular status, and 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.

A student refused admission to regular status cannot be considered for admission to non-degree status.

The applicant who wishes to register in non-degree status is required to file an Application for Admission with the Office of Admissions.
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 the last institution attended and who fails to report this immediately to the Admission Office, will be subject to disciplinary action, including possible dismissal from the University.

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

NON-DEGREE STATUS LIMITATIONS

A student is permitted to earn a maximum of thirty semester hours of credit in non-degree status, except for the student who has previously completed a baccalaureate degree. No undergraduate college of the University will accept in a degree program 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. If regular status is not attained, the student will be allowed to register in courses as an auditor only, receiving no credit.

The student in non-degree status may not enroll for more than 7 semester hours during a regular session without special approval of the Director of the Community College.

Non-degree students applying for regular status are required to follow admission procedures and to provide all items requested of transfer students (see p. 21). However, those students in non-degree status who have completed baccalaureate degrees or higher are not subject to this limitation.

CREDITS FOR TEACHER CERTIFICATION

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

INTERNATIONAL STUDENTS

The University admits qualified students who are citizens of other countries. The non-citizen is required, for visa purposes, to enter in regular status. These students, therefore, are required to present, in addition to the application for admission: official certified transcripts from each secondary school attended; official certified transcripts from each college and university attended; American College Tests (ACT) scores, if applicable (see p. 17); 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 the 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, the student should make application to the Regional Office of the Veterans Administration in the 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.

MILITARY CREDITS

Credit for service training and experience is granted on the basis of measured educational achievement, in conformity with the procedures recommended by the North Central Association of Colleges and Secondary Schools and the American Council on Education. Students who were eligible for educational benefits under one of the Public Laws or who served on active duty during a period of at least one calendar year after January 31, 1955, must apply in the Office of Admissions and Records for such credit during the first semester of enrollment in regular status. Any credit tentatively allowed will become a part of the student’s permanent record after completion of a minimum of 12 semester hours at this
University. Total semester hours of military credit to be accepted in a specific degree program will be at the discretion of the degree-granting college of this University in which the student is registered. A maximum of 8 semester hours elective credit is allowed for basic or recruit training apportioned as follows: First Aid, 2 semester hours; Hygiene, 2 semester hours; Physical Education Activity, 4 semester hours. Eight semester hours, apportioned the same as credit granted for service in the U.S. Armed Forces, will be granted to foreign students who have completed military training, provided they can show official credentials in support of their statements.

Credit earned in specialized army and navy programs conducted by college and university staffs is allowed in accordance with the recommendations of the administering institution. Credit for work done in formal training programs is allowed in accordance with the recommendations of the American Council on Education or on the basis of examinations here. U.S. Armed Forces Institute courses are acceptable if courses have been taken through university extension divisions accredited by regional accrediting 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. 53).

REGISTRATION

ORIENTATION AND ADVISEMENT

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 students who desire assistance with their academic program during the semester should request that their college office assign a faculty adviser.

REGISTRATION PROCEDURE

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

PAYMENT OF TUITION AND FEES

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

CHANGE IN COLLEGE

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

CHANGE IN ADDRESS

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

STUDENT RESPONSIBILITY

The University will hold students responsible for completion of the courses for which they have been enrolled, unless they obtain approval for a change in their registration, or file an official withdrawal from the University.

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

Students carrying 12 or more hours:

<table>
<thead>
<tr>
<th></th>
<th>N.M. Residents</th>
<th>Non-Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>$228.00</td>
<td>$642.00</td>
</tr>
<tr>
<td>Student Group Health and Accident Insurance Premium (optional)</td>
<td>12.30</td>
<td>12.30</td>
</tr>
<tr>
<td>Total Tuition and Fees with Group Insurance</td>
<td>$240.30</td>
<td>$654.30</td>
</tr>
</tbody>
</table>

All students carrying 11 hours or fewer:

|                      |          |         |
| Tuition and Fees, per semester hour | $19.00   | $53.50  |

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

LAW AND GRADUATE

Students carrying 12 or more hours:

<table>
<thead>
<tr>
<th></th>
<th>N.M. Residents</th>
<th>Non-Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>$216.00</td>
<td>$630.00</td>
</tr>
<tr>
<td>Graduate Student Association Fee—Non-Refundable</td>
<td>9.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Total Tuition and Required Fees</td>
<td>$225.00</td>
<td>$639.00</td>
</tr>
<tr>
<td>Student Group Health and Accident Insurance Premium (optional)</td>
<td>12.30</td>
<td>12.30</td>
</tr>
<tr>
<td>Total Tuition and Fees with Group Insurance</td>
<td>$237.30</td>
<td>$651.30</td>
</tr>
</tbody>
</table>

All students carrying 11 or fewer hours:

|                      |          |         |
| Tuition and Fees, per semester hour | $18.00   | $52.50  |
| Graduate Student Association Fee—Non-Refundable | 9.00 | 9.00 |

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

MEDICAL SCHOOL

<table>
<thead>
<tr>
<th></th>
<th>N.M. Residents</th>
<th>Non-Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>$315.00</td>
<td>$750.00</td>
</tr>
</tbody>
</table>

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.

OTHER FEES FOR SPECIAL SERVICES

<table>
<thead>
<tr>
<th>Service</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application fee</td>
<td>$15.00</td>
</tr>
<tr>
<td>Change in program after end of fourth week</td>
<td>5.00</td>
</tr>
<tr>
<td>Late payment penalty (tuition)</td>
<td>5.00</td>
</tr>
<tr>
<td>Late registration fee</td>
<td>5.00</td>
</tr>
<tr>
<td>Removal of Incomplete grade, per course</td>
<td>2.00</td>
</tr>
<tr>
<td>Examination to establish or validate credit, per credit hour</td>
<td>2.50</td>
</tr>
<tr>
<td>Penalty for dishonored checks</td>
<td>2.00</td>
</tr>
<tr>
<td>Late ACT Testing</td>
<td>10.00</td>
</tr>
<tr>
<td>Graduate School Foreign Language Test</td>
<td>6.00</td>
</tr>
<tr>
<td>Miller Analogies Test</td>
<td>5.00</td>
</tr>
<tr>
<td>Air Force ROTC activity fee, per semester</td>
<td>8.00</td>
</tr>
<tr>
<td>Graduation fee, all bachelor's and master's candidates</td>
<td>10.00</td>
</tr>
<tr>
<td>Master's thesis binding fee</td>
<td>8.00</td>
</tr>
<tr>
<td>Law students' dues for N.M. Student Bar Association, per yr.</td>
<td>10.00</td>
</tr>
<tr>
<td>Engineering Co-op Fee</td>
<td>10.00</td>
</tr>
<tr>
<td>Mathematics 010</td>
<td>25.00</td>
</tr>
<tr>
<td>Mathematics 020</td>
<td>25.00</td>
</tr>
<tr>
<td>Home Economics 445L (Home Management)</td>
<td>50.00</td>
</tr>
<tr>
<td>Horseback Riding (PE 192)</td>
<td>40.00</td>
</tr>
<tr>
<td>Bowling Fee—Payable at Bowling Lanes</td>
<td></td>
</tr>
<tr>
<td>Skin and Scuba Diving (PE 108)</td>
<td>15.00</td>
</tr>
<tr>
<td>Adv Skin and Scuba Diving (PE 109)</td>
<td>20.00</td>
</tr>
<tr>
<td>Skiing (PE 186) Ski Instruction Fee, payable at 1st class meeting</td>
<td>15.00</td>
</tr>
<tr>
<td>Skiing (PE 186) Ski Lift Fee, Optional Equipment Rental and Tram Fee—</td>
<td></td>
</tr>
<tr>
<td>Payable at 1st class meeting</td>
<td></td>
</tr>
<tr>
<td>Ice Skating (PE 184)—Payable to Ice Arena</td>
<td></td>
</tr>
<tr>
<td>Chemistry Laboratory Breakage Deposit Card</td>
<td>10.00</td>
</tr>
<tr>
<td>Pharmacy Laboratory Purchase Card</td>
<td>5.00</td>
</tr>
<tr>
<td>Applied Music (see &quot;Courses of Instruction... Music&quot;)</td>
<td></td>
</tr>
<tr>
<td>Mathematics 271 fee equivalent to tuition for 1 sem. hr. is charged</td>
<td></td>
</tr>
<tr>
<td>Industrial Education Laboratory Fees (some classes)—Payable at class. Maximum fee</td>
<td>10.00</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

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. 43 for explanation.

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

*The Refund Schedule for withdrawal applies to these courses.
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.

GENERAL DEFINITION OF RESIDENT STUDENT FOR TUITION PURPOSES. By state law a resident student is defined as a person who has been continuously domiciled

* Average per semester for the school year.
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 their 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.

**CHANGES IN RESIDENCE STATUS.** Any student seeking a change in resident status should first obtain a “Resident Status Change” form from Dean of Admissions and Records. A change can be made only after satisfactory evidence has been presented in writing.

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

An individual seeking a change from non-resident to resident status must submit a written request by the end of the fourth week of the semester in which the change is desired.

The following is a summary of the general rules:

**A Minor Student** (less than 18 years of age) is entitled to resident student status upon proof of the bona fide domicile in New Mexico of their custodial parent or guardian for the one year immediately preceding the student’s registration.

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

**Special Residence Problems.** Persons who have special problems concerning residence should arrange for a conference with the Dean of Admissions and Records.
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. 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.

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.

RESERVATION PROCEDURE

For further information on the various living situations, housing programs, and for applications, write to Housing Reservations and Collections Office, La Posada Hall 203.

ROOM AND BOARD FEES

To gain the maximum financial advantage of the room and board contract, students should remain in the halls for both fall and spring semesters. Students in residence for the fall semester are given the opportunity to extend their contract for room and board for the spring semester. A deferred payment plan for room and board is available.
Rates include a $3.00 residence hall social fee each semester, provision of a telephone in each student room, and University supplied bed linens. The rates do not provide for room and board between semesters or for meals during official recesses listed in the Academic Calendar. The rates are also subject to limited change if necessary to defray unexpected increases in operating costs.

MARRIED STUDENT HOUSING

The University owns and operates 20 furnished one-bedroom apartments for married students, with additional units under development. 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.
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, New Mexico Student Loans, Federal Guaranteed Loans, University Short Term Loans, The Federal Work-Study Program, The University Scholarship Program (both Academic and Athletic), the Supplemental Educational Opportunity Grant Program, and the Basic Educational Opportunity Grant Program. The Student 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 an 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.

VOCTORAL 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. 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 year. The deadline for renewal application is June 1.

Application for admission to the University of New Mexico, and scores on the American College Tests (in the case of freshman applicants), must be on file in the Admissions Office before a student can be awarded a scholarship (see “Admission” section of this catalog). A scholarship application must also be submitted to the Student 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 freshmen application 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.

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.
BASIC EDUCATIONAL OPPORTUNITY GRANT

The University of New Mexico is an eligible institution for Basic Educational Opportunity Grant Program recipients. This program is an entitlement program, at present, limited to entering freshmen without prior post secondary schooling. The Grants are renewable for four academic years. Information pertaining to this program, as well as applications are available in the Student Aids Office. Students may also obtain applications in their high schools, post offices and other public agencies.
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 and Campus 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.

DEAN OF STUDENTS

The office of the Dean of Students is a multi-faceted administrative organization concerned primarily with student life and education outside of the classroom. The Dean of Students is responsible for: 1.) The student personnel aspects such as programming, counseling, and staff training in the Residence Halls. 2.) The Student Activities Office (located in the Student Union) which coordinates the chartering of all student organizations, provides assistance and initiates programs in conjunction with student organizations, and assists students in obtaining a wide range of University sponsored activities and becoming more involved in campus life. 3.) The Administrative Office of the Dean of Students which is located (off the mall) in the South wing of Mesa Vista Hall. The professional staff is available for personal counseling, academic advisement, and referrals to other campus agencies. Their function is similar to that of an ombudsman and they will help interpret to students University policies and procedures. Other functions of this office include short-term loans, record of illness, withdrawal from the University and writing recommendations for students to prospective employers and graduate schools. Generally speaking, the Dean of Students staff will assist students in obtaining any information concerning the University.

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, staff and family members, 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. 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.

Upon request by individuals in management positions, the Center provides consulting services in the areas of organizational psychology and the management of human resources.

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 students from abroad by counseling with them and by encouraging them 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 six or more semester hours. With the exception of certain lab tests, meals in the infirmary, and medication, all services are free of charge.

Students enrolling for the first time or re-enrolling after an absence of a year or more are required to fill out a Health Status Questionnaire. The staff at the Health Center 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.

The Student Health Center, in cooperation with the College of Pharmacy, provides convenient pharmaceutical services, where students may purchase prescription and non-prescription items. A broad formulary is offered based upon the most commonly prescribed medications. The Pharmacy is open during clinic hours except from 12:00 noon to 1:00 p.m. Students enrolled for six hours or more may utilize the Pharmacy services.

STUDENT HEALTH INSURANCE

The University provides an optional health insurance program with a national insurance company. It provides for benefits to apply against expenses incurred for emergency care 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 six or more semester hours is eligible to participate in the plan upon payment of a special fee. Except for emergencies, students must be referred from the Student Health Center to be eligible for insurance benefits.

Details are mailed to all new and 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 concerning women. Zimmerman Library has a complete catalog file of this library. There are counselors at the Center for all problems—academic, personal, interpersonal, and legal. 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 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.

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.

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, skiing, and water polo.

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 are located on the south campus and are coordinated with many indoor sports on the main campus in Johnson Gymnasium, which includes an indoor pool, two large arenas, handball courts, and other specialized areas. The University Basketball Arena, with a seating capacity of 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 ON THE CAMPUS

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

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

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

HONORARY AND SERVICE ORGANIZATIONS

The following organizations are active: Phi Beta Kappa, Phi Eta Sigma, Phi Kappa Phi, Blue Key, Mortar Board, Alpha Phi Omega, Chakaa, Las Campanas, 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, Lambda Chi Alpha, Omega Psi Phi, Phi Gamma Delta, Phi Delta Theta, Phi Sigma Kappa, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Pi Epsilon.

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

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

Other social groups: Town Club.

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

CLASS HOURS AND CREDIT HOURS

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

COURSE NUMBERING SYSTEM

Courses are numbered from 001 through 799. Courses from 001 to 099 may or may not carry credit, but are not applicable toward a baccalaureate degree; from 100 to 199, lower division, are normally open to freshmen; from 200 to 299, lower division, normally open to sophomores; from 300 to 499, upper division, normally open to juniors, seniors, fifth-year undergraduates, and graduates; 500 to 799, graduate and professional, normally open 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.
CR, Credit. Gives credit for the course but is not computed in the scholarship index. At the graduate level Cr is used to report completion of a master's thesis or doctor's dissertation.
NC, No Credit. Not computed in scholarship index. At the graduate level NC is used to report unsatisfactory completion of master's thesis or doctor's dissertation.

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.
Pr, Progress. This grade is used to indicate that a thesis or dissertation is in progress but not complete. When the thesis or dissertation is complete, CR or NC is reported.

I, Incomplete. The grade of I is given only when circumstances beyond the students’ control have prevented completion of the work of a course within the official dates of a session.

W, Dropped without discredit. W is given in any course which students drop officially after the fourth week of the semester or second week of the summer session, while doing passing work. (See “Change in Program of Studies” and “Withdrawal from the University.”)

GRADES IN HONORS COURSES

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

A, Honors. 4 grade points per credit hour.

CR, Credit. Gives credit for the course but is not computed in the scholarship index.

NC, No Credit. Not computed in scholarship index.

CREDIT (CR) GRADE OPTION ENROLLMENT FOR UNDERGRADUATES ONLY

Effective with the 1970 Spring Semester the University adopted regulations whereby students may elect to take certain courses on a Credit Grade Option basis. 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, students cannot be penalized by a department if, in the process of selecting or changing major fields, they have taken a course in their major on a Credit Grade Option basis; c) in some departments and colleges, courses which are a part of the students’ 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. Students may not enroll on the credit option basis when repeating a course in which they have previously been enrolled under the regular grading system.

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. The I may be removed by the student upon completion of the work of the course (1) by the published ending date of the next semester of residence, or (2) within the next 4 semesters if the student does not reenroll in residence. The student may change the I to a passing grade by satisfactorily performing the work prescribed by the instructor. (Arrangements should be made with the instructor within a reasonable time in advance of the planned date of completion.) The student obtains from the office of the dean or director a permit to remove the I, pays the $2 fee, and takes the card to the instructor, who completes it and returns it to the Office of Admissions and Records where official entry on the student's record is made. A grade of incomplete which is not removed during the periods and by the procedure prescribed above remains on the record indefinitely.

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.

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.

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

DROP. A student has the right to drop a course, or courses, during the first four weeks of the semester or the first two weeks of the summer session without a grade, except that a grade of F, assigned by an instructor on the basis of University regulations relating to student dishonesty, will be shown on the official transcript and computed in the scholarship index. When a student drops a course 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, the student will receive a grade of W if passing the course or a grade of F for undergraduate (NC for graduates) if failing the course at the time of dropping, as determined by the instructor in the course. A student cannot drop a course, or courses, after the twelfth week of the semester or the sixth week of the summer session and receive a grade of W without petition to, and approval by, the dean or director of the college, which is limited to hardship cases involving circumstances beyond
the student's control. See below (Withdrawal from the University) if dropping all courses.

Students are responsible for the completion of every course for which they have registered; if they drop a course at any time without complying with official change of program procedures, they will receive a grade of F in the course. A fee of $5 is charged for any change made in the student's program of studies after the end of the fourth week of the semester or after the end of the second week of the summer session.

WITHDRAWAL FROM THE UNIVERSITY

When students wish to withdraw from all the courses in which they are enrolled during a semester, or summer session, they should secure a withdrawal card from the office of the Dean of Students. When a student withdraws officially from the University during the first four weeks of the semester or the first two weeks of the summer session no grades are assigned, with the exception of grades of F assigned on the basis of University regulations relating to student dishonesty. Grades of W or F as determined by the instructors in their courses are shown on the students' records if they withdraw officially from the University from the end of the fourth week through the twelfth week of the semester or from the end of the second week through the sixth week of the summer session. After the end of the twelfth week of the semester or the sixth week of the summer session no student is permitted to withdraw with a grade of W without petition to, and approval by, the dean or director of his college or school, which approval is limited to hardship cases involving circumstances beyond the students' control. When students leave the University during a semester and do not carry out their withdrawal according to this regulation, they become liable for a grade of F in all their classes, even though they are passing their courses up to the time of leaving.

MILITARY WITHDRAWAL. Under faculty regulations undergraduate students who formally withdraw from the University to enter military service after completing twelve weeks of instruction will receive full credit for each course in which they are enrolled provided the instructor certifies a grade of C or better for the course at the date of formal withdrawal. They will receive a grade of W if the instructor certifies a grade of less than C. Final semester seniors who have satisfactorily completed at least half of the work in courses for which they are enrolled that semester, provided these would complete their degree requirements, may be certified for graduation by the faculty of their colleges. Military orders or evidence of enlistment must be made available to the Dean of Students at the time of withdrawal.

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

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

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

Graduate students are referred to the Graduate Bulletin.
ADDITION OF INDEPENDENT STUDY OR EXTENSION COURSES TO PROGRAM. A resident student may enroll for independent study and extension courses only when the addition of such courses does not cause his program to be in excess of the maximum load allowed, and only after permission has been given by the dean or director of his college.

REPETITION OF COURSE

A student may repeat a course without special permission but may receive credit only once. Effective with the 1971 Spring Semester, only hours and points for the repetition are counted in the scholarship index provided the repetition resulted in a higher grade.

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

During the registration procedure it is the responsibility of the student repeating a course to notify the Office of Admission and Records by completing the repetition of course form.

AUDITED COURSES

A student may register for a course as an auditor, without credit, provided permission of the instructor concerned is obtained. An auditor who fails to attend class may be dropped at the instructor's request. The fee for audited courses is the same as for credit courses.

SCHOLASTIC REGULATIONS

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

PROBATION

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

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

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

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

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

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

ATTENDANCE

Students are required to attend all meetings of the classes in which they are enrolled unless excused by the instructor. No extensions of the vacation periods are given to any students, regardless of the location of their homes. 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 Records Office. A student with excessive absences may be dropped from a course with the grade of F, upon recommendation of the instructor.

Absences due to illness, field trips, athletic trips, etc., are to be reported by the student to the instructor and to the Dean of Students. Such report does not relieve the student of responsibility for lost work. It is the duty of the student to take the initiative in arranging with the instructors to make up work missed.
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, may 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.

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 other fees for special services).

Before the student is admitted to a special examination, the student must present to the instructor a permit signed by the dean or director of the college concerned. 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. Students admitted to or enrolled in regular status in undergraduate colleges of the University may, with appropriate approval, take an examination to establish or validate credit in courses appearing in the University's general catalog (examinations to establish credit will not be provided in non-professional physical education activity courses) and in which they have not been previously enrolled at the University of New Mexico. Students enrolled in the Graduate School have the same privilege, except that only undergraduate credit can be earned in this manner. An interview with
the department concerned is required. Upon recommendation of the department chairman and approval by the dean or director of their colleges, the students secure from their college office a permit for the examination, pay in advance the required fee of $2.50 per credit hour, and present the receipted permit to the department as authorization to take the examination. Credit will be allowed and placed on the student's permanent record only if a grade of C or better is earned. Credits earned by examination at the University of New Mexico may count toward graduation and residence requirements.

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

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

1. A minimum of 128 semester hours of earned and acceptable credits.

2. A cumulative scholarship index of 2.0 or a 2.0 grade point average on the last 128 semester hours of degree work.

3. Residence Credit Requirement: A minimum of 30 semester hours of credit earned at the University of New Mexico exclusive of extension and correspondence (independent study) credit, 15 semester hours of which must be earned after the candidate has accumulated 92 hours of earned semester hour credit. In no case is the number of hours specified to be earned after the student has completed 92 semester hours in the degree program to be interpreted as necessarily the last hours.

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

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

4. A maximum of 24 semester hours of CR grading (Credit Option and CR/NC approved courses) can be applied toward a bachelor's degree.

5. A maximum of 40 semester hours of extension and correspondence (independent study) credit can be applied toward a bachelor's degree and no more than 30 of this number can be correspondence credit.

6. Residence Requirements in Major and Minor. At least one-half of the minimum number of credit hours required for major study and one-fourth of the minimum number of credit hours required for minor study must be class or laboratory work earned in residence in the University. When a senior transfer student plans to complete a major by presenting credit hours earned in residence at another institution, the major department,
or the director of the interdepartmental major, may modify this ruling, not, however, below one-fourth of the total minimum hours required for the major (or the interdepartmental major).

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

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

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

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

The student is solely responsible for knowing the rules and regulations concerning graduation requirements and for registering in the courses necessary to meet specifications for the degree.

TWO UNDERGRADUATE DEGREES. Two undergraduate degrees may not be granted a student until he has earned the equivalent of 5 years' college work (as represented by a minimum of 30 semester hours above the requirements for the first degree) and has fulfilled all requirements for both degrees, including residence credit requirements. A transferring graduate should notify the Dean of Admissions when applying for admission if he plans to work for a second undergraduate degree. The degree of Bachelor of University Studies may not be used as a second undergraduate degree. Completion of a second major under a Bachelor of Arts or Bachelor of Science program is recorded on the student's permanent record but does not result in the awarding of a second Bachelor of Arts or Bachelor of Science degree.

EXTENSION AND INDEPENDENT STUDY CREDIT HOURS ALLOWED TOWARD DEGREE

Credit is allowed for independent study and extension courses completed at this University or through other colleges and universities accredited by regional accrediting associations. Credit for extension and independent study courses completed in institutions not accredited by regional accrediting associations is not accepted for transfer. A student who has completed such correspondence or extension work in a course comparable to one offered by the University has the privilege of establishing credit here under the regulations governing special examinations to establish or validate credit. The hours earned by independent
study or extension from accredited institutions other than the University of New Mexico may be counted towards degree requirements but the grades will not be included in the grade-point average of the student. (See "Scholarship Index"). Courses taken from other institutions must correspond to those offered at the University of New Mexico.

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

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. The student is solely responsible for complying with all regulations stated in the current Independent Study Bulletin.

COMMENCEMENT

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

HONORS WORK AND GRADUATION WITH HONORS

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

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

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

THE GENERAL HONORS PROGRAM. The General Honors Program, which may lead to graduation with Honors in General Studies, is available to any undergraduate student who wants to engage in a challenging intellectual program with an emphasis on interdisciplinary and educationally broadening activity. The program offers small seminar-type courses in a variety of styles, and students have an opportunity to study and work with other interested and interesting students from various departments. Emphasis is on discussion and student participation, with opportunities for self expression in a variety of ways. There are opportunities for individual study and informal activities, and students
have a major voice in planning the course offerings and the structure of the program. The core courses in the program (Gen St 301, 302, 403, 404—see p. 301) 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, 112, 211 or 212 (Freshman or Sophomore General Studies Seminars—see p. 300), or with one-credit hours 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 211 or 212 (Sophomore General Studies Seminar), in Gen St 299 or 399 (Individual Study), or in Undergraduate Seminar Program courses.

3. A 3.2 over-all scholarship index.


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

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

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 prerequisites, 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 students' knowledge in their major field; (2) to put this specialized knowledge into better relationship with knowledge in related fields and in the larger general area of the students' specialization; (3) to bring the students under closer guidance of, and into closer acquaintance with, teachers in their field.

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

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

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, the College English Tutorial program, the Associate of Science in Laboratory Technology degree program, and the Testing Division.

UNIVERSITY COLLEGE

All freshmen and many sophomores of the University are enrolled in the University College. The fundamental purpose of the College is to provide a maximum opportunity for each student to create an individualized program of studies best suited to his 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 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 educational choice, and the relationships between student aptitude, interests, and academic achievement. In recent years there has been an intensification of this research function particularly in 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 semester hours or who have earned 64 or more semester hours (see definition next paragraph).

CONTINUATION IN UNIVERSITY COLLEGE

You will not be permitted to 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. 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.

You may not enroll in the University College after you have been admitted to any degree-granting college of the University of New Mexico.

SCHOLASTIC REGULATIONS

All who are enrolled in the University College can be classified only as freshmen or sophomores. You cannot obtain junior or senior status until you have transferred to a degree granting college. The most 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 scholastic regulations governing academic probation and suspension see the section of this catalog titled, "General Academic Regulations." Determination of the minimum required scholarship index of a 1.40 or 1.70 is based upon University College eligibility hours as defined in the section above.

ADMISSION TO A DEGREE-GRANTING COLLEGE

The minimum requirements for transfer from the University College to any degree-granting college are:

1. Twenty-six hours of earned credit.
2. (a) A scholarship index of at least 2.0 on all hours attempted;
   or
   (b) A scholarship index of at least 2.0 on all hours attempted in the previous 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. (See definition of scholarship index in this catalog.)

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

TRANSFER FROM THE UNIVERSITY COLLEGE

Transfer to a degree-granting college is effective only at the close of a semester or summer session. Come to the University College office during the semester, preferably early in the semester, to file a transfer 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 semester hours of college work with a passing grade, of which at least 30 hours have been earned in the University of New Mexico with 15 of these 30 hours earned in the University College of the University of New Mexico; and (2) a scholarship index of 1.70 through the semester or session in which the total of college credits earned first becomes 60 or more.

BACHELOR OF UNIVERSITY STUDIES

The degree of Bachelor of University Studies is offered by the faculty of the University of New Mexico and is administered through the University College. This program was initiated in April 1969.
The fundamental purpose of the degree program is to permit a student to assume the responsibility for developing an individualized 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. (See definition of scholarship index in this catalog).
3. An informational interview prior to transfer.

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

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS
If you seek transfer into the Bachelor of University Studies program from another institution you must meet the University's general qualitative admission requirements for transfer, and 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 inter­
view 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 
couraged 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 Uni­
versity 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 Univer­
sity.

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 Wrtng w/Rdgs in Expos | 3 | Engl 102 Wrtng w/Rdgs in Lit | 3 |
| Math 121 College Alg or 150, 162 | 3-4 | Chem 281 Org & Biochem | 4 |
| Chem 141L Elements of Gen Chem | 4 | Soc 101 Intro to | 3 |
| Biol 121L Principles of | 4 | Biol 122L Principles of | 4 |
| | | Md Lab 100 Med Lab Science (Intro) | 1 |
| | | | 15 |
| | | | 14-15 |

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<tr>
<th>Second Year</th>
<th>Fall Semester</th>
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<th>Spring Semester</th>
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<tbody>
<tr>
<td>Biol 136 Human Anat &amp; Physio</td>
<td>3</td>
<td>Md Lab 201 Med Lab Science II</td>
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<tr>
<td>Phil 255 Scientific Method</td>
<td>3</td>
<td>Md Lab 202 Med Lab Science II</td>
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<tr>
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<td>Md Lab 101 Med Lab Science I</td>
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<td>Summer Session</td>
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<tr>
<td>Md Lab 203 Directed Clinical Application</td>
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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.
TWO-YEAR SECRETARIAL PROGRAM

In recognition of the increasing demand for trained office personnel, this program is designed to give students not only the basic knowledge and skills necessary for initial employment, but also a solid background in the liberal arts. In recent years greater appreciation of the value of well-planned and well-directed office services has opened an attractive field of employment for college-trained men and women. Those who choose this curriculum are able to advance more rapidly toward positions requiring managerial and supervisory responsibility.

CURRICULUM

Freshman Year

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<tr>
<th>First Semester</th>
<th>Freshman Year</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Engl 101 Wrtg w/Rdgs in Expos</td>
<td>3</td>
<td>Engl 102 Wrtg w/Rdgs in Lit</td>
</tr>
<tr>
<td>Bus Ed 112 Interm Typing</td>
<td>3</td>
<td>Hist 101 or 102 Western Civ</td>
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<tr>
<td>Bus Ed 113 Shorthand Theory</td>
<td>3</td>
<td>Bus Ed 114 Shorthand Dictation</td>
</tr>
<tr>
<td>Sp Com 101 or 255 Intro To Spch</td>
<td>3</td>
<td>Bus Ed 262 Adv Typing</td>
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<tr>
<td>or Pub Spkg</td>
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<td>Elective</td>
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<tr>
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Second Semester

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<th>Freshman Year</th>
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<tr>
<td>Bus 117 Off Moch &amp; Filing</td>
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<tr>
<td>Econ 200 or 201 Prin and Probs; Prin</td>
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<tr>
<td>Bus Ed 253 Shorthand Trans</td>
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<td>§Accounting</td>
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Sophomore Year

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<tr>
<td>Bus Ed 257 Secretarial Admin</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 265 Bus Communications</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 201 Intro to Data Proc</td>
<td>3</td>
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<tr>
<td>Bus Ed 350 Voc Off Lab and/or</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
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Electives should be taken from the following areas in consultation with the student’s major adviser:

English  Mathematics  Psychology  Geology
Fine Arts  Political Science  Sociology  Data Processing

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

THE COLLEGE ENGLISH TUTORIAL PROGRAM

This Engl 101, 102 option provides a special service to those of you who need extra help with college-level English and study skills during your first year at the University. It is especially recommended if you score 14 or below on the ACT English examination, or if you feel that college study will pose special difficulties for you because of a poor background in English or other educational disadvantages. Classes are composed of only 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.

§ See Business Education adviser.
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.
COLLEGE OF ARTS AND SCIENCES

THE COLLEGE of Arts and Sciences offers instruction in various areas which relate to man's cultural, social, and scientific achievement. Although the fields of study underlie the more specialized work of graduate and professional schools, the degree programs are not designed as vocational ends, but rather as the means for understanding mankind's achievements and problems.

Concerning the acceptance of work in business and administrative sciences, education, engineering, medicine, nursing, pharmacy, and fine arts, see "Electives" and "Special Curricula."

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 requirements. Differing requirements are specified for the Bachelor of Arts degree and for the Bachelor of Science degree for majors in biology, chemistry, geology, or psychology. 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. Candidates with majors in any other subject will receive the Bachelor of Arts degree.

ADMISSION

All freshman 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, of which 23 hours must be acceptable toward graduation from the College of Arts and Sciences.
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 Communication Skills Test.
4. Students planning to major in one of the departments in the College of Arts and Sciences should transfer from University College at the end of their second semester, if they have fulfilled the minimum requirements listed in points 1, 2, 3 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 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.

The student declares a major and minor as soon as 80 semester hours have been earned toward a degree. This is accomplished by picking up a degree application from the Dean's office, completing it, and returning 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 May, 1975, must apply for a degree at the College of Arts and Sciences office by December 20, 1974.

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 or her choice. The student's program should be arranged so that these group requirements will be fulfilled as early as possible, preferably within the first two years.
To fulfill the group requirements the student must complete:
36 hours in five of the six groups—taking six hours in four areas and 12 hours in a FIFTH AREA.

The following restrictions apply:

1. No course may be applied to more than one group.
2. Hours from the major may be applied to only one group.
3. Hours from the minor may be applied to only one group.
4. Work done at another school or in another college may apply but requires approval of the Dean of the College.
5. Courses taken in the General Honors Program (exclusive of USP courses) may, with approval of the Dean, be counted toward the group requirements, up to a maximum of six hours.

The six group requirements are as follows:

I. Communications.
   English: Any course for which the student has the prerequisites in English writing and Linguistics, except English 101.
   Speech: Any course for which the student has the prerequisites.
   Linguistics: Any course for which the student has the prerequisites.
   Journalism: Any course for which the student has the prerequisites.

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. Courses, except literature in translation, at whatever level is appropriate to the student's ability.

VI. Fine Arts. Recommended courses are: Arch 101, 261, 262; Art Hi 101, 130, 201, 202; TA 115, 116; Music 139, 140, 171. Not acceptable for this group are courses in Studio, Design, Dance (with the two exceptions of Dance 262 and 263), Applied Music, Music Theory, or Ear Training.

MAJOR AND MINOR STUDIES

Upon completion of 80 hours, a student shall declare (1) a major and a minor subject or (2) two major subjects, or (3) one of the special curricula of the College, and the program of studies thereafter shall meet the approval of the chairman of the major department or the supervisor of the special curriculum. A student may not elect both a major and a minor outside the college.

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 courses previously approved 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 semester 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 when this rule is 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.

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 College of Education 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 composite areas 24 hours are required in the area, of which 12 semester hours of credit must be in the specific subject to be taught.

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 five-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 five 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 in his first three years, then complete the B&AS minor his fourth year in courses from the School of Business and Administrative Sciences as outlined in that section of this catalog.

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 the above 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 H Ed 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 hours 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.

FRESHMAN-SOPHOMORE PROGRAMS

Normally students enrolled as freshmen in the University College take only courses numbered 100-199. Courses numbered 200-299 are open to sophomores. Courses numbered 300 or above are not open to freshmen, unless the student has the permission of the instructor, the chairman of the department and the dean of the college.

DEPARTMENTS OR PROGRAMS OF INSTRUCTION

The College of Arts and Sciences offers the following as possible majors and minors:
### MAJORS

- Anthropology
- Biology
- Chemistry
- Communicative Disorders
- Economics
- Economics-Philosophy
- English
- English-Philosophy
- Comparative Literature
- Classics
- Geography
- Geology
- History
- Journalism
- Linguistics
- Languages: French, German, Portuguese, Spanish
- Mathematics
- Philosophy
- Physics
- Astrophysics
- Political Science
- Psychology
- Latin American Studies
- Russian Studies
- Sociology
- Speech Communication
- Art
- Home Economics
- Medical Technology

### MINORS

- American Studies
- Anthropology
- Asian Studies
- Biology
- Chemistry
- Communicative Disorders
- Economics
- English
- Comparative Literature
- Geography
- Geology
- History
- Journalism
- Linguistics
- Languages: French, German, Greek, Latin, Portuguese, Russian, Spanish
- Mathematics
- Computing and Information Science
- Music
- Naval Science
- Paleocology
- Philosophy
- Religious Studies
- Physics
- Astrophysics
- Political Science
- Psychology
- Latin American Studies
- Russian Studies
- Sociology
- Special Education
- Speech Communication
- Art
- Theatre Arts (Drama)
- Home Economics
- Library Science
- Business & Administrative Sciences
- Distributed
- Mechanical Engineering
- Electrical Engineering

Major and minor requirements and descriptions of the courses offered will be found, listed by departments, in the catalog section “Courses of Instruction.”

### 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 predental program is identical with the premedical curriculum outlined below.

The student should select the dental school(s) to which he plans to seek admission, and then, with the assistance of the predental adviser, plan a course of study which will meet the admission requirements of the school(s) in which he is interested. A student who plans to do more than 2 years preparatory to entering a dental school should select courses which will give him a broad liberal arts background as well as courses which will prepare him for the more technical requirements of dental school.

Ordinarily, the student will be expected to plan his academic program in such a manner that, if his plans to go to dental school do not materialize, he will still have made progress towards a baccalaureate degree.

Further information and advice may be obtained from Dr. Earl Bourne, Biology Department, or Drs. Fritz Allen, W. F. Coleman, and Guido H. Daub, Chemistry Department. The student should choose one of these four persons as the chairman of his pre-dental advisory committee.

CURRICULUM PREPARATORY TO FORESTRY

Because of the variable admission requirements of different schools of forestry, the student is advised to seek admission information from the Department of Biology. Two years of preforestry are available.

CURRICULUM PREPARATORY TO MEDICINE

The requirement for admission to medical schools approved by the Association of American Medical Colleges and by the Council on Education of the American Medical Association is ordinarily at least 90 semester hours in a college of arts and sciences. However, because of the large number of applications to medical schools in recent years, it is difficult to gain admission without a bachelor's degree.

Although the requirements for admission to the various medical schools in the United States vary somewhat, there are certain basic minimum science requirements common to all. These include one year of general biology, general chemistry, a year of organic chemistry, a year of physics, and a year of 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 con-
sideration 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.

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<tr>
<th>First Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, 102</td>
<td>Engl Lit, Psych 101</td>
</tr>
<tr>
<td>Chem 101L, 102L or 121L, 122L</td>
<td>Chem 301, 303L, 302, 304L</td>
</tr>
<tr>
<td>Biol 121L, 122L</td>
<td>Humanities or Social Science</td>
</tr>
<tr>
<td>Math 150 or 162 or 180-181</td>
<td>Physcs 151, 152, 153L, 154L</td>
</tr>
<tr>
<td>Electives</td>
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<td>3-3</td>
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</table>

Further information and advice may be obtained from Dr. Earl Bourne, Biology Department, or Drs. Fritz Allen, W. F. Coleman, and Guido H. Daub, Chemistry Department. The student should choose one of these four persons as chairman of his pre-medical advisory committee.

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**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tr>
<td>Chem 101L Gen or 121L</td>
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<tr>
<td>Biol 121L Princ</td>
<td>4</td>
</tr>
<tr>
<td>*Math 180</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101</td>
<td>3</td>
</tr>
<tr>
<td>A&amp;S group requirement</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
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<tr>
<th>Sophomore Year</th>
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<tr>
<td>Chem 301-303L Organ</td>
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<td>Biol 253/255L Gen Bact, Intro Microbiol</td>
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<tr>
<td>A&amp;S group requirement</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
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<th>Junior Year</th>
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<tbody>
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<td>Physcs 151-153L Gen</td>
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<tr>
<td><strong>Chem 253 Quant Anal</strong></td>
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</tr>
<tr>
<td>A&amp;S group requirement</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<table>
<thead>
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<tr>
<td>Med Lab Sci 401</td>
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<tr>
<td>Med Lab Sci 402 Clin</td>
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<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

Total number of hrs. required—128, 4 of which may be P.E. activity.

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.

* Math 150 or the equivalent as determined by the placement examination given by the Department of Mathematics and Statistics.

** Not required if Chem 121L and 122L taken.
LATIN AMERICAN CENTER

Marshall R. Nason, Professor of Modern Languages, Director

Advisory Committee: Professors M. Nason (Chairman), B. Bunting (Fine Arts), S. Cohen (Economics), R. Holemon (Education), E. Lieuwen (History), G. Merkx (Sociology), M. Needler (Political Science), S. Ulibarri (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 fields of anthropology, architecture, art history, business and administrative sciences, economics, education, 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. 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 bi-national 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. 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 and work-study assignments are available through the Associated Students of the University of New Mexico and the Student Aids office respectively.
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.

Studies in the School of Business and Administrative Sciences of the University of New Mexico spread over diverse disciplines so that the student may maximize his opportunities to apply wide-ranging facts, opinions, and techniques to the art and science of decision-making. The core work presented in all programs is basic to the understanding and practice of the management function.

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 (128 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.

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 Bachelor of Business Administration program offered in the School of Business and Administrative Sciences is a two-year upper division program. It is preceded by two years of preprofessional course work, normally taken in the University College.

The program is designed to give broad experience in the liberal arts and applied sciences as preparation for productive living and progress toward executive responsibilities. The 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.

ADMISSION

All freshman students are admitted to the University College. A detailed state-
ment 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

* 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.
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.

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, as well as admission requirements to the School of Business and Administrative Sciences. 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 128 hours (excluding PE) with a scholastic index of at least 2.0 on all semester hours attempted at the University of New Mexico.

3. Completion of a minimum of 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
      B&AS 300 Management Science I. 3 hours
      B&AS 301 Management Science II. 3 hours
      B&AS 303 Accounting for Management Control (For non-accountants. Accounting concentrations will take 340) 3 hours
      B&AS 306 Organization Behavior I. 3 hours
B&AS 307 Organization Behavior II 3 hours
B&AS 308 Organization Environment 3 hours
B&AS 309 Legal Environment of Business 3 hours
or
B&AS 310 Business Law 3 hours
(Students concentrating in Accounting must take 310, but need not take 309.)
B&AS 322 Marketing Management 3 hours
B&AS 326 Financial Management 3 hours
B&AS 498 Senior Seminar (taken in the last semester of the senior year) 3 hours
Econ 300 Micro-Economic Theory 3 hours
Econ 315 Money and Banking 3 hours
Total Business and Administrative Sciences' Core 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 24 hours
Total Electives 30 hours
Total Degree Requirements 128 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 Administrative Sciences. A graduation summary sheet will then be prepared and a copy supplied to the student. No student will be included on a list of candidates for graduation unless an application for degree has been approved.

* Accounting concentrations may substitute accounting electives for these two requirements.
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  
   b. three of the following four courses:  
      B&AS 342, 443, 445, 449  
   Total  

12 hours 9 hours 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. Newpeck, 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. Kwan, Mr. Simonson, 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: Advisers: Mr. Cooper, 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. Newpeck, 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

a. two of the following: B&AS 530, 531, 532, 533, or 534.

b. 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. Cooper, 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:

a. 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.

b. 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.

Organization Behavior: Advisers: Mr. Champoux, 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

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<tr>
<td>Math 121 College Algebra</td>
<td>Math 180 Calculus</td>
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<td>Natural Science</td>
<td>Econ 200 Principles &amp; Problems</td>
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<tr>
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<td>Soc 101 or</td>
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<td>Social Science elective</td>
<td>Psych 102</td>
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<td>Elective</td>
<td>Humanity elective</td>
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Sophomore Year

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<tr>
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</thead>
<tbody>
<tr>
<td>Math 155 Problem Solving with</td>
<td>Math 102 Probability &amp; Stat</td>
</tr>
<tr>
<td>Computers</td>
<td>B&amp;AS 290L Business Stat Lab</td>
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<tr>
<td>Econ 201 Principles</td>
<td>Soc Science elective</td>
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<tr>
<td>B&amp;AS 202 Intro to Acct</td>
<td>Humanity elective</td>
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<tr>
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<td>Elective</td>
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<tr>
<td></td>
<td>16 hours</td>
</tr>
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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 3.0, (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, 87131.
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 available with the School of Law, and the Department of Nuclear Engineering. Similar programs are being planned with the Department of Architecture and the Division of Computing and Information Science. 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
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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B&amp;S 500 and 501</td>
<td>Quantitative Analysis I and II</td>
<td>6</td>
</tr>
<tr>
<td>B&amp;S 502 and 503</td>
<td>Accounting and Management Information Systems I and II</td>
<td>6</td>
</tr>
<tr>
<td>B&amp;S 504 and 505</td>
<td>Organizational Economics I and II</td>
<td>6</td>
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<tr>
<td>B&amp;S 506 and 507</td>
<td>Organizational Behavior I and II</td>
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<tr>
<td>B&amp;S 509</td>
<td>Organizational Intelligence Systems</td>
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Total: 30

Second Year Core Courses:

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>B&amp;S 520</td>
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<td>3</td>
</tr>
<tr>
<td>B&amp;S 522</td>
<td>Marketing Management</td>
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<tr>
<td>B&amp;S 598</td>
<td>Seminar in Integrative Management</td>
<td>3</td>
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</tbody>
</table>
*Electives |                                                | 18    |

Total: 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 EDUCATORS hold key positions in our society. They create 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.

‡ 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 General Academic Regulations section.

DEPARTMENTAL HONORS

A departmental honors program is offered in several of the departments of the College of Education. Application for participation in the program must be made during the junior year. The program may consist of any one of the following: (1) a senior thesis, (2) a reading and tutorial program under the major adviser, (3) honors in student teaching. All students permitted to enter the honors program will meet University regulations as described. Permission of the major adviser is required for enrollment in 497 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,
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 based upon 24 to 30 hours of work accomplished during the last two or three semesters, or
   d. you have received notice that this is your last semester of eligibility.

2. You are enrolled in Arts and Sciences, Fine Arts, 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. Some College programs can accept only limited numbers of students each semester; therefore, any student wishing to transfer should check with the department he is considering prior to making a commitment to move to Albuquerque.

4. You have already earned a bachelor's degree.

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

1. Come to the College of Education, 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 210 and 211, 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 provisionally admitted to a Teacher Education Program.
7. Before you are moved from provisional status to full admission status, you must complete a program of studies form which is approved by your adviser and filed in the Records Office of the College of Education.

The requirements for selection into a teacher education program referred to in the preceding paragraphs are considered to be minimal; even though students meet these requirements they may not be selected into certain programs. Because departmental programs differ, their admission requirements may go beyond those minimum requirements described above. Therefore, it is important that you contact the 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 students admitted to a teacher education program during their junior year will probably be required to spend one or more additional semesters beyond the usual four-year period, in order to complete the desired program.

ADMISSION TO THE COLLEGE OF EDUCATION

If you wish to be admitted to the College of Education you must have successfully completed the screening process for ADMISSION TO A TEACHER EDUCATION PROGRAM (see above).

If you are already enrolled at the University of New Mexico, whether in University College, a degree granting college, 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 may be enrolled in the College of Education provisionally for a maximum of two semesters, during which time they must complete the screening process for admission to a teacher education program.

It is not necessary to be 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 the SEMESTER BEFORE the actual teaching begins, with the exception of Elementary Education in which case admission should be sought the SPRING BEFORE.

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 their 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.

10. Have on file in College Records a completed and signed program of studies (major and minor).

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 Physical Education Student Teachers:

1. Must have submitted recommendations from three faculty members, including their adviser, indicating that the student is believed ready for student teaching.

2. As determined by their advisor in consultation with the student teaching personnel, students must have successfully completed a major portion of their theory course work.

3. Must have completed all of the following pre-requisites: Ed. Fdn. 290, 300, and 310; P.E. 319, 301, 302, 309, 310, 345, 444, 489, and P.E. (Biol) 3261.

4. Must have removed all D's and F's in their major field.
5. Must have attained at least a 2.5 grade point average in their field and at least a 2.2 grade point average overall.
6. Students enrolled in physical education student teaching may be required to comply with a modified Academic Calendar.

Special Requirements for Elementary Student Teachers:

1. Must have completed at least one semester or summer session in residence study. Those not in the regular modular program must have completed at least one course in the Department of Elementary Education.
2. Attained at least a 2.2 grade-point average overall prior to entering the Junior Module courses; attained at least a 2.5 grade-point average in all Junior Module courses prior to entering the Senior Module.
3. Students enrolled in the Junior and Senior Modules may not follow the regular University Academic Calendar. These are considered professional semesters and the student may be required to comply with a modified Academic Calendar.

ELEMENTARY EDUCATION. The modular program in elementary education combines student teaching, methods courses, and foundations courses in a single time unit consisting of full days during one semester of the junior year and one semester of the senior year. The courses that are included in these modules are clearly indicated in the curriculum for Elementary Education. Students enrolled in elementary student teaching will receive a grade of CR (credit is awarded) or NC (no credit is awarded) in the course EI 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 (hypohyperbaric 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 (hypohyperbaric) 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 final degree check immediately after completion of 92 semester hours. Application can be obtained from the Department or Office of the Dean.

2. Completion of a minimum of 128 semester hours. No more than 5 semester hours of credit earned in workshops may be used 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.

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

4. Completion of 40 semester hours in courses numbered 300 or above.

5. For minimum residence requirements, see p. 54.

6. Completion of the prescribed curriculum which leads to the desired degree (see Curricula, pp. 99-123). 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. 102-104.
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 students should consult their major department to plan a program which satisfies specific departmental general education requirements. A program plan must be on file in the department for each student.

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) all students must take other professional education courses as prescribed in the curriculum they are following. A minimum of 24 semester hours in professional education is required. In some programs Ed Fdn 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)

* Or approved substitute.
A student may enroll in either the College of Education or the College of Fine Arts and satisfy requirements for teacher certification in grades K-12.

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.¶

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 51 hours in subject matter specialization and 24 hours of professional education.

K-12 CURRICULUM

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<th></th>
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<td>3</td>
<td>Ed Fdn 310 Learn &amp; Classrm</td>
</tr>
<tr>
<td>†Art Ed 400 Student Tchg-Elem</td>
<td>3</td>
<td>Art Elective</td>
</tr>
<tr>
<td>†Art Ed 402 Children &amp; Art</td>
<td>3</td>
<td>Gen Elective</td>
</tr>
<tr>
<td>Art Studio</td>
<td>6</td>
<td>Art Studio</td>
</tr>
<tr>
<td>Art Electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Senior Year</td>
</tr>
<tr>
<td>Ed Elect (above 300)</td>
<td>3</td>
<td>†Art Ed 461 Student Tchg-Sec</td>
</tr>
<tr>
<td>Art Elect (above 300)</td>
<td></td>
<td>Art Ed 434 Tchg Art in Sec Sch</td>
</tr>
<tr>
<td>Gen Elect</td>
<td>3</td>
<td>Gen Elect</td>
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<tr>
<td>Art Ed 210</td>
<td>3</td>
<td></td>
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<tr>
<td>Art Elective</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>15</td>
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</tr>
</tbody>
</table>

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. “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 402 in

¶ Students with sufficient background and expertise in one or more of these areas may petition for exception to the above rule.

† Students enrolled in the College of Fine Arts must meet group requirements listed on pp. 147-149. 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.
the curriculum outlined above. These are the only differences in the curricula.

The successful completion of this curriculum entitles the graduate to apply through the College of Education for the special Provisional 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)

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Wrtg w/Rdgs in Expos</td>
<td>3</td>
</tr>
<tr>
<td>Engl 102 Wrtg w/Rdgs in Lit</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Science</td>
<td>6</td>
</tr>
<tr>
<td>Math Elective</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 112 Inter Typing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 113 Shorthand Theory</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 262 Adv Typing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 117 Office Mach and Filling</td>
<td>2</td>
</tr>
<tr>
<td>Psych 102 Gen Psych II</td>
<td>3</td>
</tr>
<tr>
<td>Gen Elec or Minor</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu Fdn 300 Human Growth &amp; Dev</td>
<td>3</td>
</tr>
<tr>
<td>Sec Ed 361 Pre-Student Teach Exp</td>
<td>3</td>
</tr>
<tr>
<td>Edu Fdn 310 Learn &amp; Classroom</td>
<td>3</td>
</tr>
<tr>
<td>Sec Ed 362 Pre-Student Teach Exp</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 257 Sec' Admin</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 265 Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 350 Voc Office Lab</td>
<td>3</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed Elective</td>
<td>3</td>
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<tr>
<td>Gen Elec or Minor</td>
<td>3</td>
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<td>33</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
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</thead>
<tbody>
<tr>
<td>Enlg (Lit)</td>
<td>3</td>
</tr>
<tr>
<td>Sp Com 256 Comm for Thrs</td>
<td>3</td>
</tr>
<tr>
<td>Enlg 200 or 201 Prin and Probs</td>
<td>3</td>
</tr>
<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
</tr>
<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
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<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
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<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
</tr>
<tr>
<td>Edu Block</td>
<td>12</td>
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<tr>
<td>Gen Electives or Minor</td>
<td>9</td>
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</table>

GENERAL BUSINESS CURRICULUM
(Leading to the degree of Bachelor of Science in Education)

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
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</thead>
<tbody>
<tr>
<td>Engl 101 Wrtg w/Rdgs in Expos</td>
<td>3</td>
</tr>
<tr>
<td>Engl 102 Wrtg w/Rdgs in Lit</td>
<td>3</td>
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<td>Laboratory Science</td>
<td>6</td>
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<tr>
<td>Math Elective</td>
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<tr>
<td>Bus Ed 112 Inter Typing</td>
<td>3</td>
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<tr>
<td>Bus Ed 262 Adv Typing</td>
<td>3</td>
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<tr>
<td>Psych 102 Gen Psych II</td>
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<td>Gen Elective or Minor</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
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<tbody>
<tr>
<td>Enlg (Lit)</td>
<td>3</td>
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<tr>
<td>Sp Com 256 Comm for Thrs</td>
<td>3</td>
</tr>
<tr>
<td>Enlg 200 or 201 Prin and Probs</td>
<td>3</td>
</tr>
<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
</tr>
<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
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<tr>
<td>Edu Fdn 290 Found of Ed</td>
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<tr>
<td>Edu Fdn 290 Found of Ed</td>
<td>3</td>
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<tr>
<td>Edu Block</td>
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<td>Gen Electives or Minor</td>
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</table>

† See Business Education Adviser.
†† May be waived if student has had typewriting and shorthand in high school.
‡ Must be taken concurrently (Module I).
‡‡ Must be taken concurrently (Module II).
### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>‡Ed Fdn 300 Human Growth &amp; Dev</td>
<td>3</td>
</tr>
<tr>
<td>‡Sec Ed 361 Pre-Student Teach Exp</td>
<td>3</td>
</tr>
<tr>
<td>‡‡Ed Fdn 310 Learn &amp; Classroom</td>
<td>3</td>
</tr>
<tr>
<td>‡‡Sec Ed 362 Pre-Student Teach Exp</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 359 Law of Contracts</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 265 Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 306 Behavior I</td>
<td>3</td>
</tr>
<tr>
<td>†Economics</td>
<td>3</td>
</tr>
<tr>
<td>Major Electives</td>
<td>3</td>
</tr>
<tr>
<td>Gen Elective or Minor</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 350 Voc Off Lab or Major Elec</td>
<td>3</td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine or Prac Arts (not Bus Ed)</td>
<td>3</td>
</tr>
<tr>
<td>†Soc Science</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ed 462/463 Professional</td>
<td></td>
</tr>
<tr>
<td>†Bus Ed Block</td>
<td>12</td>
</tr>
<tr>
<td>Major Electives</td>
<td>3</td>
</tr>
<tr>
<td>Gen Electives or Minor</td>
<td>12</td>
</tr>
</tbody>
</table>

33

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 15 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. 244-45 for course descriptions and the Graduate School Bulletin for all graduate programs.

**EDUCATIONAL FOUNDATIONS**

See pp. 246-48 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

† See Business Education Adviser.
‡ Must be taken concurrently (Module I).
‡‡ Must be taken concurrently (Module II).
At least four of the eight areas must be represented with a minimum of six semester hours for New Mexico State Certification.

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 Educa-
tion 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:

<table>
<thead>
<tr>
<th>Pre-Module 8 semester hours</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed Fdn 290 Found of Ed</td>
<td>3</td>
</tr>
<tr>
<td>El Ed 319 PE in El Sch</td>
<td>3</td>
</tr>
<tr>
<td>El Ed 441 Child Lit</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Methods Module, 19 semester hours†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed Fdn 300 Hum Grwth &amp; Dev</td>
</tr>
<tr>
<td>Ed Fdn 310 Learn &amp; Classrm</td>
</tr>
<tr>
<td>El Ed 321L Tchg of Soc Studies in El Sch</td>
</tr>
<tr>
<td>El Ed 331L Tchg of Reading in El Sch</td>
</tr>
<tr>
<td>El Ed 333L Tchg Oral Writ Lang in El Sch</td>
</tr>
<tr>
<td>El Ed 353L Tchg of Science in El Sch</td>
</tr>
<tr>
<td>El Ed 361L Tchg of Math in El Sch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Internship Module, 15 semester hours†</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Ed 400 Stu Tchg in El Sch</td>
</tr>
<tr>
<td>El Ed 497 Rdg &amp; Res in Honors (for selected interns)</td>
</tr>
</tbody>
</table>

MINOR REQUIREMENTS FOR ELEMENTARY EDUCATION MAJORS

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

Students wishing to pursue a 24 semester hour minor in a subject area should consult the Minor Study requirements in the appropriate department in the "Courses of Instruction" section. Those interested in preparing to teach in special education classrooms will also find the Minor Study in Special Education under Department of 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—SPANISH/ENGLISH. This is designed for students wishing to prepare for teaching in Spanish/English bilingual classrooms. This minor has a 12 hour language requirement, 9 hour culture requirement, and 9 hour pedagogy requirement. The student interested in a Composite Spanish/English minor in Bilingual Education should contact the Chairperson of the Department of Elementary Education as early in his or her college career as possible to plan this program.

Following are the required courses:

<table>
<thead>
<tr>
<th>A. Language Requirement (12 hours)</th>
<th>prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish 301 and 302</td>
<td>El Ed 300 Bilingual Experience</td>
</tr>
<tr>
<td>Spanish 311 (linguistics)</td>
<td>Ed Fdns 383</td>
</tr>
<tr>
<td>prerequisite</td>
<td>C &amp; I 458</td>
</tr>
<tr>
<td>Spanish 420 (Spanish for Bilingual Teachers)</td>
<td>C. Pedagogy Requirement (9 hours)</td>
</tr>
</tbody>
</table>

* 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. 48 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.
A composite minor in Navajo/English Bilingual Education is also available. This minor follows the same basic structure as the Spanish/English Bilingual Education minor, with substitution of appropriate courses in the Navajo language and culture.

COMPOSITE MINOR IN EARLY CHILDHOOD EDUCATION. This is a 30 hour composite minor, designed for majors in Elementary Education and other education fields, who wish to prepare for teaching in the pre-school and primary years. However, this minor program leads to New Mexico Kindergarten Certification only when combined with the Elementary Education major program.

A. Development (9-15 hours)
   Select From:
   - Home Ec 102L Infant Growth & Dev't
   - *Home Ec 408L Child Growth & Dev't
   - Ed Fdns 300 Human Growth & Dev't
   - Psych 320 Developmental Psych
   - Com Dis 430 Dev't of Speech & Lang
   - Anth 309 Comparative Studies of Childhd

B. Psychology (9-15 hours)
   Select From:
   - Psych 101 General Psych
   - Psych 102 General Psych
   - Psych 230 Psych of Adjustment
   - Psych 373 Cross Culture Psych
   - Psych 432 Clinical Child Psych
   - Psych 428 Cognitive Dev't

The courses selected from A and B above must total 24 hours.

C. Early Childhood Education (6 hours)
   - *El Ed 305 Teaching Kindergarten Primary Years
   - El Ed 405 Curriculum for Early Childhood

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, political science, history, and sociology.

The minor must include at least 12 semester hours of study in each of two departments (such as geography, political science, anthropology, and economics) and at least 6 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. 90-91.

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.

* Home Ec 408L and El Ed 305 are prerequisites for Senior Block Kindergarten Student Teaching.
GUIDANCE AND COUNSELING

This department offers work leading to the Master's degree in Guidance and Counseling. The Doctorate is offered in Pupil Personnel Services. Students may complete a planned program of 30 semester hours of work above the Master's degree leading to the certificate of Education Specialist. The Master's degree in counseling may be pursued in one of the following areas of emphasis: elementary school counseling, secondary school counseling, college personnel work, rehabilitation and community counseling, or counseling in business and industry. Doctoral work in counseling provides emphases in counselor education, counseling research, counseling psychology, college personnel work, or pupil personnel services. Students wishing to pursue any of these programs should refer to the Graduate School Bulletin.

HEALTH, PHYSICAL EDUCATION & RECREATION

MAJOR STUDY IN HEALTH EDUCATION
(Leading to a Bachelor of Science in Health Education)

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>Second Semester</td>
</tr>
<tr>
<td>*Biol 121L Prin of Biol</td>
<td>4</td>
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<tr>
<td>*H Ec 125 Food for Man</td>
<td>3</td>
</tr>
<tr>
<td>Chem 141L Elem Gen Chem</td>
<td>4</td>
</tr>
<tr>
<td>H Ed 164 First Aid</td>
<td>2</td>
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<tr>
<td>H Ed 171 Pers Comm Health</td>
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Sophomore Year

<table>
<thead>
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<th>Junior Year</th>
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<tbody>
<tr>
<td>*Anthro 102 Dev of Culture</td>
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<tr>
<td>Biol 136-139L Hum Anat &amp; Phys</td>
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<tr>
<td>H Ed 212 Fund Hum Sexuality</td>
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<tr>
<td>*Sp Com 255 Public Speaking</td>
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<tr>
<td>H Ed 345 Prof Lab Exp</td>
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<thead>
<tr>
<th>Senior Year</th>
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<tbody>
<tr>
<td>H Ed 400 Stu Tch Elem Sch</td>
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<tr>
<td>Guid 431 Theories of Human Interaction</td>
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<tr>
<td>*Multicultural Electives</td>
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</tr>
</tbody>
</table>

* Courses to fulfill general education requirements.
Ø Juniors-Seniors only.
MINOR STUDY IN HEALTH EDUCATION

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

MAJOR STUDY IN PHYSICAL EDUCATION

HIGH SCHOOL PREPARATION. It is important that the high school student who wishes to pursue a program of studies in professional physical education at the University of New Mexico orient his subject selection in appropriate directions as early as possible. The student properly prepared will be able to follow the regular pattern of studies without the necessity of making up scholastic deficiencies.

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

CURRICULA FOR STUDENTS PREPARING TO TEACH PHYSICAL EDUCATION. 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. Possible minors include: Health, Biology, Science, Social Science, Early Childhood Study, Bilingual Education, Psychology, Special Education, and Recreation.

PREREQUISITES. The following courses are prerequisites to the physical education curriculum. Respective requirements may be satisfied with ACT and/or entrance test scores which allow advanced placement, by validating credit through the special examination procedure (see p. 53), or by completing the courses on a corequisite basis during the Freshman Year.

**Math 120 Intermediate Algebra  3
**Psych 102 Gen Psych II  3
†PE 106 [105] Water Safety Inst (or current certificate)  2
PE 209 [160] Physical Fitness & Body Mechanics  2
PE 210 Folk Dance  2
PE 245 Prof Lab Exp  1
Electives  17

Hours required for Graduation: 128.

Freshman Year

**Engl 101 or equivalent  3
**Psych 102 Gen Psych II  3
†PE 106 [105] Water Safety Inst (or current certificate)  2
PE 209 [160] Physical Fitness & Body Mechanics  2
PE 210 Folk Dance  2
PE 245 Prof Lab Exp  1
Electives  17

30 + 2-4 below:

Total 32-34

* Must be completed by time of graduation.
† May count as one activity course.
** May count for General Education.
§ Biology minors must take 121L.
Men | Women
---|---
PE 117 [116] App Stunts | PE 115 Gymnastics
PE Activity | PE 133 [142] Track & Field
 | PE 212 Competency in Team Spts
 | PE 211 Competency in Ind & Dual Spts
2

Sophomore Year

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Biol 136 Anat &amp; Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 139L Anat &amp; Physiology Lab</td>
<td>2</td>
</tr>
<tr>
<td>Ed Fdn 290 Found of Educ</td>
<td>3</td>
</tr>
<tr>
<td>PE 319 PE in Elem Sch</td>
<td>3</td>
</tr>
<tr>
<td>PE 326L Physiology of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>PE 245 Prof Lab Exp</td>
<td>2</td>
</tr>
<tr>
<td>PE 398 Prin of PE</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
</tbody>
</table>
26 + 6-3 below: |
Total 32-29

Men | Women
---|---
PE Activity Electives | PE 126 [109] Mod Dance
| PE 260 Officiating |
2 | 2 |
2 | |
6

Junior Year

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>PE 397 Kinesiology</td>
<td>4</td>
</tr>
<tr>
<td>PE 489 Test &amp; Meas in PE</td>
<td>3</td>
</tr>
<tr>
<td>Junior Block (Fall) 11 semester hours:</td>
<td></td>
</tr>
<tr>
<td>Ed Fdn 300 Hum Growth &amp; Dev</td>
<td>3</td>
</tr>
<tr>
<td>PE 301 Tchg of Team Spts</td>
<td>2</td>
</tr>
<tr>
<td>PE 310 Folk Dance in Sch Prog</td>
<td>2</td>
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<tr>
<td>PE 445 Tchg of PE</td>
<td>4</td>
</tr>
<tr>
<td>Junior Block (Spring) 11 semester hours:</td>
<td></td>
</tr>
<tr>
<td>Ed Fdn 310 Learn &amp; Classroom</td>
<td>3</td>
</tr>
<tr>
<td>PE 302 Tchg Ind &amp; Dual Spts</td>
<td>2</td>
</tr>
<tr>
<td>PE 309 Tchg of Gymnastics</td>
<td>2</td>
</tr>
<tr>
<td>PE 245 Prof Lab Exp (Jr. BL)</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>PE Activity Electives</td>
<td>2</td>
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</table>
34

Senior Year

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>PE 399 Org &amp; Adm. of PE</td>
<td>3</td>
</tr>
<tr>
<td>PE 432 Org of Sports Prog</td>
<td>3</td>
</tr>
<tr>
<td>PE 466 Special PE</td>
<td>3</td>
</tr>
<tr>
<td>PE 400 Stu Tchg Elem Sch</td>
<td>3</td>
</tr>
<tr>
<td>PE 461 Stu Tchg Sec Sch</td>
<td>6</td>
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<tr>
<td>Electives</td>
<td>11</td>
</tr>
<tr>
<td>PE Activity Elective</td>
<td>1</td>
</tr>
</tbody>
</table>

Junior Block (Fall) 11 semester hours:

Men | Women
---|---
PE 203 Teach of Wrestling | |
PE 273 Intro Treat of Athl Injuries | |
2 | |
2 | 2

Junior Block (Spring) 11 semester hours:

Men | Women
---|---
PE 301 Tchg of Team Spts | |
PE 445 Tchg of PE | |
4 | |

Electives

Men | Women
---|---
2 | |
34 | 30

MINOR STUDY IN PHYSICAL EDUCATION

Men | Women
---|---
Biol 136-139L | PE 210, 211, 212
PE 209 Phys Fitness Prog | H Ed 164
PE 106 [105] Swimming W.S.I. | PE 245 Prof Lab Exp in PE
PE 203 Tchg of Wrestling | PE 301, 310, 444 or
PE 210 Folk Dance | PE 302, 309, 345 (Jr Bl)
PE 301 Tchg Team Spts | |
PE 309 Tchg of Gymnastics | |
PE 397 Kinesiology | |
PE 398 Prin of PE | |
PE 399 Org & Adm of PE | |
5 | 4
2 | 2
2 | 2
2 | 8
2 | 3
2 | 3
3 | 3
3 | 2
3 | 2

Women

Men

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Biol 136-139L</td>
<td></td>
</tr>
<tr>
<td>PE 209 Phys Fitness Prog</td>
<td></td>
</tr>
<tr>
<td>PE 106 [105] Swimming W.S.I.</td>
<td></td>
</tr>
<tr>
<td>PE 203 Tchg of Wrestling</td>
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</tr>
<tr>
<td>PE 301 Tchg of Team Spts</td>
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</tr>
<tr>
<td>PE 309 Tchg of Gymnastics</td>
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</tr>
<tr>
<td>PE 397 Kinesiology</td>
<td></td>
</tr>
<tr>
<td>PE 398 Prin of PE</td>
<td></td>
</tr>
<tr>
<td>PE 399 Org &amp; Adm of PE</td>
<td></td>
</tr>
</tbody>
</table>
5 | 4
2 | 2
2 | 2
2 | 8
2 | 3
2 | 3
3 | 3
3 | 2
3 | 2

Women

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 136-139L</td>
<td></td>
</tr>
<tr>
<td>PE 209 Phys Fitness Prog</td>
<td></td>
</tr>
<tr>
<td>PE 106 [105] Swimming W.S.I.</td>
<td></td>
</tr>
<tr>
<td>PE 203 Tchg of Wrestling</td>
<td></td>
</tr>
<tr>
<td>PE 210 Folk Dance</td>
<td></td>
</tr>
<tr>
<td>PE 301 Tchg Team Spts</td>
<td></td>
</tr>
<tr>
<td>PE 309 Tchg of Gymnastics</td>
<td></td>
</tr>
<tr>
<td>PE 397 Kinesiology</td>
<td></td>
</tr>
<tr>
<td>PE 398 Prin of PE</td>
<td></td>
</tr>
<tr>
<td>PE 399 Org &amp; Adm of PE</td>
<td></td>
</tr>
</tbody>
</table>
5 | 4
2 | 2
2 | 2
2 | 8
2 | 3
2 | 3
3 | 3
3 | 2
3 | 2

Option for grades 1-12 certification.
MINOR STUDY IN ATHLETIC COACHING FOR MEN (Not for Physical Ed Majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PE 203 Tchg of Wrestling</td>
<td>2</td>
</tr>
<tr>
<td>PE 206 Fund of Football</td>
<td>2</td>
</tr>
<tr>
<td>PE 273 Intro to Athletic Training</td>
<td>2</td>
</tr>
<tr>
<td>PE 398 Prin of Biol</td>
<td>3</td>
</tr>
<tr>
<td>Biol 136 Hum Anat &amp; Physiology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 139L Hum Anat &amp; Physiol Lab</td>
<td>2</td>
</tr>
<tr>
<td>PE 209 Phys Fitness Prog</td>
<td>2</td>
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</tbody>
</table>

ATHLETIC TRAINING OPTION
(Leading to the degree of Bachelor of Science in Physical Education)
Hours required for graduation: 138.

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eng 101 or Equivalent</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Psych 102 Gen Psych II</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Biol 121-122L Prin of Biology</strong></td>
<td>8</td>
</tr>
<tr>
<td>Phys 151-152 General Physics</td>
<td>6</td>
</tr>
<tr>
<td><strong>H Ed 164 First Aid</strong></td>
<td>2</td>
</tr>
<tr>
<td>PE 209 Physical Fitness</td>
<td>2</td>
</tr>
<tr>
<td>PE 210 Folk Dance</td>
<td>2</td>
</tr>
<tr>
<td>PE 273 Intro Athl Trng</td>
<td>2</td>
</tr>
<tr>
<td>PE 245 Prof Lab Exp</td>
<td>1</td>
</tr>
<tr>
<td>†PE 106 [105] Water Saf Inst (or current certificate)</td>
<td>2</td>
</tr>
<tr>
<td>PE 117 [116] Apparatus Stunts</td>
<td>1</td>
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<tr>
<td>Gen Education Electives</td>
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<tr>
<td>PE Activity Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

Leading to a teaching certificate in physical education with a minor in biology, national certification in athletic training and corrective therapy.

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 326L Phys of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>Biol 421L Comp Verteb Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Psych Elective</td>
<td>3</td>
</tr>
<tr>
<td>PE 375 Adv Athletic Training</td>
<td>3</td>
</tr>
<tr>
<td>PE 397 Kinesiology</td>
<td>4</td>
</tr>
<tr>
<td>PE 301 Teach Team Spts</td>
<td>2</td>
</tr>
<tr>
<td>PE 302 Teach Ind and Dual Spts</td>
<td>2</td>
</tr>
<tr>
<td>PE 309 Teach Gymnastics</td>
<td>2</td>
</tr>
<tr>
<td>PE 310 Folk Dance in Sch Spts</td>
<td>2</td>
</tr>
<tr>
<td>PE 444 Teach of PE</td>
<td>4</td>
</tr>
<tr>
<td>PE 245 Prof Lab Exp (Jr. Bl.)</td>
<td>4</td>
</tr>
<tr>
<td>Ed Fdn 310 Learning in Classroom</td>
<td>3</td>
</tr>
</tbody>
</table>

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

1. Behavioral Sciences
2. Communication Arts

* Must be completed by the time of graduation.
† May count as one activity course.
** May count as General Education.
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)

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 102 Wrtg w/Rdgs in Lit</td>
<td>H Ed 171 Personal and Community Health</td>
</tr>
<tr>
<td>Bus Ed 265 Bus Communications</td>
<td>Speech 255 Public Speaking</td>
</tr>
<tr>
<td>Natural Science</td>
<td>Recrea 321 Recrea Leadership</td>
</tr>
<tr>
<td>Recrea 175 Found of Recrea</td>
<td>Recrea 345 Prof Lab Exper in Recrea</td>
</tr>
<tr>
<td>Fine and Practical Arts Elective</td>
<td>Social Science Elective</td>
</tr>
<tr>
<td>H Ed 164 First Aid</td>
<td>HPER Elective</td>
</tr>
<tr>
<td>Psych 102 Gen Psychology II</td>
<td>Psychology elective</td>
</tr>
<tr>
<td>Recrea 290 Creat and Soc Arts for Recrea</td>
<td>Recrea Program Option</td>
</tr>
<tr>
<td>Electives</td>
<td>Directed Recrea Electives</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
</tr>
<tr>
<td></td>
<td>33</td>
</tr>
<tr>
<td>30-33</td>
<td>3-6</td>
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<tr>
<td>3</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recrea 378 Outdoor Recreation</td>
<td>Recrea 459 Field Experience</td>
</tr>
<tr>
<td>Sp Com 277 Prob Solv, Creat, &amp; Commun</td>
<td>Recrea 480 Admin of Recrea Progs</td>
</tr>
<tr>
<td>Recrea 454 Dev of Recrea Programs</td>
<td>Multi-Cultural Education</td>
</tr>
<tr>
<td>Recrea 458 Field Experience</td>
<td>Social Science Elective</td>
</tr>
<tr>
<td>Psychology Elective</td>
<td>Recrea Program Option</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>Directed Recrea Elective</td>
</tr>
<tr>
<td>Fine and Practical Arts Elective</td>
<td>Electives</td>
</tr>
<tr>
<td>Recrea Program Options</td>
<td>8-11</td>
</tr>
<tr>
<td>Directed Recrea Elective</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>29-33</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>MINOR STUDY IN RECREATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recrea 175 Fdns of Recrea</td>
</tr>
<tr>
<td>Recrea 290 Creat and Soc Arts for Recrea</td>
</tr>
<tr>
<td>PE 319 PE in Elem School</td>
</tr>
<tr>
<td>Recrea 321 Recrea Leadership</td>
</tr>
<tr>
<td>Recrea 345 Prof Lab Experience in Recrea</td>
</tr>
<tr>
<td>Recrea 454 Dev of Recrea Program</td>
</tr>
<tr>
<td>Electives</td>
</tr>
<tr>
<td>25</td>
</tr>
</tbody>
</table>

### 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
### 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 Vocational Certification.

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

#### HOME ECONOMICS EDUCATION

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anth 102 Dev of Culture</strong></td>
<td>Soc and/or Psych Elective</td>
</tr>
<tr>
<td>§Communication elective</td>
<td>6</td>
</tr>
<tr>
<td>§Communication elective</td>
<td>Econ 201 or 200</td>
</tr>
<tr>
<td>Psych 101 or 102 Gen Psych I, II</td>
<td>Humanities elective</td>
</tr>
<tr>
<td>Science Elective</td>
<td>§Communication Elective</td>
</tr>
<tr>
<td>Soc 101 Intro</td>
<td>Art Ed 130 Tech of Design Ed (fall)</td>
</tr>
<tr>
<td>H Ec 101 Freshman Seminar (fall)</td>
<td>Ed Fdn 290 Founda of Ed</td>
</tr>
<tr>
<td>H Ec 102 Infant Growth &amp; Dev</td>
<td>H Ec 125 Intro Nutrition</td>
</tr>
<tr>
<td>H Ec 120L Food Science</td>
<td>H Ec 250 Clothing &amp; Human Behavior (spring)</td>
</tr>
<tr>
<td>H Ec 150L Clothing Const</td>
<td>H Ec 252 Textiles</td>
</tr>
<tr>
<td></td>
<td>H Ec 218 Marriage and Pers Dev</td>
</tr>
<tr>
<td></td>
<td>Total 32</td>
</tr>
<tr>
<td>29-31</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc and/or Psych Elective</td>
<td>Soc and/or Psych Elective</td>
</tr>
<tr>
<td>Econ, Hist, or Geog</td>
<td>3</td>
</tr>
<tr>
<td>§Multicultural elective</td>
<td>3</td>
</tr>
<tr>
<td>Ed Fdn 300 Hum Growth &amp; Devel</td>
<td>H Ec 408L Growth &amp; Devel of Preschool</td>
</tr>
<tr>
<td>Ed Fdn 310 Learning &amp; Classroom</td>
<td>Child</td>
</tr>
<tr>
<td>H Ec 341 House &amp; Its Environment</td>
<td>2-3</td>
</tr>
<tr>
<td>H Ec 443 Family Decision Making</td>
<td>H Ec 418 Family Relationships</td>
</tr>
<tr>
<td>H Ec Ed 437 Tchg of H Ec (spring)</td>
<td>H Ec 444 Family Finance (spring)</td>
</tr>
<tr>
<td>H Ec Ed 437 Tchg of H Ec (spring)</td>
<td>H Ec 445L Home Management Lab</td>
</tr>
<tr>
<td>H Ec Ed 361 Pre Stu Tchng in H Ec (spring)</td>
<td>H Ec Ed 461 Student Teaching in Sec Sch</td>
</tr>
<tr>
<td>Elective</td>
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<tr>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>§Multicultural elective</td>
</tr>
<tr>
<td>33</td>
<td>31-33</td>
</tr>
</tbody>
</table>

12 hours selected from Sociology and/or Psychology, 3 hours 300 level or above.

§ Approval of Department needed.
CURRICULUM FOR MEDICAL DIETETIC NUTRITIONIST

This curriculum leads to a Bachelor of Science degree in Home Economics-Medical Dietetics. Persons completing this program are members of the health team in hospitals, clinics, public health and community health programs. Upon graduation they are eligible to take the examination to become registered members of the American Dietetic Association.

MEDICAL DIETETIC NUTRITIONIST

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 101L, 102L</td>
<td>8</td>
</tr>
<tr>
<td>Biol 121L, 122L</td>
<td>8</td>
</tr>
<tr>
<td>H Ec 101 Freshman Seminar (Fall)</td>
<td>2</td>
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<tr>
<td>H Ec 120 Food Science</td>
<td>3</td>
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<tr>
<td>General Education</td>
<td>9-12</td>
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<tr>
<td>Chem 301, 303L, 302, 304L</td>
<td>8</td>
</tr>
<tr>
<td>Biol 253L Microbiology</td>
<td>2</td>
</tr>
<tr>
<td>Biol 236 Physiology</td>
<td>4</td>
</tr>
<tr>
<td>H Ec 125 Introductory Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>Math 180</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 102 Infant Growth</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 222L Meal Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 218 Marriage &amp; Per Dev</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>30-33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 324 (Spring)</td>
<td>3</td>
</tr>
<tr>
<td>Math 102</td>
<td>3</td>
</tr>
<tr>
<td>Biol Stat Lab</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 325 Inter Nutri (Spring)</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 326L Nutri Lab (Spring)</td>
<td>1</td>
</tr>
<tr>
<td>H Ec 408 Growth &amp; Dev of Pre Sch</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 443 Family Dec Making (Fall)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>H Ec 444 Family Finance (Spring)</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>12</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td>Summer</td>
<td>31</td>
</tr>
<tr>
<td>H Ec 303 Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
</tr>
</tbody>
</table>

GENERAL EDUCATION

Students must develop a written plan for study for General Education in consultation with an advisor from the Department of Home Economics. This plan must include a minimum of 28 hours taken from six of the following areas:

1. Communication Arts
2. Multicultural Studies
3. Fine and Practical Arts
4. Foreign Languages
5. Humanities
6. Health Education & Recreation
7. Social Science

MAJOR STUDY IN ARTS AND SCIENCES

A major study in Home Economics in the College of Arts and Sciences prepares the student for a career in Home Economics in business or in the home.

This curriculum would be a minimum of 34 hours in Home Economics. The student will select six hours in each of the 4 areas:

§ Math department will test for placement in appropriate department.
1. H Ec 120L, 125, 222L, 325, 326L
2. H Ec 150L, 250, 252, 254L, 456L
3. H Ec 101, 102, 218, 408L, 418
4. H Ec 341, 443, 444, 445L

Ten additional hours approved by the student's adviser in Home Ec. Twelve of the 34 hours must be upper division.

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.

FOOD SERVICE MANAGEMENT
(Tourism, Hospitality, Hotel, and Restaurant Industries)

Committee in Charge: UNM—Jack Lockett, Assistant Director, Auxiliaries and Services, Food Services, Coordinator.

Professors: W. B. Runge (Education), E. A. Scholer (Recreation), E. M. Snell (Home Economics), Associate Professor Lee Zink (Economics), and representatives of the New Mexico State Department of Development, Tourism Division, and the State Hotel-Motel and Restaurant Associations.

Students wishing to include in their bachelor's degree work preparation for careers in the field of hotel, motel, restaurant, tourism, and recreation industries may enroll in selected courses for which they are eligible already being offered in Business and Administrative Sciences; Computing and Information Science; Economics; Home Economics; Health, Physical Education, and Recreation; and Speech. Such courses may be used toward the degree, Bachelor of University Studies, or in some cases may be used as electives toward other bachelor's degrees now being offered at the University.

Courses now available closely related to career goals in these occupational clusters are listed below. See committee members for detailed advisement and planning.

H Ec 325—Nutrition (3)
H Ec 427—Large Quantity Food Production (3)
H Ec 434—Organization & Management-Food Service (3)
H Ec/Rec 458-459—Directed Studies-Field Work-Internships (3)
HPER 311—Man and Leisure (Education for Leisure) (3)
HPER 378—Outdoor Recreation (3)
HPER 447—Tourism and Recreation (3)

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 recommendation for certification from 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.

Intended majors in Industrial Education must meet with an I.Ed. adviser upon completion of six (6) hours in Industrial Education for the purpose of advisement and/or the planning of a program of studies.

**Required Courses**

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ed 101 Technical Math</td>
<td>1 Ed 230L Power Mechanics</td>
</tr>
<tr>
<td>1 Ed 105 Intro to I E</td>
<td>1 Ed 261L Dft. Conventions &amp; Simplified Standards</td>
</tr>
<tr>
<td>1 Ed 110L Machine Woodworking</td>
<td></td>
</tr>
<tr>
<td>1 Ed 111L Ind Graphics &amp; Design I</td>
<td>1 Ed 265L Finishing &amp; Maint</td>
</tr>
<tr>
<td>1 Ed 112L Ind Graphics &amp; Design II</td>
<td>1 Ed 280L Elect &amp; Electronics</td>
</tr>
<tr>
<td>1 Ed 120L Machine Metalworking</td>
<td>1 Ed. 285L Welding</td>
</tr>
</tbody>
</table>

**Junior Year**

| 1 Ed 335L Int Power Mechanics                     | 1 Ed 415L Hot Processes                            |
| 1 Ed 350L Cabinet Making                          | 1 Ed 433 Tchg of Ind Subj                          |
| 1 Ed 312L Arch Dfting                             | 1 Ed 466 Theory & Org of I E                       |
| 1 Ed 365L Adv Machine Metalwrkg                   | 1 Ed 470L Carpentry                                |
| 1 Ed 380L Elect & Electronics                     | 1 Ed 461, 462, Stu Tchg                            |

**Student Year**

| 1 Ed 386L Metal Fabrication                       | 3-12                                                |
| 1 Ed Fdn 300 Hum Growth & Dev                     |                                                     |
| #Ed Fdn 310 Learn & Classrm                       |                                                     |
| *Sec Ed 361 Pre-Stu Tchg Exp                      |                                                     |
| #Sec Ed 362 Pre-Stu Tchg Exp                      |                                                     |

**MUSIC EDUCATION**

**NASM MEMBERSHIP**

The University of New Mexico is a member of the National Association of Schools of Music. Requirements for entrance and for graduation as set forth in this catalog are in accordance with the published regulations of the National Association of Schools of Music.

**CURRICULUM FOR STUDENTS PREPARING TO TEACH MUSIC IN GRADES 1-12 (128 hours) See pp. 149-150.**

(Leading to the degree of Bachelor of Music Education)

**MUSIC EDUCATION**

(8-semester plan)

<table>
<thead>
<tr>
<th>Semester I</th>
<th>Semester II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 101</td>
<td>Engl 101</td>
</tr>
<tr>
<td>Music Theory I</td>
<td>Music Theory II</td>
</tr>
<tr>
<td>Eartraining I</td>
<td>Eartraining II</td>
</tr>
<tr>
<td>Social Science</td>
<td>Social Science</td>
</tr>
<tr>
<td>Mus Ed 194</td>
<td>Sp Com 256</td>
</tr>
<tr>
<td>Applied music</td>
<td>Applied music</td>
</tr>
<tr>
<td>Ensemble</td>
<td>Ensemble</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                                                 |                                                   |
| 15                                              | 17                                               |

* Must be taken concurrently (Module I).

# Must be taken concurrently (Module II).
All students pursuing the curriculum listed above are also subject to all requirements pertaining to Music Education listed on pp. 151-152.

MINOR IN MUSIC EDUCATION
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.

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 students pursue primarily in their first two years at the University. Its major goal is the students' development of the human values and the qualities of excellence in scholarship and interdisciplinary relationships which will serve as a base for their entrance into the professional education program.

The professional education program involves both the students' pursuit of knowledge in two areas of study in which they propose 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 students in their 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 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 pp. 90-91 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. Students should select one of these curricula no later than four semesters prior to their 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.

Students who are working toward degrees in colleges other than the College of Education and who expect to gain certification should consult with advisers in the Secondary Education Department for approval of their programs.
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' programs must be approved by an adviser in Secondary 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, Teaching of English as Second Language and Theatre Arts. Acceptable as minor concentrations only are: Anthropology, Astronomy, Business and Administrative Sciences, 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

4. Industrial Education: For details see pp. 113-114.
8. Special Education: For details see pp. 121-123.

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed Fdn 290, Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td><strong>Module I: Pre-student Teaching I, 6 semester hrs.</strong></td>
<td></td>
</tr>
<tr>
<td>Ed Fdn 300, Human Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>Sec Ed 361, Pre-student Teaching Exp. in Sec Ed I</td>
<td>3</td>
</tr>
<tr>
<td><strong>Module II: Pre-student Teaching II, 6 semester hrs.</strong></td>
<td></td>
</tr>
<tr>
<td>Ed Fdn 310, Learning and the Classroom</td>
<td>3</td>
</tr>
<tr>
<td>Sec Ed 362, Pre-student Teaching Exp. in Sec Ed II</td>
<td>3</td>
</tr>
<tr>
<td>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 to Module III: Student Teaching Preparation and Internship.</td>
<td></td>
</tr>
<tr>
<td>Sec Ed 430-445, Special Methods of Tchng in Sec Schls or approved Educ substitute</td>
<td>3</td>
</tr>
<tr>
<td><strong>Module III: Student Teaching Preparation and Internship, 6 to 15 semester hours.</strong></td>
<td></td>
</tr>
<tr>
<td>Module III ranges from six to fifteen semester hours, depending upon the particular program in which the student is enrolled. One semester is the basic time framework for Module III, though two semesters may be required in experimental or pilot programs. Characteristics of Module III are: performance heavily on site (in a school) regardless of the number of hours; team endeavor involving University faculty and students and secondary school students, faculty, supervisors and administrators; development and implementation of teaching plans; and continued translation of theory into practice.</td>
<td></td>
</tr>
<tr>
<td>Sec Ed 461, 462, 463, Student Teaching</td>
<td>6-15</td>
</tr>
<tr>
<td>Total Professional Education</td>
<td>24-33</td>
</tr>
</tbody>
</table>

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 is designed to prepare a teacher of English who will be able to meet the communicative needs of secondary school students, both now and in their future lives as adults and citizens.

Students in the Communication Arts Composite Major will be required to meet periodically for program advisement and counseling with an adviser in the Dept. of Secondary Education beginning no later than the first semester of the sophomore year. With the guidance of faculty on campus and cooperating teachers in the field, each student will develop attitudes, understandings, and competencies through a variety of experiences and course work.

The Composite Major will consist of at least 54 hours of interdisciplinary study including course work in each of these areas: linguistics, English, communication arts, and cultural diversity.

In addition to the 54 hours in the major, all Communication Arts students are required to pursue the Professional Education Program in Secondary Education including Sec Ed 430 (Teaching of Communication Arts).

Since the composite contains 24 hours of English, students are strongly urged to add 9 hours of work in English courses to complete a regular English major meeting the requirements of the English Department.

No minor is required with the Communication Arts Composite Major, but it is
strongly recommended that students add a second teaching field of at least 24 semester hours in a related area such as Reading, Teaching English to Speakers of Other Languages, Speech, Drama, Journalism, Linguistics, Spanish, Navajo, etc.

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 consists of a minimum of 36 semester hours of interdisciplinary study which includes 12 hours of a second language (preferably Spanish or a Native American language) and courses in Linguistics, English, and Professional Education.

Minor: The minor consists of 24 hours of interdisciplinary study which includes 6 hours of a second language (preferably Spanish or a Native American language) and courses in Linguistics, English, and Professional Education.

Broad Field Certification: A student may elect to work toward certification in Teaching English to Speakers of Other Languages under the broad field concept. It is recommended that the applicant then augment the major of 36 hours with 21 additional hours in foreign language and English for a total of 57 semester hours; foreign language (preferably Spanish or one of the Indian languages), 12 hours; English, 9 hours including American literature, creative or informative writing (upper division course), speech communication (upper division course).

Professional Education: The student must pursue the professional education program of 24 hours, including appropriate pre-student teaching and student teaching experiences in the application of approaches, methods, and techniques in teaching English to speakers of other languages in the Southwest.
PROGRAM IN TEACHING OF READING IN THE SECONDARY SCHOOLS

Students in the Department of Secondary Education may apply for admission into a minor program leading to certification in the Teaching of Reading in the Secondary Schools. The general and professional education requirements of the college and the department must be met, and the student must also pursue a program in another major teaching field. Candidates for admission into the minor in the reading program should apply for special screening at the time they apply for admission into the College of Education. The minor in Teaching Reading in the Secondary Schools consists of 24 semester hours which includes each of these areas: reading in the secondary school, psychology of reading, diagnosis of reading, tests and measurements, linguistics, adolescent literature, methods of TESOL, and practicum.

SPECIAL EDUCATION

GENERAL EDUCATION REQUIREMENTS

All prospective educational personnel should be broadly educated as a foundation for a successful professional career. It is required, therefore, that all UNM students expecting to receive a baccalaureate degree from the College of Education include in their preparation a program of general education. The College of Education requires all its graduates to complete the general education requirements as follows:

Each student must satisfy minimum requirements of 48 hours in six of the ten listed areas of study. Students must consult the appropriate COE Department with which the student is associated for specific area standards.

REQUIRED 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. Physical Education
10. Social Sciences

Work in General Education may also be applied to a double major or minor program of studies. The student pursuing a degree in special education should contact the Department of Special Education for the list of requirements needed before being accepted in the Special Education Teacher Training Program. All special education students shall be assigned an adviser and should have a contract on file of their program of studies. This contract shall be signed by both the adviser and the student. Processes Established for all Special Education Students by the Department of Special Education.

1. The Department of Special Education requires Spc Ed 210 and Spc Ed 210* Combined as one (6) hours required).
211 (with a grade of "B" or better in both courses) before screening into the Special Education Teacher Training Program.

2. The Department will provide advisors for each student accepted in the Special Education Teacher Training Program.

3. Students shall write a contract for their program of studies and it shall be on file with both major and minor advisers.

4. Each student is required upon acceptance into Special Education to complete the Data Accumulation Form (DAF-Blue) at the end of each semester and this shall be on file with the program of studies.

5. Each student shall complete a Pre-Student Teaching, Special Education 300 Form (Green), one semester before enrolling in Pre-Student Teaching.

6. Each student shall complete a Student Teaching Application Form (Yellow), one semester before enrolling in Special Education 400 or Special Education 462.

7. The student shall complete degree check requirements for the College of Education, Department of Special Education, upon completion of 92 hours.

PROFESSIONAL EDUCATION REQUIREMENTS

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

| Educational Foundations 290 | 3 |
| Educational Foundations 300 or Psychology 320 "Developmental Psychology" | 3 |
| Educational Foundations 310 or Psychology 260 "Psychology of Learning" | 3 |
| Media (AV)—Course approved by major advisor | 3 |

SPECIAL EDUCATION MAJORS

The Department of Special Education provides the student the opportunity to major in Special Education. The major program at the undergraduate level emphasizes a Teaching Training Program for the Educable and Trainable Mentally Retarded Children in self-contained and integrated classrooms. Students wishing to pursue a Special Education major are referred to "Processes Established for all Special Education Teacher Training Programs."

The Department of Special Education encourages cooperation among other Departments in the College of Education and will accept, where amenable, a double major—i.e., a major in Elementary Education and Special Education; Secondary Education and Special Education.

In order for students to double major they shall receive written consent from both departments and a written contract (Program of Studies) shall be filled out with both departments and shall have signatures of major advisers.

COURSES REQUIRED FOR MAJOR IN SPECIAL EDUCATION

(Courses required for Major Program of Studies.)

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spc Ed 210 Introduction to Special Education</td>
</tr>
<tr>
<td>Spc Ed 211 Education of Exceptional Children</td>
</tr>
<tr>
<td>Spc Ed 221 Nature and Needs of Mentally Retarded</td>
</tr>
<tr>
<td>Spc Ed 300 Pre-Student Teaching</td>
</tr>
<tr>
<td>Spc Ed 317 Methods and Materials in Special Education</td>
</tr>
</tbody>
</table>
Spc Ed 322 Teaching the Mentally Retarded 3
or
Spc Ed 362 Teaching the Severely Retarded 3
Spc Ed 400 Student Teaching in Elementary (Special Education) 6
or
Spc Ed 462 Student Teaching in Secondary (Special Education) 6
Spc Ed 410 Undergraduate Seminar in Special Education 3
Spc Ed 415 Social and Psychological Problems in Special Education 3

Special Education Electives:
Spc Ed 404 Techniques of Teaching Children with Learning Problems 6
Spc Ed 431 Characteristics of Children with Behavior Disorders 6
C&I 435 Remedial Reading (Required) 6
Com Ds 430 Development of Speech and Language 6

Recommended Semester Outline
Freshman:
2nd Semester, *210, *211
Sophomore:
1st Semester, *221
2nd Semester, 322 or 362
Junior:
1st Semester, *415
2nd Semester, *300-317 (See major or minor advisor one semester before enrolling.)
Senior:
1st Semester, 400-410 (See major or minor advisor one semester before enrolling.)
or
2nd Semester, 400-410

MINOR: TEACHING SPECIAL EDUCATION
The Department of Special Education offers a teaching Special Education Minor for students screened into the College of Education and the Department of Special Education.

The teaching minor requires that the student earn a "B" or better in Special Education 210, 211 and 221. Upon completion of these courses (8 hours), the student shall file a program of studies (contract) to the College of Education and the Department of Special Education. The program of studies (contract) shall be established by the students and their major adviser. This program is generally limited to elementary or secondary education majors.

Required Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Electives:</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spc Ed 210 (250)</td>
<td>2</td>
<td>C&amp;I 435 (Required)</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 211 (271)</td>
<td>3</td>
<td>Spc Ed 404 (481)</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 221 (381)</td>
<td>3</td>
<td>Spc Ed 431 (444)</td>
<td>3</td>
</tr>
<tr>
<td>†Spc Ed Electives</td>
<td>6</td>
<td>Spc Ed 415 (440)</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 322 (473)</td>
<td>3</td>
<td>Spc Ed 383</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 317 (479)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spc Ed 400 or 462</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26</td>
</tr>
</tbody>
</table>

MINOR (Minimum 18 hours): EXCEPTIONAL CHILDREN, NON-TEACHING
The Department of Special Education offers a non-teaching minor in Exceptional Children designed to provide students from other departments with a basic understanding of the educational, social, psychological, and medical characteristics and needs of exceptional children. The minor is not designed, and will not lead to, teaching certification in Special Education.

The minor in Exceptional Children requires that students earn a grade of

* Screening Stages.
† Approved by major adviser.
"B" or better in Special Education 210, Special Education 211, Special Education 221, and complete 10 hours selected from the following listed courses (total 18 hours).

All students desiring a non-teaching minor must contact a Special Education adviser and a Contract (Program of Studies) must be on file with both major and minor advisers.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spc Ed 302 Communicative Disorders</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 351 Problems</td>
<td>1-3</td>
</tr>
<tr>
<td>Spc Ed &amp; Ed Fdn 383 Education of the Mexican American</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 405 [419] Special Education in a Regular Classroom</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 427 Problems of the Hearing Impaired</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 431 Characteristics of the E.D. Child</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 467 Survey of Physical Defects</td>
<td>3</td>
</tr>
<tr>
<td>Spc Ed 429 Workshop in Special Education</td>
<td>3</td>
</tr>
<tr>
<td>Com Ds 426 Manual Communication</td>
<td>1</td>
</tr>
<tr>
<td>*PE 466 Special Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>*PE 486 Principles of Therapeutic P.E.</td>
<td>3</td>
</tr>
<tr>
<td>*PE 488 Motor Learning and Performance</td>
<td>3</td>
</tr>
<tr>
<td>Rec 477 Recreation in Special Education</td>
<td>3</td>
</tr>
<tr>
<td>*Psych 332 Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>*Psych 432 Child Clinical Psychology</td>
<td>3</td>
</tr>
<tr>
<td>*Com Ds 330 Speech Pathology in the Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

* Course may not be duplicated for major and minor program.
ENGINEERS are creators and builders. They direct their 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. Engineers are not only interpreters of science and mathematics to the producers of human material needs, but they also are managers 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 students suitable education, attitudes, and motivations for their entry into successful careers as practicing engineers, administrators, researchers, or educators. The undergraduate programs are solidly founded on mathematics and the natural sciences with additional emphasis being placed upon human values and relations. This broad grounding in itself is not sufficient, however, and these curricula strive to develop the beginnings of sound judgment, perspective, and a penetrating curiosity. Many graduates continue their formal education at the postgraduate level and work toward the master’s or doctor’s degree. The student must realize, however, that education does not stop with the completion of college. More truthfully, this is when education really begins. True professional engineers never stop learning; they are continually broadening their intellectual horizons. One indication of continued growth and development is registration as a professional engineer. Every state has established criteria of education and experience which must be met before an engineer can enjoy this status.

In the College of Engineering, the students are afforded an opportunity for scholarly study, laboratory exercise, and research participation. They daily rub 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, contact College of Engineering office.

HIGH SCHOOL PREPARATION

It is important that high school students wishing to pursue professional engineering studies at the University of New Mexico orient their subject selection in the proper directions at the earliest possible moment. Students properly prepared will be able to follow the regular pattern of studies without the necessity of making up scholastic deficiencies. Students inadequately prepared in mathematics or English are required to take remedial work for no credit to remove these subject deficiencies. Students with particularly high scores in the English
area of the ACT are excused from Engl 101 (3 hours); those who are placed in Math 163 are excused from Math 162 (4 hours).

Students intending to study engineering should take in high school all of the mathematics and English possible as well as chemistry and physics. The mathematics should include a minimum of 2 units of algebra, 1 unit of geometry, and \( \frac{1}{2} \) 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. 130.

**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**

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

**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 students who enter without deficiencies and who are capable of carrying the required scholastic loads indicated under the respective departmental programs. Otherwise, students should plan on spending more than eight regular semesters to complete requirements for their degree.

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 students wish to secure a degree in another college together with their engineering degree, they are urged to seek advice early in their college careers from the deans of the colleges concerned. With care in selecting their program of studies, it is possible for students to secure two degrees in one additional year.

AEROSPACE STUDIES, NAVAL SCIENCE

It is possible for students enrolled in the Air Force ROTC or the Naval ROTC to complete their degree program in four years. However, students may need an extra semester to complete the requirements for both a degree and a commission. Students should consult the department chairman concerned in planning their program.

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

While on each work phase co-op students must register in Engineering 100 and pay a $10.00 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. 47-59). Special attention is called to the rules on probation and suspension.

COURSES NUMBERED 300 OR ABOVE

Students may be admitted to courses numbered 300 or above in the College of Engineering (1) if they are not more than 8 hours short of completing all
freshman and sophomore requirements, (2) if they have completed all prerequisites for the course in question, (3) if the remaining lower-division requirements appear on their program, or (4) at the discretion of the Dean of the College. If a student fails a required lower-division course while enrolled in a 300-level course, the student will not be eligible to enroll in additional 300-level courses until all required freshman and sophomore courses have been completed.

The College of Engineering will not accept 300-level or above engineering courses which have been taken by extension or correspondence.

MAXIMUM SEMESTER HOUR LOAD

The maximum semester hour load for students in the College of Engineering is 20 hours, including physical education. Only in exceptional cases and with approval of the Dean of the College will a student be permitted to carry 21 hours.

GRADUATION REQUIREMENTS

Specific graduation requirements are as follows:

1. Candidates for the Bachelor of Science in any of the engineering departments must complete all of the work outlined in their respective curricula. The student is solely responsible for completing all requirements for graduation.

2. Students must file applications for degree with their department chairman during the second semester of their junior year, but in no case later than when they have completed 100 semester hours acceptable toward the degree.

3. Each candidate for a degree must have at least a 2.0 grade-point average on work taken at the University of New Mexico which is counted toward graduation. Three-fourths of the semester hours offered toward a degree must be of C grade or better.

4. For minimum residence requirements, see p. 54.

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 and Instrumentation Engineering Technology Programs are listed. Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction."
### CHEMICAL ENGINEERING

The chemical engineering program is offered under the administration of the Department of Chemical and Nuclear Engineering.

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

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

**NOTES:**

1. High school preparation for Math 162 should include at least 2 units of algebra, 1 of geometry, and ½ of trigonometry or college preparatory mathematics. Students who do not qualify for Math 162 on the ACT mathematics test will be required to take remedial mathematics.

2. Students with unsatisfactory scores in the ACT English area will be required to take remedial English.

3. 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. 47 for an explanation of the grading system.)

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### COURSE OF STUDY FOR ALL ENGINEERING STUDENTS

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Cr.</th>
<th>Lect.-Lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 101L Gen</td>
<td>4</td>
<td>(3-3)</td>
<td></td>
</tr>
<tr>
<td>Engl 101 Wrtg w/Rdgs</td>
<td>3</td>
<td>(3-0)</td>
<td></td>
</tr>
<tr>
<td>in Expos</td>
<td>4</td>
<td>(1-6)</td>
<td></td>
</tr>
<tr>
<td>Engr 101L Intro to Engr</td>
<td>4</td>
<td>(4-0)</td>
<td></td>
</tr>
<tr>
<td>Math 162 Calculus I</td>
<td>4</td>
<td>(0-0)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td>(11-9)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Second Semester</th>
<th>Hrs.</th>
<th>Cr.</th>
<th>Lect.-Lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 102L Engr Comp Meth</td>
<td>3</td>
<td>(2-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physcs 160 Gen</td>
<td>3</td>
<td>(3-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 163 Calculus I</td>
<td>4</td>
<td>(4-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16 or 17</td>
<td>(15-7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

§ 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. Chemical Engineering students may participate in the Cooperative Education Program. Excellent opportunities exist throughout the Southwest for undergraduate Chemical Engineering students. For further information contact the Department Chairman or the Director of Cooperative Education.

CURRICULUM IN CHEMICAL ENGINEERING

Hours required for graduation: 130*

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Sophomore Year</th>
<th>Second Semester</th>
<th>Hrs.</th>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hrs.</td>
<td></td>
<td>Cr.</td>
<td>Lect.-Lab.</td>
</tr>
<tr>
<td>Math 264 Calculus III</td>
<td>4 (4-0)</td>
<td>Math 316 App Ord Diff Eq</td>
<td>3 (3-0)</td>
<td>Math 264 Calculus III</td>
</tr>
<tr>
<td>Physcs 161 Gen</td>
<td>3 (3-0)</td>
<td>Physcs 262 Gen</td>
<td>3 (3-0)</td>
<td>Math 264 Calculus III</td>
</tr>
<tr>
<td>Chem 301 &amp; 303L Organic</td>
<td>4 (3-3)</td>
<td>Physcs 163L or 264L Gen Lab</td>
<td>1 (0-3)</td>
<td>Physcs 161 Gen</td>
</tr>
<tr>
<td>Ch E 251 Chem Calc</td>
<td>3 (3-0)</td>
<td>Chem 302 &amp; 304L Organic</td>
<td>4 (3-3)</td>
<td>Physcs 163L or 264L Gen Lab</td>
</tr>
<tr>
<td>Econ 200 Prin and Probs</td>
<td>3 (3-0)</td>
<td>Ch E 252 Ind Stoichimetry</td>
<td>3 (3-0)</td>
<td>Chem 302 &amp; 304L Organic</td>
</tr>
<tr>
<td>H&amp;SS Elective</td>
<td>3 (3-0)</td>
<td>H&amp;SS Elective</td>
<td>3 (3-0)</td>
<td>Ch E 252 Ind Stoichimetry</td>
</tr>
<tr>
<td>Tech Elective</td>
<td>3 (3-0)</td>
<td>Tech Elective</td>
<td>3 (3-0)</td>
<td>H&amp;SS Elective</td>
</tr>
<tr>
<td></td>
<td>17 (16-3)</td>
<td></td>
<td>17 (15-6)</td>
<td></td>
</tr>
</tbody>
</table>

| Junior Year | | |
|-------------| | |
| Ch E 301 Thermo | 3 (3-0) | Ch E 302 Ch E Thermo | 3 (3-0) | Ch E 301 Thermo |
| Ch E 411 Unit Oper I | 3 (3-0) | Ch E 412 Unit Oper II | 3 (3-0) | Ch E 301 Thermo |
| Chem 311 Physical | 3 (3-0) | Ch E 414L Unit Oper Lab I | 2 (0-6) | Ch E 411 Unit Oper I |
| EECS 203 Intro to EE I | 3 (3-0) | Chem 312 & 314L Physical | 4 (3-3) | Chem 311 Physical |
| H&SS Elective | 3 (3-0) | Tech Elective | 3 (3-0) | EECS 203 Intro to EE I |
| Tech Elective | 3 (3-0) | Tech Elective | 3 (3-0) | H&SS Elective |
|                | 18 (18-0) |                | 15 (12-9) |                |

| Senior Year | | |
|-------------| | |
| Ch E 413 Unit Oper III | 3 (3-0) | Ch E 452 Seminar | 1 (1-0) | Ch E 413 Unit Oper III |
| Ch E 415L Unit Oper Lab II | 2 (0-6) | Ch E 450 Ch E Econ | 3 (3-0) | Ch E 415L Unit Oper Lab II |
| Ch E 451 Seminar | 1 (1-0) | Ch E 482L Proc Lab II | 2 (0-6) | Ch E 451 Seminar |
| Ch E 481L Proc Lab I | 1 (0-3) | Ch E 494L Ch E Design | 3 (2-3) | Ch E 481L Proc Lab I |
| Ch E 461 App Ch E Kinetics | 3 (3-0) | H&SS Elective | 3 (3-0) | Ch E 481L Proc Lab I |
| H&SS Elective | 3 (3-0) | Tech Elective | 3 (3-0) | Ch E 461 App Ch E Kinetics |
| Tech Elective | 3 (3-0) | Tech Elective | 3 (3-0) | H&SS Elective |
|                | 16 (13-9) |                | 15 (12-9) |                |

* Reduced for students placed ahead in freshman mathematics and/or English.
NOTES:
1. At least 15 hours of electives are to be taken in the humanities and social sciences (H&SS).
2. Technical electives chosen from upper division courses in engineering, mathematics, and science must be approved by the department chairman.
3. 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.
4. Prior to completion of 95 semester hours, the student must obtain departmental approval for the remainder of his degree program.

CIVIL ENGINEERING

Civil Engineering is an extremely broad professional field. Areas of interest include such seemingly diverse subjects as the theory of traffic flow, electronic computations, microbiology, the chemistry of polymers, network theory, earth physics, the stresses and strains induced in aerospace structures, the psychology of automobile driver behavior, the problems of air and water pollution, and the effects of earthquakes on structures. Civil Engineering problems involve the physical, mathematical, life, earth, social and engineering sciences, and may involve many other professional areas. However, Civil Engineering does have a unique and unified role. In particular, Civil Engineering is concerned with the engineering (planning, design and construction) of systems of constructed facilities related to man's basic needs and desires. The facilities are often large or extensive and must be engineered as operational systems involving the complex interaction of many components with each other as well as with the physical and social environment. Typical Civil Engineering facilities include transportation systems, water conservation and distribution systems, pollution control and waste disposal projects, and various structural systems such as buildings, bridges, and aerospace vehicles and launching facilities.

The scope and complexity as well as the interdisciplinary involvement of Civil Engineering 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.

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. 127 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 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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 264 Calculus III</td>
<td>4 (4-0)</td>
<td>Math 316 Appl Ord Diff Eq 3</td>
<td>(3-0)</td>
</tr>
<tr>
<td>Physcs 161 Gen</td>
<td>3 (3-0)</td>
<td>Physcs 262 Gen</td>
<td>3 (3-0)</td>
</tr>
<tr>
<td>Physcs 163L Gen Lab</td>
<td>1 (0-3)</td>
<td>CE 270L Constr Mater</td>
<td>1 (0-3)</td>
</tr>
<tr>
<td>CE 202L Engr Statics</td>
<td>3 (2-3)</td>
<td>CE 282L Engr Surveys</td>
<td>2 (1-3)</td>
</tr>
<tr>
<td>CE 281L Engr Meas</td>
<td>3 (2-3)</td>
<td>ME 206L Dynamics</td>
<td>3 (2-3)</td>
</tr>
<tr>
<td>Engl Elective</td>
<td>3 (3-0)</td>
<td>EECS 203 Intro to EE I</td>
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<tr>
<td>or Sp Com 255 Pub Spkg</td>
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<tr>
<td></td>
<td>17 (14-9)</td>
<td></td>
<td>15 (12-9)</td>
</tr>
</tbody>
</table>

* Reduced for students placed ahead in freshman mathematics and/or English.
<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 265 Vector Analysis or Math 345 Statistical Methodology</td>
<td>4 (4-0)</td>
<td>CE 360L Soil Mech or CE 306 Struc Anal II</td>
<td>3 (2-3)</td>
</tr>
<tr>
<td>CE 302 Mech of Materials</td>
<td>3 (3-0)</td>
<td>CE 322 Water Res &amp; Hydr E I</td>
<td>3 (3-0)</td>
</tr>
<tr>
<td>CE 303L Mech of Mater Lab</td>
<td>1 (0-3)</td>
<td>CE 324L Struc Des in Metals</td>
<td>3 (2-3)</td>
</tr>
<tr>
<td>CE 305 Struc Anal I</td>
<td>2 (2-0)</td>
<td>CE 336L Sanitary Engr I</td>
<td>3 (2-3)</td>
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<td>CE 331L Fluid Mech</td>
<td>3 (2-3)</td>
<td>Elective</td>
<td>3 (3-0)</td>
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<tr>
<td>CE 382 Transp Engr</td>
<td>2 (2-0)</td>
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<tr>
<td>Elective</td>
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<tr>
<td></td>
<td>17 or 18 (15-6)</td>
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<td>18 (15-9)</td>
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**Junior Year**

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>CE 411 Reinf Concr Des</td>
<td>3 (3-0)</td>
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<tr>
<td>CE 370 Engr Mater Science</td>
<td>3 (3-0)</td>
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<tr>
<td>CE 490 Prof Probs in Engr</td>
<td>2 (2-0)</td>
</tr>
<tr>
<td>ME 301 Thermodynamics</td>
<td>3 (3-0)</td>
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<tr>
<td>Technical Elective</td>
<td>2 or 3 (3-0)</td>
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<tr>
<td>Elective</td>
<td>3 (3-0)</td>
</tr>
<tr>
<td></td>
<td>16 or 17 (17-0)</td>
</tr>
</tbody>
</table>

**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.

**AREAS OF SPECIALIZATION.** The curriculum provides considerable freedom in choice of electives, particularly during the senior year. The student can pursue interests in such areas as computers, control systems, communications, electronics, microwaves, solid state, energy conversion, and systems. The student may also choose to develop a strong supporting program in such areas as business administration, life sciences, and mathematics.

An increasing number of students are continuing their studies beyond the bachelor’s degree. Such students should select their elective courses in the senior year so that they form a coherent pattern with the graduate courses in their area of specialty.

**COMPUTER SCIENCE.** A student may concentrate electives in computer science courses or may pursue the Computer Science Option which leads to a Bachelor of Engineering degree.

**MINOR STUDIES.** a) A minor in computer/computing science is offered in conjunction with the Division of Computing and Information Science for non-engineering majors. b) A minor in Electrical Engineering and Computer Science is available for students in the College of Arts and Sciences who are majoring in Mathematics.
HONORS PROGRAM. Students with a B+ average in the Department of Electrical Engineering and Computer Science are encouraged to enroll in the Honors Program. EECS students may graduate with General Honors (Honors in General Studies) or with Departmental Honors, or with both. Information is available from University College Advisers, Departmental Advisers, and the University Honors Center.

SPECIAL 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 the curricula is encouraged.

Students interested in Nuclear Engineering may arrange their undergraduate electives so that a Master's degree in Nuclear Engineering may be obtained within an additional year.

ELECTRICAL ENGINEERING LABORATORIES. Laboratories are available in the major specialty areas of Electrical Engineering. Laboratory courses are organized around design and the solution of engineering problems rather than a pattern of routine experiments.

COMPUTER FACILITIES. The department has seven computers available for student use. These computers are a PDP-11/20, two PDP-8/E machines, IBM 1620 Model II, Honeywell H-21, and two EAI Analog machines. These machines are equipped with a variety of peripherals including graphic displays, digital plotters, teletypewriters, printers, card readers, disks and DEC TAPES. All computers are operated by students in the department. In addition, the PDP-11 is a remote job entry station to the University IBM 360/67.

CURRICULUM IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Sophomore Year</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cr.</td>
<td>Hrs.</td>
</tr>
<tr>
<td>Physics 161 Gen Physics</td>
<td>3 (3-0)</td>
<td>EECS 207L EE Lab II</td>
</tr>
<tr>
<td>EECS 203 Intro to EE I</td>
<td>3 (3-0)</td>
<td>EECS 213 Circs &amp; Sysms I</td>
</tr>
<tr>
<td>EECS 206L EE Lab I</td>
<td>2 (1-3)</td>
<td>Physics 262 Gen Physcs</td>
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<tr>
<td>EECS 231 Digit Comp</td>
<td>2 (2-0)</td>
<td>Math 264 Calculus III</td>
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<tr>
<td>Math 316 Diff. Equations</td>
<td>3 (3-0)</td>
<td>†Elective</td>
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<td>†Elective</td>
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<tr>
<td>16</td>
<td>(15-3)</td>
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</table>

NOTE:
† At least 18 hours of electives are to be taken in the Humanities and Social Sciences. See approved list of electives.

* Reduced for students placed ahead in freshman mathematics and/or English.
<table>
<thead>
<tr>
<th>First Semester</th>
<th>Junior Year</th>
<th>Second Semester</th>
<th>Hrs.</th>
<th>Cr. Lect.-Lab</th>
<th>Hrs.</th>
<th>Cr. Lect.-Lab</th>
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</thead>
<tbody>
<tr>
<td>CE 202L Engr Statics</td>
<td>3 (2-3)</td>
<td>ME 206L Dynamics</td>
<td>3 (2-3)</td>
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<td></td>
<td></td>
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<tr>
<td>EECS 313 Cirs &amp; Sysms II</td>
<td>4 (4-0)</td>
<td>EECS 322 Electronics II</td>
<td>3 (3-0)</td>
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<td>EECS 321 Electronics I</td>
<td>3 (3-0)</td>
<td>EECS 326L Elect Lab II</td>
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<td>EECS 325L Elect Lab I</td>
<td>2 (1-3)</td>
<td>EECS 340 Stat Mths in EE</td>
<td>3 (3-0)</td>
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<tr>
<td>EECS 361 Electromag Fields and Waves I</td>
<td>3 (3-0)</td>
<td>EECS 362 Electromag Fields and Waves II</td>
<td>3 (3-0)</td>
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<tr>
<td><strong>EECS Electives</strong></td>
<td>9 or 10 (9-0)</td>
<td>Physics 330 Atomic &amp; Nuclear Materials or</td>
<td>3 (3-0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EECS Elective Lab</strong></td>
<td>17 or 18 (16-3)</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**NOTES:**
* At least 18 hours of electives are to be taken in the Humanities and Social Sciences. See approved list of electives.
** Approved by EECS advisor.

**MECHANICAL ENGINEERING**

**PROFESSION**

Mechanical Engineering is a very diversified branch of engineering. It is broadly concerned with energy, dynamic systems and manufacturing processes. Mechanical engineers conceive, plan, design and direct the manufacture, distribution and operation of a wide variety of devices, machines and systems for energy conversion, environmental control, material processing, transportation, materials handling and other purposes. Mechanical engineers do creative design, applied research, development and management. The demand for mechanical engineers by industry is consistently high at all levels.

**CURRICULUM**

In order to meet the challenge of a changing technological society, Mechanical Engineering students are prepared for broad fundamentals in analysis, design, experiments, and computer utilization. Many technical electives permit students to develop further according to their interest and aptitude.

**ADVANCED STUDY**

Mechanical Engineering students seeking continuing education may go to Graduate School, School of Business and Administrative Science, Law School, and Medical School. The Mechanical Engineering Department has M.S. and Ph.D. programs. Our undergraduate program is good preparation for graduate study. More information on graduate programs may be found in the "Graduate Bulletin."

The Faculty of the Mechanical Engineering Department has arranged with the School of Business and Administrative Science for a "three-two" program. Students who complete the program receive both a BS in Mechanical Engineering and an MBA at the end of their fifth year.

**COOPERATIVE EDUCATION PROGRAM**

Mechanical Engineering students may elect a Cooperative Education Pro-
gram in which they are employed full-time by an industry or governmental agency for a part of the year and in which they are full-time students for a part of the year. Students who need financial aid or who wish to gain engineering experience will find this program attractive.

FINANCIAL AID

There is a substantial number of scholarships available to Mechanical Engineering students, as well as loans. In addition to the Co-op Program, there are opportunities for Mechanical Engineering students in the Mechanical Engineering Department, part-time employment in the Computing Center, Kirtland AFB, and elsewhere in Albuquerque. In case of need, you should consult the Chairman of the Mechanical Engineering Department.

STUDENT ACTIVITIES

Mechanical Engineering is not all work and study. There are many social opportunities available within the department and elsewhere on campus. Student organizations of the department allow students to develop lasting friendships and unity. Students have always enjoyed close relationships with the faculty in the department. The available combination of academic and recreational activities are personally rewarding and satisfying.

CURRICULUM IN MECHANICAL ENGINEERING

Hours required for graduation: 130*

First Semester                  Sophomore Year                     Second Semester

Math 264 Calculus III          Math 265 Vector Analysis
Phyiscs 161 Gen                4 (4-0)                                4 (4-0)
Econ 200 Prin and Probs       3 (3-0)                                3 (3-0)
ME 201L Intro to Design       3 (2-3)                                3 (2-3)
CE 202L Engr Statics          3 (2-3)                                3 (2-3)

16 (14-6)                     16 (15-3)

Junior Year

ME 300 Mech Engr Anal         3 (3-0)                                3 (3-0)
ME 301 Thermodynamics         3 (3-0)                                3 (3-0)
ME 317 Fluid Mech             3 (3-0)                                3 (3-0)
ME 314L Dyn of Mech Sys       3 (2-3)                                3 (2-3)
EECS 204 Intro to EE II       3 (3-0)                                3 (3-0)
CE 302 Mech of Materials      3 (3-0)                                3 (3-0)

18 (17-3)                     17 (15-6)

Senior Year

ME 358L Design of Sol Sys     3 (2-3)                                6 (6-0)
ME 363L Anal of Fluid Sys     3 (2-3)                                9 (9-0)
ME 351L ME Lab II             2 (0-6)                                2 or 3 (2-0)
Elective                      3 (3-0)                                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, 363, 373, 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.

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

The nuclear engineering program is offered under the administration of the Department of Chemical and Nuclear Engineering.

Nuclear Engineering is concerned with the release, control and utilization of energy from all types of nuclear processes; and with the control and utilization of radiation. It is a relatively new branch of engineering with rapid changes and frequent breakthroughs which requires 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 and in the Bachelor of Engineering degree options. Nuclear engineering graduate programs are available leading to a Master of Science and to a Doctor of Philosophy. Students expecting to do graduate work in nuclear engineering should concentrate on physics, mathematics, and nuclear engineering in their undergraduate course work in addition to acquiring a high degree of competence in one of the other branches of engineering.

NUCLEAR ENGINEERING LABORATORIES. The principal equipment in the Nuclear Engineering laboratories includes the following: AGN-201M critical reactor; 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 466 Nuclear Environmental Safety Analysis

BACHELOR OF ENGINEERING OPTIONS

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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Sophomore Year</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td></td>
<td>Hrs.</td>
<td>Hrs.</td>
</tr>
<tr>
<td></td>
<td>Cr. Lect.-Lab</td>
<td>Cr. Lect.-Lab</td>
</tr>
<tr>
<td>Biol. 121L Prin Biol</td>
<td>4 (3-3)</td>
<td>Biol 122L Prin Biol</td>
</tr>
<tr>
<td>Chem 301 Org Chem</td>
<td>3 (3-0)</td>
<td>Chem 302 Org Chem</td>
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<tr>
<td>Chem 303L Org Chem Lab</td>
<td>1 (0-3)</td>
<td>Chem 304L Org Chem Lab</td>
</tr>
<tr>
<td>Phys 161 Gen Physics</td>
<td>3 (3-0)</td>
<td>— — H&amp;SS Elec</td>
</tr>
<tr>
<td>CE 202L Statics</td>
<td>3 (2-3)</td>
<td>EECS 203 Intro to EE I</td>
</tr>
<tr>
<td>Math 264 Calc III</td>
<td>4 (4-0)</td>
<td>EECS 206L EE I Lab</td>
</tr>
<tr>
<td></td>
<td>18 (15-9)</td>
<td>16 (13-9)</td>
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</table>

* Reduced for students placed ahead in freshman mathematics and/or English.
<table>
<thead>
<tr>
<th>Junior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physcs 262 Gen Physics</strong></td>
<td>3 (3-0)</td>
<td>Math 316 Diff Equations</td>
</tr>
<tr>
<td><strong>Chem 315L Phys Chem</strong></td>
<td>4 (3-3)</td>
<td>Chem 324 Biochem</td>
</tr>
<tr>
<td><strong>Sp Com 255</strong></td>
<td>3 (3-0)</td>
<td>EECS 404 Biomedical Instrumentation</td>
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<tr>
<td><strong>Tech Elective</strong>*</td>
<td>7 (7-0)</td>
<td>Instrumentation</td>
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<tr>
<td><strong>Sp Com 255</strong></td>
<td>3 (3-0)</td>
<td>Tech Elective***</td>
</tr>
<tr>
<td><strong>Life Sci Elective</strong></td>
<td>4 (3-3)</td>
<td>EECS 407 Biomodels</td>
</tr>
<tr>
<td><strong>Tech Elective</strong>*</td>
<td>5 (5-0)</td>
<td>— — H&amp;SS Elect</td>
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<tr>
<td><strong>Elective</strong></td>
<td>6 (6-0)</td>
<td>Tech Elective***</td>
</tr>
<tr>
<td><strong>Elective</strong></td>
<td>3 (3-0)</td>
<td>Tech Elective***</td>
</tr>
<tr>
<td><strong>Senior Year</strong></td>
<td>16 (16-0)</td>
<td>16 (16-0)</td>
</tr>
<tr>
<td><strong>H&amp;SS Elect</strong></td>
<td>3 (3-0)</td>
<td><strong>Tech Elective</strong>*</td>
</tr>
<tr>
<td><strong>Elective</strong></td>
<td>3 (3-0)</td>
<td><strong>Tech Elective</strong>*</td>
</tr>
<tr>
<td><strong>Life Sci Elective</strong></td>
<td>4 (3-3)</td>
<td>EECS 407 Biomodels</td>
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<tr>
<td><strong>Tech Elective</strong>*</td>
<td>5 (5-0)</td>
<td>— — H&amp;SS Elect</td>
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<tr>
<td><strong>Elective</strong></td>
<td>6 (6-0)</td>
<td>Tech Elective***</td>
</tr>
<tr>
<td><strong>Elective</strong></td>
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</tr>
<tr>
<td><strong>Senior Year</strong></td>
<td>16 (16-0)</td>
<td>16 (16-0)</td>
</tr>
</tbody>
</table>

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 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*

* 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.
## Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td></td>
<td>Cr.</td>
<td></td>
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</tr>
<tr>
<td>EECS 335 Intro Dig Camp</td>
<td>3</td>
<td>EECS 337 Intro Comp Sci</td>
<td>3</td>
</tr>
<tr>
<td>Math 316 Diff Equations</td>
<td>3</td>
<td>Math 264 Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>EECS 203 Intro to EE I</td>
<td>3</td>
<td>Physic 262 Gen Physics</td>
<td>3</td>
</tr>
<tr>
<td>EECS 206L EE Lab I</td>
<td>2</td>
<td>CE 202L Statics</td>
<td>3</td>
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<tr>
<td>Physics 161 Gen Physics</td>
<td>3</td>
<td>EECS 213 Circ Syms I</td>
<td>4</td>
</tr>
<tr>
<td>EECS 336 Dig Comp Progm</td>
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## Junior Year

<table>
<thead>
<tr>
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<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>EECS 435 Intro Assem Design</td>
<td>3</td>
<td>Cp Sci 356 Compiler Const</td>
<td>3</td>
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<td>EECS 321 Electronics I</td>
<td>3</td>
<td>EECS 437 Operat Sysms</td>
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<tr>
<td>Elective§</td>
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<td>Math 321 Linear Algebra</td>
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<td>Sp Com 255</td>
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</tr>
<tr>
<td>EECS 207L EE Lab II</td>
<td>2</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Cp Sci 335 Progm Lang</td>
<td>3</td>
<td></td>
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<td></td>
<td>17</td>
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<td>15</td>
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<tr>
<td></td>
<td>(16-3)</td>
<td></td>
<td>(15-0)</td>
</tr>
</tbody>
</table>

## Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cr.</td>
<td></td>
<td>Cr.</td>
</tr>
<tr>
<td>EECS 438 Logic Design</td>
<td>3</td>
<td>EECS 415 Minicomps Tech</td>
<td>3</td>
</tr>
<tr>
<td>Tech Electives**</td>
<td>6</td>
<td>Tech Electives**</td>
<td>6</td>
</tr>
<tr>
<td>Elective§</td>
<td>3</td>
<td>Math Elective</td>
<td>3</td>
</tr>
<tr>
<td>EECS 434L Logic Lab</td>
<td>2</td>
<td>H&amp;SS Elective</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;SS Elective</td>
<td>3</td>
<td>EECS 498 Seminar</td>
<td>2</td>
</tr>
<tr>
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<tr>
<td></td>
<td>17</td>
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<td>(16-3)</td>
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</table>

## 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.

§ Unrestricted Elective.

** Technical Elective: these electives will be developed in consultation with an option committee advisor to comprise a meaningful sequence for a stem specialization.
**COLLEGE OF ENGINEERING**

**CURRICULUM IN ENERGY AND POWER SYSTEMS OPTION**

Hours required for graduation: 130*

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Sophomore Year</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td></td>
<td>Hrs.</td>
<td>Cr.</td>
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<tr>
<td></td>
<td>Lect.-Lab</td>
<td></td>
</tr>
<tr>
<td>Math 264 Calc III</td>
<td>4 (4-0)</td>
<td>Math 265 Vector Analysis</td>
</tr>
<tr>
<td>Physcs 161 Gen Physics</td>
<td>3 (3-0)</td>
<td>Physcs 162 Gen Physics</td>
</tr>
<tr>
<td>CE 202L Statics</td>
<td>3 (3-0)</td>
<td>Tech Elective**</td>
</tr>
<tr>
<td>Elective§</td>
<td>3 (3-0)</td>
<td>EECS 203 Intro to EE</td>
</tr>
<tr>
<td>Tech Elective**</td>
<td>3 (3-0)</td>
<td>H&amp;SS Elective</td>
</tr>
<tr>
<td></td>
<td>16 (16-0)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
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<tbody>
<tr>
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<tr>
<td></td>
</tr>
<tr>
<td>ChE-ME 301 Thermodynamics</td>
</tr>
<tr>
<td>ME 317 Fluid Mechanics</td>
</tr>
<tr>
<td>Tech Electives**</td>
</tr>
<tr>
<td>H&amp;SS Elective</td>
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</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Nucl E 430 Intro Nucl Engr</td>
</tr>
<tr>
<td>EECS 480 Power Sys Analysis</td>
</tr>
<tr>
<td>Tech Elective**</td>
</tr>
<tr>
<td>H&amp;SS Elective</td>
</tr>
<tr>
<td>Electives§</td>
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</tbody>
</table>

**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,

* 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.
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 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 101 Wrtg w/Rdgs in Expos</td>
<td></td>
</tr>
<tr>
<td>*Math 180 Calculus for the Soc</td>
<td>3</td>
</tr>
<tr>
<td>&amp; Bio Sci</td>
<td></td>
</tr>
<tr>
<td>**Chem 141L Elements of General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Biol 121L Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 150 Introduction to MET</td>
<td>2</td>
</tr>
</tbody>
</table>

16 hrs.

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 122L Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>***Physcs 151 General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Engr T 151 Fundamentals of Elec Circuits</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 152L Electrical Circuits Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

16 hrs.

Third Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>***Physcs 152 General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Hum &amp; Soc Sci Elective</td>
<td>3</td>
</tr>
<tr>
<td>Chem 281 Integrated Organic Chem &amp; Biochem</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 251 Electronics</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 252L Electronics Lab</td>
<td>2</td>
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</table>

16 hrs.

Fourth Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECS 335 Introduction to Digital Computers</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective (see note)</td>
<td>3</td>
</tr>
<tr>
<td>Biol 236L Paramedical Anat &amp; Phys</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 253 Medical Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 254L Medical Instrumentation Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

16 hrs.

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

* Or Math 162-163, Calculus, I & II.
** Or Chem 101L General Chemistry.
*** Or Physcs 160-161, General Physics.
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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 130 Alg &amp; Trig</td>
<td>Math 150 Alg, Trig, &amp; Calc</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 132L Intro to Engr Tech</td>
<td>Engr T 142 Mechanics</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engr T 133L Meas Lab</td>
<td>Engr T 145L Machine Skills</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Engr T 134L Drawing Interp</td>
<td>Engr T 146L Instru w/Appl Electronics</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Engr T 135L Basic Elect</td>
<td></td>
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<tr>
<td>4</td>
<td>18 hrs</td>
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<tr>
<td>18 hrs</td>
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</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 151 Alg, Trig, &amp; Calc</td>
<td>CE 102L Engr Comp Methods</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Engr T 232 Heat</td>
<td>ME 201L Intro to Engr Design</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engr T 233L Instru w/Appl Data Collection</td>
<td>Engr T 241L Instru w/Appl Control Sys</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Econ 200 Principles and Problems</td>
<td>Engr T 244L Fabrica &amp; Materials</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>Social Science Elective</td>
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<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>18 hrs</td>
<td>17 hrs</td>
</tr>
</tbody>
</table>
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. Some programs are necessarily more structured than others. An example would be the major in music education, for in order to qualify to teach in the public schools, a number of specific courses must be taken. Other programs are entirely open and flexible. Your choice of a curriculum will determine the degree you receive when you complete it. The name of the degree thus serves to describe the kind of program you have taken.

Programs offered by the College are described below. If you feel you need advice in selecting a program of studies, we encourage you to talk to your department chairman or to an adviser in the College Counseling Office. If you have special problems you may also wish to seek the help of the professional counselors in the University Counseling Center (see p. 41).

You should also read carefully the General Academic Regulations of the University (pp. 47-57) and the listing of courses offered by the College. These are under nine headings:

- Architecture p. 203
- Art Studio p. 206
- Art History p. 209
- Dance p. 404
- Film p. 405
- Fine Arts p. 300
- Music p. 359
- Music Education p. 365
- Theatre Arts p. 401

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. 62. The College of Fine Arts has no special requirements other than those that are stated there.

If you are transferring to the University of New Mexico after having studied at another college or university, you may be eligible for admission directly into the College of Fine Arts. We require for admission a minimum of 26 hours of acceptable college credit, with a grade average of 2.0, or better, in all the courses you have attempted.
If you plan to enter one of the programs leading to teacher certification you should also read the requirements for admission to teacher education on pp. 92-93.

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. 56; 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. 62. 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. 146 (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, fine arts, music, or theatre arts.

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.)

3. Additional courses in any field

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 and minor in art offered by the College of Arts and Sciences are described elsewhere in the catalog.

Most of the requirements in these majors are set forth below. Please note that in all programs you must also satisfy general College and University requirements for graduation.

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. 146 (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. 62). 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, fine arts, music, or theatre arts. 48 hours

2. Major in art:
   (a) 18 hours in art history courses, including 130 (which should be taken in the Freshman year); 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. This program, which leads to the degree of Bachelor of Arts in Fine Arts, is described below:

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, 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, fine arts, music, or theatre arts. 60 hours

2. Major in art:
   (a) 33 hours in art history courses, including 130, 201, 202, and a minimum of 24 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

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. 100. 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. Requirements for entrance and graduation as set forth in this catalog are in accordance with published regulations of the National Association of Schools of Music.

MUSIC MAJORS

Majors in music are described below. Note that in addition to stated course requirements you must also satisfy general College and University requirements for graduation. For minor study in music, refer to p. 359.

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

Programs in music performance or music pedagogy are available leading to the Bachelor of Music degree and comprising a total of 128 hours. If you enroll in any one of these programs, read carefully the paragraph on p. 146 (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 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, fine arts 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 (see Departmental Handbook); 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).

Total 128 hours

<table>
<thead>
<tr>
<th>Keyboard Performance</th>
<th>4 hours in applied music; 2 hours in music theory (counterpoint); and 9 hours in music electives.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental Performance</td>
<td>8 hours in applied music; 2 hours in ensemble; and 5 hours in music electives.</td>
</tr>
<tr>
<td>Vocal Performance</td>
<td>4 hours in applied music; 2 hours in music history (473); 2 hours in diction for singers; and 7 hours in music electives.</td>
</tr>
<tr>
<td>Keyboard Pedagogy</td>
<td>4 hours in applied music; 4 hours in music pedagogy; and 7 hours in music electives.</td>
</tr>
<tr>
<td>Instrumental Pedagogy</td>
<td>8 hours in applied music; 2 hours in music pedagogy; and 5 hours in music electives.</td>
</tr>
<tr>
<td>Vocal Pedagogy</td>
<td>6 hours in applied music; 4 hours in music pedagogy; 2 hours in diction for singers; and 3 hours in music electives.</td>
</tr>
</tbody>
</table>

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 15 to 25, and distributed as follows:

8 hours in music theory; 2 hours in conducting; 4 hours in music history; and 11 hours in music electives.
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: 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.

2. Major in music, including:
   (a) 23 hours in music theory (see curriculum p. 363); 44 hours
   (b) 18 hours in music history (see curriculum p. 362, plus 10 hours of other courses in music history); 60 hours
   (c) 8 hours in applied music, including 4 hours in piano and 4 elective hours; 68
   (d) 4 hours in ensemble; and
   (e) 15 hours in music electives. 60 hours

**CURRICULUM IN MUSIC EDUCATION**

Prospective public school music teachers may enroll either in The College of Fine Arts or The College of Education. In either college the degree you will receive upon completion of requirements will be the Bachelor of Music Education. In addition to the specific curriculum given below, you must satisfy requirements for admission to a teacher education program appearing on pp. 92-93 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

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 (see Departmental Handbook)

*See College of Education section, for definitions of biological and physical sciences.
3. Courses in music education: 194, 294, 313, 366, 400, 444, 446, 451, and 461

Total 128 hours

THEATRE ARTS

The majors in theatre arts offered by the College of Fine Arts provide for emphasis in theatre, dance or film. For a description of the major in theatre arts for teacher certification, see pp. 92-93, and for minor study requirements, 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 work. So far as possible, these productions are correlated to the work done in the classroom.

Please note that in addition to the specific course requirements outlined below you must satisfy all general College and University requirements for graduation and furthermore, the faculty reserves the right to disqualify from further enrollment or participation in departmental programs:

1. Students whose grades fall substantially below 3.0 in their majors;
2. Students who fail to demonstrate reasonable progress in their personal professional development in theatre arts; and/or
3. Students whose conduct reveals a persistent inability to work effectively with others or an unwillingness to adhere to generally recognized standards of professional behavior.

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.

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, fine arts or music. 48 hours

2. Major in Theatre Arts:
   a. All theatre arts majors except those with an emphasis in Dance are required to enroll in a program consisting of the following courses:
      (1) Freshman year: TA 103-104, TA 125-126, TA 129, and TA 185, which should be taken concurrently.
      (2) Sophomore year: TA 235-236, TA 240, TA 255, and Dance 159-160, which should be taken concurrently.
      (3) Junior-Senior emphasis, e.g., acting-directing or technical production.
      (4) Additional courses in any field.

Total 128 hours

(Note: Hours used as part of the major may not be used in satisfaction of requirements outside the major.)
b. All theatre arts majors with an emphasis in Dance are required to enroll in a program consisting of the following courses:

(1) Freshman year: TA 101-102, TA 129, TA 185 and Dance 109 or equivalent. These should be taken concurrently.

(2) Sophomore year: TA 115-116, TA 240, TA 255, Dance 262-263, and Dance 259 or equivalent. These should be taken concurrently.

(3) Junior-Senior emphasis in Theater Arts and Dance 70

(4) Additional courses in any field. 10

Total 128 hours

GENERAL (LIBERAL ARTS) CURRICULUM

This curriculum leads to the degree of Bachelor of Arts in Fine Arts, and is a program of broader orientation than the Pre-Professional Curriculum, 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 English 352 and 353 and 3 hours chosen from English 453, 470, or 487; and at least 6 hours must be selected from courses in architecture, art, art history, film, fine arts or music. 60 hours

2. Major in Theatre Arts, including:

a. TA 103-104, TA 125-126, TA 129 and TA 185, and Dance 159-160.

b. Additional courses in area of specialization, e.g., acting and directing, technical production, and dance. 48

(Note: hours used as part of the major may not be used in satisfaction of requirements outside the major.)

3. Additional courses in any field. 20

Total 128 hours

CURRICULUM IN TEACHER EDUCATION

This program leads to the degree of Bachelor of Arts in Fine Arts and certification to teach in the public schools. In addition to the specific curriculum stated below, you must 1) satisfy the requirements stated on pp. 92-93 of this catalog for admission to a teacher education program as well as those stated on pp. 94-95 for admission to student teaching; 2) meet the general education requirements of the Department of Secondary Education set forth on p. 95; and 3) include in your program of studies at least 39 hours in courses offered by departments of the College of Arts and Sciences; and 6 hours selected from courses in architecture, art, art history, film, fine arts, or music.

1. Courses outside the major:

(a) 6 hours in architecture, art, art history, film, fine arts, or music;
(b) 24 hours of courses to complete the requirements of a certifiable teaching minor in a field of Arts and Sciences;
(c) Psychology 102 and 320;
(d) Educational Foundations 290, and 6 hours in Educational Foundations 310 and Secondary Education 362 (Junior Year Module II);
(e) Secondary Education 461 (Student Teaching) 51 hours

2. Major in Theatre Arts:
   (b) Dance 159 (Stage Movement);
   (c) English 352-353 (Shakespeare) 57 hours

3. Additional courses in any field**#

Total 128 hours

TAMARIND INSTITUTE

Clinton Adams, Dean of the College of Fine Arts, Director

Tamarind Institute is a division of the College of Fine Arts, operated in association with Tamarind Lithography Workshop, Inc., of Los Angeles, California. The Institute was founded in June of 1970 in order to provide a permanent professional center for lithographic training, study, and research, together with the production of original lithographs under conditions that fulfill the highest esthetic and ethical traditions of the art. Tamarind Institute is supported in part by a grant from the Division of Humanities and the Arts of the Ford Foundation.

Fellowships and assistantships are available to qualified individuals who seek to enter careers as master-printers or as print curators in art museums, private galleries, or professional workshops. Artists, printers, and curators in the Institute have full access to the resources of the University, including the Fine Arts Library and the University Art Museum. The Library has considerable strength in the history and practice of lithography and the Museum has an extensive collection of original lithographs by major artists of the 19th and 20th centuries.

The professional training program incorporates the experimental advances in artisan training developed by Tamarind Lithography Workshop. Courses in the economic and management techniques needed by artisans working in professional ateliers are offered in cooperation with the School of Business and Administrative Sciences. Courses in the history of the graphic arts and in the care and preservation of fine prints are offered by the Department of Art.

* TA 415-416 constitute 6 hours of the required 24 hours in teacher education.
** Students are strongly urged to consider electing courses to go beyond the requirements for a certifiable minor and complete a second teaching major, and to include a course in special methods of teaching in that field.
# Most students will need to use some of these hours to complete the general education requirements in Secondary Education (pp. 117-118).
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. Also, the degree Master of Fine Arts is offered.

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 overall average of at least B, in the last four semesters and in the intended major field, is required for admission and for consideration for financial aid.
Assistantships are available for some well-qualified, degree-seeking graduate students. Application deadline for financial aid is January 31.

While the Graduate School reserves the right to refuse admission to any student for scholastic or 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. 189.

INFORMATION

For further information consult the Graduate School Bulletin, the Graduate School, or the department concerned.
SCHOOL OF LAW

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

Information concerning the School is found in the School of Law Bulletin which may be obtained by writing to the Dean of the School of Law, The University of New Mexico, 1117 Stanford NE, Albuquerque, New Mexico 87131.

ADMISSION

Information about the procedure 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

The establishment of a School of the Basic Medical Sciences was authorized by the Regents and the Faculty of The University of New Mexico in 1961. The first entering class was enrolled in September 1964 and progress to the full four-year program was approved by the New Mexico State Legislature in 1966. Full accreditation by the American Medical Association and the Association of American Medical Colleges was granted in 1968.

Additional information concerning the school is found in the School of Medicine Bulletin which may be obtained by writing to the Office of Admissions, The University of New Mexico School of Medicine, Health Sciences Center-North Campus, Albuquerque, New Mexico 87131.

ADMISSION

In general, the admissions 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.

The following courses are required of all candidates for admission to the medical school:

- General Chemistry, including laboratory, one year;
- Organic Chemistry, including laboratory, one year;
- General Biology, including laboratory, one year;
- General Physics, including laboratory, one year;
- College Mathematics, one year. Mathematics through calculus is strongly recommended.

The courses taken to fulfill the specific requirements listed above should be those required of students majoring in the respective fields.

Applicants are required to take the Medical College Admission Test, preferably in May of their junior year. The examination is administered by the Testing Center, main campus, and applications may be obtained from that office.

A final selection of applicants is made on the basis of the scholastic record, scores on the Medical College Admission Test, recommendations from undergraduate professors, and impressions gained from personal interviews at the medical school.

Preference for admission is given to qualified applicants who are residents of New Mexico or regional states which do not have their own medical schools and which participate in the Western Interstate Commission for Higher Education Student Exchange Program.

The School of Medicine participates in the American Medical College Application Service (AMCAS), the Early Decision Program, the Coordinated Transfer System (COTRANS), and the Minority Applicant Registry (MED-MAR), operated by the Association of American Medical Colleges.

Application materials may be obtained by writing to the American Medical College Application Service, 1776 Massachusetts Avenue, NW, Washington, DC 20036. It is recommended that applications be filed not later than 1 November of the year preceding anticipated enrollment. Applications will not be accepted after December 15.
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, The University of New Mexico School of Medicine, Health Sciences Center-North Campus, Albuquerque, New Mexico 87131; (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 Allied Health Sciences Center.

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 is 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 usually 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, The University of New Mexico School of Medicine, Albuquerque, New Mexico 87131.

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. 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 August 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, Laboratory Sciences Program, Allied Health Sciences Center, The University of New Mexico, Albuquerque, New Mexico 87131.

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, The University of Albuquerque, Highlands University, Eastern New Mexico University, New Mexico State University, and College of Santa Fe. Students may also be accepted from other universities which agree to give full credit for the program toward a 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 that 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, a 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 $7.50 should accompany the request for evaluation with instructions to forward the completed evaluation to: Director, Laboratory Sciences Program, Allied Health Sciences Center, The University of New Mexico, Albuquerque, New Mexico 87131.

FEES
Tuition for pre-professional courses is listed in the catalog under “Student Expenses.”
Tuition for the professional program in Medical Technology:

<table>
<thead>
<tr>
<th></th>
<th>N.M. Residents</th>
<th>Non-residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Md Lab 401</td>
<td>$228.00</td>
<td>$642.00</td>
</tr>
<tr>
<td>Md Lab 402</td>
<td>228.00</td>
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<td>Total</td>
<td>$456.00</td>
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</tbody>
</table>
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: The University of New Mexico 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 18 years of age
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
CSW 010 Intro to Community Services 0
CSW 050 Clin Exper Comm Srvs 6
CSW 101 Survey of Inst 2
CSW 102 Principles of Interviewing 2
Elective (Optional) 3

Total 10-13

Spring
Engl 101 Writing with Readings in Exposition 3
CSW 040 Towards Self Understanding 3
CSW 051 Clin Exper Comm Srvs 6
Elective (Optional) 3

Total 12-15

Summer
CSW 052 Clin Exper Comm Srvs 6
Elective 3-6

Total 9-12

2nd Year
Fall
Soc 101 Intro to Soc 3
CSW 109 New Techniques of Assessment & Intervention 3
CSW 150 Clin Exper Comm Srvs 6
Elective (Optional) 3

Total 12-15

Spring
CSW 151 Clin Exper Comm Srvs 6
Soc 211 Social Problems 3
Engl 102 Writing with Readings in Literature 3
Electives 3

Total 15

Summer
CSW 152 Clin Exper Comm Srvs 6
Elective 3-6

Total 9-12

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 150-151-152 36 hours
   c) Engl 101 and Engl 102 6 hours
   d) Soc 101 and Soc 211 6 hours
   e) Electives 12 hours

   Total 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 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

<table>
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<th>First Year</th>
<th>Second Year</th>
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<td>Summer</td>
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<td>103 Prof Orientation &amp; Ethics</td>
<td>201 Inter Radiological Physics</td>
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<td>207L Radiologic Tech Lab II</td>
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<td>107 Radiologic Technology</td>
<td>209 Basic Radiological Math</td>
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<td>205 Radiation Protection</td>
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<th>Second Year</th>
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<tr>
<td>Fall</td>
<td>Fall</td>
</tr>
<tr>
<td>020 Film Critique</td>
<td>010 Journal Club</td>
</tr>
<tr>
<td>108L Radiologic Tech Lab I</td>
<td>020 Film Critique</td>
</tr>
<tr>
<td>151 Human Anatomy &amp; Physiology</td>
<td>211 Introduction to Nuclear Med</td>
</tr>
<tr>
<td>161 Radiographic Positioning</td>
<td>212L Nuclear Medicine Lab</td>
</tr>
<tr>
<td>162L Radiographic Positioning Lab I</td>
<td>281 Special Radiographic Procedures</td>
</tr>
<tr>
<td>291 Survey of Medical &amp; Surgical Disease or Pharm 334 Clinical Pharmacy</td>
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<td>3</td>
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<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
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<tr>
<td>Spring</td>
<td>Spring</td>
</tr>
<tr>
<td>010 Journal Club</td>
<td>020 Film Critique</td>
</tr>
<tr>
<td>020 Film Critique</td>
<td>221 Preventive Main &amp; Radiographic</td>
</tr>
<tr>
<td>101 Basic Radiological Physics</td>
<td>Instrumentation</td>
</tr>
<tr>
<td>111 Radiologic Darkroom Chem</td>
<td>231 Intr-Oral Radio</td>
</tr>
<tr>
<td>121 Radiological Nursing Procedures</td>
<td>261L Radiographic Positioning Lab II</td>
</tr>
<tr>
<td>163 Intermed Radiographic Positioning</td>
<td>271 Radiation Therapy</td>
</tr>
<tr>
<td>164L Inter Radiographic Positioning Lab</td>
<td>272L Radiation Therapy Lab</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
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</tbody>
</table>

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.

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

<table>
<thead>
<tr>
<th>Summer</th>
<th>Fall</th>
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<tbody>
<tr>
<td>103 Professional Orient &amp; Ethics</td>
<td>010 Journal Club</td>
</tr>
<tr>
<td>201 Intermed Radio Physics</td>
<td>291 Survey of Medical &amp; Surgical Disease</td>
</tr>
<tr>
<td>205 Radiation Protection</td>
<td>301 Adv Radiological Physics</td>
</tr>
<tr>
<td>309 Basic Nuclear Lab Procedures</td>
<td>Pharm 334 Clinical Pharmacy</td>
</tr>
<tr>
<td>310L Basic Nuclear Procedures Lab</td>
<td>311 Intermed Nuclear Lab Procedures</td>
</tr>
<tr>
<td>313 Clinical Nuclear Medicine</td>
<td>312L Intermed Nuclear Procedures Lab</td>
</tr>
<tr>
<td>314L Clinical Nuclear Med Lab</td>
<td>314L Nuclear Instrumentation</td>
</tr>
<tr>
<td></td>
<td>342L Nuclear Med Instrumentation Lab</td>
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<tr>
<td></td>
<td>Pharm 412L Radiopharmacy</td>
</tr>
<tr>
<td></td>
<td>Math 121/180 Algebra/Calculus</td>
</tr>
</tbody>
</table>

The student will usually take two of the following courses in the Fall semester and four in the Spring, the order being determined by course load.

**Fall or Spring**

<table>
<thead>
<tr>
<th>315L Clin Scint Camera Lab</th>
<th>316L Clin Single Probe Scin Scanner Laboratory</th>
<th>317L Clin Dual Probe Scin Scanner Laboratory</th>
<th>352L Radioimmunoassay Lab</th>
<th>371 Clin Radionuclide Imaging Lab</th>
<th>391 Special Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3-5</td>
<td>1-3</td>
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</tbody>
</table>

**FEES**

Same as the Radiologic Technology Program except $100 for a one year period.
COLLEGE OF NURSING

THE COLLEGE of Nursing, as an integral part of the University of New Mexico, promotes excellence in nursing through education, research and service. The College subscribes to the belief that optimum health care is a human right. Man functions as an integrated being in a complex and changing social system and his behavior has meaning. The professional nursing process synthesizes knowledge from the sciences and the humanities. To deliver nursing care in any setting, the professional nurse assesses biophysical, environmental, psychological, and socio-cultural cues which indicate man's attempts to cope with his life situation; plans nursing care in accord with the effects that the life process has on responses and resources of the individuals or groups receiving care; applies comprehensive nursing in the provision of preventive maintenance and restorative aspects of physical and emotional care, and evaluates nursing care given. Nursing is implicated in the life process of man and evolves its practices in response to society.

The College predicates nursing education on the belief that learning is an individual, assertive, and life-long process.

PURPOSE OF THE COLLEGE

Graduates of the College of Nursing will be prepared as beginning practitioners with the ability to give patient and family-centered nursing care in a variety of settings in the health care field. Graduates of the College of Nursing will be qualified to apply for graduate study in a clinical specialty, in teaching or administration in nursing.

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 by which they may be licensed to practice as registered nurses.

ADMISSION PROCEDURES

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

Beginning freshman students and student transfers at the freshman level are admitted to 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 to the Recorder, College of Nursing, The University of New Mexico, Albuquerque, New Mexico 87131 by March 1 of the year preceding their first enrollment in nursing courses:

A College of Nursing application form. This form may also be obtained from this address.

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 will 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 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.

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 by the College of Nursing must first meet requirements for admission to the University and also 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 a written examination, a demonstration of clinical competence and/or 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 for this examination in any nursing course without the instructor’s permission, nor until they have successfully completed or established credit for all prerequisites: To allow flexibility, registered nurse students should petition the Admission, Progression, and Graduation Committee to enroll in and/or establish credit by examination in 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, students' achievement may approach their potential; (4) to provide the honors student a full opportunity for vital small group discussion and written expression.

Requirements for graduation with Departmental Honors are as follows: (1) an 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 and loans 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, Anna Kaseman Hospital, 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 health requirements 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 encouraged 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

Students enrolled in nursing laboratory courses will be expected to pay a fee. A fee will be charged for the National League for Nursing Achievement Tests for regularly enrolled Junior and Senior students. 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 repeated 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 at least 60 semester hours of upper division course work. Such courses are numbered 300 or above.
3. For minimum residence requirements, see “Degree Requirements” in the section of this catalog entitled “General Academic Regulations.”
4. Students are required to have an overall scholarship index of 2.0 in Nursing in order to graduate. See also “Degree Requirements.”
5. Student must earn a grade of C or better in each upper division nursing course.
6. 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 1974-75 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**

There will be changes in the curricular requirements, i.e., non-nursing and nursing courses, over the next two years. A special brochure will be forthcoming describing the new plan.
THE COLLEGE OF PHARMACY at the University of New Mexico offers a five-year undergraduate program leading to the degree of Bachelor of Science in Pharmacy. This program consists of one year of preprofessional training followed by four years of study in the College of Pharmacy. The College of Pharmacy also cooperates with the School of Business and Administrative Sciences to offer a combined B.S. in Pharmacy/M.B.A. Program (see below).

The objective of the College of Pharmacy is to provide a program of excellence in the education of the professional pharmacist. Professional training is directed to the teaching of those facts, concepts and unique skills that the pharmacist will require as a health scientist in the future. In addition to their scientific training, stress is placed on inculcating in the students a moral, civic, and social responsibility to the public they will serve. The ethical relationship of the pharmacist to the public, to the profession, to the physician, and to other health professionals is emphasized, as is the role of the pharmacist as a consultant to the public on health matters related to their fields 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, poison control, pharmacy practice, and clinical pharmacy service. It is engaged in service responsibility to the Bernalillo County Medical Center in the area of drug distribution and clinical pharmacy. The College of Pharmacy also operates a centralized radiopharmacy which supplies service to various hospitals and institutions throughout the State of New Mexico. In addition, the college provides pharmaceutical services to UNM students via a professional pharmacy located in the Student Health Center.

OPPORTUNITIES IN PHARMACY

The profession of pharmacy offers, to properly trained individuals, a wide variety of opportunities for service in interesting and satisfying positions. More than 80 per cent of the graduates of colleges of pharmacy enter community pharmacy practices. Opportunities in this area are available in independent pharmacies, prescription centers, and in chain pharmacies. An increasing number of graduates are entering the practice of hospital pharmacy in civilian and governmental hospitals, as well as in skilled nursing facilities. Others occupy positions as manufacturing pharmacists, pharmaceutical sales representatives, analysts for state and federal food and drug departments, and as pharmacists in the Army, Navy, Air Force, Public Health Service, and Veterans Administration. Radiopharmacists, i.e., pharmacists handling radioactive drugs, will be in increasing demand in the near future. Limited numbers of pharmacists are engaged as administrators in pharmaceutical organizations and editing or writing for pharmaceutical publications. Positions as research scientists in manufacturing plants and as teachers in colleges of pharmacy are open to those who prepare themselves by pursuing graduate work toward advanced degrees.

RECOGNITION

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

FINANCIAL AID

In addition to financial aid that is available to University students generally, certain scholarships and loans are available specifically to students in the College of Pharmacy. Information and applications may be obtained from the Chairman, Grants & Financial Aids Committee, College of Pharmacy. A list of pharmacy scholarships and loans follows:

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION SCHOLARSHIPS

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

JOHN W. DARGAVEL FOUNDATION SCHOLARSHIP

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

DAVIS BROTHERS SCHOLARSHIP

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

THE DOROTHY AND MIESCHEL DOWE MEMORIAL FUND

Financial assistance is available to students enrolled in the College of Pharmacy from a memorial fund established in memory of Dorothy and Mieschel Dowe, who lost their lives in a tragic accident in February 1974. Dorothy Dowe was a pharmacy student at UNM.

THE ARTHUR B. HALL & ANNIE MAE HALL PHARMACY SCHOLARSHIP

The income from a $5,000 trust fund is available for a scholarship award to one or more students in the College of Pharmacy who can demonstrate financial need.

MCKESSON AND ROBBINS SCHOLARSHIP

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

NEW MEXICO ALLIED DRUG TRAVELERS 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 Travelers Association.
THE WILLIAM BRADLEY SCHIRMER MEMORIAL SCHOLARSHIP
One scholarship covering resident tuition for one semester is awarded annually to a student in the College of Pharmacy who has need of financial assistance. The scholarship is derived from a memorial fund established for William Bradley Schirmer, a UNM Pharmacy student who lost his life in an automobile accident in late 1973.

WOMENS PHARMACEUTICAL AUXILIARY 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 Auxiliary. The scholarship is made possible by a cash award from the Womens Auxiliary of the New Mexico Pharmaceutical Association.

HEALTH PROFESSIONS SCHOLARSHIPS
A number of scholarships of varying amounts are awarded annually to qualifying students in the College of Pharmacy. Scholarships are awarded competitively on the basis of exceptional financial need. Other eligibility requirements include U.S. citizenship and full-time enrollment (12 hours or more) in good standing (2.00 Scholastic Index or better). The scholarships are made possible by an annual grant from the Bureau of Health Manpower Education of the Department of Health, Education, and Welfare. It should be emphasized that these scholarships are dependent on annual or periodic federal legislation for funding. Therefore, it is frequently impossible to predict the annual amount of financial support in advance.

PHARMACY STUDENT LOAN PROGRAM
Low-interest loans, from Federal funds, are available to regularly enrolled students in the College of Pharmacy who can demonstrate financial need.

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

LAWS RELATING TO LICENSURE AS A PHARMACIST
In order to become eligible for licensure as a registered pharmacist upon graduation, the pharmacy student must first register as a "pharmacy intern" and serve a designated period of internship. Pharmacy students are advised to begin their internship training as early as possible in their academic career. By doing so, it may be possible to be eligible for Board of Pharmacy examinations and licensure immediately upon graduation.

The qualifications for registration as a "pharmacy intern" under the New Mexico Pharmacy Act are as follows: "an applicant shall: be not less than 18 years of age, have completed not less than 30 semester hours or the equivalent thereof in an accredited college of pharmacy, and meet other requirements established by regulation of the Board of Pharmacy."

The qualifications for registration as a pharmacist by examination under the New Mexico Pharmacy Act are as follows: "an applicant shall: be not less than 18 years of age and not addicted to drugs or alcohol, hold a degree from an accredited college of pharmacy, have not less than one year of internship experience, and pass an examination prepared and administered by the Board of Pharmacy."
Additional information on registration as a pharmacy intern and licensure as a pharmacist may be obtained from the New Mexico Board of Pharmacy, 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.

MINORITY RECRUITMENT PROGRAM

The College of Pharmacy has initiated a program designed to attract students from minority group and low-income backgrounds. The program has been funded by a HEW Special Project Grant and includes a wide range of recruitment and retention activities. Additional information on the program may be obtained from the Director of Pharmacy Minority Recruitment at the College of Pharmacy.

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

Due to limitations of facilities and faculty, enrollment in the College of Pharmacy is limited to 80 first professional year students. Since the number of applications from well qualified students considerably exceeds the number that can be accommodated, successful completion of the minimum requirements as stated below is no guarantee of admission. All applications for admission to the College of Pharmacy are screened by the Admissions Committee of the College of Pharmacy, and selection of successful applicants is made on a competitive basis. While not a requirement, it is strongly recommended that applicants complete the courses of the first year of the curriculum, with emphasis on biology, chemistry, and mathematics. Preference is given to New Mexico residents.

The College of Pharmacy admits students for the fall semester only. Successful applicants are selected by the Admissions Committee during the month of June.

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.

The transfer petition must be signed and filed in the University College not later than the end of the twelfth week of the spring semester in order to be considered for admission to the College of Pharmacy in the following fall semester. Students are urged to talk to the Chairman of the Admissions Committee of the College of Pharmacy before filing the transfer petition.

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 at least 2.2 on all work attempted while the student was enrolled in the other degree granting college(s). Students should notify the Chairman of the Admissions Committee of the College of Pharmacy of their intent to transfer not later than the end of the twelfth week of the spring semester in order to be considered for admission to the College of Pharmacy in the following fall semester.

TRANSFER FROM OTHER COLLEGES AND INSTITUTIONS

Transfer to the College of Pharmacy from other accredited colleges and institutions requires at least 26 semester hours of acceptable credit with a scholarship index of at least 2.2 on all hours attempted in the other colleges or institutions.

Applications and credentials for admission to the University of New Mexico must be received in the University of New Mexico Admissions Office NOT LATER THAN APRIL 1 in order to be considered for admission to the College of Pharmacy in the following fall semester.

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 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.

6. Students must complete all required courses in the first four years of the pharmacy curriculum before admission to the Fifth Year. (Pharm 244 is an exception to the above for the 1975 graduating class only.)

7. All students who have been placed on probation are required to obtain counseling from an academic adviser in the college.

MAXIMUM NUMBER OF HOURS
Students in the College of Pharmacy may not enroll for more than 20 hours per semester without prior approval from an academic adviser in the college.

ACADEMIC ADVISEMENT
The Chairman of the Admissions Committee of the College of Pharmacy is the academic advisor for all pre-pharmacy students and newly admitted pharmacy students during the first year of their enrollment in the College of Pharmacy.

All other pharmacy students are encouraged to consult individual faculty members of the College of Pharmacy for academic advisement of a general nature or for information and advice in curriculum matters.

MINIMUM RESIDENCE REQUIREMENT
Students entering the College of Pharmacy with advanced standing from
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. Pharmacy students are required to take not less than twelve hours of non-professional electives during the first four years of the curriculum. 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.

2. Complete a total of not less than 160 semester hours.

3. Maintain a grade point 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, the student 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.

**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.")

* No more than two hours in non-professional physical education.
First Year
(Preprofessional Year)

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Wrtg w/Rdgs in Expos</td>
<td>3</td>
</tr>
<tr>
<td>Chem 101L Genl Chem</td>
<td>4</td>
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<td>5Math 123 Trigonometry</td>
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<td>Elective</td>
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Second Semester

<table>
<thead>
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<th>Course</th>
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<tr>
<td>Chem 102L Genl Chem</td>
<td>4</td>
</tr>
<tr>
<td>Math 181 Calc for Soc &amp; Biol</td>
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<tr>
<td>5Biol I Genl</td>
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<tr>
<td>Elective</td>
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Second Year
(First Professional Year)

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Pharm 291 [231] Pharm Orient</td>
<td>2</td>
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<tr>
<td>Chem 301 Organic Chem</td>
<td>3</td>
</tr>
<tr>
<td>Chem 303L Organic Chem Lab</td>
<td>1</td>
</tr>
<tr>
<td>6Biol II Anat Phys (Organ Syst)</td>
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<tr>
<td>Physcs 151 Genl Physics</td>
<td>3</td>
</tr>
<tr>
<td>Physcs 153L Genl Physics Lab</td>
<td>1</td>
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<td><strong>Total</strong></td>
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Third Year
(Second Professional Year)

For students enrolling in the Third Year in Semester I, 1974-75 only, the Third Year curriculum will be:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>Pharm 341L Operative Pharm I</td>
<td>4</td>
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<tr>
<td>Pharm 343 Pharm Calc</td>
<td>2</td>
</tr>
<tr>
<td>Pharm 373 [374] Phmcol I</td>
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</tr>
<tr>
<td>Chem 253L Quant Anal</td>
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<td>Elective</td>
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<td><strong>Total</strong></td>
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For students enrolling in the Third Year after 1974-75, the Third Year curriculum will be:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Pharm 341L Operative Pharm I</td>
<td>4</td>
</tr>
<tr>
<td>Pharm 343 Pharm Calc</td>
<td>2</td>
</tr>
<tr>
<td>Pharm 373 [374] Phmcol I</td>
<td>2</td>
</tr>
<tr>
<td>Chem 253L Quant Anal</td>
<td>4</td>
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<tr>
<td>Biol 253-254L Intro Microbiol</td>
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<td><strong>Total</strong></td>
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</table>

Fourth Year
(Third Professional Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Pharm 443L Physical Pharm</td>
<td>4</td>
</tr>
<tr>
<td>Pharm 435L [445L] Clin Pharm III</td>
<td>4</td>
</tr>
<tr>
<td>Pharm 461 [463] Org Pharm Chem I</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 475L Phrmcol II</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

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

1 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.
2 Biology 121L-122L may be accepted in lieu of Biology I for 1974-75, and for transfer students.
3 Course numbers and content will be designated subsequently for these new courses.
3. Radiopharmacy
4. Preparation for Post-baccalaureate Studies

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

The Fifth Year option must be selected (in the Spring) by all Fourth Year students at least one week prior to the start of preregistration for the Fall Semester of the Fifth Year. The option must be declared in writing after approval of the faculty member(s) concerned. Enrollment for the Radiopharmacy option and the Preparation for Post-baccalaureate Studies option may be limited.

Students are reminded that it is their individual responsibility to make certain that sufficient elective hours are secured in the Fifth Year program to attain the total of 160 credit hours required for graduation.

For Fifth Year students in 1974-75 only, an elective course should be substituted for Pharm 422, if the student has taken this course previously.

1. Community Pharmacy Option:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Pharm 427L [447L] Clin Pharm V</td>
<td>8</td>
</tr>
<tr>
<td>Pharm 421 Pharm Acctg &amp; Fin Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 423 Phm Admin &amp; Org Behav</td>
<td>3</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
</tr>
<tr>
<td>Pharm 422 Pharmacy Law</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 424 [423] Phm Retlg Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 482 [483] Toxicology I</td>
<td>3</td>
</tr>
<tr>
<td>Professional Electives</td>
<td>0-7</td>
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<tr>
<td>---</td>
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<tr>
<td>Total</td>
<td>14</td>
</tr>
<tr>
<td>Range</td>
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</tbody>
</table>

2. Hospital Pharmacy Option:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharm 437L [447L] Clin Phm V</td>
<td>8</td>
</tr>
<tr>
<td>Pharm 451 Inst Phm Proc</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 423 Phm Admin &amp; Org Behav</td>
<td>3</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
</tr>
<tr>
<td>Pharm 422 Pharmacy Law</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 452 Inst Pharm Manag</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 482 [483] Toxicology I</td>
<td>3</td>
</tr>
<tr>
<td>Professional Electives</td>
<td>0-7</td>
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<td>---</td>
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<tr>
<td>Total</td>
<td>14</td>
</tr>
<tr>
<td>Range</td>
<td>9-16</td>
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</tbody>
</table>

3. Radiopharmacy Option:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Rad T 201 Intermed Radiophysics</td>
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<tr>
<td>Rad T 205 Radiation Protection</td>
<td>1</td>
</tr>
<tr>
<td>NMDT 313 Clin Nuc Med</td>
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<td>---</td>
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</tr>
<tr>
<td>NMDT 301 Adv Rad Physics</td>
<td>2</td>
</tr>
<tr>
<td>NMDT 341 Nuc Instrument</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 412L Radiopharm I</td>
<td>4</td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td>NMDT 321 Nuc Rod Biology</td>
<td>2</td>
</tr>
<tr>
<td>Pharm 416 In-Vitro Studies</td>
<td>2</td>
</tr>
<tr>
<td>Pharm 418 Radiopharm Rotat</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 422 Pharm Law</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 498 Problems</td>
<td>3</td>
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<tr>
<td>Professional Electives</td>
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<td>Total</td>
<td>14</td>
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<tr>
<td>Range</td>
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</table>

4. Preparation for Post-Baccalaureate Studies Option:

a. Combined B.S. Pharm.-M.B.A. Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Pharm 421 Pharm Acctg &amp; Fin Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 501 Quent Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 502 Acct &amp; Manag Info Syst I</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 504 Organiz Econ I</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 506 Organiz Behavior I</td>
<td>3</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
</tr>
<tr>
<td>Pharm 422 Pharm Law</td>
<td>3</td>
</tr>
<tr>
<td>*Pharm 426 Pharmaceut Mktg</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 503 Acct &amp; Manag Info Syst I</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 505 Organiz Econ II</td>
<td>3</td>
</tr>
<tr>
<td>B&amp;AS 507 Organiz Behavior II</td>
<td>3</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
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<tr>
<td>Total</td>
<td>15</td>
</tr>
<tr>
<td>* Or, Pharm 424 may be selected as an alternate, upon consultation with the instructor.</td>
<td></td>
</tr>
</tbody>
</table>
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.

### b. Pharmacy Administration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Pharm 437L [447L]</td>
<td>Clin Pharm V</td>
<td>8</td>
</tr>
<tr>
<td>Pharm 421Phm Acctg &amp; Fin Mgmt</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 423Phm Org &amp; Admin Behav</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 425Seminar in Phm Admin</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pharm 422Pharm Low</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 424 [423]</td>
<td>Phm Rtlg Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>Pharm 426Pharmaceut Mkgt</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 498Problems</td>
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<td><strong>Total</strong></td>
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### c. Clinical Pharmacy

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Pharm 437L [447L]</td>
<td>Clin Phm V</td>
<td>8</td>
</tr>
<tr>
<td>Pharm 423Phm Admin &amp; Org Behav</td>
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<tr>
<td>Professional Electives</td>
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<tr>
<td>Pharm 438L [448L]</td>
<td>Clin Phm VI</td>
<td>9-15</td>
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<tr>
<td>Pharm 422Pharm Law</td>
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<tr>
<td>Professional Electives</td>
<td>0-3</td>
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### d. Pharmaceutical Chemistry

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<tbody>
<tr>
<td>Pharm 463</td>
<td>Adv Pharm Chem I</td>
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<tr>
<td>Pharm 465L Org Phm Chem Lab I</td>
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<td>Pharm 467Chem of Nat Prod I</td>
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<td>*Electives</td>
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<tr>
<td>Pharm 464</td>
<td>Adv Pharm Chem II</td>
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<tr>
<td>Pharm 466L Org Phm Chem Lab II</td>
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<td>Pharm 468Chem of Nat Prod II</td>
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<td>Pharm 422Pharm Law</td>
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<td><strong>Total</strong></td>
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### e. Pharmacology

<table>
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<th>Course Name</th>
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<tr>
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<td>Clin Phm V</td>
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</tr>
<tr>
<td>Pharm 477LBiol Assays</td>
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<tr>
<td>Pharm 485LBiochem Pharmacol</td>
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<tr>
<td>MedSc 589Adv Biometry for Rsch</td>
<td>3</td>
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<td>MedSc 691Sc Writ for Grad</td>
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<tr>
<td>Pharm 484LToxicology II</td>
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<tr>
<td>Pharm 478L[479] Psychopharmacol</td>
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<td>Pharm 422Pharm Law</td>
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### f. Pharmacognosy

<table>
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<th>Course Name</th>
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<tr>
<td>Pharm 467Chem of Nat Prod I</td>
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<td>Chem 351Adv Quant Anal</td>
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<td></td>
</tr>
<tr>
<td>Pharm 468Chem of Nat Prod II</td>
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</tr>
<tr>
<td>Biol 363L Flora of N. Mex</td>
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<td></td>
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<td>Biol 372L Plant Morphogen</td>
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<tr>
<td>MedSc 588Adv Biometry for Rsch</td>
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<tr>
<td>Pharm 422Pharm Law</td>
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### g. Pharmaceutics

<table>
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<th>Course Name</th>
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<tr>
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<td>Pharm 497Problems</td>
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<td>Pharm 450Clin Pharmaceut</td>
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<td>Pharm 498Problems</td>
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<td>Pharm 422Pharm Law</td>
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### h. Hospital Pharmacy

<table>
<thead>
<tr>
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<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Pharm 437L [447L]</td>
<td>Clin Pharm V</td>
<td>8</td>
</tr>
<tr>
<td>Pharm 451Instl Pharm Prac</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 423Pharm Admin &amp; Org Behav</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 453Sem in Hosp Phm Admin</td>
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<tr>
<td>Pharm 482 [483] Toxicology I</td>
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<td></td>
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<tr>
<td>Pharm 452Instl Phm Manag</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharm 456Rsch Dsgn &amp; Stat Meth</td>
<td>3</td>
<td></td>
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<td>Pharm 422Pharm Law</td>
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<td>Professional Electives</td>
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<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

* Select from the following after consultation with the instructor: any professional pharmacy course, Chem 315L, Chem 414, Chem 415L, Math 162, Math 163.

† Depending on the student’s interest, selection will include professional pharmacy courses and suitable offerings from the Departments of Chemistry, Mathematics, Physics or Biology.
DENTAL PROGRAMS

The Dental Programs have three offerings:
1. A two semester Dental Assisting Program leading to a Certificate of Proficiency in Dental Assisting;
2. A two year Dental Hygiene Program leading to the degree of Associate of Science in Dental Hygiene;
3. A program leading to the degree of Bachelor of Science in Dental Hygiene. This requires 120 days of working experience as a licensed dental hygienist and two or more semesters of academic work beyond the Associate of Science Degree requirements.

DENTAL ASSISTING

As auxiliary personnel to the dental profession, dental assistants perform supportive duties to the dentist in all dental procedures, assume responsibilities in dental office management, instrument sterilization and x-ray developing. Individuals trained as dental assistants may be employed immediately upon completion of their education. Licensure is not required.

The Dental Assisting Program is a two semester curriculum which begins each year in the fall semester only. It is open to applicants who meet University admission requirements and are selected by an Admissions Committee of the Program. Applicants transferring from another institution must have at least a C average.

The class each year is limited to 16 students. The Admissions Committee selects the class on the basis of high school and college records, and a personal interview. High school or college courses in general Biology and typing are prerequisites.

In addition to tuition, housing, books and other usual school expenses, the Dental Assisting Program requires approximately $100 for clinic and laboratory uniforms, and $85 for instruments and dental supplies.

APPLICATION PROCEDURE

1. Submit a formal application, including all required transcripts and test scores, to the University of New Mexico, Office of Admissions (refer to “Admission and Registration”);
2. Obtain a dental programs application form from the Dental Programs Office and follow the instructions therein.

ALL OF THE ADMISSION REQUIREMENTS MUST BE COMPLETED BY MARCH 1 in order to be considered for the Dental Assisting Program.

Curriculum leading to the Certificate in Dental Assisting

(Description of the courses offered will be found, listed by departments, in the catalog section “Courses of Instruction.”)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>cr. hrs.</th>
<th>Second Semester</th>
<th>cr. hrs.</th>
</tr>
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<tr>
<td>Eng 101 Wrtg w/Rdgs in Expos</td>
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<td>Eng 102 Wrtg w/Rdgs in Expos</td>
<td>3</td>
</tr>
<tr>
<td>Psych 101, Soc. 101 or Sp. 201</td>
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<td>DH 110 Oral Anatomy</td>
<td>3</td>
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<tr>
<td>DH 100 Orientation</td>
<td>2</td>
<td>H Ec 125 Food for Man</td>
<td>3</td>
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<tr>
<td>DH 111L Dental Anatomy</td>
<td>2</td>
<td>H Ed 164 First Aid</td>
<td>2</td>
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<tr>
<td>DA 121L Intro Dent Sciences</td>
<td>3</td>
<td>DA 122L Adv Dent Science</td>
<td>3</td>
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<td>DA 131L Prin of Dent Assisting</td>
<td>2</td>
<td>DA 132L Pract in Dent Asstg</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
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<td>17</td>
</tr>
</tbody>
</table>
REQUIREMENTS FOR THE CERTIFICATE IN DENTAL ASSISTING

1. Completion of all curriculum requirements with a 2.0 average.
2. Unanimous recommendation by the Faculty of the Dental Programs.

Students who complete the Dental Assisting Program may elect to take the certification examination of the American Dental Assistants' Association. This Examination is administered at the University of New Mexico on demand each spring and fall.

DENTAL HYGIENE

PROGRAM FOR ASSOCIATE OF SCIENCE DEGREE IN DENTAL HYGIENE

Dental Hygienists are auxiliary personnel to the dental profession. Opportunities for hygienists are available in a variety of clinical settings, including private dental practice where the hygienist performs dental prophylaxes, applies decay-preventatives, and instructs patients in preventive home care.

The Dental Hygiene Associate Degree Program is a four semester curriculum which begins each year during the fall semester only. Facilities limit each class to 24 students who are selected by an Admissions Committee to the Program. In addition to tuition, housing, books and other usual school expenses, the Dental Hygiene Program requires approximately $275.00 for instruments and dental supplies, $225.00 for clinic and laboratory uniforms, and an additional $60.00 for books.

REQUIREMENTS FOR ADMISSION

1. High school graduation or equivalent, with at least a C average, and the completion of two units of science, preferably Biology or Chemistry;
2. Completion of all courses listed under the pre-professional curriculum of the Dental Hygiene Program.

Preference is given to residents of New Mexico. Potential students who are past the age of most college students are not handicapped by this factor and are encouraged to apply. It should be noted that an increasing number of men are entering the field of dental hygiene.

APPLICATION PROCEDURE

1. Students transferring from another institution or those seeking re-admission to the University of New Mexico must submit a formal application to the University of New Mexico, Office of Admissions. Please refer to “Admissions” section of this bulletin.
2. All applicants should obtain a Dental Programs application form from the Dental Programs Office and follow the instructions therein.

ALL OF THE ADMISSIONS REQUIREMENTS MUST BE COMPLETED BY MARCH 1 in order to be considered for the Dental Hygiene Program. Credentials are screened by the Admissions Committee in March. Applicants who successfully complete this portion of the application are then invited to meet with the Admissions Committee for a brief personal interview. Those applicants who are provisionally selected by the Admissions Committee will be required to submit medical and dental history forms. Notification of the selection of applicants is made in April.

REQUIREMENTS FOR THE ASSOCIATE OF SCIENCE DEGREE

The accepted candidate must:
1. Complete all the course work outlined below, maintaining a scholastic average of at least 2.0.
2. Be unanimously recommended by the Dental Hygiene Programs Faculty. Students who complete the Dental Hygiene Program may elect to take the National Board Examination of the American Dental Hygienists' Association.

**Curriculum Leading to the Associate of Science in Dental Hygiene Degree**

(Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction."

**PREPROFESSIONAL CURRICULUM**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Engl 101 Wrtg/Rdgs in Expos</td>
<td>Engl 102 Wrtg/Rdgs in Lit</td>
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<tr>
<td>Psych 101 Gen Psych</td>
<td>Soc 101 Intro to Soc</td>
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<tr>
<td>Chem 141L Elem Gen Chem</td>
<td>Chem 281 Org &amp; Biochem</td>
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<tr>
<td>Bio 136-139L Human Anatomy &amp; Physiology/Lab</td>
<td>Bio 253-254L Intro to Microbio</td>
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<tr>
<td></td>
<td>Sp Comm 201 Interpers Comm</td>
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**FIRST PROFESSIONAL YEAR**

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<td>DH 103 Clin Dent Hyg</td>
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<tr>
<td>DH 101 Predin Dent Hyg</td>
<td>DH 104L Clin Dent Hyg Lab</td>
</tr>
<tr>
<td>DH 102L Predin Dent Hyg Lab</td>
<td>DH 110 Oral Anatomy</td>
</tr>
<tr>
<td>DH 111L Dental Anatomy</td>
<td>Dh 112L Oral Radiography</td>
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<tr>
<td>H Ec 125</td>
<td>Pharm 276 Pharmacology</td>
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<td>Elective</td>
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**SECOND PROFESSIONAL YEAR**

<table>
<thead>
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<td>DH 200 Integ Dent Hyg</td>
<td>DH 202 Integ Dent Hyg</td>
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<td>DH 201L Integ Dent Hyg Lab</td>
<td>DH 203L Integ Dent Hyg Lab</td>
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<tr>
<td>DH 210L Histology</td>
<td>DH 212 Pathology</td>
</tr>
<tr>
<td>DH 220L Dental Materials</td>
<td>DH 222 Dent &amp; Pub Hlth Ed</td>
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<tr>
<td>DH 230 Oral/Dent Medicine</td>
<td>DH 242 Practice Management</td>
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**PROGRAM FOR THE BACHELOR OF SCIENCE DEGREE IN DENTAL HYGIENE**

This offering is designed to prepare teachers of clinical dental hygiene. Therefore at least 120 days of clinical work experience as a licensed hygienist are required. This program is available to selected students who have received an Associate Degree 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 admission to the Bachelor's Degree Program must meet these requirements:

1. Admissibility to the University of New Mexico as described in the "Admissions and Registration" section of the bulletin;
2. Written letter of intent to the Director of the Dental Programs;
3. A 2.5 grade point average from the dental hygiene Associate Degree or Certificate program;
4. Satisfactory evidence of possessing the clinical skills currently provided by the University of New Mexico Dental Programs, or willingness to gain these skills in courses arranged by the Dental Programs;
5. Written recommendation from the Director of the Dental Hygiene Program from which the applicant completed the Associate Degree or Certificate in Dental Hygiene.
6. Documentation of at least 120 days of work experience in clinical dental hygiene. Forms are available from the Dental Programs.
7. Records of medical and dental examinations within the past three months.

ALL OF THE ABOVE REQUIREMENTS MUST BE COMPLETED BY MARCH 1 for entrance fall semester; November 1 for entrance the spring semester.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

1. Completion of 132 semester hours including the required courses below;
2. At least a 2.0 scholastic index in all hours attempted at the University of New Mexico and a 2.4 average in all Dental Hygiene courses;
3. Written application for graduation to be submitted during the semester prior to expected graduation date. This is to be submitted to the Dental Programs Office.
4. Unanimous recommendation by the Faculty of the Dental Programs.

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 432*, Production of Instructional Materials (3)
C&I 433*, Audio-Visual Methods and Techniques (3)
DH 410*, Dental Health Education Methods (3) Internship Methods
DH 400, Seminar (2)
Sec Ed 461, Student Teaching (Dental Hygiene) (6)
Sec Ed 462, Student Teaching (Dental Hygiene) (6)
Sp Com 277, Prob Solv, Creat, & Commun (3)
or 315, Problems of Interpersonal Comm
Guid 431, Theories of Human Interaction (3)
Electives to complete 132 credit hours.

* Prerequisites to Sec Ed 461 and 462 for Dental Hygiene students.
OTHER DIVISIONS OF THE UNIVERSITY
DIVISION OF CONTINUING EDUCATION

The Division of Continuing Education is a separate unit of the University of New Mexico, responsible for conducting instruction by Independent Study and Extension classes. The division also supervises the programs of all students enrolled in the University for Non Degree work.

Extension Classes. Any of the regular University courses may be offered by extension provided there is a large enough group in any one center to justify doing so and as long as the class is not dependent upon the campus library and laboratory facilities. Persons interested in having an extension class offered in a specific community should address their inquiries to the Director, Division of Continuing Education, the University of New Mexico, Albuquerque, New Mexico, 87131.

Independent Study Courses. A number of courses are offered which are carried on entirely by mail and are planned and conducted by qualified University personnel. Credit received from these courses may be applied toward an undergraduate degree to the extent of 30 semester hours, subject to the approval of the dean of the college in which the student is enrolled. (See "General Academic Regulations.")

Community College
The Community College offers a program of late afternoon, evening and Saturday courses making it possible for adults to supplement their education along general, cultural lines or in the fields of their special interest.

The Community College Bulletin listing non-credit courses offered each semester may be obtained from the Director, Division of Continuing Education, The University of New Mexico, Albuquerque, New Mexico, 87131.

Conferences, Institutes, and Short Courses
All conferences and special courses connected with The University of New Mexico are coordinated through the Division of Continuing Education.

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 give all the assistance possible. Such activities as classes for illiterates, club study groups, forums, lecture series, etc., will receive special attention.

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 students to file applications for admission, to pay a $15 application fee, and to have their credentials sent directly to the Dean of Admissions and Records from the high school or college previously attended. Transcripts in the possession of students are not acceptable for entrance purposes.

THE GALLUP BRANCH

The University of New Mexico-Gallup Branch began its first full-term instruction in September 1968. The Branch offers courses within the first two years of a baccalaureate program. In addition, the Branch offers technical and 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 began with the 1973 Summer Session and headquarters are located near Española.

The Branch District encompasses seven school districts, and facilities for Branch College classes are secured in the different high school classrooms and the laboratories in the area where demands warrant such use. Classes are held in the late afternoons and evenings although some are 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 properly qualified doctoral candidates to carry on research for their dissertation. Acceptance of students for research at Los Alamos is subject to certain conditions specified by the Laboratory. Further information concerning work offered may be obtained by writing to the Director at Los Alamos or to the 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. 77).

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.

DIVISION OF COMPUTING AND INFORMATION SCIENCE

The University offers a Master of Science Degree in Computing and Information Science to prepare students for careers in the use of computers in a wide variety of applications. The program is built upon a core of courses in computing science, and encourages the election of options in related fields or in fields of application such as mathematics, physical sciences, business, library science, law, medicine, education or the humanities.

The Division also offers with the College of Business and Administrative Sciences, a dual degree program in which a student may earn an M.B.A. degree in Business and Administrative Sciences, and a Master of Science in Computing and Information Science.

For description of courses, faculty, Minor in Computing/Computer Science, and Honors in Computing and Information Science, see “Courses of Instruction.” For Master’s Degree curricula, see the Graduate School Bulletin.

COMPUTING CENTER

The Computing Center supports both course work and research, with its facilities open to the use of students and faculty in all departments. The building is open 24 hours a day.

The Center has an IBM System 360, Model 67, and is also equipped with a sorter and card punches. Members of the staff are on hand to offer programming assistance to all users. An extensive set of reference documents, both vendor and Center produced, is maintained to aid in this assistance.

The staff at the Center also conducts a series of lectures in programming orientation for members of the University. These series are given at irregular intervals but are announced well in advance.

Along with the standard software provided with the computer by the vendor, additional software is maintained including WATF IV, SPSS, ICES, CSMP, GPSS, MPS, The U.C.L.A. BMD statistical series, and other similar packages.

The computing system supports batch (card reader and printer) job entry both remote and local as well as keyboard entry through a variety of low speed terminals, some located at the Computing Center and some within various departments around the campus. The interactive timesharing system supports the BASIC, FORTRAN and PL/1 languages as well as a remote batch interface.
MILITARY TRAINING

AIR FORCE ROTC

The Aerospace Studies curriculum is designed to give the participating student an understanding of the military instrument of national power with emphasis on the United States Air Force and how it fits into the spectrum of power. Inherent in course content and methodology are opportunities for students to develop their capacities to think creatively, to speak and write effectively, and to lead and manage efficiently.

The Air Force ROTC commissioning program is open to qualified students in all academic majors. The program is divided into a General Military Course (GMC) and a Professional Officer Course (POC). The latter is the final commissioning phase for those students who qualify and desire a commission in the USAF. Both the GMC and POC require one hour of 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.

This department is administered by personnel of the United States Air Force under rules promulgated by the Department of the Air Force and the University of New Mexico.

The mission of the Air Force ROTC education program is to provide preprofessional preparation for future Air Force officers. It is designed to develop selected men and women who can apply their AFROTC education to their initial active duty assignments as Air Force Commissioned officers.
Students may enter the Air Force ROTC from any high school, college, or university. Transfer students with an ROTC background can receive credit for previous ROTC experience.

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

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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Freshman Year</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td>AF ASP 100 United States Military</td>
<td>AF ASP 101 United States Military Forces</td>
<td>Forces in the Contemporary World 1</td>
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<tr>
<td>AF ASP 200 Introduction to Defense</td>
<td>AF ASP 201 Introduction to Defense</td>
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<tr>
<td>AF ASP 300 Aerospace Power and</td>
<td>AF ASP 301 Aerospace Power and</td>
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<tr>
<td>Astronautics</td>
<td>Astronautics 3</td>
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<tr>
<td>AF ASP 400 Concepts of Leadership and</td>
<td>AF ASP 401 Concepts of Leadership and</td>
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<tr>
<td>Management</td>
<td>Management 3</td>
<td></td>
</tr>
<tr>
<td>AF ASP 402 Flight Instruction</td>
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</table>

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 87131, telephone (505) 277-3744.

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.

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Nav Sc 105 Naval Ships Systems I</td>
<td>Nav Sc 106 Naval Ships Systems II</td>
</tr>
<tr>
<td>Pol Sc 240 International Politics</td>
<td>Prior to Senior Year</td>
</tr>
<tr>
<td>Nav Sc 303 Navigation and Naval Operations</td>
<td>Hist 375 Military History of the US</td>
</tr>
<tr>
<td>Nav Sc 304 Navigation and Naval Operations</td>
<td></td>
</tr>
<tr>
<td>Nav Sc 407 Principles of Naval Organization and Management</td>
<td>Three hour elective</td>
</tr>
</tbody>
</table>

Marine Corps subjects, given below, are substituted by Marine Corps applicants during the junior and senior years:

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nav Sc 331 Evolution of Warfare</td>
<td>Three hour elective</td>
</tr>
<tr>
<td>Nav Sc 431 Amphibious Warfare</td>
<td>Three hour elective</td>
</tr>
</tbody>
</table>

All NROTC students attend two hours of Naval Science drill/laboratory per week.

In addition to the above, NROTC students must take certain additional courses. Information concerning additional course work can be obtained at the Department of Naval Science.
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. See Graduate School Bulletin for description of courses numbered 500 and above.

Symbols used in departmental faculty listings:

1 - On sabbatical leave for year
2 - On sabbatical leave first semester
3 - On sabbatical leave second semester
4 - On leave for the year
5 - On leave first semester
6 - On leave second semester

Symbols used in course descriptions:

** - 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.

ACCOUNTING

See Business and Administrative Sciences.

AEROSPACE STUDIES

Director to be appointed; Noel F. Austin, Maj, USAF, M.A., Assistant Director; John R. Grierson, Capt, USAF, M.A., Assistant Director.
AEROSPACE STUDIES—AFRO-AMERICAN STUDIES

CURRICULUM

See p. 192.

010. Corps Training. (0)
A laboratory of one hour per week is conducted over the student’s full period of enrollment for the practice of leadership and management techniques. It provides students with practical command and staff leadership experiences by performing various managerial duties within the framework of the corps. No academic credit is awarded for this laboratory.

100-101. United States Military Forces in the Contemporary World. (1, 1)
A study of the doctrine, mission, and organization of the United States Air Force; U.S. strategic offensive and defensive forces; their mission and functions; employment of weapons systems, aerospace defense; missile defense; U.S. general purposes and aerospace support forces; the mission, resources, and operation of tactical air forces, with special attention to limited war; review of Army, Navy, and Marine general purpose forces.

200-201. Introduction to Defense Policy. (1, 1)
Defense organization: Organization and functions of Department of Defense and role of the military in U.S. national policies; theories of general war; nature and context of limited war; Soviet strategies and policies, Chinese strategies and policies; role of allegiances in U.S. defense policies; the elements and processes in the making of defense policy.

300-301. Aerospace Power and Astronautics. (3, 3)
Critical analysis of the development of air power and aerospace power to include doctrine, technology, organization, and the utilization of manned and unmanned aircraft and space vehicles. Evolution and evaluation of U.S. space programs. Review of main characteristics of the solar system, types of orbits, and trajectories. Examination of current and planned capabilities for space operations. In each semester, students will take field trips, participate in group discussions, and prepare oral and written reports.

400. 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.

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.

AFRO-AMERICAN STUDIES

Coordinator: Charles Becknell, M.A., Assistant Professor of Educational Foundations; Assistant Coordinator: Harold Bailey, M.A., Lecturer in Educational Foundations.

The Afro-American Studies Program is an interdisciplinary program dedicated to a scholarly examination of the black experience in Africa, the Caribbean, and the United States.

Besides offering a wide variety of courses, the program complements classroom work with special lectures, community involvement, concerts and other artistic and cultural events.

CURRICULUM

Amer St. 301. Interdepartmental Studies in the Culture of the United States. (3)

English 300. Studies in Literature. (3)
The Black Novelist.

History 284. Afro-American History. (3)
(Also offered as Ed Fdn 284.)

History 357. History of Africa Since 1800. (3)

Swahili 110-111. Introduction to Swahili. (3, 3)

Social 310. The Black Family in America. (3)
AMERICAN STUDIES

COMMITTEE IN CHARGE: Joel M. Jones, Ph.D., (American Studies) Chairman; G. Argersinger, M. Phil., (American Studies); G. Arms, Ph.D., (English); E. Baughman, Ph.D., (English); C. Biebel, Ph.D., (American Studies); B. Bunting, Ph.D., (Art); W. M. Dabney, Ph.D., (History); H. Rhodes, Ph.D., (Political Science); P. F. Schmidt, Ph.D., (Philosophy); F. Szasz, Ph.D., (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 Studies 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>

286. Life and Thought in America II. (3)
Course is intended for students who have had American Studies 285: Life and Thought
in America. Purpose is to give students opportunity to pursue individual and group research projects which interested them in introductory course, but for which one semester's time was insufficient to develop. Interests, methodology, and results will be presented to entire class.

301-302. Interdepartmental Studies in the Culture of the United States. (3, 3)†
Subjects, varying from semester to semester, will be topical in 301 (as "Present Predicaments" and "Politics of the 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)†
<Summer, Fall, Spring>

*606. Approaches in Interdisciplinary Methodology. (4)
Prerequisite: permission of instructor.

*651. Individual Study. (1-3 hrs. per semester, to a maximum of 12)†
For Ph.D. candidates only.

*699. Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

ANTHROPOLOGY


Explanation of footnotes not indicated will be found on p. 194.

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 Hi 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 Hi 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>

*498. Honors Seminar. (3) Staff
Readings and discussions concerning anthropological research methods, sources, goals, and professional ethics. Open to upper division majors and concentrators whose applications for the honors program have been approved. <Spring>

*499F. Field Research. (2-6)
Field research for qualified advanced or graduate students with previous experience in archaeology, linguistics, or general ethnology. Problems are selected on the basis of student-faculty 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>

*511. Advanced Research. (3)
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. <Fall>

*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.

*388. Human Genetics. (3) Spuhler
An introduction to human transmission, cellular, molecular, developmental, and population genetics. <Fall>

*431. Problems in Primate Ethology. (3) Froehlich
Current issues in primate behavioral research; their relevance to the evolution and present condition of man. Prerequisite: permission of the instructor. <Spring>

*450. Physical Anthropology. (3) Rhine, Spuhler
The biological organization of past and present primate and human populations. <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) Harpending
The conditions for stability and change in gene and genotype frequencies in human breeding populations. <Spring 1975 and alternate years>
*455. Human Evolution. (3) Rhine
   Evolutionary significance of various hominid characteristics; comparisons of significant fossil forms. Students are encouraged but not required to enroll concurrently in 456L.<Spring>

*456L. Human Evolution Laboratory. (1) Rhine
   Anthropometric and anthroposcopic comparisons of fossil and recent hominids. <Spring>

*488. Formal and Numerical Methods in Anthropology. (Quantitative Methods in Anthropology.) (3) Harpending
   Formal and mathematical techniques for organizing and analyzing anthropological data, with emphasis on computer usage. <Offered upon demand>

*510. Seminar: Physical Anthropology. (3) Spuhler
   <Offered upon demand>

*531. Seminar: Problems in Primatology. (3) Froehlich, Rhine
   <Spring 1974 and alternate years>

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 1974 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 1975 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 1974 and alternate years>

*366. 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 1974 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 1974 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 1974 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 1975 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 1975 and alternate years>

*507. Seminar: Archaeological Theory and Method. (3)‡
   <Spring>

*514. Seminar: South American Archaeology. (3)
   <Offered upon demand>
*516. Seminar: European Prehistory. (3) Hibben
<<Offered upon demand>>

*557. Seminar: Early Man in the New World. (3) Hibben
<<Offered upon demand>>

*582. Seminar: American Archaeology. (3)
<<Offered upon demand>>

*594. Seminar: Southwestern Archaeology. (3) Judge
<<Offered upon demand>>

ETNOLOGY, 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. <Spring>

*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 1975 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 1974 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. <Spring>

*321. Ethnology of South Asia. (3) Sebring
Survey of modern social structures and cultures of South Asia with emphasis upon selected areas and problems. <Spring>

*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 1974 and alternate years>

*341. Biosocial Bases of Sex Roles. (3) Draper, Harpending
Biological and sociological bases of sex role differentiation. <Spring 1975 and alternate years>

*345. Spanish-Speaking Peoples of the Southwest. (3) Alvarado
Analysis of the ethnohistory and modern culture patterns of Spanish-speaking peoples of the Southwest. <Spring 1975 and alternate years>

*347. Anthropological Folklore. (3) Weigle
Comparative and ethnographic study of selected genres of expressive culture.

*348. Social Anthropology of Complex Societies. (3) Barrett
Main contributions of anthropology to the study of complex societies, with special attention to the methods and techniques utilized in the study of these societies. <Spring>

§ No prerequisite.
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>

Southwestern Ethnology: Non-Pueblo Peoples. (3) Alvarado The cultures and relationships of Pima, Papago, Yaqui, Tarahumara, Seri, Yumans, Navajos, and Apaches. <Fall>

Southwestern Ethnology: Pueblo Peoples. (3) Alvarado The origin, social organization, material culture, and relationships of Southwestern Pueblo tribes. <Spring>

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.

Urbanization in Latin America. (3) (Also offered as Sac 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.

American Indian History. (3) (Also offered as Hist 369.) Survey of American Indian history from white contact to the present. <Fall>

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>

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>

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>

Cultural Ecology. (3) 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. <Spring>

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. <Fall 1975 and alternate years>

Primitive Religion. (3) Barrett Selected examples of non-literate religions. Special emphasis on revitalization or nativistic movements which develop in acculturative situations.

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. <Spring>

Comparative Social Structure. (3) Basehart An introduction to the study of kinship and social organization. <Offered upon demand>

Economic Anthropology. (3) Introduction through case material to the forms of economic organization in non-Western societies: analyses of production, distribution, and consumption, the evolution of economic systems, and the relation of economy to society. <Fall 1974 and alternate years>

Political Anthropology. (3) Investigation of political organization in primitive societies, with emphasis on political processes. Prerequisite: 102. <Fall 1975 and alternate years>

Seminar in Museology and Museography. (3) Brody (Also offered as Art Hi 460.) Practical and theoretical work in specific museum problems. Prerequisite: 304L or 380L, or Art Hi 400, or permission of instructor.

Cultural Ecology. (3) Campbell <Spring 1974 and alternate years>
ANTHROPOLOGY

*508. Processes of Culture Change. (3) Alvarado
   <Fall 1974 and alternate years>

*512. Seminar: Ethnology. (3)‡
   <Fall, Spring>

*513. Anthropological Problems in Latin America. (3)
   <Offered upon demand>

*584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3) Lieuwen,
Merx, Needle, Schwerin
   (Also offered as Econ, Hist, Pol Sc, and Soc 584.) <Spring>

*595. Seminar: Southwestern Ethnology. (3)
   <Fall 1975 and alternate years>

*610. Kinship Studies. (3)‡ Basehart
   <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, Steele
   (Also offered as Ling 317L.) Phonetic principles and phonological theory, descriptive
   analysis of phonological systems, transcriptional practice and problems from selected
   languages. 2 lectures, 2 hrs. lab. <Fall, Spring>

*318L. Grammatical Analysis. (3) Rigsby, Steele, Staff
   (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. <Fall, Spring>

*352. Verbal Art. (3) Weigle
   Comparative study of non-Western oral traditions as cultural and aesthetic expres­
   sions. Special emphasis on narratives and proverbs.

*354. The Nature of Language. (3) Spolsky
   Introduction to modern descriptive linguistics, principles of comparative linguistics, lan­
   guage as a social and psychological phenomenon. <Offered upon demand>

*359. Language and Culture. (3) Rigsby, Spolsky
   (Also offered as Ling 359.) 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 contempo­
   rary speech communities; intensive examination of the structure of one or more South­
   western native languages. Prerequisite: 292 or 354, or equivalent. <Offered upon demand>

*417L. Advanced Phonological Analysis. (3) Rigsby, Steele
   (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)
   (Also offered as Ling 446.) The comparative method applied to Indo-European and to
   unwritten languages; other methods and techniques used in comparing languages. Pre­
   requisites: 313L, 317L, 354 or permission of instructor. <Spring 1974 and alternate years>
*459. Language and Society. (3) Spolsky
(Also offered as Ling 459.) 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 569.) 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)
<Offered upon demand>

*661. Types of Linguistic Structure. (3)
<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. Prerequisites: 304L. 2 lectures, 2 hrs. lab. <Spring>

*489. Computer Models in Anthropology. (3)
Introductory theory and practice of the use of high speed computers to solve anthropo-
logical problems. Prerequisites: Math 155 or equivalent ability with a programming
language compatible with the campus computer, basic course in statistics with ele-
mentary 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), M. Arch.; B. Bunting, Ph.D.; R. Cohlmeyer, B.S.; ASSO-
CIATE PROFESSORS R. Anderson, Ph.D.; V. D. Hooker, B. Arch.; P. Montague (part-time),
Ph.D.; M. L. Pillet, M. Arch.; ASSISTANT PROFESSORS J. Borrego, MCP; E. Cherry, M. Arch.;
R. Nordhaus, B. Arch.; LECTURERS E. Mazria, B. Arch.; W. McConnell (part-time), B.S.; R.
Walters, B.F.A.; E. Kessler, and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 194.

Students are reminded that charges for classroom supplies and services for
certain architecture courses must be paid at the Fine Arts Box Office during the
first three weeks of each semester. Refunds will be given according to the refund
schedule in the student expense section of this catalog, page 31.
CURRICULA

See p. 147.

101. Introduction to Architecture. (3)
   Building form as a product of social, perceptual, and technological determinants. <Fall, Spring>

104. Visual Communications. (3)
   Visual analysis with emphasis on observation, recording, and communication techniques. <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)
   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 by interview 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)
   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: open by brochure only. <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)
   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. Title of individual sections will vary as content varies. 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.

* Open only to students enrolled in the professional curriculum in architecture.
*462. Seminar. (2)†
Individually listed topics each semester. <Fall, Spring>

*465. City Planning Methods. (3)
(Also offered as Econ, Pol Sc, and Soc 465) Topics include perceptual form of the
city; planning and decision-making theory; national and regional policy; public control
over development; direct action techniques. This is a multi-discipline introduction to
urban studies with emphasis on planning and control. <Fall>

*466. Economics for City Planning. (3)
(Also offered as Econ 466) This course introduces quantitative methods of city and
development planning. Topics include cost-benefit analysis, including heroic quantification
and social physics (simultaneous design of transportation and land use). Prerequisite:
Econ 201. <Spring>

*471. American Architecture. (3) Bunting
History of American architecture from the 17th century to World War II. <Spring>

*472. Regional Planning. (3)
Normative studies at regional scale integrating social science and physical design
methods. <Spring>

*497. Social Planning Seminar. (2)†
Consequences of social and cultural change on design and planning. Prerequisite: senior
standing. <Fall, Spring>

*498. 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)‡
An overview of the architectural undergraduate curriculum. Prerequisite: for graduate
students in architecture with degrees from other disciplines. <Fall, Spring>

*501. Studio Workshop. (6)
May be repeated to a total of 12 hours. <Fall, Spring>

*551. Problems. (1-3)
May be repeated to a total of 12 hours. <Fall, Spring>

*562. Seminar. (2)†
<Fall, Spring>

*581. Architectural Research and Programming Methods. (2)
<Fall, Spring>

*598. Thesis Research and Programming. (6)
Prerequisite: 581.

*599. Thesis. (1-6)
Prerequisite: 598. <Summer, Fall, Spring>

ART
Chairman to be appointed. PROFESSORS C. Adams, M.A. (Dean); G. Z. Antreasian, B.F.A.; B.
Bunting, Ph.D.; V. D. Coke, M.F.A.; R. Lewis, M.A.; C. Mathias; C. E. Paak, M.A.; S. D.
Smith; VISITING PROFESSOR B. Newhall, M.A.; ASSOCIATE PROFESSORS T. Barrow, M.S.;
B. Manley, N.D.D.; H. Nadler, M.A.; M. E. Smith, Ph.D.; P. Walsh, Ph.D.; ASSISTANT PROFES-
PROFESSOR E. Boyd; LECTURERS N. Abdalla, M.A.; J. Booth, M.A. (part-time); C. Downey,
M.A. (part-time); D. Keefe, M.A.; J. Lacher, M.F.A.; A. Noggle, M.A. (part-time); H. D. Radee,
M.A.; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 194.

MAJOR STUDY
1. For the student enrolled in the College of Fine Arts who wishes to pursue
a studio emphasis, a 70-hour major offered under the Pre-professional Curriculum
leads to the degree of B.F.A. (See curriculum, p. 147.)

2. For the student enrolled in the College of Fine Arts who wishes to pursue
an art history emphasis, a 48-hour major offered under the General (Liberal Arts)
Curriculum leads to the degree of B.A. in Fine Arts. (See curriculum, p. 147.)

* Open only to students enrolled in the professional curriculum in architecture.
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 201 and 202; 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.

Students are reminded that charges for classroom supplies and services for certain art studio courses must be paid at the Fine Arts Box Office during the first three weeks of each semester. Refunds will be given according to the refund schedule in the student expense section of this catalog, page 31.

ART (STUDIO)

Course 123 is prerequisite to most art studio courses, and is specifically designed for students who plan to major or minor in art. Other students should consider courses 102 and 142 as their best introductions to studio art.

102. Painting (3) S. D. Smith
Basic principles of still life, figure, and landscape painting. <Fall, Spring>

123. Studio Fundamentals. (6)
Basic aspects of two and three dimensional phenomena including drawing and color theory. <Fall, Spring>

142. Drawing. (3)
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)
Descriptive painting: materials, techniques, composition, and color theory. Prerequisite: 123 or equivalent; corequisite: 205. <Fall, Spring>

213. Sculpture I. (3)
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: 205 <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)
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
Emphasis on the landscape. Prerequisite: 123 or equivalent; corequisite: 205. <Offered upon demand>
305. Drawing II. (3)†† 
Drawing as an independent medium and 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)†† 
Techniques, composition, color and various painting concepts. Prerequisite: 207. <Fall, Spring>

308. Painting III. (3)†† 
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>

310. Sculpture II. (3)†† 
Relationships of various materials to specific conceptual problems. Prerequisite: 213. <Fall, Spring>

311. Sculpture III. (3)†† 
Continuation of 313. Prerequisite: 313. <Fall, Spring>

312. Intermediate Jewelry and Metalwork. (3)†† Lewis 
Development of metalworking techniques with emphasis on the creative application of various skills. Prerequisite: 257. <Fall, Spring>

313. Intermediate Ceramics. (3)†† Paak 
Experimental approaches to ceramics. Prerequisite: 268. <Summer, Fall, Spring>

314. Lithography. (3)†† Antreasian 
Techniques and methods of lithography. Prerequisite: 305. <Fall, Spring>

315. Photography II. (3)†† 
Continuation of 287 with concentration on photographic techniques and the development of personal vision. Prerequisite: 287; corequisite: 123. <Fall, Spring>

316. Photography III. (3)†† 
Further development of personal concepts of photographic vision. Prerequisite: 315. <Fall, Spring>

317. Cinematic Photography. (3)†† Lazorik 
Basic study of film-making. Prerequisite: 287 or Journ 261. <Fall, Spring>

318. Topics in Photography. (3)†† [Photo Communications.] (3)†† 
Concentrated practical and historical study of specific concerns in photography. Prerequisite: 316. <Offered upon demand>

*405. Advanced Drawing. (3)†† 
Drawing as an expressive medium and as a vehicle for developing advanced conceptual theories in the visual arts. Prerequisite: 306. <Fall, Spring>

*406. Computer Graphics. (3)†† Mattax 
Generalized course for developing graphic images by electronic computer and electronic plotter. <Offered upon demand>

*407. Advanced Painting. (3)†† 
Investigation of individual problems based on a thorough knowledge of materials and methods. Prerequisite: 308. <Fall, Spring>

*408. Advanced Landscape Painting. (3)†† S. D. Smith 
Landscape painting in various media. Prerequisites: 305, 307. <Offered upon demand>

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

* Open only to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Students in the teacher education curricula may enroll with permission of the Department Chairman.

* Open only to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Students in the teacher education curricula may enroll with permission of the Department Chairman. A 3.5 grade average in 6 hours (or 3.0 grade average in 9 hours) of the 300 level prerequisite noted in the course description is also required.
ART

*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)††
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) Booth
Application of systems theory to the structure of a business environment for preservation of the art of lithography. Emphasis on the application of management techniques in the planning, directing, and control of print shop business operations. <Fall>

*476. Business Systems in Lithography Workshops. (2) Booth
Continuation of 475. Research and synthesis of small business practices which contribute to successful art entrepreneurship. Specific consideration of capital funding, marketing methods, and financial management. <Spring>

*486. Techniques of Photography. (3)††
Exploration of special equipment and such processes as photo-silk-screening, film strips, photo montage, high contrast film use. Prerequisite: 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)††
Advanced criticism of specifically directed individual problems. Prerequisite: 6 hours of 300 level courses in the tutorial area. By permission of the instructor. <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>

*505. Projects in Drawing. (3)†
Prerequisite: 405. <Fall, Spring>

*507. Projects in Painting. (3)†
Prerequisite: 407. <Fall, Spring>

*513. Projects in Sculpture. (3)† Grow, Mattox
Prerequisite: 413. <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
Prerequisite: 457. <Fall, Spring>

*568. Projects in Ceramics. (3)†† Paak
Prerequisite: 468. <Fall, Spring>

*574. Projects in Lithography. (3 or 6)† Antreasian
Prerequisite: 474. <Fall, Spring>

*587. Projects in Photography. (3)† Coke
Prerequisite: 487. <Fall, Spring>

*598. Final Project. (3)
Prerequisite: advancement to candidacy. <Fall, Spring>

*699. Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements. <Fall, Spring>

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

§ Open only to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Students in the teacher education curricula may enroll with permission of the Department Chairman.

* Open only to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Students in the teacher education curricula may enroll with permission of the Department Chairman. A 3.5 grade average in 6 hours (or 3.0 grade average in 9 hours) of the 300 level prerequisite noted in the course description is also required.
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>

201. History of Art I. (3) Bunting
Prehistoric, Near Eastern, Egyptian, Greek, Roman, Early Christian, Byzantine and Romanesque, Gothic Art. <Fall, Spring>

202. History of Art II. (3) George, Rodee
Western art from the Early Renaissance to Impressionism. <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
<Offered upon demand>

*304L. Beginning Museology. (3) Brody
(See Anth 304L.)

*320. African and Oceanic Art. (3) M. E. Smith
<Spring>

*340. Pre-Columbian Art. (3) M. E. Smith
Art of Middle America prior to the 16th century. <Fall>

*350. Greek and Roman Art. (3)
Painting and sculpture from 1800 B.C. to the 6th century A.D. <Offered upon demand>

*351. Medieval Art I. (3) Bunting
Architecture, painting, and sculpture from the dissolution of the Roman empire to the 11th Century. <Spring 1975 and alternate years>

*352. Medieval Art II. (3) Bunting
Architecture, painting, and sculpture from the 12th Century through the 16th Century. <Spring 1976 and alternate years>

*370. History of the Graphic Arts. (3)
Printmaking from the 13th century to the present. <Fall>

*380L. Advanced Museology. (3) Brody
(See Anth 380L.)

*400. Museum Practices. (3) Brody
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
Historical development and aesthetic character of photography in the 19th Century. <Fall>

*426. 20th Century Photography. (3) Newhall
Historical development and aesthetic 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>

*452. Fifteenth and Sixteenth Century Art in Northern Europe. (3) Rodee
Painting and sculpture from the late 14th century through Mannerism. <Spring>

*460. Seminar in Museology and Museography. (3) Brody
(Also offered as Anth 460.) Practical and theoretical work in specific museum problems. Prerequisites: Anth 304L or 380L, or Art 400.
*463. Seventeenth-Century Art in Europe. (3)
  Painting, sculpture, and architecture of the Baroque. <Spring 1975 and alternate years>

*464. Eighteenth-Century Art in Europe. (3)
  <Fall 1974 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
  Painting and sculpture from colonial times to 1906. <Fall>

*479. American Art: 1906-1940. (3) George
  Painting and sculpture from 1906 to the beginning of World War II. <Spring>

*481. Nineteenth Century Art. (3) Rodee
  Painting and sculpture from the late Rococo period through Courbet. <Fall>

*482. Foundations of Modern Art. (3) Rodee
  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
  Painting and sculpture from World War I to the present. <Fall>

*492. Art Criticism. (3)
  Principles of criticism in the visual arts with emphasis on critical approaches to contemporary art. Prerequisite: 6 hours upper division in art history, literature, and/or philosophy. <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. Prerequisite: 6 hrs. upper division art history. <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
  <Fall>

*501. Interdepartmental Seminar in the Culture of the United States. (3)
  (See Am St 501.) <Offered upon demand>

*551-552. Problems. (2-3 hrs. each semester)
  Maximum 6 hours. <Fall, Spring>

*559. 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)
  <Offered upon demand>

*572. Problems in the Art of the United States. (3) George
  <Spring>

*580. Problems in Spanish Colonial Art. (3)
  Prerequisites: 450 and reading knowledge of Spanish. <Fall>

*581. Problems in 19th Century Art. (3) Newhall, Rodee
  <Fall, Spring>

*582. Problems in 20th Century Art. (3) Adams, Newhall, Walch
  <Fall, Spring>

*592. Art Since 1950. (3) Adams, Walch
  <Spring>

*594. Topics in Art History. (3)

*599. Master's Thesis. (1-6 hrs. per semester)
  See the Graduate School Bulletin for total credit requirements. <Fall, Spring>

*699. Dissertation. (3-9 hrs. per semester)
  See the Graduate School Bulletin for total credit requirements. <Fall, Spring>
ASIAN STUDIES

COMMITTEE IN CHARGE: Associate Professor C. McDermott, Ph.D. (Philosophy), Chairperson; Assistant Professor D. Gordon, M.A. (Geography); Professor F. Iklé, Ph.D. (History); Assistant Professor J. Sebring, Ph.D. (Anthropology); Professor J. Sorenson, Ph.D. (Political Science).

MAJOR STUDY

Not offered.

UNDERGRADUATE MINOR

An interdepartmental minor in Asian Studies shall consist of at least 18 hours in courses selected from the approved list below, including at least 3 hours in History, 3 hours in Philosophy, and 3 hours in Geography. No more than 9 hours may be selected in any one department and courses used to satisfy the major field may not be applied to the minor. The following courses have been approved. (See appropriate departmental listings for course descriptions and prerequisites):

Anthropology 321; Art 303; Geography 330, 331, 336, 337; History 251, 252, 350, 351, 352, 354, 356, 370, 371, plus 495 and 496 when topic is appropriate; Philosophy 263, 334, 335, 336, 337, 348, plus 441 and 442 when topic is appropriate; Political Science 450.

BIOLOGY


Explanation of footnotes not indicated will be found on p. 194.

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 162 or 180 and 181; Chem 101L-102L or 121L-122L, and 281 or 301-303L (Note: 281 not allowed for chemistry minor. Credit not allowed for both 281 and 301); 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,
212 BIOLOGY

386L; Microbiological—253, 473L, 482L; plus sufficient added courses in biology to total 39 hours. Math 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 or to receive advisement should report to the departmental office Room 173. Students entering the sophomore year or higher level will be assigned to an appropriate faculty adviser on a voluntary basis.

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. 369.

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

See p. 73.

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

110. Life Science for Non-Majors. (3) Degenhardt
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. <Summer, Fall>

122L. Principles of Biology. (4) Altenbach
Heredity, development, and evolution. 3 lectures, 3 hrs. lab. <Summer, 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. 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: 121L and 122L, Chem 281. Not accepted toward a biology major. 3 lectures, 3 hrs. lab. <Spring>

253. Introductory Microbiology. (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. <Fall, Spring>

*324. Biochemistry. (3)
(See Chem 324.) <Spring>

326L. Physiology of Exercise. (3) Atterbom
(Also offered as P.E. 326L) Physiological processes and their relation to exercise. Prerequisite: 121L and 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: 121L and 122L. 3 lectures, 3 hrs. lab. <Fall>

*371L. Invertebrate Zoology. (4) Staff
Evolution; morphology; and complementarity of structure, environment, and function of the invertebrates. Prerequisite: 121L and 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: 121L and 122L. 3 lectures, 3 hrs. lab. <Fall, Spring>

400. Senior Seminar. (2)
(Offered each semester, cannot be repeated for credit). <Fall, Spring>

*401L. Biometrics. (4) Gosz
Collection, handling, and statistical treatment of biological data. Prerequisites: 20 hrs. of Biol and Math 121 or 150 or 162 or 180 and 181. 2 lectures, 6 hrs. lab. <Spring>

*407. Concepts of Ecology. (3) Potter, Gosz
Interrelationships of physical and biotic environments. Prerequisite: 16 hrs. of Biol or instructor's permission. <Fall, Spring>

*408. Genetics. (3) W. Johnson
Structure, function, and transmission of hereditary factors. May be taken with, or independent of, 409L. Prerequisite: 121L and 122L. <Fall, Spring>

*409L. Genetics laboratory. (1) W. Johnson
Genetic principles using the fruit fly and and lower organisms. Prerequisite or corequisite: 408. 3 hrs. lab. <Fall, Spring>

*410L. Arid Land Invertebrates. (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 1975>

*411L. Population Biology. (4) Rosenzweig
Evolutionary mechanics; population and evolutionary ecology. Prerequisite: 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: 121L and 122L, 371L or permission of instructor. 2 lectures, 4 hrs. lab. <Fall>

*416L. Histology. (4) Bourne
Microscopic structure of vertebrate tissues, emphasizing correlation of structure and function. Prerequisites: 121L and 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: 121L and 122L and 371L or 386L. 2 lectures, 6 hrs. lab. <Spring>

*423. Biological Adaptation. (3) Gosz, Riedesel, Ligon, Crawford
Adaptations of plants and animals to light. Prerequisite: 121L and 122L and Junior standing. <Fall>

*424. Biological Adaptation. (3) Gosz, Riedesel, Ligon, Crawford
Adaptations of plants and animals to temperature and water. Prerequisite: 121L and 122L and Junior standing. <Spring>

*429L. Cellular Physiology and Biochemistry. [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>
*433. Molecular Biophysics. (3) Beckel
(Also offered as Chem, Physcs 433.) Physio-chemical properties and the dependence of biological function on these properties for amino acids, proteins, nucleotides, DNA, and RNA. <Offered upon demand>

*433L. Comparative Physiology. (4) Landau
A comparison of physiological processes with emphasis on osmoregulation, nutrition, and metabolism. Prerequisites: 371L or 386, 430L or 478L and 429L, or permission of instructor. Organic chemistry recommended. 3 lectures, 3 hrs. lab. <Spring 1975 and alternate years>

*443L. Comparative Physiology. (4) Landau
A comparison of physiological processes with emphasis on osmoregulation, nutrition, and metabolism. Prerequisites: 371L or 386, 430L or 478L and 429L, or permission of instructor. Organic chemistry recommended. 3 lectures, 3 hrs. lab. <Spring 1975 and alternate years>

*454L. Pathogenic Bacteriology. (4) Cooper
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. <Spring>

*455. Ethology: Animal Behavior. (3) Ligon
Adaptive significance of major behavioral patterns, with special emphasis on vertebrates; composition of behavior. Prerequisite: 386L. <Fall>

*456L. Immunology. (3) 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. Ethology Laboratory: Animal Behavior. (1) Ligon
Special laboratory and field projects in animal behavior. Optional. To be taken with, or subsequent to, 455. 3 hrs. lab. <Spring>

*458. Immunology Laboratory Techniques. (2) Cooper

*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. 2 lectures, 6 hrs. lab. <Fall>

*473L. General Mycology. [Mycology and Plant Pathology] (4) Barton, Martin
A general study of the fungi with emphasis on classification, physiology, biochemistry, and the impact of these organisms on human affairs. Prerequisites: 121L and 122L and 363L, 372L or 253. 2 lectures, 6 hrs. lab. <Spring>

*474L. Plant Anatomy. (4) Martin
Structure of vascular plants. Prerequisites: 121L and 122L and 363L or 372L. 2 lectures, 4 hrs. lab. <Summer>

*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 Bioi or junior status. <Spring>

*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. <Spring>

*481L. Medical Entomology. (3) Staff
The insects and arachnids of importance in human and veterinary medicine. Emphasis in the laboratory on identification. Prerequisites: 121L and 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>
*483. Analysis of Development. (3) Staff
Advanced study of basic problems in developmental biology, with major emphasis on interacting systems at the molecular, fine structural, and cellular levels, and genetic and metabolic control of interacting systems. Discussions, outside readings and student report. Prerequisites: 408, 412 and 429 or permission of instructor. 3 lectures. <Spring>

*484L. Limnology. (4) Staff
Fresh-water habitats and aquatic invertebrates with special reference to problems of productivity. All-day field trips required. Prerequisites: 121L and 122L. 3 lectures, 3 hrs. lab. <Spring 1976>

*486L. Ornithology. (4) Ligan
Classification, phylogeny, natural history and literature of birds. Early morning field trips required. Prerequisite: 386L or permission of instructor. 3 lectures, 3 hrs. lab. <Fall>

*487L. Ichthyology. (4) Koster
Classification, phylogeny, natural history and literature of fishes. All-day field trips required. Prerequisites: 121L and 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. Prerequisites: 121L and 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>

*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: 121L and 122L, and permission of instructor. 1 lecture, 4 hrs. lab. <Fall>

*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. <Spring>

*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. Seminars: Current Topics in Biology. (1)‡
Prerequisites: permission of instructor. <Summer, Fall, Spring>

*502. Special Topics in Biology. (1-3)‡
Prerequisites: permission of instructor. <Summer, Fall, Spring>

*503. Research Procedures. (2) Koster
Prerequisite: 16 hours in Biol. <Fall, Spring>

*504. Environmental Physiology. (3) Riedesel
Prerequisites: 430L and permission of instructor. <Fall>

*508L. Advanced Invertebrate Zoology. (4) Staff
Prerequisite: 371L. 2 lectures, 4 hrs. lab. <Spring 1976>

*509. Advanced Genetics. (3) W. Johnson
Prerequisite: 408. <Spring 1975 and alternate years>

*510. Genetics of Speciation. (3) W. Johnson
Prerequisite: 408. <Spring 1976>

*525. Current Concepts of Biology. (3) Duszynski
*540L. The Soil Ecosystem. (4) Gosz, G. Johnson
Prerequisite: Graduate status or permission of instructor. <Fall 1974 and alternate years.>

*551L. Problems. (2-3)††

*552L. Advanced Parasitic Protozoology. (4) Duszynski
Prerequisites: 371L, 416L, 482L or permission of instructor. 2 lectures, 4 hrs. lab.
<Spring 1976>

*554L. Advanced Mammalogy. (4) Findley
Prerequisite: 489L. 3 lectures, 3 hrs. lab. <Fall 1974 and alternate years>

*557. Theoretical Ecology. (3) Rosenzweig
Prerequisites: 411L and Math 163 or equivalent. 3 lectures. <Fall>

*563L. Advanced Plant Taxonomy. (4) Martin
Prerequisite: 408 and 363L. Recommended: 407, 474L, and 478L. 2 lectures, 6 hrs. lab.
<Spring 1974>

*571L. Physiological Plant Ecology. (4) Gosz
Prerequisite: 407 or 478L. 3 lectures, 3 hrs. lab. <Fall>

*572L. Ecology of North American Vegetation. (4) Potter
Prerequisite: 407. 3 lectures, 3 hrs. lab. <Spring>

*583. Biology of Water Pollution. (3) Kidd
Prerequisite: permission of instructor. <Fall>

*584L. Biology of Water Pollution Laboratory. (1) Kidd
Enrollment limited to ten. Prerequisite: permission of instructor. Must be taken concurrently with or after 583.

*593L. Plant Mineral and Water Relations. (4) G. Johnson
Prerequisite: 478L. 2 lectures, 6 hrs. lab. <Fall 1975 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)
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


CURRICULA
See p. 81.

MINOR
The minor in Business and Administrative Sciences is available only to those students who complete the “Specific Requirements” for admission to 300- and 400-level B&AS courses: Math 102, 121, 155, 180; Econ 200, 201; Psych 102 and a 200 or higher psychology course or Soc 101 and a 200 or higher sociology course; B&AS 202 and 290L (taken with Math 102). The additional courses required for the minor are B&AS 303 or 340, 306, 307, and one additional upper division course in B&AS.

100. Management: An Introduction (3)
Modern concepts of organizations and their management. An overview of functional activities within business and other organizations. A management simulation game will provide students with the opportunity to integrate the subject materials of the course.
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. Management Science I. (3)
Mathematical and statistical models used in the decision-making process. Computer used in problem solving through deterministic models for optimal scheduling, resource allocation, and inventory control. Statistical techniques for time series forecasts and Bayesian decision theory. Prerequisites: "Specific Requirements," see above. <Fall, Spring>

301. Management Science II. (3)
Continuation of 300. Analyses of waiting line situations, design and execution of computer simulations, scheduling and sequencing techniques such as PERT-CPM in network analysis, and a computer-based management information project. Prerequisite: 300 <Fall, Spring>

303. Accounting for Management Control. (3)
Primary emphasis on the role of accounting in the processes of management decision-making for planning and control. Topics include: relevant cost analysis; standard costing and analysis of variances; budgeting and responsibility accounting, planning capital expenditures. Prerequisite: "Specific Requirements," see above. <Fall, Spring>

306. Organizational Behavior I—Theory and Concepts. (3)
Intensive examination of behavioral science research and theory as a basis for understanding, managing, and changing organizations. Emphasis is upon a comparative organizational approach which applies to every organization, public or private, as a socio-technical system. Prerequisites: "Specific Requirements," see above. <Fall, Spring>

307. Organizational Behavior II—Applications. (3)
Continuation of 306 with emphasis on applications of theories and concepts. Prerequisite: 306. <Fall, Spring>

308. Organizational Environment. (3)
The 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. Man, Society, and Law. (3)
Examination of nature, functions and ends of law. Philosophical schools of thought concerning the nature of man, organizations and government from Aristotle to present. Emphasis on law as external constraint on decision-making by individuals and organizations. Prerequisites: "Specific Requirements," see above. <Fall, Spring>

310. Law of Contracts. (3)
A conceptual approach to transactions between men and organizations. Development of an understanding of the elements of agreements, the types of agreements which are legally enforceable, and the legal remedies available to the parties thereto. Prerequisites: "Specific Requirements," see above. <Fall, Spring>

322. Marketing Management. (3)
Provides an understanding and appreciation of the marketing process within the framework of the firm. The purpose is to develop a comprehension of the increasingly important role of behavioral and quantitative models in developing marketing strategy. Prerequisites: "Specific Requirements," see above. <Fall, Spring>
326. Financial Management. (3) Principles and practices influencing the decision-making responsibility for business financial operations. Financial analysis, planning and control; long-term investment decisions; financial structure and cost of capital; working capital management; long-term external financing. Prerequisites: 300, 303, Econ 300, 315. <Fall, Spring>

340. Financial Accounting I. (3) Financial reporting theory, applied financial accounting problems, contemporary financial accounting issues. The accounting cycle; asset valuation; income determination; issues resulting from the corporate form of organization; current assets. Prerequisites: grade of C or better in 202. <Fall, Spring>

*341. Financial Accounting II. (3) Continuation of 340. Problems relating to liabilities and non-current assets; the analysis and interpretation of financial statements including the impact of income taxes and changing price levels. Prerequisites: “Specific Requirements,” see above and 340. <Fall, Spring>

*342. Income Tax Accounting. (3) Federal and state income tax laws and regulations; sources of tax law; tax services; the Internal Revenue Service; tax returns, rates and credits; deductions and exclusions; withholding provisions; capital gains and losses; community property clauses. Prerequisites: “Specific Requirements,” see above and 340, or permission of the instructor. <Spring>

*346. Managerial and Cost Accounting. (3) Procedures involved in the development, presentation and interpretation of accounting information as an aid to management. Usefulness and limitations of accounting data in evaluating and controlling operations; collecting cost information; cost estimation and allocation; standard costs; budgeting; cost-value relationships. Prerequisite: 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. Man, Society, and Law. (3) Examination of nature, functions and ends of law. Philosophical schools of thought concerning the nature of man, organizations and government from Aristotle to present. Emphasis on law as external constraint on decision-making by individuals and organizations. Not accepted as credit toward a B.B.A. degree. <Fall, Spring>

359. Law of Contracts. (3) A conceptual approach to 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. Organization Theory. (3) Fundamentals of organization and management which apply to organizations involving sizeable groups of people. The manager's job in setting goals and utilizing human and material resources to meet organization objectives. Human relations case problems. Not acceptable as a credit toward a B.B.A. degree. <Fall, Spring>

436. Production 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. Financial Accounting III. (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. 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. Contemporary Accounting Topics. (3)
An examination of selected theoretical issues related to current controversy in accounting. Prerequisite: 440. <Spring>

*449. Accounting Information Systems. (3)
Accounting and its relationship to the management information and control system in the context of the total servomechanism system concept. Theories and applications emphasize the generation, organization, transformation, dissemination, codification, discrimination and economics of information. 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. Labor Law and Collective Bargaining. (3)
Intensive analysis of negotiation and arbitration cases involving wages, employee discipline, seniority rights, management prerogatives, and other collective bargaining issues. Prerequisites: B average or higher in 306 and 307. <Fall>

*466. Advanced Concepts and Problems in Organizational Behavior. (3)
Selected topics, problems, learning designs, and models in organizational behavior. Prerequisites: B average or higher in 306 and 307. <Spring>

470. Money Management and Financial Institutions. (3)
Financial flows in the U.S. economy, the monetary mechanism and determination of interest rates. Behavior of short- vs. long-term interest rates. Regulation and structure of the banking system. Character and behavior of financial institutions. Prerequisite: 326. <Fall>

471. Investment Analysis and Management. (3)
Theory and techniques basic to control of investment risks and optimization of investment returns. Investment media and priorities, security market operations, portfolio analysis and management, profitability analysis, planning and management of investment programs, timing of securities transactions. Prerequisite: 326. <Fall, Spring>

472. Problems and Policies in Business Financial Management. (3)
Planning and financing current and long-term operations. Internal vs. external financing, internal rate of return, mergers and consolidations, dividend policy. Development of a policy-making framework for sound decision-making under risk. Prerequisite: 326. <Spring>

*480. 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. 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)
Analysis and development of an integrated distribution network. A systems approach is applied to problems of marketing logistics. Economic analysis and quantitative tools are used in decision-making concerning the physical flow of goods. Warehousing and inventory planning. Prerequisites: 300 and 322. <Spring>

*487. Marketing Communication. (3)
Communication theory including market, audience, and individual behavior; relationships of communication in the marketing mix; personal and nonpersonal forms of communications; problems of determining advertising appropriations, budgets, campaign strategy, media analysis, and evaluations of the communications effort. Prerequisite: 322. <Fall>

490-491-492-493. Special Topics in Business and Administrative Sciences. (3)
Selected offerings of business and administrative science topics not represented in the regular curriculum. Prerequisites: 301, 309, 322, 326. <Offered upon demand>
495. Seminar in Small Business. (3)
The objectives of the course are to stimulate creative entrepreneurship in small business. It is devoted to consideration of the problems of initiating and/or acquiring, financing, organizing, operating, and marketing the product of small firms. Prerequisites: 301, 309, 310, 322, 326. <Fall, Spring>

498. Senior Seminar. (3)
Emphasizes the functions of top management. Case studies offer the student an opportunity to develop a habit of administrative thinking as company-wide objectives and policies are formulated and consistent plans and programs are carried into action. Prerequisites: 306, 309 or 310, 322, and 326 and second semester senior standing. <Fall, Spring>

500. Quantitative Analysis I. (3)
501. Quantitative Analysis II. (3)
502. Accounting and Management Information Systems I. (3)
503. Accounting and Management Information Systems II. (3)
504. Organizational Economics I. (3)
505. Organizational Economics II. (3)
506-507. Organizational Behavior I and II. (3, 3)
508. Organizational Environment. (3)
509. Organizational Intelligence Systems. (3)
510. Management Science I. (2)
511. Management Science II. (2)
512. Financial and Managerial Accounting and Control I. (2)
513. Financial and Managerial Accounting and Control II. (2)
514. Organizational Economics I (2)
515. Organizational Economics II. (2)
516. Organizational Behavior I. (2)
517. Organizational Behavior II. (2)
518. Organizational Environment I. (2)
519. Organizational Environment II. (2) Arthur
520. Operations Research and Production Management. (3)
521. Operations Management I. (2)
522. Marketing Management. (3)
523. Operations Management II (2)
524. Operations Management III. (2)
525. Operations Management IV. (2)
526. Financial Management. (3)
527. Strategic and Operational Planning. (2) Lenberg
528. Seminar in Integrative Management. (2) Lenberg
530. Systems Theory and Information Science. (3)
531. Multivariate Analysis for Administrative Science. (3)
532. Simulation. (3)
533. Quantitative Analysis for System Planning. (3)
534. Computerized Administrative Information Systems. (3)
544. Advanced Accounting Theory and Practice. (3)
545. Seminar in Accounting Theory and Its Development. (3)
546. Seminar in Controllership. (3)
547. Seminar in Advanced Tax Accounting. (3)
549. Seminar in Managerial Control. (3)
550. Economic and Behavioral Theories of the Organization. (3)
551-552. Problems. (1-3 hrs. each semester)
553. Industrial Organization Economics. (3)
BUSINESS AND ADMINISTRATIVE SCIENCES—CHEMISTRY

*554. Public Control of Business. (3)
*555. Urban Economics and Social Welfare. (3)
*556. Experimental Economics. (3)
*557. Seminar in Organizational Economics. (3)
*558. Man and His Environment. (3)
*559. Seminar in Organizational Ecology. (3)
*560. Psychobiological Approaches to Organizational Behavior. (3)
*561. Interpersonal Dynamics. (3)
*562. Organizational Design and Development. (3)
*563. Human Resources Management: Theory and Applications I. (3)
*565. Seminar in Administrative Theory and Decision Making. (3)
*566. Human Relations Laboratory. (3)
*569. Seminar in Organizational Communication. (3)
   (See Sp Com 544.)
*570. Analysis of the Financial System. (3)
*571. Security Analysis and Investment Management. (3)
*572. Financial Planning and Capital Budgeting. (3)
*575. Seminar in Finance. (3)
*580. Research for Marketing Management. (3)
*581. Seminar in Marketing Strategy. (3)
*582. Seminar in Marketing Models. (3)
*583. Seminar in Comparative Marketing Systems. (3)
*584. Advanced Seminar in Marketing Theory. (3)
*585. Fundamentals of International Business. (3)
*586. Seminar in the Management of International Business Operations. (3)
*587. Seminar in Management of World Markets. (3)
*588. Advanced Seminar in International Business Administration. (3)
*590. Problems for Interns. (1-6)
*595. Seminar in Corporation and Society. (3)
*596. Seminar in Applied Organizational Intelligence. (3)
*597. Advanced Seminar in Planning Theory and Practice. (3)
*598. Seminar in Integrative Management. (3)
*599. Administrative Research and Problems I and II. (Thesis) (1-6)

BUSINESS EDUCATION
   See Education, Secondary

CHEMICAL ENGINEERING
   See Engineering, Chemical

CHEMISTRY


The program of the Department of Chemistry conforms to the standards prescribed by the American Chemical Society.

Explanation of footnotes not indicated will be found on p. 194.
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, 315, 342 and at least 11 additional hours selected from courses numbered 324-498; or Chem 101L, 102L, 253L, 301, 302, 303L, 304L, 315, 342 and at least 8 additional hours selected from courses numbered 324-498.

For the degree of Bachelor of Science: Chem 121L (or 101L), 122L, 301, 302, 309L, 310L, 311, 312, 313, 331L, 332L (or 333L and 334L), 351, 431 and at least 7 additional hours selected from courses numbered 324-498; or Chem 101L, 102L, 253L, 301, 302, 309L, 310L, 311, 312, 313, 331L, 332L, (or 333L and 334L), 351, 431 and at least 7 additional hours selected from courses numbered 324-498. The program must also include Physics 160, 161, 163L, 262, 264L, Mathematics equivalent to 265. Two years German is recommended for students who are planning to do advanced studies in chemistry. Only three credits of Chem 495-498 and two credits of 325-326 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 7 additional hours required selected from courses numbered 324-498.

Any deviation from the requirements prescribed above must be approved by the Department of Chemistry and must total a minimum of 34 hours (BA degree) or 44-47 hours (BS degree).

DEPARTMENTAL HONORS

A student shall enter the program in his junior year. At the time of entry he must have a grade point average of 3.2 overall and 3.5 in chemistry. Course requirements for graduation with honors are as follows: 121L-122L or 101L-102L-253L; 301, 302, 309L and 310L; 311, 312, 313; 333L, 334L; 351, 431 and at least 7 additional hours of 400 level courses including at least 3 hours of 497-498. The senior honors research project will be culminated with a written and oral report.

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 309L-310L may be substituted for Chem 303L-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. <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, Summer>

102L. General Chemistry. (4)
Continuation of 101L. 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. Prerequisite: 1 yr. high school chemistry and ACT math score of 26 or permission of instructor. Corequisite: Math 162 or 180. 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 or 253L.) <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. (Students should make every effort to complete 253 within two semesters of completion of 102.) <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 or corequisite: 281. 3 hrs. lab. <Offered upon demand>

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 or 309L be taken concurrently. <Fall, Summer>

**302. Organic Chemistry. (3)
Continuation of 301. Prerequisite: 301. It is mandatory that 304L or 310L be taken concurrently. <Spring Summer>

**303L. Organic Chemistry Laboratory. (1)
To be taken concurrently with 301. 3 hrs. lab. <Fall, Summer>

**304L. Organic Chemistry Laboratory. (1)
To be taken concurrently with 302. 3 hrs. lab. <Spring, Summer>

**305. Organic Chemistry. (3)
Continuation of Chem 302. Special topics including reactions of carbonions, conjugate addition, non-classical ions, orbital symmetry and other advanced topics. Prerequisite: 302. <Fall>
**309L. Organic Chemistry Laboratory. (2)  
To be taken concurrently with 301 by B.S. majors. 6 hrs. lab. <Fall>  

**310L. Organic Chemistry Laboratory. (2)  
To be taken concurrently with 302 by B.S. majors. 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: Math 264, Math 265, Physics 262; pre- or corequisites: 122L or 253. <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>  

**315. 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.) (Credit not allowed for both 311 and 315.) 3 lectures, 2 hrs. discussion. <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.) <Spring>  

**325-326. Special Topics for Undergraduates. (1-2 hrs. each semester)  
Discussion of a topic of general interest. Possible topics are: chemical literature, environmental chemistry, group theory, photochemistry, macromolecules, synthesis. Prerequisite: 302. Corequisite, 311 or 315. <Offered upon demand>  

**331L. Chemistry Laboratory III. (2)  
Integrated advanced analytical-inorganic-physical chemistry laboratory, illustrating the techniques used to quantify the energetics, dynamics, composition, and structure of matter. Pre- or corequisites: 311, 351. 6 hrs. lab. <Fall>  

**332L. Chemistry Laboratory III. (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. Inorganic Chemistry. [Descriptive Inorganic Chemistry]. (2)  
A survey of the chemical and physical properties of the elements and their compounds including periodic trends, solid state structures, nonmetallic compounds, and transition metal complexes. Prerequisite: 311 or 315 or permission of instructor. <Spring>  

**336L. Inorganic Chemistry Laboratory. [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: 342 or 431. <Spring>  

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. <Fall 1974 and alternate years>  

*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. <Spring 1975 and alternate years>
*414. Mechanistic Organic Chemistry. (2)
A survey of mechanisms of organic reactions with emphasis on reactivity patterns and stereochemical outcome. Prerequisite: 302. <Spring 1976 and alternate years>

*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 302-310L and permission of instructor. 2 lectures, 6 hrs. lab. <Fall>

*431. Advanced Inorganic Chemistry. [Inorganic Chemistry] (3)
Survey of electronic and molecular structures of inorganic compounds, coordination chemistry, bonding theory, physical methods, periodicity, and reactions. Prerequisite: 312 or permission of instructor. <Fall>

*433. Molecular Biophysics. (3)
(Also offered as Biol and Physics 433.) Physico-chemical properties and the dependence of biological function on these properties for amino acids, proteins, nucleotides, DNA, and RNA.

*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, 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.) Prerequisite: 302; 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)
<Fall>

*502. Molecular Structure Determination. (3)
<Spring>

*503. Chemical Synthesis. (3)
<Fall>

*504. Chemical Dynamics. (3)
<Spring>

Prerequisite: 504 or permission of instructor. <Fall 1974 and alternate years>

Prerequisite: 511 or permission of instructor. <Spring 1975 and alternate years>

*513. Chemistry of Heterocyclic Compounds. [Topics in Organic Chemistry] (3)
<Fall 1975 and alternate years>
*514. Synthesis in Organic Chemistry. [Topics in Organic Chemistry] (3)‡
Prerequisite: 503 or permission of instructor. <Spring 1976 and alternate years>

*515-516. Topics in Organic Chemistry. (1-3)‡
<515—Fall upon demand; 516—Spring upon demand>

*521. Radiochemistry. (3)
Prerequisite: 312. <Fall 1975 and alternate years>

*522. Advanced Topics in Radiochemistry. (3)
Prerequisite: permission of instructor. <Spring 1976 and alternate years>

*523L. X-ray Crystallography. (4)
(Also offered as Geol 506L) Prerequisites: 311 or Math 264, and permission of instructor.
2 lectures, 6 hrs. lab.

*524L. Crystal Structure Analysis. (3)
(Also offered as Geol 507L) Prerequisites: 523L and permission of instructor. EECS 336 is
strongly recommended, 2 lectures, 3 hrs. lab.

*525-526. Special Topics in Chemistry. (1)‡
Prerequisite: permission of instructor. <525—Fall upon demand; 526—Spring upon demand>

*532. Inorganic Stereochemistry. [Advanced Inorganic Chemistry] (3)
Prerequisite: 431 or permission of instructor. <Spring 1975 and alternate years>

*533. Group Theory. [Topics in Inorganic Chemistry] (3)
Prerequisite: 431 or permission of instructor. <Fall 1974 and alternate years>

*534. Advanced Coordination Chemistry. [Topics in Inorganic Chemistry] (3)
Prerequisite: 431 or permission of instructor. <Spring 1976 and alternate years>

*535. Bioinorganic Chemistry. (3)
Prerequisite: 431 or permission of instructor. <Fall 1975 and alternate years>

*536. Inorganic Reaction Mechanisms. (3)
Prerequisite: 431 or permission of instructor. <Spring 1975 and alternate years>

*537-538. Special Topics in Inorganic Chemistry. (1-3)‡
Prerequisite: permission of instructor. <537—Fall upon demand; 538—Spring upon demand>

*541. Separations. [Advanced Analytical Chemistry.] (3)
<Fall 1975 and alternate years>

*542. Chemical Measurements. (3)
<Spring 1976 and alternate years>

*543. Analytical Spectroscopy. [Topics in Analytical Chemistry.] (2)
<Fall 1974 and alternate years>

*544. Electrochemistry. [Topics in Analytical Chemistry.] (3)
<Spring 1975 and alternate years>

*545-546. Topics in Analytical Chemistry. (1-3)
<545—Fall upon demand; 546—Spring upon demand>

*561. Quantum Chemistry I. [Advanced Physical Chemistry.] (3)
<Fall 1974 and alternate years>

*562. Quantum Chemistry II. [Advanced Physical Chemistry.] (3)
Prerequisite: 561. <Spring 1975 and alternate years>

*563. Thermodynamics. [Topics in Physical Chemistry.] (3)
Prerequisite: 312 or permission of instructor. <Fall 1974 and alternate years>

*564. Statistical Thermodynamics. [Topics in Physical Chemistry.] (3)
Prerequisite: 313 or permission of instructor. <Spring 1975 and alternate years>

*565. Kinetics. (3)
Prerequisite: 313 or permission of instructor. <Fall 1975 and alternate years>

*566. Spectroscopy. (3)
Prerequisite: 313 or 561 or permission of instructor. <Spring 1976 and alternate years>

*567-568. Topics in Physical Chemistry. (1-3)‡
Prerequisite: permission of instructor. <567—Fall upon demand; 568—Spring upon demand>

*581. Advanced Topics in Biological Chemistry. (3)
(Also offered as Med Sc 581) Prerequisite: 482. <Offered upon demand>

*599. Master's Thesis. (1-6 hrs. per semester.) See the Graduate School Bulletin for total
credit requirements.
*623. Biochemistry of Steroids. (3)
(Also offered as Med Sc 623.) Prerequisites: 302, 324 or 481, or Med Sc 590-591.

*625. Chemistry Seminar. (1)
<fall, spring>

*650. Research. (2-6 to a maximum of 12) <summer, fall, spring>

*699. Dissertation. (3-9 hrs. per semester) See the Graduate School Bulletin for total credit requirements.

CHICANO STUDIES
COORDINATOR: Antonio Mondragon, Lecturer in American Studies; ASSISTANT COORDINATOR: Tobias Duran, M.A., Lecturer in American Studies.

This interdepartmental program is designed to inject the richness of the Chicano viewpoint and culture into the already existing departments. In order to eradicate the historical and political biases, which have existed vis-a-vis the Chicano values, language and way of life, this program offers approximately 15 courses, which are accredited and numbered by the corresponding departments. The following are some of the core courses:

CURRUCULUM
American Studies 301. Interdepartmental Studies in the Culture of the United States. (3)
  Chicano Literature.
American Studies 302. Interdepartmental Studies in the Culture of the United States. (3)
  History of conflict in New Mexico.
History 283. La Raza: A History of Mexican Americans. (3)
Philosophy 105. Introduction to Chicano Thought. (3)
Sociology 226. Sociology of the Barrio. (3)
Sociology 227. Chicanism: Contemporary Mexican Society. (3)

CIVIL ENGINEERING
See Engineering, Civil

CLASSICAL LANGUAGES
CLASSICS
See Modern and Classical Languages.

COMMUNICATIVE DISORDERS


MAJOR STUDY
36 hours in Communicative Disorders. Required: 280, 302, 303, 320, 321.

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)
Clinical work for students who speak English with a foreign accent. <Summer, Fall, Spring>

280. Scientific Bases of Speech. (3)
(Also offered as Sp Com 280.) The bases of the speech process as presented in the scientific materials of such related fields as physics, physiology, psychology, and linguistics. <Fall, Spring>

292. Introduction to the Study of Language. (3 or 4)
(See Ling 292.)

*302. Communicative Disorders. (3)
Bolton, 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. <Spring, Fall, Summer>

*303. Phonetics. (3)
Chreist
(Also offered as Sp Com and Ling 303.) English phonetics as applied to problems of articulation, pronunciation, rhythm, dialects, and to the teaching of speech, English, language and communicative disorders. <Fall, Spring>

*320. Acoustics of Speech and Hearing. (3)
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. <Spring>

*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>

*326. Processes of Speech Articulation Laboratory. (1)
Draper
Projects and demonstrations in support of theory presented in 325. Pre- and 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>

*350. 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>

358. Pre-Clinical Training. (1)
Bolton, Draper, Hood
Introduction to basic clinical skills prerequisite for clinical practicum. Prerequisites: 302, 303, 321, 325 and permission of instructor. <Summer, Fall, Spring>

*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
Appraisal and management of individuals with impaired hearing. Prerequisite: 321 or equivalent. <Spring>

*426. Manual Communication. (1)
Fletcher, Hood
Fingerspelling and sign language. <Fall, Spring>

*427. Problems of the Hearing-Impaired. (3)
Hood
(Also offered as Spc Ed 427.) Communicative, educational and psycho-social problems of the deaf and hard of hearing. Prerequisite: 302 or 321 or permission of instructor. <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) Draper
  Theories of stuttering and other rhythmic disorders and approaches to treatment.
  Prerequisite: 302 or permission of instructor. <Spring>

*437. Aphasia. (3) Porch
  Symbolic disorders of communication, including receptive and expressive speech and language problems.
  Prerequisites: 302, 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 instructor. <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, Hood
  Speech pathology and audiology in the clinic. Prerequisite: 358 or 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. (3) Ryan

*506. Seminar in Foreign Accent. (3) Chreist

*530. Language Disorders in Children. (3) Butt

*531. Communication Problems of the Cerebral Palsied. (3) Butt

*535. Seminar in Cleft Palate. (3) Ryan

*536. Seminar in Research in Stuttering. (3) Butt

*537. Seminar in Aphasia. (3) Porch

*539. Seminars Current Concepts in Speech Pathology and Audiology. (1, repeatable to a total of 2) Lamb

*551-552. Problems. (1-3 hrs. each semester)

*553. Seminar in Linguistics and Language Pedagogy. (1-3)
  (See Ling 555.)

*558. Special Tests in Speech Pathology. (3) Butt

*560. Audiology and Audiometry. (3) Hood

*561. Clinical Audiology. (3) Hattler, Lamb

*563. Speech Audiometry and Hearing Aids. (3) Hood

*565. Seminar in Aural Rehabilitation. (3) Hood

*566. Seminar in Audiology. (3) Lamb

*599. Master's Thesis (1-6 hrs. per semester)

COMPARATIVE LITERATURE

COMMITTEE IN CHARGE: Assistant Professor S. Guthrie, Ph.D., (English), Chairperson; PROFESSORS F. M. Dickey, Ph.D., (English); J. Kolbert, Ph.D., (Languages); A. Rodriguez, Ph.D., (Languages); ASSISTANT PROFESSORS L. Johnson, Ph.D., (English); B. T. Lindsey, Ph.D., (Languages); P. K. Pabisch, Ph.D., (Languages); G. F. Peters, Ph.D., (Languages); W. S. Smith, Ph.D., (Languages); J. T. Timm, M.A., (Languages).

Comparative Literature is an interdepartmental program administered jointly
by the Department of English and the Department of Modern and Classical Languages. Students planning to major or minor in Comparative Literature are urged to consult with a Comparative Literature adviser so that their programs may be carefully planned.

MAJOR STUDY

The major in Comparative Literature normally consists of 33 hours distributed as follows:

Comparative Literature 260 and 12 additional hours in Comparative Literature, not more than 6 of which may be literature in translation;

9 hours of literature selected from courses numbered 300 or above in each of two languages, one of which may be English (literature in translation may not be used to satisfy this requirement).

A student is strongly advised to acquire reading knowledge of a second foreign language. Satisfactory completion of one of the following courses is recommended: French 252, 105-106, 275-276; German 202, 105-106; Greek 102, 301-302; Italian 275-276; Latin 251-252; Portuguese 275-276; Russian 251-252; Spanish 252, 105-106. Reading proficiency may also be demonstrated by examination through the University Testing Service.

Students may minor in any national literature, but courses taken to satisfy requirements for the minor may not be used to satisfy major requirements.

MINOR STUDY

A minor in Comparative Literature normally consists of Comparative Literature 260 and 12 additional hours of courses in literature, 6 of which must be Comparative Literature. 6 hours may be courses in any national literature. A student majoring in a national literature may not satisfy this requirement with literature courses in the language of his major.

The student is required to demonstrate reading proficiency in one foreign language by the satisfactory completion of one of the courses listed above, or by examination through the University Testing Service.

PERIOD MINOR STUDY

A period minor, an interdisciplinary minor with emphasis on one historical period, may consist of Comparative Literature 260 and 15 additional hours of appropriate courses drawn from literature, history, fine arts, music, philosophy, or other related fields, with the approval of a Comparative Literature adviser. Proficiency in an appropriate foreign language must be demonstrated, as in the Comparative Literature minor.

260. Introduction to the Study of Comparative Literature. (3)
General introduction to comparative literature emphasizing problems of theme, genre, period, influence, reception, and translation, through the study of specific literary texts.

300. Studies in Literature. (3)
(See Engl 300.)

*334. Spanish American Literature in Translation. (3)
(See Span 334)

*335. French Literature in Translation. (3)
(See French 335)

*336. German Literature in Translation. (3)
(See German 336)
*337. Spanish Literature in Translation. (3)  
(See Span 337)

*338. Russian Literature in Translation. (3)  
(See Russ 338)

*341. Greek Mythology. (3) Smith  
(See Greek 341)

*343. Soviet Literature in Translation. (3) Lindsey  
(Also offered as Russ 343.)

*344. Topics in Latin Literature in Translation. (3)‡  
(See Latin 344.)

*345. Topics in Greek Literature in Translation. (3)‡  
(See Greek 345.)

375. World Literature from Homer to Dante. (3)  
(See Engl 375.)

376. World Literature from Rabelais to Mann. (3)  
(See Engl 376.)

400. Literary Movements. (3)  
(See Engl 400.)

410. Literary Criticism. (3)  
(See Engl 410.)

*450. Special Topics in German Literature. (3)  
(See German 450.)

452. The Middle Ages. (3)  
(See Engl 452.)

459. Irish Literature (3)  
(See Engl 459.)

470. Contemporary Literature. (3)  
(See Engl 470)

*475. Dante in Translation. (3)  
(See Italian 475.)

*481. The Folktale in English. (3)  
(See Engl 481.)

487. Studies in Genre: Comedy, Epic, Satire, Tragedy, etc. (3)  
(See Engl 487.)

488. Interdisciplinary Studies. (3)  
(See Engl 488.)

*490. Seminar in Russian Literature. (3)  
(See Russ 490.)

*491. Seminar in Russian Language and Literature. (1-6)‡  
(Also offered as M A 491.)

*599. Master's Thesis. (1-6 hrs. per semester)

COMPUTING AND INFORMATION SCIENCE

PROFESSORS S. Bell, Ph.D., D. R. Morrison, Ph.D.; ASSOCIATE PROFESSORS E. J. Gilbert, Ph.D.,  
J. W. Ulrich, Ph.D.; ASSISTANT PROFESSOR N. Martin, Ph.D.

The following members of other departments also assist in the program. Department of  
Mathematics: C. Moler, Ph.D., S. Pruess, Ph.D., R. Allen, Ph.D.; School of Business and  
Administrative Sciences: F. Newbeck, Ph.D.

MAJOR STUDY

There is no major in Computing and Information Science. Students who wish  
to concentrate in this field are advised to earn a Bachelor of University Studies Degree, and to consult the faculty listed above concerning a choice of courses.  
See also, Electrical Engineering and Computer Science, p. 281.
MINOR IN COMPUTER/COMPUTING SCIENCE

To fulfill the requirements for a minor in Computer/Computing Science, the student must take 21 hours of credit selected from course offerings in the Division of Computing and Information Science and computer science courses in the Department of Electrical Engineering and Computer Science. Certain introductory courses, such as CIS 105, 155, 156, and EECS 336, may not be included in the 21 hours. The minor program must be approved by an adviser in EECS and an adviser in CIS before the completion of 12 hours of the minor. With approval of both advisers, computer courses in other departments may be allowed in the minor.

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. 3 lectures, 2 hrs. lab.

156. Computers and Problem Solving in the Liberal Arts. (3)
An elementary introduction to art of computing including use of Computer Center resources, SOFTWARE packages and programming. Students taking this course may not also take CIS 155.

255. Introduction to Computing Systems. (3)
An introduction to machine language, internal representation of instructions and data, interaction between programs and the basic components of operating systems. Structured programming in PL 360, a "high level" assembly language. Prerequisites: 155 or programming experience.

256. Programming Languages. (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. (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. <Spring>

*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. <Fall>

*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)
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. Prerequisite: 155.

*375. Introduction to Numerical Computing. (3)
(Also offered as Math 375.) An introductory course covering such topics as interpolation, integration, solution of linear and non-linear equations, and solution of ordinary differential equations. A single effective method will be studied for each topic and computer codes furnished. Emphasis will be on solving problems. Prerequisites: Calculus and some ability at Fortran programming. <Fall>
COMPUTING AND INFORMATION SCIENCE 233

*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. (3)

*452. Simulation. (3)
(Also offered as B&AS 532.) Study of a variety of simulation methods as an aid to managerial decisions involving both micro- and macro-systems. Problems and projects involve active programming of simulations in at least one simulation language. Prerequisites: ability to write programs in some language and B&AS 501 or knowledge of elementary probability and statistics and introductory calculus. <Spring>

*455. Mathematical Logic. (3)
(Also offered as Math 455.) Formalization of mathematical reasoning. The notion of completeness and consistency will be developed within the context of the first order predicate calculus. The higher order calculus, or the theory of types, will be examined. Two alternative definitions of mathematical truth will be discussed. There are no prerequisites in particular, but the student should have a reasonably strong background in mathematics with a good intuitive feeling for what constitutes mathematical proofs. Prerequisite: permission of instructor.

*456. Non-Standard and Higher Order Logic. (3)
(Also offered as Math 456.) Intuitionistic logic and model theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory to types. Prerequisite: 455.

*457. Principles of Artificially Intelligent Machines. (3)
Survey of artificial intelligence exclusive of pattern recognition. Heuristic search techniques, game playing, introduction of mechanical theorem proving. Prerequisite: 354. <Offered upon demand>

*475. Numerical Analysis I. (3)
(Also offered as Math 475.) Numerical solution of linear and nonlinear systems of equations; the algebraic eigenvalue problem; round-off error. Prerequisites: Math 314 or equivalent and some knowledge of Fortran programming. Students with credit for Math 375 should consult with instructor. <Fall>

*476. Numerical Analysis II. (3)
(Also offered as Math 476.) Approximation of functions, integration and numerical solution of ordinary differential equations. Prerequisites: 316 or 361 or equivalent, and some knowledge of Fortran programming. Students with credit for 375 should consult with instructor. <Spring>

**490. Computing for Liberal Arts Graduate Student. (3)
Elementary introduction to art of computing including use of Computer Center resources, SOFTWARE packages, and programming. Student will be required to complete term project relating course to his major field of study. Prerequisite: Permission of instructor. Course cannot apply to either minor or master's degree in CIS.

*499. Individual Study. (1-3 hrs. per semester)
Guided study, under the supervision of faculty member, of selected topics not covered in regular courses. Admission by approval of Division Director.

*500. Foundations of Set Theory. (3)
(Also offered as Math 500.) Prerequisites: 451, 455, 456. <Offered upon demand>

*553. Computer Evaluation of Mathematical Functions. (3)
Prerequisites: 475-476 or equivalent, with permission of instructor. <Offered upon demand>

*554. Mathematical Theory of Computation. (3)
Prerequisite: 455. <Offered upon demand>

*555. Data Structures. (3)
Prerequisites: Math 155, or equivalent, with permission of instructor. <Fall>

*556. Introduction to Information Retrieval. (3)
Prerequisite: 555, or permission of instructor. <Spring>
*557. Computational Mathematics. (3)†
(Also offered as Math 557.) <Offered upon demand>
*558. Mechanical Theorem Proving. (3)
(Also offered as Math 558.) Prerequisite: Mathematical Logic. <Spring>
*559. Topics in Computing. (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.) <Offered upon demand>

CURRICULUM AND INSTRUCTION
See Education, Curriculum and Instruction.

DANCE
See Theatre Arts, Dance.

DENTAL HYGIENE
PROFESSORS Carman A. Bliss, Ph.D., (Acting Director); M. Novitski, D.D.S.; ASSOCIATE PROFES-
ADJUNCT ASSOCIATE PROFESSORS W. Avery, D. Clifford, D.D.S., N. Cooper, C. Cullen,
R. Sei, D.D.S., W. Thornberry, D.M.D.

DENTAL HYGIENE
CURRICULUM
See p. 183.

100. Orientation. (2) Staff
Survey of dental hygiene, dental assisting, dentistry, and related professions. Personal
and oral health. Introduction to patient education. <Fall>

101. Preclinical Dental Hygiene. (2) Pederson
Didactic introduction to the clinical skills of dental hygiene. <Fall>

102L. Preclinical Dental Hygiene Laboratory. (2) Staff
Introduction to the clinical skills of dental hygiene. 6 hrs. lab. <Fall>

103. Clinical Dental Hygiene. (2) Pederson
Techniques of oral hygiene procedures through didactic instruction. <Spring>

104L. Clinical Dental Hygiene Laboratory. (2) Staff
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. Pre-
requisite: 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) Creighton
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>

200. Integrative Dental Hygiene. (2) Staff
Continuation of DH 103. Didactic instruction in dental hygiene sciences. <Fall>

201L. Integrative Dental Hygiene Lab. (4) Staff
Clinical experiences in dental hygiene procedures and practices. 11 hours lab. <Fall>

202. Integrative Dental Hygiene. (1) Staff
Continuation of 200. <Spring>

203L. Integrative Dental Hygiene Laboratory. (5) Staff
Clinical experience in dental hygiene procedures and practices. Prerequisite: completion
of all courses in first three semesters of professional curriculum. 16 hrs. lab. <Spring>
210. Histology. (2) Avery
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) Avery
Introduction to general pathology; pathology of diseases affecting teeth and their supporting structures; oral manifestations of systemic disturbances. Prerequisite: 210L. <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) Creighton
Teaching of dental health; methods and materials to use; theory and practice of preventive dentistry and public health. Open to dental hygiene students. <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. (Practice Management and Ethics) (2) Navarre
The principles, laws and regulations related to dentistry and dental hygiene; essentials of office management, record keeping, and practice building. Prerequisite: 4th semester standing.

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: Ed, Fdn. 300, Ed. Fdn. 310, C & I 432, C & I 433. <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

100. Orientation. (2) Staff
(See DH 100.)

110. Oral Anatomy. (3) Novitski
(See DH 110.)

111L. Dental Anatomy. (2) Novitski
(See DH 111L.)

121L. Introductory Dental Sciences. (3) Miera, Novitski, Cullen
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) Miera
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. Study of dental
specialties, dental literature, and dental health materials. Prerequisites: 121L and 131L. 3 lectures, 3 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, Ph.D., (Chairman); S. Cohen, Ph.D., M. Gisser, Ph.D., P. Gregory, Ph.D., D. Hamilton, Ph.D., G. Hufbauer, Ph.D., P. Jonas, Ph.D., A. Kneese, Ph.D., N. Wollman, Ph.D.; ASSOCIATE PROFESSORS S. Ben-David, Ph.D., P. Chung, Ph.D., A. Parker, Ph.D., D. Toilby, Ph.D., P. Therikidt, Ph.D., L. Zink, Ph.D.; ASSISTANT PROFESSORS L. Brown, Ph.D., A. Church, Ph.D., W. Schulze, Ph.D.

Explanation of footnotes not indicated will be found on p. 194.

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 Economic 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. Financial Management. (3) (See B&AS 326.)

*330. Consumer Economics. (3) Hamilton The theory of consumption. Prerequisites: 200, 201, or consent of instructor.

*331. The Economics of Poverty. (3) Hamilton Defines the scope of poverty problems, relates the problem to economic theory, and examines possible solutions. Prerequisites: 200, 201, or consent of instructor.

*332. Government Control of Business. (3) Parker Government and social control of business enterprise, including public utilities; the economics of rate making in public utilities. Prerequisites: 200, 201, or consent of instructor. <Spring>

*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: 200 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 Physicocrats to Keynes. Prerequisites: 200, 201.

*364. Rise of Modern Industry. (3) Hamilton
Institutional and technological forces in the evolution of the industrial economy. Pre-
requisites: 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>

(Also offered as Math 407.) A survey course designed to develop those mathematical
results and methods which find frequent use in economic analysis. Prerequisites: 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 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 govern-
ment intervention. Prerequisite: 300.

*427. Labor and Public Policy. (3) Cohen
Development of public policy toward industrial relations and labor market problems.
Emphasis upon economic implications. Prerequisite: 320.

*440. Regional Analysis. (3)
Analysis of regional economies, economic models. Prerequisites: 200, 201.

*442. Natural Resources. (3) Ben-David, Brown, Kneese, Wollman
Land, water, mineral, energy resources; development, allocation, pricing; productivity
and effects on national income and balance of payments. Prerequisite: 300.

*445. Economics of the Budget Process. (3) Boyle
(Also offered as Pub Ad 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. Pre-
requisites: 200, 201.

451-452. Problems. (1-3 hrs. per semester)
<Fall, Spring, Summer>

*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. Prerequisites: undergraduates require approval of department.

497-498. Reading for Honors. (3, 3)

499. Senior Honors Thesis. (4)

*500. Micro-economic Theory. (3) Gisser 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)† Prerequisite: permission of instructor.

*504. Quantitative Analysis II. (3) (See B&AS 501.)

*505. Macro-economic Theory. (3) Prerequisites: 303, Math 180-181. <Spring>

*506. Advanced Macro-economic Theory. (3) Prerequisites: 505 and Math 314. <Fall>

*507. Programming and Growth. (3) Prerequisites: 407 and Math 314.

*508. Data Construction and Evaluation in Economics. (3) Brown Prerequisites: 289, 407. <Spring>


*510. Econometrics. (3) Brown Prerequisite: 509.

*511. History of Economic Thought. (3) Tailby Prerequisite: graduate status in Economics or permission of instructor.

*512. Economic History. (3) Tailby Prerequisite: graduate status in Economics or permission of instructor.

*515. Theory of Money and Banking. (3) Chung, Parker Prerequisite: 303 or 315.

*516. Monetary Problems and Policies. (3) Chung, Parker Prerequisite: graduate standing in Economics.

*520. Seminar in Labor Economics. (3) Cohen, Gregory Prerequisite: 320 or equivalent and permission of instructor.

*521. Comparative Labor Problems. (3) Cohen

*526. Seminar in European Economic History. (3) Goldsmith (Also offered as Hist 526.)

*531. Standards and Levels of Living. (3) Hamilton Prerequisite: graduate status in Economics or permission of instructor.
*532. The Theory of Consumption. (3) Hamilton  
Prerequisite: graduate standing in Economics or permission of instructor.

*542. Seminar in Natural Resource Planning. (3) Ben-David, Wollman  
Prerequisite: 300 or 500.

*543. Seminar in Natural Resource Planning. (3) Ben-David, Wollman  
Prerequisite: 303 or 505.

*544. Special Topics in Environmental Economics. (3) Ben-David, Kneese  
Prerequisite: 300 or equivalent. <Fall>

*546. Economic Education. (2 or 4) Parker, Doxtator  
(Also offered as Bus Ed 546 and Sec Ed 546.) <Summer only>

*551-552. Problems. (2·3 hrs. per semester)

*560. Theory of Public Finance. (3) Boyle, Church, Therkildsen  
Prerequisite: permission of instructor.

*562. State and Local Finance. (3) Boyle, Church, Therkildsen  
Prerequisite: 350 or graduate status in Economics or permission of instructor.

*565. Seminar in Fiscal Policy. (3) Boyle, Therkildsen  
Prerequisite: graduate status in Economics.

*570. Institutional Economics. (3) Hamilton  
Prerequisite: graduate status in Economics or permission of instructor.

*578. Economic Planning. (3) Jonas  
Prerequisite: 303. <Spring>

*579. Monetary Aspects of International Economics. (3)  
Prerequisite: 424 or permission of instructor.

*580. International Trade Theory. (3) Hufbauer  
Prerequisite: 424 or permission of instructor.

*582. Theories of Economic Development and Growth Models. (3) Hufbauer

*583. Seminar in Economic Development with Particular Application to Latin America. (3) Gregory  
Prerequisite: graduate status in Economics or permission of instructor.

*584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3) Lieuwen,  
Merkx, Needler, Schwerin  
(Also offered as Anth, Hist, 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
(Also offered as Phil 485.) Philosophical backgrounds of classical and neo-classical, socialist
and communist, and institutionalist economics. Prerequisite: Econ 201. <Spring 1973 and
alternate years>

EDUCATION, ART

PROFESSOR H. McConeghey, Ed.D., (Chairman); ASSOCIATE PROFESSORS D. J. McIntosh, Ed.D.,
N. Townsend, M.A.; ASSISTANT PROFESSORS P. Peterson, M.A., J. Srubek, M.A.; B. Vogel,
M.A.

CURRICULUM


MINOR STUDY


110. Creative Arts and Crafts in the Elementary Schools. [Creative Art in Elementary School.] 
   (4)
   Developing art and craft awareness through comprehension and expression. Companion
   course with Art Ed. 115. <Summer, Fall, Spring>

115. Creative Experiences in Art for the Elementary School. [Creative Craft in Elementary
   School.] (2)
   Specialized experiences in teaching art in the elementary school. Companion course with
   Art Ed. 110. <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 in the secondary school setting. This course should be
   taken the semester preceding student teaching in the secondary schools. Prerequisite or
   corequisite: Art Ed. 220. <Fall and on demand>

211. Creative Art K-9. (3)
   Fundamentals of art education in elementary, middle and junior high schools. Prerequisite:
   Art Ed. 220. <Spring and on demand>

220. Pre-teaching Experience in Art. (3-6)††
   Required for screening into art education, this course includes consideration of child
   development in art and offers introductory teaching experience with children and youth.
   Prerequisite for all art education courses in the major program. <Summer, Fall, Spring>

247. Topics. (1-3)
   Courses on a variety of topics are offered as need and interest dictate. Different section
   numbers indicate different topics. <Spring, Summer, Fall>

351. Problems. (1-3)
   Individual problems are studied under the supervision of a faculty member. Permission of
   faculty member involved required.

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
   For Art Education majors only. Prerequisite: 220; corequisite: 402. <Fall only>

*401. Children and Art. (3)
   Pre-school through adolescence. For Art Education minors only. <Spring>

*402. Teaching Art in Elementary School. (3)
   Objectives, motivation, and procedures. For Art Education majors only. Prerequisite: 220;
   corequisite: 400. <Fall>

*429. Workshop. (1-4)
   Various workshops are offered as necessary in the teaching of different aspects of art.
   This course carries graduate credit when specifically approved by the Graduate
   Committee. For degree restrictions see p. 98 of this catalog or consult the Graduate
   School Bulletin.

†† May be repeated for a maximum of 6 hours.
*434. Teaching Art in Secondary School. (3)
Objectives, motivation, and procedures. Corequisite: 461. <Spring>

*477. Topics. (1-3)
Courses on a variety of topics are offered as need and interest dictate. Different section numbers indicate different topics.

458-459. Field Experience I and II. (3-6, maximum of 12)
(Also offered as Bus Ed, C&I, Ed Adm, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor.

461. Student Teaching in the Secondary Schools. (3-6-9)
For Art Education majors only.
Prerequisites: Art Ed 220 and 210; corequisite: Art Ed 434. <Spring>

*465. Art and the Exceptional Child. (3)
(Also offered as Spec Ed 465.) Course designed to acquaint Special Education teachers value and therapeutic uses of art in Special Education classroom and to acquaint Art Education majors with adaptations of art to various exceptionalities. <Fall>

*500. Seminar. (1-3)‡
<Summer, Fall, Spring>

*529. Workshop. (1-3)

*547. Topics. (1-3)

*551-552. Problems. (1-3 hrs. each semester)

*558-559. Advanced Field Experiences I and II. (3-6, 3-6)
(Also offered as C&I, Ed, Fdn, Bus Ed, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of instructor. <Summer, Fall, Spring>

*561. Practicum in the Supervision of Instruction. (3)
(See C&I 561.)

*585. Research Applications to Education. (3)
(Also offered as Ed Fdn 500.)

*590. Current Trends and Issues in Art Education. (3)
<On demand>

*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)

*699. Doctoral Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

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. (Taller Pedagogico) (1-4)
For degree restrictions see p. 98 of this catalog or consult the Graduate School Bulletin.

*432. Production and Utilization 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. 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: EI 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, I Ed, Sec Ed 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

*458-459. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, Ed Adm, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

*460. Organization and Administration of Media Centers. (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
<Summer, Fall, Spring>

*482. Teaching English as a Second Language. (3) Brodkey, Pfeiffer, Spolsky, White, Zintz
Prerequisites: Ling 292 or Engl 440 (may be taken concurrently) and permission of instructor. <Summer, Fall, Spring>

*500. Advanced Instructional Strategies. (3)
(Also offered as Sec Ed 500.) <Spring>

*512. Arranging Learning Environments. (3) Loughlin
(Also offered as EI Ed 512.) <Fall>

*515. Remedial Teaching Techniques. (3) Zintz
<Summer, Spring 1972 and alternate years>

*529. Workshop. (1-4) <Offered upon demand>

*530. Adult Education. (3)
(Also offered as Ed Adm 530.) <Spring>

*532. The Reading Process. (3) Van Dongen, White, Zintz
Prerequisites: 535L and EI Ed 531 and permission of instructor. <Spring, Summer 1973 and alternate years>

*535L. Practicum in Learning Disabilities (Reading). (3) Van Dongen, Zintz
Includes 3 hr. supervised laboratory each week. Prerequisites: 435L and EI Ed 531 or Sec Ed 520. 3 lectures, 1 hr. lab. <Summer, Fall, Spring>

*541. Principles of Curriculum Development. (3) Drummond, Howard, Ivins, Mann
<Spring 1973, Summer, and alternate years>

*542. Curriculum Theory Seminar. (3) Mann
Prerequisite: permission of instructor. <Fall>

*547. Topics. (1-3)

558-559. Advanced Field Experiences I and II. (3-6, 3-6)
(Also offered as Art Ed, Bus Ed, Ed Fdn, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of instructor. <Summer, Fall, Spring>

*560. Supervision of Instruction (Elementary and Secondary). (3)
(Also offered as Ed Adm 560.) <Summer, Fall, Spring>

*561. Practicum in the Supervision of Instruction. (3) Auger, Ivins
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) Prerequisite: permission of instructor. <Summer, Fall>
*580. Curriculum Development for Bilingual/Bicultural Programs. (3) Gonzales
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.) <Fall>

*610-611. Internship I and II. (3-6, 3-6)
<Summer, Fall, Spring>

EDUCATION, EDUCATIONAL ADMINISTRATION

ASSOCIATE PROFESSOR P. A. Pohland, Ph.D. (Chairman); PROFESSORS R. Blood, Ph.D.; R.
Lawrence, Ph.D.; R. Tonigan, Ed.D.; C. C. Travelstead, Ph.D.; ASSOCIATE PROFESSORS J. Aragon,
PROFESSORS H. Jaramillo, Ph.D.; S. Pagrow, Ph.D.

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)
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. 98 of this catalog or consult the Graduate School Bulletin.
<Offered upon demand>

*447. Topics. (1-3)

458-459. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, C&I, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed,
Sec Ed 485-459). Planned and supervised professional laboratory or field experiences in
agency or institutional setting. Prerequisite: permission of instructor. <Offered upon demand>

*509. Introduction to Educational Administration. (3)

*510. School-Community Relations. (3)

*520. The School Principalship. (3)

*521. Public School Finance. (3)

*522. School Business Management. (3)

*526. Educational Planning and the School Plant. (3)

*529. Workshop in Educational Administration. (1-4)
For degree restrictions consult the Graduate School Bulletin. <Offered upon demand>

*530. Adult Education. (3)
(Also offered as C&I 530.)

*531. Administration of Staff Personnel. (3)

*532. Current Educational Problems. (3)

*547. Topics. (1-3)

*551-552. Problems. (1-3 hrs. each semester)

*558-559. Advanced Field Experiences I and II. (3-6, 3-6)
(Also offered as C&I, Art Ed, Bus Ed, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H
Ec Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission
of instructor. <Summer, Fall, Spring>

*560. Supervision of Instruction (Elementary and Secondary.) (3)
(Also offered as C&I 560.)

*561. School Law. (3)

*564. School and Community Surveys. (3)

*571. State and Federal Educational Administration. (3)

*581. Seminar in Educational Administration. (1-3)

*612-613. Field Experiences in Educational Administration. (3, 1-3)

*626. Educational Buildings and Equipment. (3)
*629. Seminar for Practicing School Administrators. (1-3)
*630. Administration in Higher Education (3)
*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. (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. 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 El Ed 441.) Pre- or corequisite: 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. <Spring, Summer>

EDUCATION, EDUCATIONAL FOUNDATIONS


Explanation of footnotes not indicated will be found on p. 194.

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 philosophers 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
(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. 98 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, I Ed, Sec Ed 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

458-459. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, C&I, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

*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.)

*501L. Research Methods in Education. (3) Berch, Cooper, Dahmen, Harris, Moellenberg

*502. Seminar. (3)‡
(Also offered as Ling 552.)

*503. Seminar in Human Growth and Development. (3) Berch, Dahmen, Harris, Moellenberg

*504. Computer Applications in Educational Research. (3) Cooper, Moore

*510. Seminar in Classroom Learning. (3) Berch, Blackwell, Dahmen, Harris

*515. Comparative Philosophies of Education. (3) Vogel, Zepper

*516. Educational Classics. (3) Zepper

*517. Educational Ideas in Literature. (3) Vogel

*518. Comparative Education. (3)‡ Bachelor, Zepper

*533. Behavior Modification in Education. (3) Harris

*547. Topics. (1-3)‡

*551-552. Problems. (1-3 hrs. each semester)

*553. Seminar in Language Acquisition (3) John-Steiner
(Also offered as Ling 553.)

*555. Seminar in Linguistics and Language Pedagogy. (1-3) John-Steiner, Oller
(See Ling 555.)
*558-559. Advanced Field Experiences I and II. (3-6, 3-6)
(Also offered as C&I, Art Ed, Bus Ed, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, H Ed Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of instructor. <Summer, Fall, Spring>

*574. Theory and Construction of Educational Measures. (3) Blackwell, Harris, Moore

*581. Seminar: Sociology of Education. (3) Bachelor
(Also offered as Soc 521.)

*603. Research Design and Statistics in Education. (3) Blackwell, Cooper, Harris, Moore

*604. Multivariate Design and Analysis in Educational Research. (3) Blackwell, Cooper, Moore

*610-611. Internship I and II. (3-6, 3-6)

*645. Advanced Seminar in Foundations of Education (3)†

*650. Dissertation Seminar. (1) Cooper, Harris

*699. Doctoral Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

EDUCATION, ELEMENTARY


CURRICULA

See pp. 102-105.

§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>

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. <Spring>

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. (3) Hinger, Moolenijzer
(Also offered as PE 319.) Four class meetings a week. <Summer, Fall, Spring>

321L. Teaching of Social Studies in the Elementary School. (3) Auger, Darling, Drummond, Gonzales, D., 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) Auger, 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>

§ Open to students in the A.A. in Educ (Elem) program only.
351. Problems. (1-3) <Summer, Fall, Spring>

*353L. Teaching of Science in the Elementary School. (3) Auger, Darling, Drummond, Gonzales, D., Mann, Tweeten, Van Dongen <Summer, Fall, Spring>

361L. Teaching of Mathematics in the Elementary School. (2) Auger, Darling, Drummond, Gonzales, D., 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, 335L, 361L. See also additional requirements on p. 95. Special fee of $10 is charged. <Fall, Spring>

405. Curriculum for Early Childhood. (3) Auger, Loughlin
Education of children 2-5. Prerequisite: H Ec 408L. <Fall, and upon demand>

*421. The Social Studies Program in the Elementary School. (Estudios Sociales en la Escuela Primaria) (3) Drummond
Prerequisite: 321L. <Summer 1973 and alternate years, Fall>

*429. Workshop. (1-4) (Taller Pedagogico)
Carries Graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 98 of this catalog or consult the Graduate School Bulletin. <Offered upon demand>

*431. The Reading Program in the Elementary School. (El Programa de Lectura en la Escuela Primaria) (2 or 3) Auger, Gonzales, Van Dongen, Zintz
Prerequisite: 331L. <Summer, Fall, Spring>

*433. Oral and Written Language Program in the Elementary School. (Lenguaje oral y Escrito en la Escuela Primaria.) (2-3) Loughlin, Jaramillo
Prerequisite: 333L. <Summer, Fall>

*441. Children's Literature. (Literatura Infantil.) (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. <Fall 1974, Summer 1975 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. 91. <Fall, Spring>

*505. Seminar in Early Childhood Education. (3-12) Auger, Loughlin

*511. Curriculum in the Elementary School. (3-12) Auger, Darling, Drummond

*512. Arranging Learning Environments. (3) Loughlin
(Also offered as C&I 512.) <Fall>

*521. Seminar in the Social Studies. (3-12) Drummond

*529. Workshop. (1-4)
For degree restrictions consult the Graduate School Bulletin.

*531. Seminar in Teaching Reading. (3-12) Auger, Gonzales, Van Dongen, Zintz

*533. Seminar in the Language Arts. (3-12) Jaramillo, Zintz

*541. Seminar in Children's Literature. (3-12) Gonzales, Van Dongen

*547. Topics. (1-3)

*551-552. Problems. (1-3 hrs. each semester)

*553. Seminar in Teaching Elementary Science. (3-12) Tweeten

*561. Seminar in Teaching Mathematics. (3-12) Darling

*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)

*699. Doctoral Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.
EDUCATION, GUIDANCE AND COUNSELING


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. 98 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)
(Also offered as Spec Ed 510.) 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 Spec Ed 512.)

*513. Socio-Economic Information in Counseling. (3)

*514. Organization and Supervision of Counseling Services. (3)

*515. Differential Diagnosis II. (3)
(Also offered as Spec Ed 515.)

*516. Clinical Case Study. (3)

*517. Group Counseling. (3)

*518. Theories of Counseling. (3)

*519. Practicum in Counseling. (1-6)

*529. Workshop in Counseling. (1-4)
For degree restrictions, consult the Graduate School Bulletin. <Offered upon demand>

*540. Counseling in the Elementary School. (3)

*541. Counseling and Play Therapy with Children. (3)

*547. Topics. (1-3)

*550. College Personnel Work. (3)

*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)
*620. Seminar in Counseling. (3)
*621. Advanced Theories of Counseling and Psychotherapy. (3)
*622. Advanced Group Counseling and Psychotherapy. (3)
*630. Advanced Practicum in Counseling, Counselor Education, and Supervision. (3-6)
*699. Doctoral Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

EDUCATION, HEALTH, PHYSICAL EDUCATION AND RECREATION


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. 106-111.

HEALTH EDUCATION

164. First Aid. (2)
Preparation in knowledge and skills to meet the needs in most situations where first aid care is needed. Students eligible for Standard Red Cross First Aid Certificate. <Summer, Fall, Spring>

171. Personal and Community Health. (3)
Exploration of the major areas of health information pertinent to understanding how to achieve, maintain, and promote positive health. Topics covered include mental health, drugs, human sexuality, prevention and control of diseases, nutrition, consumer health and ecology. <Summer, Fall, Spring>

212. Fundamentals of Human Sexuality. (3)
Basic knowledge about human sexuality including anatomical, physiological, psycho-social, and ethical components. Broad consideration of sexual behavior. Emphasis on discussion of viable topics from varying points of view. <Fall, Spring>

247. Topics. (1-3)

301. General Safety Education. (3)
Basic principles of safety education. Current safety programs as they apply to school, home, and community. <Spring and alternate summers beginning with Summer 1973>

345. Professional Experience in School and Community Health Education. [Professional Laboratory Experiences in Health Education.] (1-4)
<Summer, Fall, Spring>
351. Problems. (1-3)
Prerequisite: permission of Health Education Coordinator. <Summer, Fall, Spring>

400. Student Teaching in Elementary Schools. (3-6-9)
<Fall, Spring>

402. Traffic Safety Education in Secondary Schools. (3)
Those enrolling must be licensed drivers. Discussion includes 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. 98 of this catalog or consult the Graduate School Bulletin. <Offered upon demand>

442. Emergency Health Care. (3)
Information and skills in recognizing and managing emergencies due to illness or injuries. Limited to juniors/seniors. Prerequisite: permission of Health Education Coordinator. <Summer, Fall, Spring>

*447. Topics. (1-3)

458-459. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, C&I, Ed Adm, Ed Fdn, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of Health Education Coordinator. <Summer, Fall, Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
<Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
<Fall, Spring>

469. Elementary School Health and Health Education. (3)
Stress is placed on understanding current information related to health of elementary school children, planning and directing learning experiences in health and safety, promoting a healthy environment for learning, and ways of working as an effective member of the school health team. Open to health specialists, elementary school administrators, and classroom teachers. Prerequisites: 171, Ed Fdn 300, or permission of instructor. <Summer, Fall, Spring>

470. Secondary School Health and Health Education. (3)
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, Spring>

*475. Alternative Approaches in Drug Education. (3)
Teaching skills necessary to communicate effectively in this subject material. Emphasis on methodology, curriculum and teacher qualities. Permission of the instructor required. <Spring and every other summer>

*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. Prerequisite: 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. 91.

*504. Research Seminar. (1)

Prerequisite: minimum of an undergraduate minor in Health Education or permission of instructor. <Summer and upon demand>

*511. Administrative Aspects of School and Community Health. [Administration of School Health.] (3)

φ Limited to juniors and seniors only.
*516. Seminar in Health Education. (3)

*520. Teaching Human Sexuality. (3)

*529. Workshop. (1-4)
   For degree restrictions consult the Graduate School Bulletin.

*547. Topics. (1-3)

*551-552. Problems. (1-3 hrs. each semester)
   Only by permission of Health Education Coordinator.

558-559. Advanced Field Experiences I and II. (3-6, 3-6)
   (Also offered as C&I, Art Ed, Bus Ed, Ed Fdn, Ed Adm, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of instructor. <Summer, Fall, Spring>

*599. Master's Thesis. (1-6 hrs. per semester)
   See the Graduate School Bulletin for total credit requirements.

*610-611. Internship I and II. (3-6, 3-6)

*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.

100. [101] Beginning Swimming. (1)
   Instruction for students who have not been in the water or have a fear of water.

101. [102] Intermediate Swimming. (1)
   Instruction in all basic strokes. For students who can swim.

102. [103] Advanced Swimming. (1)
   Instruction and practice in perfecting all swimming strokes.

103. Diving. (1)
   Instruction in basic fundamentals of springboard diving, primarily on one meter board.

104. Water Polo. [Lifesaving.] (1)
   Basic skills, strategy, rules and terminology to play and officiate the game.

105. [104] Lifesaving. [Water Safety Instructorship] (1)
   Instruction and practice in lifesaving techniques which lead to Senior Red Cross Lifesaving Certificate. Prerequisite: Ability to swim.

106. [105] Water Safety Instruction. (2)
   Instruction in swimming, teaching techniques for those who want to become teachers of swimming. Prerequisite: Current Red Cross Senior Lifesaving Certificate.

   Instruction and practice in canoeing, sailboating, kayaking, and in operation of small motor craft.

108. [132] Skin and Scuba Diving. [Ballroom Dance.] (2)
   Special Fees. Fundamental skills of skin and scuba diving, use of equipment, medical and safety aspects, dive planning, oceanography and marine life.

109. Advanced Scuba. [Modern Dance I.] (2)
   Special Fees. Instruction in technical aspects of diving such as repetitive, deep decompression and high altitude diving, equipment maintenance and repair, underwater navigation, search and recovery, light salvage diving, life saving and first aid.

115. Gymnastics. (Women only) (1)
   A course to acquaint the student with fundamental skills of tumbling, balance beam, trampoline, uneven parallel bars and vaulting.

117. [116] Apparatus Stunts. (Men only) [Individual Tumbling.] (1)
   Instruction in activities in tumbling, vaulting, parallel bars and trampoline to better acquaint the student with gymnastics.

118. [117] Individual Tumbling. (Men only) [Movement Fundamentals.] (1)
   A class for the beginner to help develop coordination, agility, flexibility, a Kinesthetic sense and neuromuscular control.

120. [107] American Country Dance. [Wrestling.] (1)
   Instruction in the basic movements of square, contra and round dance.
122. [112] International Folk Dance. (1) Instruction of selected folk dances of the world.
123. Intermediate-International Folk Dance. [Wilderness Experiences.] (1) Instruction dependent upon experience of students.
126. [109] Modern Dance I. [Beginning Golf.] (1) (Also offered as Dance 109.) The techniques and practice of basic motor skills and their application to aesthetic communication. <Fall, Spring>
128. [111] Mexican-New Mexican Dance. [Beginning Tennis.] (1) Instruction in the basic movement of Mexican-New Mexican folk dance.
140. [126] Beginning Golf. [Volleyball.] (1) Instruction in the basic skills, equipment, rules, etiquette and shot-making.
142. [134] Advanced Golf. [Track and Field] (1) For the low handicap player. Emphasis is on the refining of skills and strategies of competitive golf.
143. [128] Beginning Tennis. [Ice Skating.] (1) Instruction in the basic skills and rules of tennis.
144. [129] Intermediate Tennis. [Beginning Judo.] (1) Instruction emphasizes actual play.
145. [133] Advanced Tennis. [Casting and Angling.] (1) Instruction for the consistent player with emphasis upon advanced skills.
146. [130] Bowling. (1) Special Fees. Instruction and practice in the basic skills of bowling.
147. Topics. (1-2) New activities offered on an exploratory basis.
148. Archery. (1) Instruction in the basic skills and knowledge of range archery.
149. [125] Badminton. [Therapeutic Physical Education] (1) Instruction in the basic skills, rules and strategy of competitive play.
150. Fencing. (1) Instruction in the basic skills and knowledge of French foil fencing.
151. Handball. (1) Instruction and practice in all the four wall handball shots and rules.
152. Racquetball. (1) Instruction and practice in the skills and rules of racquetball.
153. [142] Track and Field. (1) Instruction in the basic techniques of track and field events for both men and women.
160. [121] Weight Training. (1) Individual training programs for development of general strength, tone, endurance and weight control.
161. [124] Developmental Physical Education—Weight Control. (1) Combined weight training and running for over-all development.
163. Aerobics. (1) Individualized running programs for improved cardiorespiratory endurance.
164. [118] Movement Fundamentals. (1) Individualized programs for improvement and development of posture and fitness.
170. [135] Basketball, (Women only) (1) Instruction and practice of game skills with consideration given to the ability levels of students.

172. [135] Basketball, (Men only) (1) Instruction and practice of game skills with consideration given to the ability levels of students.

174. Softball-Team Handball. (1) Practice in playing and learning the fundamentals of softball and team handball, a team game which can be described as being similar to a combination of basketball and hockey, sometimes called European Handball.

175. [140] Volleyball, (1) Instruction and practice of basic game skills, with emphasis upon power techniques.

177. Flag Football, (Women only) (1) Instruction and practice of basic game skills of flag football.

178. [137] Flag Football-Flickerball, (Men only) (1) Instruction and practice of basic game skills of both flag football and flickerball.

179. [136] Field Hockey, (Women only) (1) Instruction in the basic skills and rules of field hockey.

180. [139] Soccer-Speedaway, (1) Instruction and practice of basic skills of soccer and speedaway.

184. [143] Ice Skating, (1) Special fees. Basic and intermediate skating, including figure skating, basics broom hockey, ice skating, and precision skating.

186. [141] Beginning Skiing, (1) Special Fees. Instruction leading to wide-track parallel skiing.

187. Intermediate Skiing. (1) Special Fees. Review of beginning skills including beginning parallel skiing and instruction in more advanced techniques.

189. [145] Cross Country Skiing, (1) Special Fees. Instruction and practice in techniques leading to cross country touring.

190. [145] Casting and Angling. (1) Instruction in skills and techniques for fishing in New Mexico.

191. Camping Experiences, (2) Instruction and field experiences designed to develop skills in shelter, food, warmth and safety.

192. [131] Horseback Riding, (1) Special Fees. Basic fundamentals of horsemanship in relationship to trail and recreation riding. (First meeting at Johnson Gymnasium, remainder at Horse Country Club.)

194. [123] Wilderness Experience, (2) Special Fees. Creation of stressful situations in the wilderness environment to help students learn more about themselves.

195. Bicycling, (1) Instruction in bicycle maintenance, safety, speed trial riding and touring includes speed trials and tours of various distances.

198. [149] Therapeutic Physical Education, (1) Therapeutic physical education works subordinate to Student Health Services supplying corrective and adaptive program for students incapable of regular program participation. Prerequisite: permission of University Health Service.

PROFESSIONAL COURSES—PHYSICAL EDUCATION

Some of the following courses are scheduled to meet more periods or hours per week than indicated by the number of credit hours. These courses, in addition to lectures, include professional activity, laboratory, or field types of class experiences. To identify these courses, the number of class meetings or hours per week is stated after the course description.

201. Gymnastics, (2) The professional course in gymnastics. Prerequisite: 118. 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>

205. Fundamentals of Basketball. (2)
The professional course in the coaching of basketball. 4 class meetings per week. <Fall>

206. Fundamentals of Football. (2)
The professional course in the coaching of football. 4 class meetings per week. <Spring>

207. Swimming (2)
A professional course in swimming. Prerequisite: ability to swim. 4 class meetings per week. <Fall, Spring>

208. Body Mechanics and Self-Testing Activities. (1)
Three class meetings per week. <Fall>

209. Physical Fitness and Body Mechanics. [Physical Fitness Programs.] (2)
The professional course in physical fitness programs. 4 hours per week <Fall, Spring>

210. Folk Dance. (2)
Four class meetings per week. <Fall, Spring>

211. Competency in Individual and Dual Sports. (1)
Three class meetings per week. <Spring>

212. Competency in Team Sports. (1)
Three class meetings per week. <Fall>

245. 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>

247. Topics. (1-3)
<Summer, Fall, Spring>

260. Officiating in Sports. (2)
Discussion and practice in officiating techniques in soccer, speedball or field hockey, volleyball, basketball, etc. Prerequisite: permission of instructor. 4 hrs. per week. Not restricted to Education students. <Fall, Spring>

273. Introduction to Athletic Training (2)
<Fall, Spring>

301. Teaching of Team Sports. (2)
Prerequisites: M-209, W-212 or permission of instructor. 4 hours per week. <Fall>

302. Teaching of Individual and Dual Sports. (2)
Prerequisite: M-209, W-211, or permission of instructor. 4 hours per week. <Spring>

307. Team Sports in the Secondary School (2)
Prerequisite: 212 or permission of instructor. 4 hours per week. <Fall>

308. Individual and Dual Sports in the Secondary School. (2)
Prerequisite: 211 or permission of instructor. 4 hours per week. <Spring>

309. Teaching of Gymnastics. (2)
Prerequisites: W-115, M-118 or permission of instructor. 4 hours per week. <Spring>

310. Folk Dance in the School Program. (2)
Prerequisite: 210 or permission of instructor. 4 hours per week. <Fall>

319. Physical Education in the Elementary School. (3)
(Also offered as EI Ed 319.) 4 hours per week. <Summer, Fall, Spring>

326L. Physiology of Exercise. (3)
(Also offered as Biol 326L.) <Fall, Spring>

351. Problems. (1-3)
Prerequisite: permission of Physical Education Coordinator. <Summer, Fall, Spring>

366. Teaching of Modern Dance. (2)
(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. (4)
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: 398 or 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 245, 319, 301, 302, 309, 310, 489, and Biol 326L. <Fall, Spring>

*429. Workshop. (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 98 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 209, 210 & 245, M-118, W-115, 211, 212. <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 intramural, interschool, and community recreation programs. Prerequisite: permission of instructor. <Fall, Spring>

458-459. Field Experiences I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, C&I, Ed Adm, Ed Fdn, H Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisites: 245, 326L, 301, 302, 309, 310, 319, 444, 489, and Ed Fdn 290, 300, 310. <Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisites: 245, 319, 326L, 301, 302, 309, 310, 444, 489, 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: 206 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: 205 and senior standing. <Fall>

466. Special Physical Education. (3)
The field of adoptive 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 211 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. (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. 91. <Summer, Fall, Spring>

*504. Research Seminar. (1)

*505. Foundations for a Philosophy of Physical Education. (3) 
Prerequisite: at least 3 hours in history, principles, or methods of physical education. <Summer, Fall>

*510. Curriculum Construction in Physical Education. (3) <Spring, Summer>

*514. The Remedial Program in Physical Education. (3) <Spring, Summer>

*516. Seminar in Physical Education. (3) <Summer, Fall, Spring>

*521. Clinical Program in Therapeutic Physical Education. (3-6) 
(Also offered as Spc Ed 521) <Summer, Fall, Spring>

*523. Biomechanics. (3) <Spring, Summer>

*527. Physiological Aspects of Exercise and Sport. (3) <Summer, Fall>

*529. Workshop. (1-4) 
For degree restrictions consult the Graduate School Bulletin. <Summer>

*530. Laboratory Investigations in Exercise Metabolism. (3) 
Prerequisite: undergraduate course in exercise physiology and permission of instructor. <Summer, Fall>

*540. Sport in American Culture. (3) 
Prerequisite: Soc 101 or equivalent. <Spring, Summer>

*547. Topics. (1-3) <Summer, Fall, Spring>

*551-552. Problems. (1-3 hrs. each semester)

558-559. Advanced Field Experiences I and II. (3-6, 3-6) 
(Also offered as C&I, Art Ed, Bus Ed, Ed Fdn, Ed Adm, H Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of instructor. <Summer, Fall, Spring>

*570. The Analysis of Teaching Physical Education. (3) 
(Also offered as C&I 570.) Prerequisite: permission of instructor. <Summer, Fall>

*588. Psychological Aspects of Sports. (3) 
Prerequisite: Psych 230 or 332 or equivalent. <Spring, Summer>

*595. Facilities Planning, Construction, and Utilization. (3) <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) <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>
Prerequisite: permission of the recreation coordinator.

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. 98 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>

458. [475] Field Experience. [Field Work in Recreation] (3-6)
Prerequisite: 345. <Summer, Fall, Spring>

459. [476] Field Experience. [Field Work in Recreation] (3-6)
Prerequisite: 458. <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. <Fall>

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. 91. <Offered upon demand>
*504. Research Seminar. (1)  
(See PE 504.)

*507. History and Philosophy of Recreation in the United States. (3)  
<Fall>

*508. Recreation Administration. (3)  
<Fall>

*516. Seminar in Recreation. (3)  
<Spring>

*524. Evaluation of Recreation Resources and Programs. (3)  
<Fall>

*529. Workshop. (1-4)  
<Offered upon demand>

*540. Systems Approach For Outdoor Recreation Planning. (3)  
<Fall>

*547. Topics. (1-3)  <Offered upon demand>

*551-552. Problems.

*555. Socio-Psychological Concepts of Leisure. (3)  
<Spring>

558-559. Advanced Field Experiences I and II. (3-6, 3-6)  
(Also offered as C&I, Art Ed, Bus Ed, Ed Fdn, Ed Adm, H Ed, Phys Ed, Ind Ed, H Ec Ed,  
Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission of  
instructor. <Summer, Fall, Spring>

*586. Principles of Therapeutic Recreation. (3)  
<Spring>

*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)  
<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, Ed.D., Chairman; ASSOCIATE PROFESSORS: R. B. Harris, M.S.; E. Sanders, M.S.; ASSISTANT PROFESSORS: I. H. McMurray, M.S.; T. Olson, Ph.D.; M. M. Smith, M.S.; C. Bruner, Ph.D.

MAJOR STUDIES AND CURRICULUM

See pp. 111-113.

HOME ECONOMICS

101. Freshman Seminar. (2) Snell  
Individual's role as a home economist and her relationship with families. Required of all majors. <Fall>

102. Infant Growth and Development. (3) Bruner  
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. Introductory Nutrition. [Food for Man.] (3) Harris  
Nutritive needs of normal individuals of all age groups; relation of nutrition to health. <Fall, Spring>

150L. Clothing Construction. (2) McMurray  
Fitting and altering patterns and garments, methods or techniques in construction processes, use and upkeep of equipment. 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. <Fall>

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 102, Soc 101, and Art Ed 130. <Spring>

252. Textiles. (3) McMurray
Construction, identification, use and care of clothing and household textiles. Consumer education related to textile products. <Fall, Spring>

254L. Tailoring. (3) McMurray
Construction of a wool suit or coat emphasizing fitting and techniques of finishing. 1 lecture, 4 hrs. lab. <Fall>

303. Practicum. (3) Sanders
On-the-job training assignment topics for study are developed that lead to the understanding of the role and responsibilities of a clinical dietitian. Prerequisites: Junior standing. <Summer>

325. Intermediate Nutrition. [Nutrition.] (3) Harris
Nutrition related to the chemistry, physiology of the human body; interrelationships of nutrients, analysis of nutritive value of foods. Prerequisites: Junior standing. <Summer>

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. <Spring>

341. House and Its Environment. (3)
Guides in the selection of a house with emphasis upon the use of space for function, economy, and beauty. <Fall, Spring>

351. Problems. (1-3)

403. Practicum—Hospital. (4) Sanders
Student demonstrates and practices the role and responsibility of a clinical dietitian. Prerequisites: Senior standing concurrent with H Ec 426, 404. <Fall, Spring>

404. Practicum—Community (4) Sanders
Student demonstrates and practices the role and responsibility of a clinical dietitian. Prerequisites: Senior standing concurrent with H Ec 426, 403. <Fall, Spring>

*408L. Growth & Development of the Pre-School Child [Child Growth and Development] (3)
Bruner
Developmental principles and recent research on social-emotional, cognitive and physical development of the preschool child. Laboratory experiences. Prerequisites: Psych 102, H Ec 102. Junior standing. 2 lec., 3 hours lab experience. <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. Prerequisite: H Ec. 218. <Fall, Spring>

425. Introduction to Clinical Nutrition (3) Sanders
(Also offered as Clin Sci 425) Determination of nutritional status of normal persons by the health team, using research methodology. Prerequisites: Physiology, H Ec 325, 326L, Biochemistry or concurrently 500 Med. Biol. I. <Fall, Spring>

426. Clinical Nutrition. (4) Sanders
Practice, under supervision, the role of a nutrition educator in a health organization; the facilitator of continuing nutritional care through the life cycle; and the responsibilities of professional status. Prerequisites: Senior standing concurrent enrollment in H Ec 403, 404. <Fall, Spring>

427L. Large Quantity Food Production. (3) Lockett
Standard methods of food production in quantity; food cost control; standardization of formulas, menu planning and food service. Prerequisites: 120L, 222L. <Spring>

428. Diet Therapy. (3) Harris
The adoption 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: Chem 141L. 2 lectures, 3 hrs. lab.
434. Organization and Management. (3) Harris, Lockett
A study of the principles of organization and management applied to food service installations. Prerequisite: Psych 102; pre- or corequisite: B&AS 306.

443. Family Decision Making. (Home Management.) (3) Smith
Family decisions in the allocation and use of resources to meet family goals. Prerequisites: Soc and Anthro. Junior standing. <Fall, Spring>

*444. Family Finance. (3) Smith
Economic problems of direct concern to the family. Prerequisites: a basic course in Economics, Family Decision Making, Psychology, and Sociology. <Spring>

445L. Home Management Lab. (Home Management Residence) (4) Smith
Experiences in dealing with families of varying value structures and for identifying values and goals held by others. Prerequisite: 443. Special fee $50.00. <Fall, Spring>

*447. Topics. (1-3)

*456L. Dress Design. [Creative Design in Clothing.] (3) McMurray
Dress designing through manipulation of a basic pattern. Prerequisites: advanced standing—majors and minors only. 1 lecture, 4 hrs. lab. <Spring>

*509L. Organization and Management of Nursery Schools and Kindergarten. (3)

*510. Young Child At Home and School. (3)

*520. Family Living in Modern Society. (3) Olson

*529. Workshop. (1-4)

*535. Seminar in Nutrition. (3) Harris

*547. Topics. (1-3)

*549. Managing Family Resources. (3) Smith

*551-552. Problems. (1-3 hrs. each semester)

*554. Socio-Psychological Aspects of Clothing. (3) McMurry

*555. Seminar in Textiles. (3)

*610-611. Internship I and II. (3-6, 3-6)

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. 98 of this catalog. <Offered upon demand>

*437. Teaching of Home Economics. (3) Snell <Spring>

458-459L. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, C&S, Ed Adm, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, Sec Ed 458-459L.) Planned and supervised professional laboratory of field experiences in agency or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 437. <Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
<Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
<Fall, Spring>

465. Home Economics Seminar. (2) Snell
Trends in Vocational Home Economics Education. <Fall, Spring>

*475. Evaluation in Home Economics. (3) Snell
Newer concepts concerning evaluation and testing instruments and techniques for home economics. The construction and use of evaluative devices for home economics in the classroom and ways of determining their value. Pre- or corequisite: 461. <Offered upon demand>

*480. Curriculum Development for Home Economics. (3) Snell
Curriculum, methods, and facilities for courses which use home economics knowledge and skills. Prerequisite: major in home economics and teaching experience. <Offered upon demand>
497. Reading and Research in Honors. (3-6)
   Prerequisite: see p. 91. <Offered upon demand>

*529. Workshop. (1-4)

*551-552. Problems. (1-3 hrs. each semester)

558-559. Advanced Field Experiences I and II. (3, maximum total allowed 6.)
   (Also offered as C&I, Art Ed, Bus Ed, Ed Fdn, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, Sec Ed
   558-559.) Prerequisite: acceptance into a graduate program and permission of instructor.
   <Summer, Fall, Spring>

*570. Seminar in Home Economics Education. (3) Snell

EDUCATION, INDUSTRIAL

See Education, Secondary

EDUCATION, MUSIC

See Music Education.

EDUCATION, PHYSICAL


EDUCATION, SECONDARY

SECONDARY EDUCATION

   Ph.D.; ASSISTANT PROFESSORS R. R. Esparza, M.A.; L. J. Macias, Ph.D.; S. A. Mierzwa,
   Ph.D.

BUSINESS EDUCATION

ASSISTANT PROFESSORS C. McQueen, M.B.A.; C. G. Sampley, M.A.; J. H. Warner, M.Ed.

INDUSTRIAL EDUCATION

ASSISTANT PROFESSOR F. R. Field, Ed.D. (Assistant Chairman); ASSOCIATE PROFESSOR R. D.

In this Department, 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. 115-121.

Business Education, see pp. 101-102.

Industrial Education, see pp. 113-114.

SECONDARY EDUCATION

Explanation of footnotes not indicated will be found on p. 194.

351. Problems. (1-3)
   <Offered upon demand>

§§361. Pre-Student Teaching Experience I. (3)
   Three hours seminar, six hours field work weekly. <Fall, Spring>

§§362. Pre-Student Teaching Experience II. (3)

§§ Students in Sec Ed 361 must enroll concurrently in the appropriate section of Ed Fdn 300.
   Students in Sec Ed 362 must enroll concurrently in the appropriate section of Ed Fdn 310 (consult
   Schedule of Classes).
264  EDUCATION, SECONDARY

*429.  Workshop.  (1-4)  
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 98 of this catalog or consult the Graduate School Bulletin.  <Offered upon demand>

430.  Teaching of Communication Arts.  (3)  Hirshfield, White  
Prerequisite: 361, 362 and Ling 292 or English 440.  <Fall>

431.  Teaching of Sciences.  (3)  Tweeten  
Prerequisite for 461-Science. Prerequisite: to be taken concurrently with 362.  <Fall, Spring>

432.  Teaching of Social Studies.  (3)  Doxtator, Esparza, Stoumbis  
Prerequisite: consult instructor for prerequisites.  <Fall, Spring>

433.  Teaching of Industrial Subjects.  (3)  Garrett, Nesbitt  
(See I Ed 433)

434.  Teaching Art in Secondary School.  (3)  
(See Art Ed 434)

*435.  Teaching of Biology.  (3)  Degenhardt  
Prerequisites: 361, Biol 122L. 2 lectures, 3 hrs. lab.  <Fall>

436.  Teaching of English.  (3)  Logan, Hirshfield, White  
Prerequisites: 361, 362 and Ling 292 or English 440. 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 and 362.  <Fall>

439.  Teaching of Business Subjects.  (3)  
(See Bus Ed 439)

*440.  Teaching of French.  (3)  T. Book  
(Also offered as French 440) Prerequisite: Sec Ed 361.  <Spring>

*441.  Teaching of Spanish.  (3)  Lamadrid, Macias  
(Also offered as Span 441) Prerequisite: Sec Ed 361.  <Offered upon demand>

*442.  Teaching of Reading.  (3)  White  
Prerequisite: 361 and Ling 292 or English 440.  <Summer, Fall>

*443.  Coordination Techniques in Vocational Cooperative Programs.  (3)  Garrett, Runge  
(Also offered as Bus Ed 443 and I Ed 443.) Development of present practices in work experience programs for secondary school students. Special emphasis is given to organization and administration of vocational education cooperative part-time work plans for distributive office and industrial occupations.  <Summer only>

444.  Teaching of Physical Education.  (3)  Hinger  
(Also offered as PE 444)  <Fall>

*445.  Teaching of German.  (3)  Jesperson  
(Also offered as German 445) Prerequisite: Sec Ed 361 and 362.  <Offered upon demand>

*447.  Topics.  (1-3)

*456.  Science, Technology, and Human Values: Implications for Education.  (3)  
(Also offered as C&I Ed, Ed Fdn, I Ed 456.) Examination of the continuing social impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

458-459.  Field Experience I and II.  (3-6, maximum of 12)  
(Also offered as Art Ed, Bus Ed, C&I, Ed Adm, Ed Fdn, H Ed, Phys Ed, Ind Ed, Rec, H Ec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor.  <Summer, Fall, Spring>

461.  Student Teaching.  (3-6-9, maximum total allowed 15)  
Observation and teaching in secondary schools for one or more semesters. Weekly seminar meetings required with University supervisors. Prerequisites listed on pp. 94-95.  <Summer, Fall, Spring>

§ Credit for undergraduate teaching majors and graduates in Education only.
462. Student Teaching. (3-6-9, maximum total allowed 15)
A second student teaching experience.

463. Professional Education Block. (6-15)
Combines foundations, methods, pre and student teaching in one semester. Students should apply for admission at least one semester in advance to the program director. See instructors for special prerequisites and scheduling.

497. Reading and Research in Honors. (3-6)
Prerequisites: see p. 91. <Offered upon demand>

*500. Advanced Instructional Strategies. (3)
(Also offered as C&I 500.)

*501. High School Curriculum. (3)

*502. The Junior High School. (3)

*503. Student Activities in the Secondary School. (3)

*504. The Two Year College Curriculum. (3)

*508. Seminar in Supervision of Student Teaching. (1-3)

*510. Developments in Industrial and Vocational Education. (3)
(Also offered as Bus Ed 510 and I Ed 510.)

*520. Instructional Trends in the Communication Arts. (3)

*521. Seminar in English Curriculum and Instruction. (2-5)

*527. Studies in Rhetoric for Teachers. (3)
(Also offered as Engl 527.)

*528. Studies in Reading and Literature for Teachers. (3)
(Also offered as Engl 528.)

*529. Workshop. (1-4)

*530. Seminar in Science Teaching. (3)

*540. Instructional Trends in the Social Studies. (3)

*546. Economic Education. (2 or 4)
(Also offered as Econ 546 and Bus Ed 546.)

*549. History Education. (3)
(Also offered as Hist 549.)

*550. Seminar in History Education. (3)
(Also offered as Hist 550.)

*551-552. Problems. (1-3 each semester)

*555. Proseminar in Problems of Language Instruction. (3)
(See Span 556.)

*558. Advanced Field Experiences I. (3-6)

*559. Advanced Field Experiences II. (3-6)

*590. Seminar. (3)

*599. Master's Thesis. (1-6 hrs. per semester)

*601. Curriculum Appraisal and Improvement of School Programs. (3)
(Also offered as C&I 601.)

*610-611. Internship I and II. (3-6, 3-6)

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

BUSINESS EDUCATION

I. SECRETARIAL

NOTE: Students should consult with Business Education advisers for proper placement and credit before enrolling in skill courses BE 111, 112, 113, 114.

§111. Beginning Typewriting. (2) Sampley
Use of the touch system in learning basic typewriting. One lecture, 2 hours laboratory.
<Offered upon demand>

§ Available for graduate credit except for graduate majors in Economics or History.
266 EDUCATION, SECONDARY

§112. Intermediate Typewriting. (3) Sampley, Warner
Development of speed and accuracy in business letters, forms, manuscripts, and tabulations. Prerequisite: knowledge of typewriter operation and keyboard. Two lectures and 2 hours laboratory. <Fall, Spring>

§113. Shorthand Theory. (3) Sampley, Warner
Gregg theory and essentials of writing shorthand; speed goal: 60 wpm minimum. Two lectures and 2 hours laboratory. <Fall, Spring>

§114. Shorthand Dictation. (3) Sampley, Warner
Review of theory; building dictation speed and development of transcription; speed goal: 80 wpm minimum. Prerequisites: 111, 113, or equivalent. Two lectures and 2 hours laboratory. <Fall, Spring>

117. Office Machines and Filing. (2) Warner
Laboratory work in listing and non-listing calculators, filing, transcription from recorded dictation. Prerequisites: 112 or equivalent. One lecture and 2 hours laboratory. <Fall, Spring>

201. Introduction to Data Processing for Business Education. (3) McQueen, Bradley
Unit record systems and applications along with elementary card-computer systems. Basic flow charting, programming in FORTRAN, and an opportunity to use the computer and the terminal. <Fall, Spring>

§253. Shorthand Transcription. (3) Sampley, Warner
Review of theory; dictation and transcription from shorthand notes correctly and speedily; mailable letters are required; speed goal: 100 wpm minimum. Prerequisites: 112, 114, or equivalent. Two lectures and 2 hours laboratory. <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>

*262. Advanced Typewriting. (3) Sampley, Warner
Proficiency in production of office problem material including letters, reports, manuscripts, tabulations, rough drafts, legal documents, and study of skill performance problems from point of view of teacher and/or office supervisor. Prerequisites: 112, 113, or equivalent. Two lectures and 2 hours laboratory. <Fall, Spring>

265. Business Communications. (3) McQueen, Warner
Development of psychologically sound business communications in correct and forceful English. All outside assignments must be in typewritten form. <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>

II. PROFESSIONAL

351. Undergraduate Problems. (1-3) McQueen
429. Workshop in Business Education. (1-4) McQueen
<Offered upon demand>

439. Teaching of Business Subjects. (3) McQueen
<Offered upon demand>

*443. Coordination Techniques in Vocational Cooperative Programs. (3) Garrett, Runge
(Also offered as Sec 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 plans for distributive office and industrial occupations. <Summer only>

*447. Topics. (1-3)
458-459. Field Experience I and II. (3-6, maximum of 12) McQueen
(Also offered as Art Ed, C&I, Ed Adm, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

§ Maximum of 6 hours credit allowed in Arts and Sciences. No credit allowed in Pharmacy.
¶ No credit allowed toward degrees in Colleges of Arts and Sciences and Pharmacy.
461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
  McQueen  <Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
  McQueen  <Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
  McQueen  <Fall, Spring>

III. GRADUATE

*501. Foundations of Vocational Business Education. (3)

*503. Readings in Vocational Business Education. (3)

*510. Developments in Industrial and Vocational Education. (3)
  (Also offered as Sec Ed 510 and 1 Ed 510)

*511. Instructional Trends and Research in Typewriting Education. (3)

*512. Instructional Trends and Research in Shorthand Education. (3)

*513. Instructional Trends and Research in Bookkeeping and Accounting Education. (3)

*514. Instructional Trends and Research in Socio-Business Education. (3)

*515. Methods and Materials in Vocational Office and Distributive Education. (3)

*529. Workshop in Business Education. (1-4)

*546. Economic Education. (2 or 4) Doxtator, Parker
  (Also offered as Econ 546 and Sec Ed 546.)

*551-552. Graduate Problems. (1-3 hours each semester)

*558-559. Advanced Field Experiences I and II. (3-6, 3-6)
  (Also offered as CBI, Art Ed, Ed Fdn, Ed Admin, H Ed, Phys Ed, Rec, Ind Ed, Home Ec Ed,
  and Sec Ed 558-559.) Prerequisite: acceptance into a graduate program and permission
  of instructor. <Summer, Fall, Spring>

INDUSTRIAL EDUCATION

Explanation of footnotes not indicated will be found on p. 194.

I. TECHNICAL  <Courses in this section will also be offered upon demand in
summer session>

101. Technical Math. (Shop Computation.) (3) Cunico
  Practical application of algebra, geometry, and trigonometry in the solution of applied
  problems found in the industrial arts. Also to include metrification, graphical mathematics
  and an introduction to the use of handbooks and data tables. <Fall, Spring>

110L. Machine Woodworking. (3) Cunico
  Introduction to the woodworking area. Emphasis on the proper use of hand tools, power
  machinery, and basic finishing methods. 2 lectures, 3 hrs. lab. <Fall, Spring>

111L. Industrial Graphics (Drafting) and Design I. (4) Garrett
  The graphical approach in construction and manufacturing industrial processes as applied
  to the planning functions of industry and elementary systems. Design processes in industry
  via team organization, brainstorming, data analysis, technical reports, oral presentations
  and creative problem solving. 3 lectures, 3 hrs. lab. <Fall>

112L. Industrial Graphics (Drafting) and Design II. (4) Garrett
  Descriptive geometry, spatial analysis of geometric elements, vectors, data analysis,
  triangulation, intersections, developments and graphical applications in a variety of
  construction and manufacturing areas. Product development, utilizing team dynamics,
  technical writing, PERT, human engineering, and oral presentation. 3 lectures, 3 hrs. lab.
  Prerequisites: 111L. <Spring>

120L. Machine Metalworking. (3) Field
  Introduction to machine metalworking technology with emphasis upon use of tools and
  machines and their operations. 2 lectures, 3 hrs. lab. <Fall, Spring>

ø Available for graduate credit except for graduate majors in Economics or History.
225L. 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. Prerequisites: 110L, 111L. <Offered upon demand>

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, 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. Drafting Conventions and Simplified Standards. [Descriptive Geometry.] (2) Garrett
Instruction in arrowless and tabular dimensioning, simplified drafting, point-to-point dimensioning and datum line dimensioning, the International Standards Organization and true positional dimensioning. 1 lecture, 3 hrs. lab. <Fall>

265L. Finishing and Maintenance. (3) Cunico, Field
Techniques, processes and application of finishes on the various kinds of wood. Practice in tool and machine maintenance, and repair. 2 lectures, 3 hrs. lab. Prerequisites: 110L, 120L. <Fall, Spring>

280L. Electricity and Electronics I. (3) Cunico
An introductory course in electrical theory and electronics. Individual and group experiences are derived through experimentation. 2 lectures, 3 hrs. lab. <Fall, Spring>

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>

312L. [262L] Architectural Drafting. (2) Garrett
Principles of style and design of residential dwellings are studied with emphasis upon architectural drawing and construction details. 1 lecture, 3 hrs. lab. Prerequisite: 111L. <Spring>

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. 2 lectures, 3 hrs. lab. Prerequisite: 280L or permission of instructor. <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 developed 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>

415L. [315L] Hot Metal Processes. (3) Field, Nesbitt
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. <Fall, Spring>

470L. Carpentry. (3)
Plot layouts, foundations, floor and wall framing, roof construction, inside and outside finishing. 2 lectures, 3 hrs. lab. Prerequisite: 110L or equivalent. <Spring>
475L. Metal Technology. (1-3) Field, Nesbitt
Advanced course designed to meet the individual needs of students wishing to concentrate in a specialized area of metalworking. Lab hours arranged. Prerequisite: 120L, 285L, 365L. <Fall, Spring>

480L. Wood Technology. (1-3) Cunico, Garrett
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) Cunico, Field, Garrett, Nesbitt
Seminar in history, philosophy, and current trends, including an orientation to industrial education teacher preparation. <Fall>

247. Topics. (1-3) <Fall, Spring>

351. Problems. (1-3) <Fall, Spring>

429. Workshop in Industrial Education. (1-4)
For degree restrictions, see p. 98 of this catalog. <Offered upon demand>

433. Teaching of Industrial Subjects. (3) Field, Garrett, Nesbitt, Cunico
Methods of developing instructional units, teaching methods associated with industrial curricula, and the selection and evaluation of teaching materials used in the classroom. <Fall or Spring>

458-459. Field Experience I and II. (3-6 maximum of 12)††
(Also offered as Art Ed, Bus Ed, C&I, Ed Adm, Ed Fdn, Ed Ed, H Ed, Phys Ed, Rec, H Ec Ed, Sec Ed 458-459.) Planned and supervised professional laboratory of field experiences in agency or institutional setting. <Summer, Fall, Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 12)
Prerequisite: 453. <Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 12)
Prerequisite: 453. <Fall, Spring>

466. Theory and Organization of Industrial Education. (3) Field, Garrett, Nesbitt, Cunico
An analysis of organizing and teaching of industrial subjects as found in the modern school. <Spring>

III. GRADUATE STUDY <Will be offered upon demand>

*443. Coordination Techniques in Vocational Cooperative Programs. (3) Garrett, Runge, Cunico
(Also offered as Sec Ed 443 and Bus Ed 443.) <Summer only>

*447. Topics. (1-3) Staff

*456. Science, Technology and Human Values: Implications for Education. (3) Mierzwa
(Also offered as C&I 456, Ed Fdn 456, Sec Ed 456.)

*490. Measurement and Evaluation Techniques. (3) Field, Nesbitt, Cunico

*492. Instructional Analysis. (3) Cunico, Garrett, Nesbitt

*505. Development, Selection, Use and Organization of Instructional Materials. (3) Garrett, Nesbitt, Cunico

*510. Developments in Industrial and Vocational Education. (3) Garrett, Nesbitt, Runge
(Also offered as Bus Ed 510 and Sec Ed 510.) <Summer only>

*511. Laboratory Planning and Design. (3) Field, Nesbitt

*515. Industrial Accident Prevention. (3) Nesbitt

*520. Administration of Industrial and Vocational Programs. (3) Cunico, Field, Garrett, Nesbitt

*525. Advanced Technical Knowledge and Skills. (3)†† Cunico, Field, Nesbitt

*529. Workshop. (1-4)
For degree restrictions consult the Graduate School Bulletin.

*547. Topics. (1-3)

*551-552. Problems. (1-3 hrs. each semester)

*558-559. Advanced Field Experiences I and II. (3, maximum total allowed 6)††
EDUCATION, SPECIAL EDUCATION


CURRICULUM
See pp. 121-124.

210. [260] Introduction to Special Education. (2)
Work experience and seminars in Special Education settings. Required of all undergraduates. Corequisites: 211, student must receive "B" or better before being screened into the Special Education Teacher Training Program. <Fall, Spring>

211. [271] Education of the Exceptional Child. (3)
Survey of the characteristics and educational needs of exceptional children. Corequisite: 210, student must receive "B" or better before being screened into the Special Education Teacher Training Program. 211 or equivalent is required of all students. <Fall, Spring>

221. [381] Nature and Needs of the Mentally Retarded. (3)
Social, medical, emotional, physical, and mental characteristics of mentally retarded children. Methods of classifying, diagnosing and treating retarded children from medical, psychological, sociological, and educational points of view. Prerequisites: 210, 211. (Special permission required to take 210, 211 and 221 together.) <Summer, Spring>

300. [450] Adaptive Instructional Techniques in Special Education. (6)
Methods and techniques for teaching exceptional children. Corequisites: 317, student must have Program of Studies (Contract) on file and must complete pre-student teaching form (Green) one semester before enrollment in Special Education 300. 5 hrs./wk. pre-student teaching required. <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>

317. [479] Methods and Materials in Special Education. (3)
Culminating experience to be taken in conjunction with Special Education 300. Interpretation, design, development, and implementation of methods and materials in special education. Corequisite: 300, student must have Program of Studies (Contract) on file. UNDERGRADUATES ONLY. <Fall, Spring>

322. [*473] Teaching the Mentally Retarded. (3)
Objectives, curriculum, content, methods, organization of work. Prerequisites: 210, 211 and 221 and Program of Studies (Contract) on file. <Spring, Summer, Fall>

351-352. Problems. (1-3)
Prerequisite: permission of instructor. <Spring, Summer, Fall>

362. Teaching the Severely Mentally Retarded. (3)
Strategies and techniques for teaching the severely handicapped (TMR) child. Prerequisites: 210, 211, 221 and Program of Studies (Contract) on file. <Spring>

383. Education of the Mexican-American: Trends, Issues, Problems. (3)
(Also offered as Ed Fdn 383.) Educational trends, issues and problems of the Mexican-American and the solutions necessary to alleviate these problems. Prerequisite: permission of instructor. <Spring, Summer, Fall>

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
Corequisites: 410 and permission of department; student must have Program of Studies (Contract), signed by major adviser, on file in the Department of Special Education and must complete student teaching application form (Yellow) one semester before enrollment into Special Education 400. <Fall, Spring>

*404. [*481] Teaching Children with Learning Disabilities. (3)
Identifying and educating children with learning disabilities. Open to all students. <Fall, Spring>

*405. [*419] Special Education in the Regular Classroom. (3)
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: student must have Program of Studies (Contract) on file in the Department of Special Education. <Spring, Fall>
410. Undergraduate Seminar in Special Education. (3)
This course allows the student the opportunity for technical assistance from his/her peers
and the Department of Special Education staff while in student teaching. Corequisite:
must be taken with Special Education 400 or 462. <Fall, Spring>

*415. [*440] Social and Psychological Problems in Special Education. (3)
Cultural, social, intellectual, affective, and educational factors relevant to the under.
standing of ideological and therapeutic problems in Special Education. Prerequisites:
210, 211 and Program of Studies (Contract) on file. <Spring, Summer, Fall>

*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. <Spring, Fall>

*429. Workshops in Special Education. (1-4)
Prerequisite: permission of instructor. <Offered upon demand>

*431. [*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. Open to all
students. <Spring, Fall>

*447. Topics. (1-3)
458-459. Field Experience I and II. (3-6 maximum of 12)
(Also offered as Art Ed, Bus Ed, Ed Adm, Ed Fdn, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed, Sec
Ed 458-459.) Planned and supervised professional laboratory or field experiences in agency
or institutional setting. Prerequisite: permission of instructor. <Summer, Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Corequisites: 410 and student must have Program of Studies (Contract) on file and must
have student teaching application form (Yellow) completed one semester before enroll.
ment into Special Education 462. <Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
<Summer, Fall, Spring>

*465. Art and the Exceptional Child. (3)
(Also offered as Art Ed 465.) <Fall, Spring>

*467. Survey of Physical Defects. (3)
(Also offered as PE 467.) To investigate the etiology, characteristics and treatment pro-
grams necessary for teaching the physically handicapped child. Prerequisites: 210, 211
and must have Program of Studies (Contract) on file. <Fall>

*481. [*577] Education of Gifted Children. (3)
Survey of the characteristics and educational needs of gifted children. Prerequisite: per-
mission of instructor. <Spring>

*510. Techniques of Parent Counseling. (3)
(Also offered as Guid 510.)

*512. Differential Diagnosis I. (3)
(Also offered as Guid 512.)

*514. [*579] Instructional Strategies in Special Education. (3)
(Also offered as Guid 515.)

*517. [*571] Curriculum Development in Special Education. (3)
*521. Clinician Programs in Therapeutic Physical Education. (3-6)
(Also offered as PE 521.)

*529. Workshops in Special Education. (1-4)
*532. [*475] Education of Emotionally Disturbed Children. (3)
*534. [*525] Clinical and Behavioral Aspects of the Emotionally Disturbed Child. (3)
*542. [*578] Learning Disabilities. (3)

*547. Topics. (1-3)

551-552. Problems. (1-3 hrs. each semester)

558-559. Advanced Field Experiences I and II. (3-6, 3-6)
(Also offered as Art Ed, Bus Ed, Ed Fdn, Ed Adm, H Ed, Phys Ed, Rec, Ind Ed, H Ec Ed,
Sec Ed 558-559.)

*562. [*523] Education of the Severely Retarded. (3)
*573. Seminars in Special Education. (3)
*574. Organization and Supervision of Special Education Programs. (3)
*576. [*476] Diagnosis and Remediation of Learning Disabled. [Teaching the Neurologically Impaired.] (3)
*580. Practicum in Special Education. (3-6)
*599. Master's Thesis. (1-6 hrs. per semester)
*610-611. Internship I and II. (3-6, 3-6)
*699. Doctoral Dissertation. (3-9 hrs. per semester)

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
See Engineering, Electrical

ELEMENTARY EDUCATION
See Education, Elementary

ENGINEERING
The courses listed in this category are of three types: (1) engineering courses for students not majoring in engineering, (2) engineering courses normally taken by all engineering students during their freshman year, and (3) courses taken by students participating in the Engineering Cooperative Education Program.

I. ENGINEERING COURSES FOR STUDENTS NOT MAJORING IN ENGINEERING
These courses are designed for students in the humanities, social sciences, fine arts, and education.

**320. Engineering in its Social Context. (3)
Impact of technology on society; conflict and resolution between human values and technological society; public decision making and individual moral-ethical-political considerations; systems approach to analysis and design incorporating socio-economic, ecological, ethical and political 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)
For non-engineers, surveys the field of air pollution and presents concepts in a non-mathematical way. Air pollution is placed in perspective with other ecological problems. Topics include: environmental services management; pollutants and sources: technological, meteorological, biomedical, social, economic, political, and legal 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)
For non-engineers, surveys the history, present state, and possible future developments in the field of transportation. Topics will include the economic, environmental, and social impact of transportation systems and the studies and planning that go into their selection and location. The interdependence of transportation and urban planning will be stressed. <Spring>

**360. Computers and Society. (3)
Interrelation between technology and society via computers. Logic structures underlying use of computers in design, analysis, communication, and control will be studied together with application to law, society, finance, art and technology. Basic knowledge of algebra will be assumed. Approach is non-mathematical. <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>

Modern day devices and products from space vehicles to the tiniest transistor, from aluminum baseball bats to artificial hearts, owe their very existence to new materials. Explores the technology which provides a wide range of materials in our technological age and discusses critically the societal impact; history of materials, basic materials science, concepts of material selection, and materials disposal and recycling. <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)**
Designed to acquaint the non-technical student in the humanities with nuclear energy and its peaceful applications in many areas affecting human affairs. Includes atomic and nuclear structure, fission, fusion, nuclear reactors, nuclear explosives, accelerators, applications of radioisotopes, and socio-economic considerations. <Spring>

**382. Energy and the Environment. (3)**
For non-engineers on the subject of energy resources, energy conversion, and the effect on the environment. Includes survey of world and U.S. energy supply and demand; energy and the economy; comparison of fuels—fossil, nuclear, hydro, solar, winds, and others; energy conversion processes; and the associated environmental effects—air pollution, water pollution, thermal pollution, nuclear radiation and others. No prerequisites. <Fall>

**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>

II. ENGINEERING COURSES FOR BEGINNING ENGINEERING STUDENTS
These courses are required for all engineering students, unless special permission is granted by the Dean of Engineering.

101L. [CE 104] Introduction to Engineering. (4)
Description of engineering, design of new products by groups of students, and development of graphical, analytical, communicative and other engineering skills. 1 lecture, 6 hrs. lab. <Fall, Spring>

102L. [CE 102] Engineering Computational Methods. (3)
Graphical methods applied to empirical equations; calculus of finite differences; applied engineering computer programs; digital computer programming (FORTRAN IV and WHATIFIVE). Corequisite: Math 162 or equivalent. 2 lectures, 4 hrs. lab. <Fall, Spring>

III. COOPERATIVE EDUCATION PROGRAM
Students enrolled in the Cooperative Education Program (see p. 127) 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) $10.00 fee (Required each work phase).

109. Evaluation of Cooperative Education Work Phase 1. (1)
EVALUATION OF COOPERATIVE EDUCATION WORK PHASES 2-6

ENGINEERING, CHEMICAL

PROFESSORS G. A. Whan, Ph.D., (Chairman); T. T. Castonguay, Ph.D.; ASSOCIATE PROFESSOR K. E. Cox, Ph.D.; ASSISTANT PROFESSOR H. E. Nuttall, Ph.D.; ADJUNCT PROFESSOR R. K. Traeger, Ph.D.

CURRICULUM

See pp. 130-132.

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, Physics 161, Math 264. <Spring>

301. Thermodynamics. (3)
(Also offered as ME 301.) Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physics 161, Math 264. <Summer, Fall, Spring>

**302. Chemical Engineering Thermodynamics. (3)
Continuation of 301 with applications to chemical engineering processes; physical and chemical equilibria. <Spring>

**317. [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>

**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, Physics 161, Chem 101L, or equivalents, and junior standing. <Fall>

**354L. Process Dynamics. (3)
Application of special mathematical techniques to chemical processes; topics in process control and instrumentation. Prerequisite: Math 316. 2 lectures, 3 hrs. lab. <Spring>

370. Engineering Materials Science. (3)
Structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers. Prerequisite: 301; recommended 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 316, Physics 262. <Fall>

**412. Unit Operations II. (3)
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>

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, Physics 161, Math 264. <Spring>

301. Thermodynamics. (3)
(Also offered as ME 301.) Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physics 161, Math 264. <Summer, Fall, Spring>

**302. Chemical Engineering Thermodynamics. (3)
Continuation of 301 with applications to chemical engineering processes; physical and chemical equilibria. <Spring>

**317. [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>

**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, Physics 161, Chem 101L, or equivalents, and junior standing. <Fall>

**354L. Process Dynamics. (3)
Application of special mathematical techniques to chemical processes; topics in process control and instrumentation. Prerequisite: Math 316. 2 lectures, 3 hrs. lab. <Spring>

370. Engineering Materials Science. (3)
Structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers. Prerequisite: 301; recommended 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 316, Physics 262. <Fall>

**412. Unit Operations II. (3)
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. <Fall>

*431. [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>

**450. Chemical Engineering Economics. (3)**
Factors other than engineering and chemical which determine the feasibility of putting a chemical on the market. Particular reference to control of raw materials, markets, competition, patent situation, and related topics. Prerequisites: 412, 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. [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. Prerequisite: 354L. <Offered upon demand>

**461. 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. Prerequisite: 302, Math 316. <Fall>

(Also offered as Nucl E 470) Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisites: 370 or equivalent. <Fall>

*472. Chemical Engineering Materials. (3)**
Modern theory of corrosion, electrochemical principles, and electrolytic processes with applications. Methods of production of polymers and effect of controlled structure on properties. Use of polymers as engineering material. <Spring>

*474. [574] 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. <Offered upon demand>

*477. [572] Diffusion in Solids. (3)**
Horak
Atomic theory of diffusion in metals, alloys and compounds, solution of the diffusion equations, physical and thermodynamic aspects of diffusion, thermal diffusion, electromigration, experimental methods. <Spring 1975 and alternate years>

481L. Chemical Engineering Process Laboratory I. (1)
Senior research and development laboratory studies on chemical processes and products. Emphasis on creativity in pursuing research objectives. Literature survey, laboratory notebook, oral presentations, and report writing stressed. Prerequisites: 302, 412, 414L, 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. 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: 302, 413. 2 lectures, 3 hrs. lab. <Spring>

**501-502. Chemical Engineering Seminar. (1-3; 1-3):‡**
<501 Fall, 502 Spring>

**521. Advanced Transport Phenomena I. (3)**
Prerequisite: 411 or equivalent. <Fall 1975 and alternate years>
*522. Advanced Transport Phenomena II. (3)
Prerequisite: 521 or equivalent. <Offered upon demand>

*523. Equilibria and Staged Operations. (3)
Fall 1974 and alternate years

*541. Catalysis. (3)
Offered upon demand

*542. Advanced Chemical Engineering Thermodynamics. (3)
Spring 1975 and alternate years

*543. Irreversible and Statistical Thermodynamics. (3)
Offered upon demand

*551-552. Problems. (1-3 hrs. each semester)

*561. Kinetics of Chemical Processes. (3)
Spring 1975 and alternate years

*571. Thermodynamics of Materials. (3) Gauster, Yost
Recommended prerequisite: 542 or equivalent. Fall 1974 and alternate years

*575. Selected Topics in Material Science. (1-3)
Offered upon demand

Recommended prerequisite: 571. Fall 1975 and alternate years

*577. Phase Transformations in Solids. (3) Horak, Yost
Recommended prerequisite: 571. Spring 1976 and alternate years

*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


CURRICULUM
See pp. 132-134.

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: Physics 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: minimum of one semester of calculus. <Spring>

270L. Construction Materials. (1)
A laboratory study of the physical, mechanical, and chemical properties of engineering materials. 3 hrs. lab. <Fall, Spring>

281L. Engineering Measurements. (3)
Principles and theories of physical measurements of spatial quantities; theory of probable error and adjustment of observations; use of measuring instruments and systems using surveying techniques where desirable. Prerequisite: Math 162 or permission of instructor. 2 lectures, 3 hrs. lab. <Fall>

282L. Engineering Surveys. (2)
Engineering applications of theories and principles developed in 281L; horizontal and vertical control surveys, topography, alignment curve geometries, modern survey systems and instruments; introduction to photogrammetry and geodesy. Prerequisite: 281L. 1 lecture, 3 hrs. lab. <Spring>

§ No credit allowed in College of Engineering.
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: 211. <Fall>

324L. Structural Design in Metals. (3)
Methods of design of tension, compression, and flexure members of metal including their analysis and design of structural elements of metal as consistent with modern practice. Prerequisite: 305. 2 lectures, 3 hrs. lab. <Spring>

**331L. Fluid Mechanics. (2) 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>

(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. <Spring>

§ No credit allowed in College of Engineering.
*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, Varon
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>

§*417. Structures Workshop I. (2) Gafford
Advanced topics in structures for Architectural majors. Prerequisite: permission of instructor. <Fall>

§*418. Structures Workshop II. (2) Gafford
Advanced topics in structures for Architectural majors. Prerequisite: permission of instructor. <Spring>

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, run-off routing, ground water flow. Prerequisites: 332 and permission of instructor. <Fall 1975 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. 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. (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>

§ No credit allowed in College of Engineering.
*450. Introduction to Probabilistic Methods in Engineering. (3) Bleyl
Applications of the theory of probability and statistics to engineering problems such as measurement errors, traffic flow, sanitary engineering, water resources, hydrology, construction management, yield and fracture strength of metals. Prerequisite: permission of instructor. <Fall>

*451. Engineering Analysis. (3) Cottrell
Methods of theoretical analysis of typical engineering systems. Applications of ordinary and partial differential equations, finite differences and matrices to solve engineering problems. Prerequisites: Math 316 or equivalent and permission of instructor. <Offered upon demand>

*452L. Computer Applications in Civil Engineering. (3) Bleyl
Use of digital computers to solve typical problems in various areas of Civil Engineering, including use of stored programs and preparation of original programs. Prerequisites: Engr 102L or EECS 336, senior standing in Engineering. 2 lectures, 3 hrs. lab. <Spring>

*453. Numerical Methods in Civil Engineering. (3)
Methods of discrete analysis of engineering systems. Applications of numerical techniques to solve engineering problems. Prerequisites: Engr 102L or EECS 336, Math 316 or equivalent. <Offered upon demand>

*461. Soil Engineering for Highways and Airfields. (3) Carney, Clough
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, caissons, 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. Prerequisite: senior standing in Engineering or Architecture or permission of instructor. Architecture students must have successfully completed CE 312 or its equivalent. <Spring>

*472. Construction Contracting. (3) Clough
Management principles as applied to the conduct and control of a construction contracting business; estimating methods, bidding, construction contracts, bonds, insurance, project planning and scheduling, cost accounting, labor law, labor relations, and safety. Prerequisite: senior standing. <Fall, Spring>

*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>
280 ENGINEERING, CIVIL

*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
Prerequisite: 415 or permission of instructor. <Spring>

Prerequisite: permission of instructor. <Fall>

*505. Advanced Reinforced Concrete. (3) Hulsbos
Prerequisites: 306, 411. <Offered upon demand>

*506. Prestressed Concrete. (3) Hulsbos
Prerequisite: 411. <Spring 1975 and alternate years>

*507. Design of Concrete Plates and Shells. (3) Hubbos
Prerequisite: 411. <Spring 1976 and alternate years>

*510. Advanced Structural Design in Metals. (3) Johnson, Varan
Prerequisite: 324L. <Offered upon demand>

*516. Theory of Plates. (3) Cottrell, G. May, Varan
Prerequisite: 401 or permission of instructor. <Offered upon demand>

*517. Discrete and Macro Mechanics. (3) Varan
Prerequisite: permission of instructor. <Offered upon demand>

*518. Elastic Stability. (3) Cottrell, Varan
Prerequisites: 401 or 402, Math 312, or permission of instructor. <Spring>

*519. Theory of Shells. (3) Cottrell, Varan
(Also offered as ME 519.) Prerequisites: 402 and Math 312. <Spring>

*520. Vibration of Elastic Systems. (3) Cottrell
Prerequisites: 421 or ME 414, and Math 312. <Offered upon demand>

*521. Design of Structures for Dynamic Loads. (3) Cottrell
Prerequisites: 415, 421 or ME 414. <Offered upon demand>

*523. Random Vibrations. (3) Cottrell
(Also offered as ME 523.) Prerequisite: 520 or permission of instructor. <Offered upon demand>

*531. Advanced Water Treatment and Plant Design. (3-4)
Prerequisite: permission of instructor. <Fall 1975 and alternate years>

*532. Advanced Waste Water Treatment and Plant Design. (3-4)
Prerequisite: permission of instructor. <Fall 1974 and alternate years>

*533. Water Resources Engineering. (3)
Prerequisite: permission of instructor. <Offered upon demand>

*534L. Advanced Sanitary Lab. (3)
Prerequisite: permission of instructor. 1 lecture, 6 hrs. lab. <Offered upon demand>

*535. Open Channel Hydraulics. (3) Carney, Martinez
Prerequisite: 332. <Offered upon demand>

*536. Hydraulic Structures. (3) Carney, Martinez
Prerequisite: 535. <Offered upon demand>

*551-552. Problems. (1-3 hrs. each semester)

*560. Advanced Soil Mechanics. (3) Carney, Clough, Triandafilidis
Prerequisites: 401 or 402, 463. <Offered upon demand>
*561. Advanced Soil Mechanics Laboratory. (2) Carney, Clough
Corequisite: 463. 1 lecture, 3 hrs. lab. <Offered upon demand>

*562. Advanced Foundation Engineering. (3) Carney, Clough, Triandafllidis
Prerequisite: 463. <Spring>

*563. Earth Structures. (3) Carney, Clough
Prerequisite: 463. <Spring>

*568. Physico-Chemical Properties of Soils. (3)
Prerequisite: 463. <Offered upon demand>

*572. Construction Project Management. (3) Clough
Prerequisite: permission of instructor. <Spring>

*581. Highway Traffic Operations. (3) Bleyl
Prerequisite: 382 or permission of instructor. <Fall>

*582. Highway Traffic Design. (3) Bleyl
Prerequisite: 483. <Spring>

*583. Urban Transportation Planning. (3) Bleyl
Prerequisite: 483. <Spring>

*599. Master's Thesis. (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*623. Random Processes in Mechanics. (3)
Prerequisite, 523 or permission of instructor. <Offered upon demand>

*650. Research. (1-6 to a maximum of 12)

*660. Soil Dynamics. (3) Triandafllidis
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, Ph.D. (Chairman), M. D. Bradshaw, Ph.D., W. J. Byatt, Ph.D., A.
Erteza, Ph.D., W. W. Grannemann, Ph.D., S. Karni, Ph.D., R. D. Kelly, Ph.D., A. H. Koschmann,
Ph.D., H. D. Southward, Ph.D.; ASSOCIATE PROFESSORS L. T. Boatwright, Ph.D., R. A.
Colclaser, Ph.D., R. C. De Vries, Ph.D., J. Djuric, Ph.D., H. K. Knudsen, Ph.D., D. P. Petersen,
Ph.D., D. Sparks, B.S.E.E., B.S.M.E., R. H. Williams, Sc.D.; ASSISTANT PROFESSORS J. T.
Cordaro, Ph.D., S. H. Gurbaxani, Ph.D., C. F. Hawkins, Ph.D., B. R. Peterson, Ph.D.

CURRICULUM

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. Magnetic circuits and transformers.
Corequisite: Math 163. <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. (Nor­
mally 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>

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 decompo-
sition. Prerequisites: C or better in 203, Math 316; corequisites: 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: Engr 102L, Math 163; corequisite: 203 or permission of instructor. <Fall>

234L. Digital Systems Laboratory. (2) Ereteza, Peterson, Sparks
Corequisite: 238. 1 lecture, 3 hrs. lab. <Spring>

238. Digital Systems. (4) Ereteza, 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 survey of electrical and electronic instrumentation used in clinical medicine. Topics covered include basic principles of electricity, physiological effects of electrical shock, ECG, EEG, intensive care instrumentation, surgery instrumentation, and diagnostic instrumentation. Prerequisite: Biol 236L. <Offered upon demand>

313. Circuits and Systems II. (4)
General study of linear lumped time-invariant systems: differential equations, transfer functions, frequency response, state-variable description, introduction to analog and digital simulation. Prerequisite: "C" or better in 213. <Fall, Spring>

**321. Electronics I. (3) Bootwright, 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. (3) Bootwright, Kelly
Continuation of 321. Prerequisite: 321; corequisite: 326L. <Fall, Spring>

**325L. Electronics Laboratory I. (2) Bootwright
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) Ereteza, Peterson, Sparks
Computer organization, Computer Logic, binary and decimal arithmetic units, coding and basic programming including use of the PDP-11 computer. Prerequisites: junior standing 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: junior standing or permission of instructor. Credit allowed for 336 or Engr 102, but not for both. <Summer, Fall, Spring>

§*337. Introduction to Computer Science. (3)
Introduction to algorithms, stored program computers, and programming languages. Concept and properties of an algorithm, language and notation for describing algorithms. Prerequisite: 335 or equivalent. <Fall>

*340. Statistical Methods in Electrical Engineering. (3)
Problems in electrical engineering involving the application of probabilities and statistical methods to noise in amplifiers and communication links, reliability quality control, tolerance assignment in design, planning of tests, calibration. Prerequisite: 313. <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>

§ Not available for graduate credit for students specializing in computers.
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: Physics 262. <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. Bioelectrical 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 St 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
Characteristics of nonlinear devices: two terminal and multi-terminal; graphical and numerical analysis of resistive and dynamic nonlinear networks. Prerequisite: Senior standing in EECS or permission of instructor. <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), clamps, 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: 336 or equivalent programming knowledge. <Fall>

*431. Cobol and Decision Tables Techniques. (3) Study of structure and syntax of COBOL programs of DATA files (sequential, random, index sequential). Decision table techniques discussed as they apply to documenting and manipulating DATA files. Prerequisite: 336 or equivalent programming knowledge. <Fall>
*432. Programming in PL/1. (3)
List processing, string and symbol manipulation using PL/1. Table searching and sorting
techniques. DATA attributes of PL/1 covered as well as the four classes of PL/1 storage.
Prerequisite: 431 or equivalent. <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 equivalent. <Fall>

*434L. Logic Design Laboratory. (2) DeVries
Corequisite: 438. 1 lecture, 3 hrs. lab. <Fall, Spring>

*435. Introduction to Design of Assemblers. (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 Pro­
gram), SCEPTRE, CINDA. Prerequisite: knowledge of FORTRAN. <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. Prerequisite: 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. Prerequisites: 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 solu­
tion. Prerequisites: senior standing, and knowledge of Fortran programming. <Spring>

440. Digital Data Communications. (3)
A quantitative overview of computer data communication in Band limited systems. Data
communication codes, error detecting and correcting. Data transfer formats in transparent
and non-transparent modes. Students will write PDP-11 computer programs to accomplish
data communication. <Offered upon demand>

*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. (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 suit­
able for computer aided design and circuit analysis. Frequency effects. Prerequisite:
370 or Physics 330. <Spring>

*472. Microelectronics. (3) Colclaser
The technology of monolithic and MOS integrated circuits, and thick-film and thin-film
Large scale integration and semiconductor memories. Prerequisite: 370 or permission of the instructor. <Spring>

*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) Southward, 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 equivalent. <Fall>

*475L. Hybrid Microelectronics Laboratory. (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. (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>

*481. Electrical Transients in Power Systems. (3) Karni
Switching transients; 3-phase symmetrical components; recovery voltages; overload pro­
tection; parameters for transient calculations. Prerequisite: EECS 480 or equivalent.
<Spring>

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 Chair­
man 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)
Prerequisite: 400. <Fall>

**502. Electrical Engineering Principles for Advanced Students. (3)
Prerequisite: knowledge of differential equations and computer programming. <Offered upon demand>

*506. Methods of Operation Research I. (3)
Prerequisite: 400. <Fall>

*507. Methods of Operations Research II. (3)
Prerequisite: 506 or equivalent or permission of instructor. <Spring>

*512. Modern Network Theory. (3) Karni
Prerequisite: permission of instructor. <Spring>

*513. Modern Filter Theory and Design. [Methods of Network Design.] (3)
Prerequisite: 512 or permission of instructor. <Fall>

*515. Graph Theory and Applications. (3)
Prerequisites: 400 or permission of instructor. Programming knowledge. <Offered upon demand>

*531. Error-Correcting Codes. (3) DeVries
Prerequisite: 438. <Fall 1973 and alternate years>

*532. Theory of Automata. (3) Erteza
Prerequisite: 438. <Fall>

*533. Image Processing by Digital Computer. (3) Koschmann
Prerequisite: knowledge of Fourier Analysis, linear system theory, and digital computers. <Offered upon demand>

*534. Symbol Manipulation and Heuristic Programming. (3) Sparks
Prerequisites: 431, 432, or equivalent. <Fall>

*535. Principles of Threshold Logic. (3)
Prerequisite: 438. <Spring>

*536. Advanced Logic Design. (3)
Prerequisite: 438. <Fall 1974 and alternate years>

*537. Formal Languages and Automata. (3) DeVries
Prerequisite: 532. <Spring>

*538. Design of Digital Systems. (3) DeVries
Prerequisite: 438. <Spring>

*539. Computer Methods of Signal Analysis I. (3)
Prerequisites: knowledge of FORTRAN, advanced calculus, Laplace transforms. <Fall>

*541. Random Signal Processing. (3)
Prerequisites: 400, 340 or equivalent. <Fall>

*542. Statistical Communication Theory. (3) Koschmann, Petersen
Prerequisites: 400, 340 or equivalent. <Spring>

*543. Digital Communication and Data Transmission. (3) Staff
Prerequisite: 541 or equivalent. <Offered upon demand>

*545. Vehicle Navigation and Control. (3) D. Petersen
Prerequisites: 445, 446, and 500. <Offered upon demand>

*546. Automatic Control Theory. (3) Knudsen
Prerequisites: 446 and 500. <Spring>

*547. Neural Networks. (3) Bolle, Hawkins
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)
<Fall>

*562. Electromagnetic Waves II. (3)
Prerequisite: 561. <Spring>

*563. Direct Energy Conversion. (3)
<Offered upon demand>

*570. Quantum Theory of Solids I. (3)
Prerequisites: 370 or Physics 330. <Fall>
*571. Quantum Theory of Solids II. (3) Byatt
Prerequisite: 570. <Spring>

*572. Semiconductor Properties. (3) Southward, Grannemann, Colclaser
Prerequisite: 470. <Spring>

*573. Magnetic and Dielectric Properties of Solids. (3)
Prerequisite: 570. <Offered upon demand>

*574L. Processing Techniques in Solid State Technology. (3)
Pre- or corequisite: 470. <Spring>

*575. Theory of Solid State Devices. (3) Colclaser, Grannemann, Southward
Prerequisite: 570. <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)
Prerequisite: 500. <Fall 1974 and alternate years>

*614. Modern Filters. [Active Networks.] (3)
Prerequisite: 513. <Offered upon demand>

*635. Theory of Micro Programming. (3) Erteza
Prerequisite: 538. <Fall>

*636. Decomposition Theory. (3) DeVries
Prerequisite: 536 or permission of instructor. <Spring>

*639. Computer Methods of Signal Analysis II. (3)
Prerequisite: 539. <Spring>

*641. Information Theory and Coding. (3) Koschmann
Prerequisite: 542. <Offered upon demand>

*643. Special Topics in Communication Theory. (3)
<Offered upon demand>

*646. Optimal Processes. (3) Knudsen
Prerequisite: 546. <Fall 1975 and alternate years>

*647. Introduction to Artificial Intelligence. (3) Bolle
Prerequisites: graduate standing in Math, Physics, Physiology or Engineering and permission of instructor. <Spring>

*649. Special Topics in Control Theory. (3)
Prerequisite: 546. <Offered upon demand>

*651-652. Problems. (1-3 hrs. each semester)†† <Offered upon demand>

*661. Antennas. (3) Williams
Prerequisite: 562. <Offered upon demand>

*662. Microwave Techniques. (3) Byatt
Prerequisite: 562. <Offered upon demand>

*663. Magnetohydrodynamics. (3) Byatt, Erteza, Grannemann
Prerequisite: 562. <Fall 1975 and alternate years>

*664. Advanced Electromagnetic Propagation. (3) Byatt
Prerequisite: 562. <Offered upon demand>

*669. Seminar in Electromagnetic Waves. (3) <Offered upon demand>

*671. Charge Transport in Solids. (3) Byatt, Grannemann
Prerequisite: 571. <Fall 1974 and alternate years>

*672. Quantum Electronics. (3) Southward
Prerequisite: 570 or permission of instructor. <Spring 1974 and alternate years>

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


CURRICULUM

See pp. 136-137.

201L. Introduction to Engineering Design. (3)
Deals with elements of engineering design; conception, feasibility, analysis, engineering drawing, materials, manufacturing methods, and selection of components. These design elements are used in 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, Physics 161, Math 265 or equivalent. <Summer, Fall, Spring>

**302. Thermochemistry and Gas Dynamics. (3)
Thermodynamics of reactions and requirements of equilibrium. Isentropic flow, thermodynamics of shock waves, supersonic characteristics of internal and external flow. Prerequisites: 301, 317 or permission of instructor. <Spring>

314L. 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>

**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. <Fall>

318L. Mechanical Engineering Laboratory II. (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, Physics 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, gyrodynamics, and linear vibratory systems including multi-degree of freedom systems and excitation-response analysis. Prerequisites: 206L, Math 265 or equivalent, and senior standing or permission of instructor. <Offered upon demand>

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)
Prerequisite: at least one semester of 400- or 500-level course in solid or fluid mechanics. <Offered upon demand>

*501. Heat Conduction. (3)
Prerequisites: 320, Math 312, or permission of instructor; corequisite: 503. <Spring>

*503. Advanced Fluid Mechanics I. (3)
Prerequisites: 206L, 300, 301, or their equivalents. <Spring>

*506. Advanced Thermodynamics I. (3)
Prerequisites: 300 and 301, or equivalents. <Fall>

*507. Similitude in Engineering. (3)
Prerequisite: 501 or 503 or 516. <Offered upon demand>

*509. Advanced Gas Dynamics. (3)
Prerequisites: 501, 503. <Offered upon demand>

*510. Boundary Layers. (3)
Prerequisite: 503. <Offered upon demand>

*511. Radiant Heat Transfer. (3)
Prerequisite: 320. <Offered upon demand>

*514. Variational Mechanics. (3)
Prerequisite: at least one semester of graduate study or permission of instructor. <Offered upon demand>

*515L. Experimental Stress Analysis. (3)
2 lectures, 3 hrs. lab. <Offered upon demand>

*516. Elasticity I. (3)
Prerequisite: 300 or equivalent. <Spring>
*517. Elasticity II. (3)  
Prerequisite: 516; corequisite: Math 313. <Offered upon demand>

*519. Theory of Shells. (3)  
(Also offered as CE 519.) Prerequisite: 516. <Offered upon demand>

*520. Analysis of Thermal Stresses. (3)  
Prerequisite: 516. <Offered upon demand>

*523. Random Vibrations. (3)  
(Also offered as CE 523.) Prerequisite: 357 or permission of instructor. <Offered upon demand>

*541. Tensor Analysis in Mechanics. (3)  
Corequisite: 503 or 516 or equivalent. <Offered upon demand>

*551-552. Problems. (1-3 hrs. each semester)

*559. Design Project. (3)†‡  
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)  
Prerequisites: 501, 503. <Offered upon demand>

*604L. Experimental Methods in Mechanics. (3)  
Prerequisite: 515L or permission of instructor. 2 lectures, 3 hrs. lab. <Offered upon demand>

*605. Convection. (3)  
Prerequisites: 501, 503. <Offered upon demand>

*606. Kinetic Theory and Statistical Mechanics. (3)  
Prerequisites: 505, Math 345. <Offered upon demand>

*607. Hypersonic Flow of Ideal Gases. (3)  
Prerequisites: 503, 509 or permission of instructor. <Offered upon demand>

*608. Hypersonic Flow of Real Gases. (3)  
Prerequisites: 503, 506, 509 or permission of instructor. <Offered upon demand>

*624. Nonlinear Theory of Elasticity. (3)  
Prerequisite: 541. <Offered upon demand>

*671. Mechanics of Inelastic Continuum. (3)  
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  


*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, 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>

**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>

†‡ May be repeated once for credit.
*461. Power Reactor Technology. (3)
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>

*465. Nuclear Power Systems. (3)
Seminar on nuclear power systems with emphasis on independent study; safety analysis reports for light water, gas-cooled and liquid metal fast breeder reactors; environmental impact statements; student selected topics. Prerequisite: 430 or equivalent. <Summer>

*466. Nuclear Environmental Safety Analysis. (3)
Radiation protection and safety; contributors to radiation environment; environmental monitoring; radioactive waste handling and disposal; guidelines, standards, and regulations; and the environmental impact statement. Prerequisite: 430 or equivalent. <Spring>

(Also offered as ChE 470.) Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisite: ChE 370 or equivalent. <Offered upon demand>

*476. Reactor Fuel Processing. (3)
Fuel cycles in nuclear reactors; production of reactor fuels; processing of spent fuels by precipitation, solvent extraction, etc.; and separation of isotopes. Prerequisite: 430 or equivalent. <Offered upon demand>

*480. Introduction to Controlled Fusion. (3) 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)
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)
Pre- or corequisites: 420, Math 312. <510-Fall, 511-Spring>

*513-514L. Nuclear Engineering Laboratory I & II. (1-3, 1-3)
Prerequisites: 423L, 510. I lecture, 6 hrs. lab. <513L-Fall, 514L offered upon demand>

*515. Seminar. (1-3)
<Offered upon demand>

*520. Interaction of Radiation and Matter. (3)
Prerequisites: 420, Math 312. <Offered upon demand>

*551-552. Problems. (1-3 hrs. each semester)

*560. Reactor Kinetics and Control. (3) Long
Prerequisites: 511 or 430 and permission of instructor; recommended: EECS 431. <Offered upon demand>

*570. Materials for Nuclear Applications. (3) Horak
Recommended prerequisite: 470 or equivalent. <Fall>

*580. Plasma Science and Technology. (3) Everett
<Offered upon demand>

*599. Master's Thesis. (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*610. Advanced Reactor Theory. (3)
Prerequisite: 511. <Offered upon demand>

*699. Dissertation. (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. Prerequisite: 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>

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.

§ No credit allowed in College of Engineering.
145L. Machine Skills. (4)  

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


MAJOR STUDY

An English major consists of 33 hours above the 199 level. Of these no more than 9 hours may be at the 200 level. (The limit will be 12, however, if 3 hours are selected from 294, 295, or 296.) 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” p. 71 of this catalog.

DEPARTMENTAL HONORS

Students interested in registering for Honors in English should go to the Undergraduate Studies Office for details.

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

A student must have credit for English 101 or its equivalent before registering for 102, 220, 221, or 222, and credit for English 102 before registering for a course numbered 250-300.
At least one course in literature numbered 250-300 is further required for admission to a literature course numbered 351 or above. An English major should meet this last prerequisite with English 250.

COURSES FOR COLLEGE GROUP REQUIREMENTS

English 270 and 280 are recommended for students who wish to satisfy college group requirements at the lower division level. English 300 is recommended for students who seek upper division credits for college group requirements. For Arts and Sciences group requirements the following courses are accepted under Communications: 102, 220, 221, 222, 292, 303, 320, 321, 322, 421, 422, 440, 441, and 445. All other courses are accepted under Humanities.

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. Prerequisite: 101 or its equivalent. <Summer, Fall, Spring>

103. Fundamentals of English as a Second Language. (3)
    Course in speaking, writing, and understanding English, designed for students to whom English is a second language. Engl 103 precedes, and is not a substitute for Engl 101. <Fall, Spring>

210. Introduction to the Film. (3)
    (See Film 210.)

220. Expository Writing. (3)
    An intermediate course with emphasis on rhetorical types, structure, and style. Prerequisite: 101 or its equivalent. <Fall, Spring>

221. Creative Writing: Prose Fiction. (3)
    Prerequisite: 101 or its equivalent. <Fall, Spring>

222. Creative Writing: Poetry. (3)
    Prerequisite: 101 or its equivalent. <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. Papers will be submitted regularly. Prerequisite: 102 or its equivalent. <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. Prerequisite: 102 or its equivalent. <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. Prerequisite: 102 or its equivalent. <Fall, Spring>

295. American Literature. (3)
    A general survey to the present. Especially recommended for English majors. <Fall, Spring>
300. Studies in Literature. (3)‡
Literary works selected by theme or idea, genre or subgenre, or period. Titles of individual sections will vary as content varies. Prerequisite: 102 or its equivalent. <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.)

347. Introduction to Rhetorical Criticism. (3)
(See Sp Com 347.)

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. Prerequisites: 6 hrs. in literature. <Fall, Spring>

*415. Old English. (3)
Elementary grammar, translations of prose and poetry. <Fall>

‡‡ May be repeated once for credit.
*416. Old English Literature: Beowulf and Other Topics. (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.

*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)
(Also offered as Ling 440.) <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>

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. (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)
Permission of the instructor is required before registering. The student should present a plan of study to the instructor.

*499. Rhetorical Theory. (3)
(See Sp Com 499.)

Graduate Courses

*500. Introduction to the Professional Study of English. (3)
Required in first year of all graduate students who do not offer an equivalent. <Fall>

*501. Interdepartmental Seminar in the Culture of the United States. (3)
(See Am St 501.)

*510. Criticism. (3)
<Fall>

*513. The Middle Ages. (3)‡‡
<Fall>

*523. The Renaissance. (3)‡‡
<Fall, Spring>

*527. Studies in Rhetoric for Teachers. (3)
(Also offered as Sec Ed 527.) <Fall>

*528. Studies in Reading and Literature for Teachers. (3)
(Also offered as Sec Ed 528.) <Spring>

†‡ May be repeated once for credit.
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.

*533. The Seventeenth Century.* (3)‡†
  <Fall>
*537. Teaching Composition.* (2)
  <Fall>
*538. Teaching Introductory Literature.* (2)
  <Fall>
*543. The Eighteenth Century.* (3)‡†
  <Spring>
*551. Problems for the Master's Degree.* (1-3 hrs. per semester)
*553. The Nineteenth Century.* (3)‡†
  <Fall, Spring>
*555. Seminar in Linguistics and Language Pedagogy.* (1-3) (See Ling 555.)
*560. American Literature.* (3)‡†
  <Fall, Spring>
*563. The Twentieth Century.* (3)‡†
  <Spring>
*573. Language.* (3)
  <Fall>
*575. Problems and Methods of Literary Study.* (3)
  <Spring>
*580. Special Topics: History of Ideas, Literary Movements, etc.* (3)†
  <Fall>
*587. Genre: Comedy, Epic, Satire, Tragedy, etc.* (3)‡
*590. Colloquium.* (4)‡
  <Fall, Spring>
*599. Master's Thesis.* (1-6 hrs. per semester)
  See the Graduate School Bulletin for total credit requirements.
*600. Studies in American Literature.* (4)‡
*610. Studies in Criticism.* (4)‡
*620. Studies in British Literature.* (4)‡
*630. Studies in Language.* (4)
*640. Special Studies: Types, Backgrounds, Forces.* (4)‡
*651. Problems for the Doctor's Degree.* (1-3 hrs. per semester)
*652. Independent Study.* (1-3 hrs. per semester for maximum of two consecutive semesters)
  <Fall, Spring>
*699. Dissertation.* (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.

‡† May be repeated once for credit.
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
(Also offered as Phil 480.) 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)

151. Artistic Traditions of the Southwest. (3)
Pre-Columbian, American Indian, Spanish colonial, territorial and modern traditions in architecture, art, dance, music and theatre. <Fall>

490. Interdepartmental Proseminar. (3)
Open to juniors and seniors with the requisite grade-point average. See p. 146 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. 56-59.

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, and 211-212, which are open to all sophomores, these courses are normally restricted to students enrolled in the General Honors Program.

Explanation of footnotes not indicated will be found on p. 194.

111-112. Freshman General Studies Seminar. (3, 3)
Broad, general reading and class discussion for freshmen with senior General Honors students acting as instructors and discussion leaders under faculty direction. <Fall, Spring>

211-212. Sophomore General Studies Seminar. (3, 3)
Broad, general reading and class discussion for sophomores with senior General Honors students acting as instructors and discussion leaders under faculty direction. <Fall, Spring>

299. Individual Study. (1-3)††

†† May be repeated for credit with permission of program director.
301-302. Honors Seminar. (3, 3):†
Selected seminar topics of an educationally broadening and generally interdisciplinary nature by staff of various departments. Instructors and topics will vary from section to section and from semester to semester. <Fall, Spring>

399. Individual Study. (1-3):‡

403-404. Senior Honors Colloquium. (3, 3):‡
Educationally broadening seminars of various kinds specially designed to meet the needs of senior students in the program. Specific course offerings are determined in discussion with seniors during previous 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. 58.

331-332. Seminars in the General Area of the Humanities. (1, 1):†
Various sections, various topics each semester.

333-334. Seminars in the General Area of the Sciences. (1, 1):†
Various sections, various topics each semester.

335-336. Seminars in the General Area of the Social Sciences. (1, 1):†
Various sections, various topics each semester.

337-338. Interdisciplinary Seminars. (1, 1):‡
Various sections, various topics each semester.

GEOGRAPHY

PROFESSORS R. E. Murphy, Ph.D. (Chairman); I. Bennett, Ph.D.; R. D. Campbell, Ph.D.; R. E. Snead, Ph.D.; ASSISTANT PROFESSORS E. M. Barrett, Ph.D.; D. H. Gordon, M.A., and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 194.

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; Physics 103, 160-161, 163L.

‡‡ May be repeated for credit with permission of program director.
Environmental Systems:
Recommended courses in Geography:
261, 361, 373, 405, 471, 472.
Recommended distributed minor:
Anth 361; Arch 101; B&AS 306; Econ 200, 201, one other 3 hour course; 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)
Examination of time-space frameworks for looking at the world; strategies used to solve problems which distributions of people and their activities create within ecosystems; causal relationships between spatial structure and spatial process. <Spring>
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) Bennett
Regional geography of the southwestern United States. <Fall 1974 and alternate years>

*330. Southeast Asia. (3) Gordon
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. East Asia. (3) Gordon
Regional geography of China, Korea, and Japan. <Spring>

*332. Western Europe. (3) Murphy
Regional geography of Europe from the Atlantic eastward through Finland, Germany, Austria, and Italy. <Fall 1975 and alternate years>

*333. The Soviet Union and Eastern Europe. (3) Murphy
Regional geography of the U.S.S.R. and of eastern Europe from Poland southward through Czechoslovakia, Hungary and the Balkans. <Fall 1974 and alternate years>

*336. The Middle East. [The Middle East and the Indian Subcontinent.] (3) Snead
Regional geography of southwestern Asia from Turkey through Afghanistan and southward through the Suez and Arabia. <Spring 1976>

*337. The Indian Subcontinent. (3) Snead
Regional geography of south central Asia including India, Pakistan, Bangladesh, Nepal, Bhutan, and Ceylon. <Spring 1976>

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 1976 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)
Use of probability theory and descriptive statistics in geographic applications, models, and theories. Prerequisite: College algebra. <Fall>
*365. Urban Geography. (3)  
Urbanization as a spatial process. Evolution of the city through time. Types of cities, internal and external spatial relationships of cities and city systems. <Fall>

*373. Map Reading and Air Photo Interpretation. (3) Snead  
Techniques of analysis of maps and aerial photographs for geographic study and research. Prerequisite: 101. <Spring 1976>

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) Bennett  
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. <Spring 1975 and alternate years>

*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) Gordon  
Training in field mapping and other field techniques used in geography, with particular emphasis on studies of land utilization, physiography, urban geography, and microclimatology. The Albuquerque vicinity is used as a case study area, and classes meet frequently in the field. <Spring>

**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)  
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. (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. (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 1975 and alternate years>

*476. Regional Psychological Geography. (3) Campbell  
Geography of personality and national character; defining personality, national character, culture; the role of environment; personality and national character regions. <Spring 1976 and alternate years>

*478. Seminar in International Studies. (3) Slavin  
(Also offered as Econ, M&CL, Pol Sc, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.

*479. Environmental Conservation. (3) Dittmer  
(See Biol 479.) Open to Geography majors and minors. <Summer, Spring>
*481. Geomorphology. (3) Snead
(Also offered as Geol 481.) Origin, development, and classification of land forms, with
detailed consideration of gradation processes. Open to Geography majors and minors who
have completed Geol. 101. <Fall 1974 and alternate years. Taught as Geol. 481
each alternate year>

*482. Remote Sensing. (3) Snead
Techniques of Remote Sensing of environment using infrared, radar, microwave, and
multispectral sensors. Prerequisite: Geography 373 or Geology 455L. <Offered upon
demand>

*483. Physical Geography of North America. (3) Snead
Detailed study of the development of the surface landforms and associated physical
phenomena of North America with special emphasis on soils, vegetation, and Pleistocene
climatic influences. Prerequisite: 481 or permission of instructor. <Spring 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
<Fall>

*511. Seminar in Physical Geography. (3)‡ Bennett, Snead
<Fall>

*512. Seminar in Human Geography. (3)‡ Barrett, Campbell, Gordon, Murphy
<Spring>

*521. Seminar in Regional Geography (3)‡
<Offered upon demand>

*551-552. Problems. (2-3 hrs. each semester)

*575. Seminar in Psychological Geography. (3) Campbell
<Spring 1975 and alternate years>

*599. Master's Thesis. (1-6 hrs. per semester)

GEOL OGY

PROFESSORS L. A. Woodward, Ph.D. (Chairman); R. Y. Anderson, Ph.D.; D. G. Brookins, Ph.D.;
W. E. Elson, Ph.D.; J. P. Fitzsimmons, Ph.D.; Klaus Keil, Ph.D. (Director, Institute of
Meteoritics); S. A. Wengerd, Ph.D.; EMERITI PROFESSORS V. C. Kelley, Ph.D.; S. A.
Northrop, Ph.D.; ASSOCIATE PROFESSOR A. M. Kudo, Ph.D.; ASSISTANT PROFESSORS J. F.
SENIOR RESEARCH ASSOCIATE Martin Prinz, Ph.D. (Institute of Meteoritics).

Explanation of footnotes not indicated will be found on p. 194.

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, Chem­
istry, 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, 301L, 302L or 307L, and 8 additional hours, no more than 4 of which may be taken at the 100-299 level. It should be noted that Chem 101L is pre- or corequisite for Geol. 301L, Chem 102L is pre- or corequisite for Geol. 302L, and Math 162 or instructor's permission is required for Geol. 307L. No more than 2 hours of Geol. 401 (Seminar) may be credited toward the minor.

MINOR STUDY IN PALEOECONOMY
See p. 369.

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) Siemers
Origin and evolution of life and some aspects of paleoenology. Prerequisite: 101. <Fall, Spring>

105L. Physical Geology Laboratory. (1)
Minerals, rocks, and topographic maps; occasional field trips. Corequisite: 101. 2 hrs. lab. <Summer, Fall, Spring>

106L. Historical Geology Laboratory. (1)
Fossils and paleogeographic maps; emphasis on the historical geology of New Mexico. 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 Paleo 209.) Studies of the atmosphere, the ocean, and the terrestrial environment as a total system, including environments of the past. Interrelationships of physical, biological, and human processes and resources. <Summer, Fall, Spring>

225. Oceanography. (3) Jiracek, Kudo
The ocean as a physical feature and a dynamic process. Prerequisite: 101. <Spring>

**301L. Mineralogy. (4)
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. Determinative Mineralogy. (3)
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 or permission of instructor. 3 lectures, 3 hrs. lab. <Fall>

**319L. Field Geology and Reports. (4) Siemers**
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>

*410. Fundamentals of Geochemistry. (3) Brookins, Landis**
Geochemistry of igneous, metamorphic, and sedimentary rocks. Geochemical methodology. Prerequisite: 302L. 3 lectures. <Fall>

*411L. Invertebrate Paleontology. (4)**
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)**
Recognition and utilization of appropriate fossils in geochronology and paleogeography. Prerequisite: 319L or permission of instructor. 8 hrs. lab. <Spring>

*420L. Advanced Field Geology. (4) Callender**
Geological mapping; special field problems. Prerequisite: 319L. 1 full day in field each week plus 1 hr. lecture during week. <Spring>

*421L. Optical Mineralogy. (4) Fitzsimmons**
Optical properties and microscopic determination of nonopaque minerals. Prerequisite: 301L or equivalent. 2 lectures, 6 hrs. lab. <Fall>

*422L. Petrography. (2) Fitzsimmons**
Study of rocks by means of the petrographic microscope, stressing mineral content, textural relations, and classification of rocks. Prerequisite: 421L; pre- or corequisite: 302L. 6 hrs. lab. <Spring>

*426L. Exploration Geophysics. (4) Jiracek**
Principles and applications of gravity, magnetic, seismic, electrical, and electromagnetic methods in subsurface exploration. Field investigations and interpretations. Prerequisites: 101, Math 163, Physcs 161. 3 lectures, 3 hrs. lab. <Fall>

*427. Solid Earth Geophysics. (3) Jiracek**
Structure, constitution, and deformation of earth as determined by gravity, magnetics, seismology, heat flow, and earth currents. Related aspects of plate tectonics. Prerequisites: 307L, Math 163, Physcs 161. <Spring>

*429L. Paleontological Techniques. (3)**
Laboratory methods for the preparation of fossils for study and illustration. Prerequisite: 411L or equivalent. 5 hrs. lab. and field trips. <Fall>

*431L. Palynology-Micropaleontology. (4) Anderson**
Studies of the morphology, methods of identification, ecology and applications of pollen, spores, nonfossils, 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. <Spring>

**450. Geology of New Mexico. (3) Callender, Kudo, Woodward**
Description of geologic features including structures, landforms, and mineral resources of New Mexico. For earth science teachers at high schools and junior high schools. Prerequisite: 101. <Summer>

*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>
*462. [462L] Hydrogeology. (3) Trauger
Occurrence of ground water with emphasis on water quality, terminology, and hydrologic properties of rocks. Prerequisites: 105L, senior standing, and permission of instructor. 3 lectures. <Fall>

*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, Landis
Origin, classification, occurrence, and exploration of mineral deposits. Prerequisites: 302L, 307L. 3 lectures, 3 hrs. lab. <Fall>

*472. Quantitative Hydrogeology. (2) Hale
Handling of quantitative hydrologic data needed for analysis of ground-water systems under induced stress. Prerequisite: 462. 2 lectures. <Spring>

*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 1975 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>

*487L. Morphological Crystallography. (3)
The 32 point groups; crystal form and habit; crystal projections; crystal measurement and drawing. Prerequisite: Math 264. 2 lectures, 3 hrs. lab. <Fall>

*490. Geologic Presentation. (1) Callender
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>

*501. Sedimentary Geochemistry. (3) Brookins
Pre- or corequisite: 302L. 3 lectures. <Fall 1974 and alternate years>

*502L. High-temperature Geochemistry. (3) Kudo
Pre- or corequisites: 302L or 422L, Chem 311-312 or 315L. 2 lectures, 3 hrs. lab. <Spring 1975 and alternate years>

*504. Geochronology I [Isotope Geochemistry I.] (3) Brookins
Prerequisite: 302L; Chem '315L recommended. <Fall 1975 and alternate years>

*505L. Geochronology II. [Isotope Geochemistry II.] (3) Brookins
Prerequisite: 504L or consent of instructor. <Spring 1976 and alternate years>

*506L. X-ray Crystallography. (4)
(Also offered as Chem 523L.) Prerequisites: Math 264 and permission of instructor. 2 lectures, 6 hrs. lab. <Fall>

*507L. Crystal Structure Analysis. (3)
(Also offered as Chem 524L.) Prerequisites: 506L and permission of instructor. EECS 336 is strongly recommended. 2 lectures, 3 hrs. lab. <Spring>

*510. Advanced Mineral Deposits. (3) Elston
Prerequisite: 471L. <Spring 1975 and alternate years>

*512L. Petrography of Opaque Ores. (3) Keil
Prerequisites: 421L, 471L. 1 lecture, 6 hrs. lab. <Spring 1976 and alternate years>

*513L. Meteoritics and Cosmochemistry. (3) Keil
Prerequisite: 422L or permission of instructor. 2 lectures, 3 hrs. lab. <Spring 1975 and alternate years>
*517L. Instrumental Methods in Geochemistry. (2-4) Keil, Landis  
Prerequisite: permission of instructor. 1 or 2 lectures, 3 or 6 hrs. lab. <Spring>

*518L. Microprobe Analysis. (3) Keil  
Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. <Fall>

*519L. Selected Topics in Geochemistry. (2-4) Kudo, Landis  
Prerequisite: permission of instructor. <Spring>

*520. Selected Topics in Geobiology. (3) Keil  
Prerequisite: permission of instructor. <Spring>

*521L. Metamorphism. [Metamorphic Petrology.] (4) Collender 
Prerequisite: 422L. 2 lectures, 3 hrs. lab. <Spring>

*525L. Comparative Tectonics. [Advanced Structural Geology.] (3) Callender, Woodward 
Prerequisite: 307L. 2 lectures, 3 hrs. lab. <Fall>

*527L. Advanced Structural Geology. (3) Callender, Woodward 
Prerequisites: 307L and either 426L or 427. 2 lectures, 3 hrs. lab. <Spring 1975 and alternate years>

*528. Regional Tectonics. (3) Callender, Woodward  
<Spring 1976 and alternate years>

*531L. Igneous Petrology. (4) Kudo  
Prerequisites: 421L and 422L or 302L. 3 lectures, 3 hrs. lab. <Fall>

*537L. Stratigraphic Analysis. (3) Wengerd 
Prerequisites: 307L, 441L. 2 lectures, 3 hrs. lab. <Fall 1975 and alternate years>

*539. Environmental Reconstruction. (3) Anderson  
(Also offered as Paleoc 539.) Prerequisite: permission of instructor. <Spring>

*542L. Subsurface Geology. (3) Wengerd  
Pre- or corequisite: 442 or 462L. 1 lecture, 6 hrs. lab. <Offered upon demand>

*544L. Sedimentary Petrology. (4) Siemens  
Prerequisite: 422L. 2 lectures, 6 hrs. lab. <Spring 1975 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  

Explanation of footnotes not indicated will be found on p. 194.
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 with the recommendation of his departmental adviser after completing 80 hours. To complete the program, a student must take 9 hours in Honors courses. A student may offer this program in lieu of one of the required fields in history.

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—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 1877, (162) from 1877 to the present. <Summer, Fall, Spring>

251. [251-252] Traditional Eastern Civilizations. [Eastern Civilizations.] (3) Ikio, Porter
The origin and development of the traditional societies and cultures of India, Southeast Asia, China, and Japan. <Fall>

The emergence of modern Asia from the impact of western colonialism and imperialism to nationalism, modernization, and revolution. <Spring>
§260. History of New Mexico. (3) Survey from Cabeza de Vaca to 1912. <Fall, Spring>

281. History of Colonial Latin America. (3) 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) Duran 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 SI 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.

*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. (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>

*315. 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. 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>

*317. [305] History of Science to 1543. [History of Science 1687] (3) Skabelund The history of science, mainly internal, from Ancient Babylonia and Egypt through the European Renaissance. <Fall>

§ May be taught at Los Alamos or other off-campus centers.
318. History of Science, 1543-1800. (3) Skabelund
The history of science, mainly internal, during the Scientific Revolution of the 16th and 17th centuries and the 18th Century Enlightenment. <Spring>

319. History of Science, 1800 to the Present. (3) Skabelund
History of science, mainly internal, during the "classical" period of the 19th century and the "second scientific revolution" of the 20th. <Fall>

320. Studies in History. (1-3) Staff
Will vary from instructor to instructor, but will be an in depth analysis of specific historical problems. For course content consult schedule of classes. <Fall, Spring>

321. Early Middle Ages, 300 to 1050. (3) Sullivan
The emergence of medieval European civilization from the reign of Constantine to the beginnings of the papal monarchy. Prerequisite: 101. <Fall>

322. The Central Middle Ages, 1050-1300. [High Middle Ages, 1050 to 1300] (3) Sullivan
The maturing of medieval civilization: Gregorian reform, the Crusades, the rise of the university, and the Gothic Cathedral. <Spring>

323. Renaissance Era, 1300 to 1520. (3) Sullivan
The decline of medieval civilization and the transition to a new phase of European history. <Fall>

324. Reformation Era, 1500-1600. [The Reformation, 1500 to 1648] (3) Sullivan
Religious revolution and concurrent developments in European politics, society, and culture.

325. History of the Occult and Irrational. (3) Skabelund
Mystical traditions in Western history: the other side of rationalism, the "fossil" sciences, the preternatural—neglected episodes in Western civilizations. <Spring>

326. Europe in the Seventeenth Century. (3) Steen
Survey of political, cultural, social and economic trends in Europe during Thirty Years War and reign of Louis XIV. Special emphasis on developments in England, France and Hapsburg dominions. <Fall>

327. Europe in the Eighteenth Century, 1700-1788. [Early Modern Europe, 1648-1763] (3) Steen
Survey of the political, cultural, social and economic situation in Europe at height of Old Regime. Emphasis will be on intellectual and social developments that culminated in French Revolution. <Fall>

328. The French Revolution and Napoleon, 1789-1815. [French Revolution and Napoleon.] (3) Steen
Survey of the course of the revolution and its impact on France and on European social, political, economic and military life. <Spring>

329. 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>

330. 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>

331. 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>

332. The City in History. (3) Roebuck
(Also offered as Arch 338 and Soc 338.) Overview of development of urban forms throughout history, with emphasis on modern times, which examines the causes of urban growth and change and ways in which cities have affected course of development of western society. <Fall>

333. Military History of Europe to 1790. (3) <Fall>

334. Military History of Europe since 1790. (3) <Spring>

335. Medieval France to 1559. [France.] (3) Steen
Study of the evolution of French social, political and religious institutions from Roman time to outbreak of the Wars of Religion. <Fall>

336. France in Early Modern Times, 1560-1815. (3) Steen
Study of creation of France as modern state with emphasis on social and political developments that led to French Revolution. <Spring>
*343. History of England to 1688. (3) Roebuck
Survey of medieval foundations, Tudor era, and seventeenth century social and political revolutions. <Fall>

*344. History of Modern England since 1688. (3) Roebuck
Emphasis on social, political, and intellectual developments. <Spring>

*345. The British Empire and Commonwealth. (3) Roebuck
Survey of British colonial policy and nation-building since 1815. Emphasis on Ireland, Canada, Australia, India, and South Africa. <Fall>

*346. The History of Italy 1815-Present. (3) Seitz
Covers response to Napoleon's Fall, rise of a nationalist movement, successful unification of Italy (Risorgimento), problems facing the new state, the background of entrance into World War I, and the attempt to establish a democratic Italian nation in post war era. Emphasis placed on cultural and intellectual themes of these periods. <Spring>

*347. Old Russia from the 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>

*353. The Far East in the Contemporary World. (3) Iklé
Emphasis upon diplomatic relations between Asia and the West. <Fall>

*354. History of the Near East. (3) Iklé
From ancient Mesopotamia to the present. <Fall>

*355. History of Africa since 1800. (3) Spidle
Survey of the African continent during colonial and national periods. <Spring>

*356. History of New Mexico. (3) Cutter, Ellis
Survey from Cabeza de Vaca to the present. <Fall, Spring>

*357. 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 the impact upon the development of the United States. <Fall>

*358. American Urban History since 1870. (3) Rabinowitz
Continuation of 357, emphasizing the emergence, development, and role of the modern city. <Spring>

*359. The Old South. (3) Brewer
Emphasis on the South in post Revolutionary America, the transition to the South of the pre-Civil War era, slavery and Ante-Bellum southern society, and the mind of the Old South. <Spring>

*360. Political History of the United States. (3) Smith
From 1860 to the present. <Spring>

*361. From Slavery to Freedom in Urban America. (3) Rabinowitz
<Spring>

Study of the impact of the American Revolution on the post war society, the creation of the new nation, crises of the 1790's, origin of modern political parties, Jeffersonian America, the War of 1812, and the movement westward.

Sequel to 362, with emphasis on Jacksonian society, politics and party formation, the reform movements, and the breakdown of social order and the coming of the Civil War. <Spring>
314 HISTORY

*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) 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>

*385. The American West in the Twentieth Century. (3) Nash
This course surveys the growth of the trans-Mississippi West in the twentieth century, giving attention to social development, economic growth, cultural development, the role of minority groups, and the impact of science and technology. <Spring>

*387. Blacks in Latin America. (3)
Survey of the history and assimilated culture of the black man in Latin America since colonial times. <Spring, Fall>

*393. Spanish South America to 1820. (3)
Emphasis on Peru and on economic, social, and cultural aspects. <Spring>

*395. Spain and Portugal to 1700. [Iberian History to 1700.] (3) Kern
Spanish and Portuguese history to 1700. <Fall>

*396. Spain and Portugal since 1700. [Iberian History since 1700.] (3) Kern
Spanish and Portuguese history since 1700. <Spring>

*397. Mexico to 1821. (3) Cutter
Prerequisite: 281. <Fall>

*398. Mexico since 1821. (3) Lieuwen
Prerequisite: 282. <Spring>

*401. Quantification in History. (2) Brewer
Introduction to statistical and quantitative procedures of particular use to historian and social scientist. Emphasis on practical application, not theory. No prior knowledge of statistics or higher mathematics needed. Course will begin with elementary procedures and go up to, but not through, use of computers. <Fall>

*405. Social History of Science and Technology. (3) Skabelund
The "external" histories of science and technology, including agriculture and medicine; their interaction with society at large. Environmental and ecological factors in Western history—including geographical features, food, disease, commerce, industry, communications, and war. <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. (3) Seitz
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. (3) Seitz
The anti-positivist reaction; the decadent period and the crisis in values, scientific revolution; existentialism; Dostoevski, Nietzsche, Heinsenberg, Freud, Bergson, Kierkegaard, Sarte, Buber.

*438. European Diplomatic History. (3) Spidle
Since 1815. Prerequisite: 102. <Fall>

*442. Germany, 1871 to 1971. (Germany.) (3) Spidle
Bismarck to Brandt, a survey of German history from unification to contemporary times with special emphasis on Weimar and Hitlerian Germany. Prerequisite: 102. <Fall>

*443. The Hapsburg 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) Slenes
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)
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) Cutter, 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) Herbold, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins 
(Also offered as Ib-Am, Port, and Span 504.) <Fall, Spring>

*520. Seminar and Studies in Ancient History. (3) Berthold <Spring>

*521. Seminar and Studies in Medieval History. (3) Sullivan <Fall>

*526. Seminar in European Economic History. (3) 
(Also offered as Econ 526.)

*532. Seminar and Studies in Early Modern European History. (3) Steen <Fall>

*537. Seminar in European Imperialism. (3) Spidle

*540. Seminar and Studies in European Intellectual History. (3) Seitz <Fall>

*542. Seminar and Studies in Modern European History. (3) <Spring>

*545. Seminar and Studies in British History. (3) Roebuck <Spring>

*547. Seminar and Studies in Modern Russian History. (3) Robbins <Spring>

548. Seminar and Studies in Iberian History. (3) Kern

**549. History Education. (3) Zepper 
(Also offered as Sec Ed 549.) <Summer>

**550. Seminar in History Education. (3). 
(Also offered as Sec Ed 550) Prerequisite: 549. <Summer>

*551-552. Problems. (1-3 hrs. each semester)

*554. Seminar and Studies in Far Eastern History. (3) Ikle, 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) Szosz <Fall>

*566. Seminar and Studies in Civil War Period. (3) Smith <Spring>

*568. Seminar and Studies in Recent American History. (3) Nash <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) <Spring>

*582. Seminar in Recent Latin American History. (3) Lieuwen <Fall, Spring>

*584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3) Lieuwen, Marks, 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. Noson, Ph.D., Director.

Explanation of footnotes not indicated will be found on p. 194.

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)† Herbold, T. Holzapfel, Lieuwen, Nason, Slenes, Tomlins
(Also offered as Hist, Port, and Span 504.) <Fall, Spring>

*584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3)‡ Lieuwen, Merkw, Needler, Schwerin
(See Anth, Econ, Hist, Pol Sc, and Soc 584.) <Spring>

*651-652. Problems. (1-3 hrs. each semester)

See the Graduate School Bulletin for total credit requirements.

INDUSTRIAL EDUCATION
See Education, Secondary.

ITALIAN
See Modern and Classical Languages.

JOURNALISM


MAJOR STUDY
Advertising-Management Sequence: 33 hours including 251, 252, 277, 311, 312, 322, 401, 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 St 277.) Graphic design in communication. Prerequisite: Art St 123. <Fall>

300. History of Journalism in the United States. (3) Jermain
American journalism from the pre-colonial beginnings through to modern times. Prerequisite: permission of instructor. <Fall>

304. Persuasive Writing. [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, Spring>

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 St 388.)

399. Practicum in Journalism. (3) Staff
Supervised internship with a medium of mass communications. Prerequisite: 252 and permission of instructor. May be repeated for a total of no more than 6 credit hours, with permission of instructor. <Summer, Fall, Spring>

401. Advertising. (3) Toppino
Theory, strategy and techniques of advertising and advertising campaigns. Prerequisite: permission of instructor. 2 lectures, 2 hrs. lab. <Fall>

*402. Advertising Campaigns. (3) Toppino
Theory, strategy, and techniques applied to advertising campaigns. Prerequisite: 401, or permission of instructor. <Spring>

440. News Programming II. (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
  Interpreive coverage of matters of public concern. Prerequisite: permission of instructor. <Fall, Spring>

494. Mass Media as a Social Force. (3) Hillerman
  The power and the problems of the communications media with emphasis on evolving ethical standards. <Fall, Spring>

495. The Mass Media as a Social Force in Latin America. (3)
  Taught only at the Quito Center, on demand. <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
grounders, official leaks; their relationship to politics and policy-making in government.
  Problems of news judgment and writing style. Prerequisites: senior standing and per­
  mission of instructor. <Offered upon demand>

LATIN
  See Modern and Classical Languages.

LATIN AMERICAN STUDIES
PROFESSOR M. C. Needler, Ph.D., 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
  This is a demanding program, equal in requirements to a combined major and minor. 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; 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, Markx, Needler
  (See Anth, Econ, Hist, Pol Sc, and Soc 584.)

*599. Master's Thesis. (1-6 hrs. per semester)
LAW


FIRST YEAR COURSES

#500. Historical Introduction to the Legal System. (2)
#501. Constitutional Law I. (3)
#502. Contracts. (4)
504. Criminal Law. (3)
505. Law of International Relations. (2)
#508. Property I. (3)
#510. Torts. (4)
#513. Introduction to Advocacy I. (2)
#533. Family Law. (3)
575. Programmed Studies I. (2)
587. Introduction to Law. (3)
#611. Introduction to Legislation. (1)
#613. Introduction to Advocacy II. (2)
676. Programmed Studies II. (2)

NOTE: Some upperclass electives are available to freshmen law students during Semester II.

SECOND AND THIRD YEAR COURSES

Commercial Law

520. Business Associations I. (3)
521. Business Associations II. (3)
523. Commercial Transactions II. (2)
528. Creditors' Rights. (3)
550. Unfair Trade Practices. (2)
553. Products Liability. (3)
558. Contracts III. (3)
564. Law and the Consumer. (2)
581. Insurance. (3)
622. Commercial Transactions IA. (1)
623. Commercial Transactions IB. (2)
624. Commercial Transactions IC. (3)
629. Bankruptcy. (1)

Procedure

512. Civil Procedure I. (3)
516. Civil Procedure II. (3)
517. Trial Practice Workshop. (2)
529. Criminal Procedure. (3)

# Required.

NOTE: Some upperclass electives are available to freshmen law students during Semester II.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>531</td>
<td>Injunctions. [Equitable Relief.]</td>
<td>1</td>
</tr>
<tr>
<td>532</td>
<td>Evidence.</td>
<td>3</td>
</tr>
<tr>
<td>552</td>
<td>Federal Jurisdiction.</td>
<td>3</td>
</tr>
<tr>
<td>561</td>
<td>Arbitration.</td>
<td>3</td>
</tr>
<tr>
<td>563</td>
<td>National Moot Court Competition.</td>
<td>2</td>
</tr>
<tr>
<td>606</td>
<td>Survey of Civil Procedure.</td>
<td>3</td>
</tr>
<tr>
<td>631</td>
<td>Remedies.</td>
<td>2</td>
</tr>
<tr>
<td>632</td>
<td>Evidence-Trial Practice.</td>
<td>5</td>
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</table>

### Property and Natural Resources

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>524</td>
<td>Community Property.</td>
<td>2</td>
</tr>
<tr>
<td>544</td>
<td>Oil and Gas.</td>
<td>3</td>
</tr>
<tr>
<td>554</td>
<td>Wills and Future Interests.</td>
<td>3</td>
</tr>
<tr>
<td>557</td>
<td>Wills and Trusts. [Trusts.]</td>
<td>1-3</td>
</tr>
<tr>
<td>565</td>
<td>Natural Resources.</td>
<td>1-3</td>
</tr>
<tr>
<td>578</td>
<td>Land Transfers and Finance.</td>
<td>3</td>
</tr>
<tr>
<td>580</td>
<td>Environmental Law.</td>
<td>2</td>
</tr>
<tr>
<td>608</td>
<td>Property II.</td>
<td>3</td>
</tr>
<tr>
<td>619</td>
<td>Mining Law.</td>
<td>2</td>
</tr>
<tr>
<td>625</td>
<td>Wills.</td>
<td>2</td>
</tr>
<tr>
<td>627</td>
<td>Future Interests.</td>
<td>2</td>
</tr>
<tr>
<td>635</td>
<td>Land Use Planning.</td>
<td>2</td>
</tr>
</tbody>
</table>

### Public Law

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>515</td>
<td>Employee's Rights.</td>
<td>2</td>
</tr>
<tr>
<td>518</td>
<td>Administrative Law.</td>
<td>3</td>
</tr>
<tr>
<td>525</td>
<td>Conflict of Laws.</td>
<td>3</td>
</tr>
<tr>
<td>526</td>
<td>Constitutional Law II.</td>
<td>3</td>
</tr>
<tr>
<td>535</td>
<td>Food and Drug Law.</td>
<td>2</td>
</tr>
<tr>
<td>537</td>
<td>Labor Law.</td>
<td>3</td>
</tr>
<tr>
<td>542</td>
<td>Legal Process.</td>
<td>3</td>
</tr>
<tr>
<td>548</td>
<td>Legislation.</td>
<td>2</td>
</tr>
<tr>
<td>628</td>
<td>Regulated Industries.</td>
<td>2</td>
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</table>

### Taxation

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>530</td>
<td>Federal Estate and Gift Taxation.</td>
<td>2</td>
</tr>
<tr>
<td>534</td>
<td>Federal Income Taxation.</td>
<td>3</td>
</tr>
<tr>
<td>536</td>
<td>State and Local Taxation.</td>
<td>1</td>
</tr>
<tr>
<td>551</td>
<td>Taxation of Corporations and Shareholders.</td>
<td>3</td>
</tr>
<tr>
<td>620</td>
<td>Taxation of Partnerships, Estates and Trusts.</td>
<td>2</td>
</tr>
<tr>
<td>621</td>
<td>Taxation of Natural Resources Transactions.</td>
<td>2</td>
</tr>
</tbody>
</table>

### Law and Social Problems (See Seminars also)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>555</td>
<td>Jurisprudence.</td>
<td>3</td>
</tr>
<tr>
<td>566</td>
<td>Law and the Behavioral Sciences.</td>
<td>3</td>
</tr>
<tr>
<td>570</td>
<td>Law of the Poor.</td>
<td>2</td>
</tr>
<tr>
<td>579</td>
<td>Juvenile Courts and Juvenile Delinquency.</td>
<td>2</td>
</tr>
<tr>
<td>664</td>
<td>Poverty Law.</td>
<td>3</td>
</tr>
</tbody>
</table>

### Professional Skills and Functions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>538</td>
<td>Law Journal and Review (Second Year).</td>
<td>1</td>
</tr>
<tr>
<td>568-569</td>
<td>Law Journal and Review (Third Year).</td>
<td>2, 1</td>
</tr>
<tr>
<td>572</td>
<td>The Legal Profession.</td>
<td>2</td>
</tr>
<tr>
<td>600</td>
<td>Role of the Lawyer in Society.</td>
<td>2</td>
</tr>
</tbody>
</table>
Seminars

527. Business Planning. (3)
545. Estate Planning. (2)
546. Antitrust Law. (2)
547. Water Law. (2)
549. Comparative Law. (2)
556. State and Local Government. (2)
560. Women and the Law. (2)
567. Legal Problems in Community Economic Development. (2)
571. Law and Psychiatry. (2)
574. Mining and Public Lands. (2)
576. Current Legal Problems. (2)
577. Legal Counseling. (2)
582. The Corporation and Society. (2)
583. International Legal Problems. (2)
584. Indian Law. (2)
590. Commercial Law. (2)
592. Legal Education. (1)
593. Private Law Reform. (2)
594. Individual Research. (1-6)
595. Tax Policy. (2)
615. Corrections. (2)
640. Applied Problems in Current Litigation. (2)
645. Sex Roles in the Law. (1)
650. Pornography and the Law. (2)
655. First Amendment Rights: Use of Public Forums and Mass Media. (2)
660. Juvenile Courts. [Juvenile Law and Practice.] (2)
666. Advanced Problems in Federal Litigation. (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. (1-4)
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. Ethics. (1)
751. Advanced Spanish for Lawyers. (2)

LIBRARY SCIENCE
See Education, Educational Media.

LINGUISTICS
ASSOCIATE PROFESSORS J. Oller, Ph.D. (Chairman); PROFESSORS B. Spolsky, Ph.D.; F. Chreist, Ph.D. (Communicative Disorders); M. Zintz, Ph.D. (Elementary Education); ASSOCIATE PROFESSORS V. John-Steiner, Ph.D. (Educational Foundations); R. Pickett, Ph.D. (English); B. Rigsby, Ph.D. (Anthropology), R. White, Ph.D. (Secondary Education); ASSISTANT PROFESSORS G. Bills, Ph.D. (Modern and Classical Languages); D. Brodkey, Ed.D. (Elementary Education); S. Steele, Ph.D. (Anthropology); R. Young, Ph.D. (Elementary Education); VISITING PROFESSOR W. Morgan; VISITING RESEARCH PROFESSOR R. W. Young, LL.D.

MAJOR IN THE COLLEGE OF ARTS AND SCIENCES
The major for the B.A. in Linguistics requires a minimum of 36 hours (21 in required courses, 15 in approved electives) and four semesters of a foreign language or the equivalent. Required courses are: an Introduction to Linguistics (Ling 292 or 440), Ling 303, 370, 317L, 417L, 318L, 418L. Students must complete an additional 15 hours in approved courses which they may select from the following recommended courses (others may be approved by the Department of Linguistics): Anthro 313L, 405; Com Dis 325, 326L; C&I 480, 481, 482; Sec Ed 430, 436, 440, 441, 442, 445; Engl 436, 441; Mod Lang 480; French 405, 440; German 405, 445; Navajo 401; Span 440, 441, 453; Cp Sci 451; Phil 256, 257, 352, 356, 357, 445; Psych 367, 467; Sp Com 215, 350, 411, 415, or courses in Linguistics.

MINOR IN THE COLLEGE OF ARTS AND SCIENCES
The minor requires at least 21 hours of Linguistics courses: 292 or 440, 303, 317L, 318L, 370, and six additional hours selected from the requirements or approved electives for the major.

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.
100. The Study of Language. (3) John-Steiner, Oller, Spolsky
Overview of language use in social settings. Gives a brief introduction to some concepts from linguistics and sociolinguistics. Presumes no prior knowledge of either field.

292. Introduction to the Study of Language. (3 or 4) Rigby
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) Christ
(Also offered as Sp Com 303 and Comm 303.) English phonetics as applied to the problems of articulation, rhythm, dialects, and to the teaching of speech, English, and speech correction. <Fall, Spring>

*313. Linguistic Field Methods. (3)
(See Anth 313L.)

*317L. Phonological Analysis. (3) Rigby, Steele
(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) Bills, Rigby, Steele, Young
(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, Spring>

*359. Language and Culture. (3) Oller, Rigby, Spolsky, Steele
(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) Oller, Spolsky
Survey of multilingual education throughout the world. Principles and practices. Prerequisite: 292. <Spring>

*417L. Advanced Phonological Analysis. (3) Rigby, Steele
(Also offered as Anth 417L.) Survey of problems in generative phonology. Formal and substantive universals of phonological systems. Prerequisite: 317L. <Spring>

*418L. Advanced Grammatical Analysis. (3) Oller, Steele, Young
(Also offered as Anth 418L.) Major theoretical positions in development of transformational-generative syntactic theory; presentation of standard theory and other alternatives, followed by generative semantics and interpretivism. Prerequisite: 318L. <Spring>

*440. Introduction to Linguistics. (3)
(Also offered as Engl 440.) <Fall, Spring>

*446. Introduction to Comparative Linguistics. (3) Steele
(Also offered as Anth 446.) Theory and methodology of comparative and historical linguistics. Consideration of theoretical approaches in the reconstruction of phonology, syntax and semantics. Prerequisites: 313L, 317L, 318L or permission of instructor. <Spring>

*451. Mathematical Theory of Formal Language. (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>

495-496. Undergraduate Problems. (1-6)
<Offered upon demand>

*497. Topics. (1-3)
<Offered upon demand>

*552. Seminar in Language Testing. (3) Oller, Spolsky
(Also offered as Ed Fdn 502.) <Spring>

*553. Seminar in Language Acquisition. (3) John-Steiner
(Also offered as Ed Fdn 553.) <Spring>
*554. Seminar in Linguistic Theory. (3) Staff  
(Also offered as Anth 554.) Prerequisites: 317L, 318L or equivalent. <Offered upon demand>

*555. Seminar in Linguistics and Language Pedagogy. (1-3) Brodkey, Oller, John-Steiner  
Prerequisite: permission of instructor. <Offered upon demand>

*569. Seminar in Sociolinguistics. (3) Rigsby, Spolsky  
(Also offered as Anth 469.) Prerequisite: 459. <Fall>

*595-596. Graduate Problems. (1-6)  
(Fall, Spring)

MATHEMATICS AND STATISTICS

Chairman to be appointed. PROFESSORS S. Bell, Ph.D. (joint appointment); J. Blum, Ph.D., R. Cogburn, Ph.D.; D. Dubeis, Ph.D., B. Epstein, Ph.D., R. Hersh, Ph.D., A. Hillmen, Ph.D., L. Koopmans, Ph.D., W. Kyner, Ph.D., M. Mitchell, Ph.D., D. Morrison, Ph.D. (joint appointment), A. Steger, Ph.D.; ASSOCIATE PROFESSORS R. Allen, Ph.D., A. Carasso, Ph.D.; J. Davis, Ph.D., H. Devis, Ph.D., R. DeMarr, Ph.D., G. Efroymson, Ph.D., R. Entringer, Ph.D., A. Gibson, Ph.D., R. Griego, Ph.D., T. Guinn, Ph.D., L. Hahn, Ph.D., S. Kao, Ph.D., J. Lewis, Ph.D., R. Metzler, Ph.D., C. Moler, Ph.D., C. Onneweer, Ph.D., P. Pathak, Ph.D., C. Qualls, Ph.D., A. Stone, Ph.D., W. Zimmer, Ph.D.; ASSISTANT PROFESSORS J. Ellison, Ph.D., B. Jones, Ph.D., S. Pruess, Ph.D.; INSTRUCTORS R. Grassl, M.A., L. Cameron, M.A. (part-time), S. Feuchtner, Ph.D. (part-time).

Explanation of footnotes not indicated will be found on p. 194.

Students who are planning to take mathematics courses at the University are hereby advised to take at least two years of algebra and one year of geometry in high school. In addition, students who plan to take calculus are advised to take more advanced courses, in particular trigonometry, prior to entering the University.

FLOW CHART FOR BEGINNING COURSES

Student’s preparation determines starting course in any sequence.

- Remedial sequence
  010 → 020 → 120 → 123 → 150

- Business sequence
  121 → 180

- Calculus for social and biological sciences
  121
  123 → 180 → 181

- Mathematics major sequence
  150 → 162 → 163 → 264 → 361 → 362
  123 & 162 → 162 → 265 → 321 → 322

- Engineering sequence
  150 → 162 → 163 → 264 → 265 → 314 → 313
PLACEMENT

Students who plan to take their first mathematics course at UNM are required to take the Mathematics Department placement tests. The only exception is Math 101 (A Survey of the Art) which does not require a placement test. On the basis of these placement scores advisers will determine the best mathematics course for the student. Placement tests are given during preregistration and registration periods. A beginning student who wishes to take Mathematics 163 or a higher course must have permission from Mr. Richard Grassl.

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 116 and must see an adviser in Secondary Education.

MAJOR STUDY

264, 265 and 21 hours in courses numbered above 300, approved by the Mathematics Department. A typical mathematics major is urged to take 321, 322, 361, 362 as soon as possible; also at least one 400 level course should be taken. Undergraduates who intend to continue toward a graduate degree in mathematics are advised to take courses in at least one of these languages: French, German, Russian.

Students majoring in mathematics are required to have their courses of study approved by the Department by the beginning of their junior year.

A student who wishes to enroll in any course requiring a prerequisite must earn a minimum grade of C in the prerequisite course.

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 and Computing Science: EECS 203, 206L, 213, 321, 361, plus 2 courses selected from EECS 362 and 322, 421, 436.

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.
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 280, Psych 201.) An introduction to some of the basic ideas in probability and statistics; analysis of numerical data and descriptive statistics, probability and basic probability models for statistics, sampling and statistical inference, techniques of statistical inference illustrated by examples from a variety of fields; demonstrations of the use of the computer in statistics. Prerequisite: a knowledge of algebra. <Fall, Spring>

120. Intermediate Algebra. (3)
Basic algebraic operations; proportion, variation, linear and quadratic functions and equations, graphing, logarithms. Prerequisite: high school algebra and geometry or satisfactory score on placement test. <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. Prerequisite: satisfactory score on placement test or 120 or 121. <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.

Algebra and trigonometry as preparation for Math 162. Includes study of functions with emphasis on graphs, equations, inequalities, exponential and logarithmic functions, trigonometric and inverse trigonometric functions. Prerequisite: adequate score on placement test. <Summer, Fall, Spring>

155. Problem Solving with the Computer. (3)
(Also offered as Cp Sci 155) Elementary introduction to computing science. Object of course is an understanding of the relationship between mathematics, computing, and problem solving. <Fall>

162. Calculus I. (4)
Derivative as a rate of change, intuitive, numerical and theoretical concepts applications to graphing, trigonometric and exponential functions, integral as a sum, relation between integral and derivative, applications, numerical integration. Some sections make use of the computing laboratory. Prerequisite: adequate score on placement test or permission of department chairman. <Summer, Fall, Spring>

* Not open to students with credit for courses numbered 121 and above.
† Credit not allowed for both 123 and 150.
§§ Effective Semester II, 1973-74 credit will not be allowed for both 180 and 162 or both 181 and 163.
163. Calculus II. (4)
Techniques of differentiation and integration, applications, logarithmic and trigonometric functions, some space geometry and partial derivatives, numerical integration, simple differential equations. Some sections make use of the computing laboratory. Prerequisite: C or better in Math 162 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'Hôpital's 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. (1,1)
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)
Vector representation of curves and surfaces, partial derivatives, multiple integrals, Taylor polynomials and error, power series, improper integrals. Introduction to approximate solution of differential equations. Prerequisite: 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. 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. There will be one or more sections each consisting of a 150 minute lecture weekly. In Fall 74-75 only there will be in addition a lecture-lab section, with two 50 minute lecture sessions and one 75 minute lab session. <Summer, Fall, Spring.>

112. Mathematics for Elementary School Teachers II. (3)
The properties of the rational number system; extension to the irrationals; decimal representation and operations with real numbers; intuitive geometry and measurement; solution of equations and of inequalities. There will be one or more sections each consisting of a 150 minute lecture weekly. In Spring only, 1974-75, there will be, in addition, a lecture-lab section with two 50 minute lecture sessions and one 75 minute lab session. 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 logic, algebra, and geometry designed for the in-service teacher. <Offered upon demand.>

§§ Credit will not be allowed for both 180 and 162 or both 181 and 163. Effective Sem. II, 1973-74.
§ Math 111 and 112 (or 213, 214 for better prepared students) are suggested for fulfilling requirements in Elementary Education. See Ed Ed curriculum, p. 102.
§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)
Inductive and deductive reasoning; mathematical systems and structure. Prerequisite: 264 or equivalent. <Offered upon demand>

§305. History of Mathematics. (3)
A survey of the history of elementary mathematics. Prerequisite: 264 or equivalent. <Offered upon demand>

§306. College Geometry. (3)
Famous theorems of geometry. Fundamentals of Euclidean 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. Applications of Mathematics. (1-4)
Applications of elementary mathematics to the physical, biological, and social sciences. Prerequisite: one year elementary calculus. <Offered upon demand>

§338. Mathematics for Secondary Teachers. (3)
Topics from secondary mathematics presented from an advanced standpoint and designed to meet the needs of pre- and in-service teachers. Open only to 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 and graduates with no professional teaching experience; students required to attend a briefing seminar each week and to tutor two or more hours per week. Grading is on a Credit-No Credit basis. Prerequisite: one year of calculus 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: 264 and 316. <Summer, Fall, Spring>

**313. Advanced Engineering Mathematics II. (3)
Theory of functions of a complex variable with applications to physical and engineering problems. Prerequisite: 264. 265 is recommended. <Fall>

###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>

§ Math 111 and 112 (or 213, 214 for better prepared students) are suggested for fulfilling requirements in Elementary Education. See EI Ed curriculum, p. 102.
¶ 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.
# Only one of 314 and 321 may be taken for credit.
**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: per­
mission 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. Pre­
requisite: 163 and knowledge of FORTRAN. 264 and Engr 102L are recommended. <Sum­
mer; Fall, Spring>

**319-320. Theory of Numbers.** (3, 3)
Divisibility, congruences, primitive roots, quadratic residues, diophantine equations, con­
tinued fractions, partitions, number theoretic functions. <319-Fall, 320-offered upon
demand>

**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: 264 or
permission of instructor. <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, Spring>

**331-332. Survey of Geometry.** (3, 3)
Topics from affine, projective, Euclidean, and hyperbolic geometries. <Offered upon de­
mand>

**345. [345-346] Statistical Methodology.** (3)
A brief introduction to probability. Principles of estimation; mean-square error, bias,
efficiency, confidence intervals. Principles of hypothesis testing; significance, power.
Applications of standard estimation and testing procedures to problems from a variety
of fields will be given. Prerequisite: one year of elementary calculus. <Summer, Fall,
Spring>

**346. [345-346] Applied Experimental Design and Analysis.** (3)
Principles of designing experiments. Analysis of variance. Some commonly used designs:
Factorial experiments; Randomized, Randomized Block, Latin Square, Nested and Split
Plot Designs. Fixed, Random and Mixed Models. Throughout course applications and use
of existing computer codes will be stressed. Prerequisite: an introductory course in
statistics (e.g. Math 102 or Ed Fdn 501). <Fall, Spring>

**361-362. Advanced Calculus.** (3, 4)
A rigorous development of the differential and integral calculus of functions of one
and several real variables. Prerequisite: 265 is recommended for 362. <361-Fall, 362-
Spring>

**375. Introduction to Numerical Computing.** (3)
(Also offered as Cp Sci 375). An introductory course covering such topics as interpolation,
integration, solution of linear and non-linear equations, and solution of ordinary differ­
tential equations. A single effective method will be studied for each topic and computer
codes furnished. Emphasis will be on solving problems. Prerequisites: calculus and some
ability at Fortran programming. <Fall>

**407. Mathematical Methods in Economics.** (3)
(Also offered as Econ 407.) A survey course designed to develop those mathematical
results and methods which find frequent use in economic analysis. (This course will not
be counted in the hours necessary for a mathematics major or minor.) Prerequisite: one
year of calculus or consent of instructor. <Fall>

# Only one of 314 and 321 may be taken for credit.
415. Foundations of Mathematics. (3)
(Also offered as Phil 415.) This course will consider the following questions and topics.
What is a number? Do numbers exist? What is a set? Do sets exist? What is an axiom system?
Gödel'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, con­
tinued 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. Prerequisite: 361, 362. <Offered upon demand>

431. Introduction to Topology. (3)
Metric spaces, topological spaces, continuity, concepts used in analysis. Prerequisite: 361.
Fall>

434. Introduction to Differential Geometry. (3)
Differential geometry of curves and surfaces in Euclidean 3-space. Prerequisites: 361-362.
<Offered upon demand>

439. Topics in Mathematics. (1-3 hrs. per semester)

441. Probability and its Applications. (3)
Mathematical models for random experiments, random variables, expectation. The common
probability distributions and some of their applications. Joint distributions, conditional
probability and independence. Laws of large numbers, the central limit theorem and a brief introduction to stochastic processes. Prerequisite: two years of calculus or
345. <Fall>

442. Applied Stochastic Processes. (3)
Markov chains and Markov processes. Stationary processes and harmonic analysis. Applications
of importance in the physical and biological sciences and engineering. Prerequisite: 441 or equivalent. <Spring>

445. Linear Models and Their Applications. (3)
of estimable functions. Tests of linear hypotheses. Confidence ellipsoid, Geometrical inter­
pretations. Computer programs. Computing laboratory and application of theory. Prereq­
quise: 314, 345 or permission of instructor. <Spring>

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: 345 or permission of instructor. <Offered upon demand>

447. Methods of Multivariate Analysis. (3)
(Also offered as Psych 402.) Properties of the multivariate normal and related distributions.
Tests of hypothesis based on these distributions. Multivariate analysis of variance, discrimi­
nate analysis, principle components and factor analysis with applications. Prerequisites:
314, 345 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: 345 or permission of instructor. <Offered upon demand>
Topics in Probability and Statistics. (3)

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>

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>

Functions of a Complex Variable. (3)
Analytic functions, Cauchy theorem and consequences, conformal mapping. Prerequisite: 361 or consent of instructor. <Offered upon demand>

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>

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>

Applied Matrix Theory. (3)

Methods of Theoretical Physics. (3)
(Also offered as Physcs 466.) A selection of mathematical methods applied to physics. <Spring>

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>

Integral Equations and Boundary Value Problems. (3, 3)
Theory of integral equations, eigenfunction expansions, boundary-value problems, conversion into integral equations, variational methods, approximation methods. Prerequisite: knowledge of calculus and linear algebra. <Offered upon demand>

Numerical Analysis I. [Elements of Numerical Analysis] (3)
(Also offered as Cp Sci 475.) Numerical solution of linear and non-linear systems of equations; the algebraic eigenvalue problem; round-off error. Prerequisites: MA 314 or equivalent and some knowledge of Fortran programming. Students with credit for MA 375 should consult with instructor. <Fall>

Numerical Analysis II. [Elements of Numerical Analysis] (3)
(Also offered as Cp Sci 476.) Approximation of functions, integration and numerical solution of ordinary differential equations. Prerequisites: 316 or 361 or equivalent, and some knowledge of Fortran programming. Students with credit for 375 should consult with instructor. <Spring>

Linear Spaces. (3)
Linear spaces, normed linear spaces, Hilbert spaces, applications to differential and integral equations. Prerequisite: 361. <Offered upon demand>

Survey of Advanced Mathematics. (1)
Expository and historical lectures on modern mathematics by different members of the department. Each student will be required to prepare notes on at least one lecture to be distributed to the class. Grading is on a credit, no-credit basis. Prerequisites: 361-362, 321-322. <Fall>

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.)

*519. Selected Topics in Number Theory. (3)†

*521-522. Modern Algebra. (3, 3)

*527-528. Theory of Rings. (3, 3)

*529. Selected Topics in Algebra. (3)†

*531-532. Topology. (3, 3)

*533-534. Algebraic Topology. (3, 3)

*536. Differential Geometry. (3)

*539. Selected Topics of Geometry and Topology. (3)†

*541-542. Probability Theory. (3, 3)
<541-Fall, 542-Spring>

*543-544. Statistical Inference. [Statistical Distributions] (3, 3)
Prerequisites: 441, 464. <543-Spring, 544-Fall>

*545-546. Stochastic Processes. (3, 3)
Prerequisites: 541-542. <Offered upon demand>

*547. Statistical Design of Experiments. (3)
Prerequisite: 543 or 445 or permission of instructor. <Offered upon demand>

*548. Techniques of Statistical Consulting. (3)
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.) <Offered upon demand>

*558. Mechanical Theorem Proving. (3)
(Also offered as Cp Sci 558.) Prerequisite: Mathematical Logic. <Spring>

*561-562. Functions of a Complex Variable. (3, 3)
<561-Fall, 562-Spring>

*563-564. Functions of a Real Variable, Measure, Integration. (3, 3)
<563-Fall, 564-Spring>

*565. Harmonic Analysis. (3)
Prerequisites: 562, 564, 581 (or consent of instructor). <Offered upon demand>

*569. Selected Topics in Analysis. (3)†

*571-572. Ordinary Differential Equations. (3, 3)
Prerequisite: 462. <Offered upon demand>

*573-574. Partial Differential Equations. (3, 3)
Prerequisites: 473-474. <Offered upon demand>

*575. Calculus of Variations. (3)
Prerequisites: 473-474. <Offered upon demand>

*576. Approximation Theory. (3)
Corequisite: 563. Recommended: 581. <Offered upon demand>

*577-578. Integral Equations. (3, 3)
Corequisites: 563, 581. <Offered upon demand>

*579. Selected Topics in Applied Mathematics. (3)†

*581-582. Functional Analysis. (3, 3)
Prerequisites: 563-564. Recommended: 473-474. <Offered upon demand>

*583. Linear Topological Spaces. (3)
Prerequisite: 481. <Offered upon demand>

*584. Banach Algebras. (3)
Prerequisites: 431, 481. Recommended: 531. <Offered upon demand>
*589. Selected Topics in Functional Analysis. (3)†

*619. Seminar in Number Theory. (1-3)†

*629. Seminar in Algebra. (1-3)†

*631-632. Algebraic Geometry. (3, 3)  
<Offered upon demand>

*639. Seminar in Geometry and Topology. (1-3)†

*643. [543] Advanced Statistical Inference I. (3)  
Prerequisites: 544, 564; corequisite: 541.  <Fall>

*644. [544] Advanced Statistical Inference II. (3)  
Prerequisite: 643.  <Spring>

*649. Seminar in Probability and Statistics. (1-3)†

*650. Reading and Research. (1-6)†

*669. Seminar in Analysis. (1-3)†

*672. Advanced Numerical Analysis—Eigenvalues. (3)  
Prerequisites: 475-476 and a sound knowledge of the fundamentals of linear algebra.  <Offered upon demand>

*673. Advanced Numerical Analysis—Ordinary Differential Equations. (3)  
Prerequisites: 475-476 and 462 or equivalent, with permission of instructor.  <Offered upon demand>

*674. Advanced Numerical Analysis—Partial Differential Equations. (3)  
Prerequisites: 475-476, 463 and an acquaintance with the elementary principles of functional analysis in Banach spaces, or equivalent, with the consent of instructor.

*675-676. Differential Operators. (3, 3)  
Prerequisite: 481, 473-474 or 573-574. Recommended: 581-582.  <Offered upon demand>

*677. Pattern Recognition. (3)  
(Also offered as Cp Sci 677)  <Offered upon demand>

*679. Seminar in Applied Mathematics. (1-3)†

*689. Seminar in Functional Analysis. (1-3)†

*699. Dissertation.  (3-9 hrs. per semester)  
See the Graduate School Bulletin for total credit requirements.

MEDICAL SCIENCES

Anatomy

PROFESSORS A. J. Ladman, Ph.D. (Chairman); L. M. Napolitano, Ph.D. (Dean); G. E. Omer, Jr., M.D.; ASSISTANT PROFESSORS W. G.戴尔, Jr., Ph.D.; L. S. Demske, Ph.D.; S. E. Dietert, M.D.; A. P. Evan, Ph.D.; R. O. Kelley, Ph.D.; R. E. Waterman, Ph.D.; ADJUNCT ASSISTANT PROFESSOR G. H. Moffat, Ph.D.

Biochemistry


Family and Community Medicine

MEDICAL SCIENCES 335

**Medicine**


**Microbiology**


**Neurology**


**Obstetrics and Gynecology**

Orthopaedics


Pathology


Pediatrics


Pharmacology


Physiology


Psychiatry

See Graduate School Bulletin for description of courses numbered 500 and above.

CLINICAL SCIENCE

425. Introduction to Clinical Nutrition. (3) Sanders
(Also offered as H Ec 425.) The determination of nutritional status of normal persons by the health team, using research methodology. Prerequisites: Physiology, Nutrition 325, 325L or equivalent, Biochemistry or concurrently 600 Med Biology I. <Summer>

504-505. Clinical Science I. (5, 5)

520. Clinical Science Makeup Course. (10)
Prerequisites: one year of medical school study. <Summer only>

530-531. Clinical Science II. (5, 5)
Prerequisites: 504-505.

540. Medicine Clerkship. (7)

541. Obstetrics-Gynecology Clerkship. (7)

542. Pediatric Clerkship. (7)

543. Psychiatry Clerkship. (7)
544. General Surgery. [Surgery and Surgical Subspecialties.] (7)
545. Orthopedic Surgery. (3)
546. Thoracic Surgery. (3)
547. Urology. (3)
570. Neurology-Neurosurgery Clerkship. (6)
571. Clinical Science IV. (12)
572. Selectives. (12)
573. Electives. (1 cr. hr. for each week of full-time medically related activity)

MEDICAL BIOLOGY
500-501. Medical Biology I. (13, 13)
502L-503L. Medical Biology I Laboratory. (6, 6)
526-527. Medical Biology II. (11, 11)
Prerequisite: 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)
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.

*400. Special Problems in Medical Physics. (1-3) Barnes
A special problem in the area of medical physics of mutual interest to the student and the instructor will be selected. Prerequisite: permission of instructor only. <Fall, Spring>

*420. Biochemistry of the Nervous System. (3) LeBaron, Wild
(Also offered as Biol 420.) 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 the function of the nervous system. Prerequisite: one semester biochemistry.

*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.

*434. Clinical Laboratory Microbiology. (2) Ulrich
Prerequisite: permission of instructor. <Offered each semester and may be repeated under different areas of concentration>

*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) Biochemistry Staff
(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. Prerequisites: Chem 302, and 311 or 315. <Fall>

*482. Biological Chemistry. (3) Biochemistry Staff
(Also offered as Chem 482.) Continuation of 481 with major emphasis on anabolic metabolism and control mechanisms. Prerequisite: 481. <Spring>

*510. Human Microscopic Anatomy. (3) Moffat
Prerequisites: 6 hrs. of biology or its equivalent or permission of instructor. <Offered at Los Alamos Laboratory only>

*570. Surgical Pathology Seminar—Elementary. (1) Weitzner
Prerequisites: 594 and permission of instructor.

*571. Diagnostic Cytology Seminar. (1) Jordan
Prerequisites: 594 and permission of instructor. Students must take course two times (but register only once) to get 1 hr. credit.

*572. Clinico-Morphologic Correlation Conference. (2) Key
Prerequisites: 594 and permission of instructor.

*573-574. Clinical Pathology Seminar. (2, 2) Howard
Prerequisites: 594 and permission of instructor.

*575. Pathology. [Pathobiology.] (8) Anderson
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.) Prerequisite: 482. <Offered upon demand>

*583. Clinical Chemistry. (1-2) Standefer
Prerequisite: Organic Chem and Biochemistry.

*584L. Clinical Chemistry Laboratory. (8) Standefer
Prerequisite: permission of instructor.

*588-589. Advanced Biometry for Research. (3) Eberle, Wall
Prerequisites: Math 162-163 or 180-181 or permission of instructors.

*590-591. Medical Biology I. (1-8 hrs. each semester)

*592L-593L. Medical Biology I Laboratory. (1-6 hrs. each semester)

*594-595. Medical Biology II. (1-12 hrs. each semester)
Prerequisites: 590-591, 592L-593L.

*596L-597L. Medical Biology II Laboratory. (1-6 hrs. each semester)
Prerequisites: same as for 594-595.

*599. Masters Thesis. (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*601-602. Advanced Physiology. (1-7 hrs. each semester)
Prerequisites: 590-591 or consent of Physiology Department. <Offered Academic 1974-75 and alternate years>

*610L. Experimental Cytology. (3-6) Kelley, Ladman, Leppi, Napolitano
Prerequisites: 590-591 or equivalents.

*611L. Fine Structure and Electron Microscopy. (6-12) Kelley, Ladman, Leppi, Napolitano
Prerequisites: 590-591 and 610L or equivalent and approval of Anatomy Department Chairman.

*612L. Histochemistry and Cytochemistry. (4-6) Kelley, Ladman, Leppi, Napolitano
Prerequisites: 590-591 and 610L or equivalent.

*613. History of Anatomy. (1-2) Ladman

*614. Research Techniques in Morphology. (2-4)
Prerequisites: 590-591 or equivalent. <Fall>

*615. Current Topics in Morphology. (1-2)
Prerequisites: 590-591 or equivalent. <Fall, Spring>

*616. Selected Topics in Developmental Biology. (3) Kelley, Waterman
Prerequisites: Biol 412L or 429L or consent of instructor.
*617. Neurobiology and Behavior of Marine Animals. (3) Demski
Prerequisite: permission of instructor. <Fall 1973 and alternate years>

*618. Seminar in Anatomy. (1)

*620. Advanced Biochemistry. (4) LeBaron, loftfield, Scallen, Smith
Prerequisites: Chem 311-312 and either Chem 481-482 or Med Sc 590-591.

*621. Biochemistry of Proteins. (3) Lofield, Smith, Woodfin
Prerequisites: Chem 311-312 and either Chem 481-482 or Med Sc 590-591.

*622. Biochemistry of Phospholipids. (3) LeBaron
Prerequisites: Chem 324 or 481-482 or Med Sc 590-591.

*623. Biochemistry of Steroids. (3) Scallen
(Also offered as Chem 623.) Prerequisites: Chem 301-302; Chem 324 or 481 or Med Sc 590-591.

*631L. Introduction to Research Techniques in Microbiology. (2)
Prerequisite: approval of Microbiology Department Chairman.

*632. Advanced Microbiology. (3) Scalletti
Prerequisites: biochemistry, general microbiology or equivalent. <Offered in alternate years>

*633L. Advanced Microbial Physiology and Metabolism. (4) Scalletti
<Offered in alternate years>

*634. Biochemical Genetics. (2-4) Baker
Prerequisites: Med Sc 590 or biochemistry; Introductory Genetics and Microbiology.
<Offered in alternate years>

*635L. Immunobiology. [Immunochemistry.] (2-4) Tokuda
Prerequisites: biochemistry, general microbiology and permission of instructor. <Offered in alternate years>

*636. Advanced Virology. (3) Cords, McLaren
Prerequisites: biochemistry, immunology, virology or equivalent. (Offered in alternate years.)

*638. Microbiology Seminar. (1)

*650. Translocations in Biological Systems. (3)
Prerequisites: 590-591 or Biol 429L, 430L or permission of instructor; pre- or corequisite: Chem 311-312. <Fall 1973 and alternate years>

*651. Integrative Functions of the Endocrine System. (3) Ratner
Prerequisites: 590-591 or equivalent and permission of instructor. <Spring 1974 and alternate years>

*652. Advanced Cardiovascular Physiology. (3) Priola, Weiss
Prerequisites: 500-501, 502L-503L, or equivalent. <Fall 1973 and alternate years>

*653. Renal Water and Electrolyte Metabolism. (4) Solomon and Staff of Physiology
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
<Spring 1975 and alternate years>

*655. Control Mechanisms in Biological Systems. (3) Kastella
Prerequisites: calculus and permission of instructor. <Offered by arrangement>

*656. Advanced Neurophysiology. (3) Kastella, Weiss
<Fall 1974 and alternate years>

*657. Special Topics in Physiology. (3)
Prerequisite: permission of instructor.

*658. Physiological Techniques. (4)
Prerequisite: permission of instructors. <Summer 1975 and alternate years>

*659. Seminar in Physiology. (2)

*660. Advanced Respiratory Physiology. (3) Shannon
Prerequisites: 500-501, 502L-503L or equivalent. <Offered Fall 1974 and alternate years>

*670. Principles of Drug Action at the Cellular Level. (2) Hurwitz, Buss
Prerequisites: 590 and 591 or special permission of instructor. <Spring>
*680. Surgical Pathology Seminar—Advanced. (1) Black
Prerequisites: 570 and permission of instructor.

*681. Oncology Seminar. (1) Black
Prerequisites: 570 and permission of instructor.

*682. Pathology Research Seminar. (1) Troup
Prerequisite: permission of instructor.

*683. Immunology Seminar. (1) Anderson, Tokuda
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

*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.

§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. (8)
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. (8)
Basic theory and practice of clinical bacteriology, parasitology, and immunohematology. 5 hrs. lecture and 15 hrs. combined student laboratory and hospital laboratory experience. Prerequisite: 201.

§203. Directed Clinical Applications. (12)
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). (20)
Instruction includes theory and clinical application of accepted diagnostic procedures in the following disciplines: hematology, clinical chemistry, medical microbiology, instrumentation, immunohematology, 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). (12)
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.

§ Credit limited to students enrolled in Medical Laboratory Sciences Programs.
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, students will gain a level of self-awareness that should enable them to be more conscious of how they come across to clients and co-workers.

050, 051, 052. Clinical Experiences in Community Services. [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 Community Service Worker Program.

150, 151, 152. Clinical Experiences in Community Services. [Advanced Field Placement.] (6 hrs. per course)
320 hours per semester in a Community Service Agency. Weekly seminar meetings with University personnel are required. Prerequisites: 050, 051, and 052.

101. Survey of Institutions. (2)
Orientation and exposure to institutions in general and specifically to agencies identified with helping services. Emphasis will be on different kinds of institutions, what types of residents they serve, what kinds of professionals are employed there, what the goals of the institution are, and what the political, social, and economic factors are that influence the operation of the institution.

102. Principles of Interviewing. (2)
Provides basic knowledge of the interviewing process with emphasis on developing interviewing skills. Developing an awareness of the ways in which the student's background, attitude, and behavior influence the interview. With the assistance of videotape, students will be expected to role-play and record interviews which will provide material for class critique and discussion.

103. The Case Study. (3)
Develops a student's data-gathering ability through the process of: (a) asking a question that needs to be answered re: a client's behavior; (b) choosing the appropriate observational, historical, personal method of data collection necessary to answer the question; (c) organizing, synthesizing, and interpreting the information; and (d) reporting the finding via a formal written report and/or an oral report to a treatment/teaching team.

104. Principles of Human Behavior (3)
A survey of issues aimed at understanding behavior in terms of the person as a biological and behaving organism. Specifically, students will focus on learning, language development, perception and group membership. Greater self-understanding will be developed by intensive work in motivation, personality theory and abnormal behavior.

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.

120. Dynamics of Community Health. (3)
Focuses upon the dimensions of the health-illness continuum. Topics presented are a basic knowledge and understanding of (a) health, (b) epidemiology, (c) chronic and communicable diseases, (d) nutrition, (e) home safety and sanitation, (f) techniques for health education of family and community groups.

149. Workshop in Human Service Problems. (1-3 per semester to a maximum of 9)
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, Trovato
Survey of literature related to research in the field of radiologic technology and radiology. <Fall, Spring>

020. Film Critique. (0) Seubert, Trovato
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, Trovato
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>
344 MEDICAL SCIENCES

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) Seubert
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>

162L. Radiographic Positioning Laboratory I. (4)
Principles of radiographic positioning of the human body utilizing an artificial phantom patient. Prerequisite: 161. <Fall>

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. <Spring>

164L. Intermediate Radiographic Positioning Laboratory. (4)
Actual clinical radiographic positioning in a radiographic room under the supervision of a registered radiologic technologist. Corequisite: 163. <Spring>

201. Intermediate Radiological Physics. (2) Grant
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-Fall continuum>

205. Radiation Protection. (1) 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. <Summer-Fall continuum>

209. Basic Radiological Mathematics. (2) Appledorn
Mathematical and statistical relationships of primary interest to the field of radiologic and nuclear medicine technology. Prerequisite: 101. <Summer>

211. Introduction to Nuclear Medicine. (1) Appledorn
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) Seubert
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) Sternhagen
Low, medium, and high voltage therapy units, monitoring devices, protective measures, and the handling of radioactive materials. Prerequisites: 101, 151. <Spring>

272L. Radiation Therapy Laboratory. (3)
Clinical radiation therapy laboratory procedures in a department of radiation therapy. Prerequisites: 101, 151. <Spring>
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>

NUCLEAR MEDICINE TECHNOLOGY

291. Survey of Medical and Surgical Diseases. (3) Shoop
(Also offered as Pharm 334.) Nature and cause of diseases and the changes that occur
with disease and injury. Prerequisites: 105, 121. <Spring>

301. Advanced Radiological Physics. (2) Grant
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) Staff
Laboratory practice in venesection and preparation of patient samples. <Summer>

311. Intermediate Nuclear Laboratory Procedures. (1) Havey
Principles of thyroid uptake measurements, in vitro thyroid studies, Schilling tests,
and blood volume studies. Prerequisites: 309, 310L. <Spring>

312L. Intermediate Nuclear Procedures Laboratory. (1) Staff
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. Corequisite: 291 or equivalent. <Summer-Fall continuum>

314L. Clinical Nuclear Medicine Laboratory. (3)
Laboratory practice in organ imaging, function studies, blood flow, and ventilatory
function. Corequisite: 291 or equivalent. <Summer-Fall continuum>

315L. Clinical Scintillation Camera Laboratory. (3) Appledorn
Practical clinical applications of the isotope scintillation camera, including data process­
ing, computer interfacing, static, and dynamic readout formats. Prerequisite: 313; co­
requisite: 341. <Fall, Spring>

316L. Clinical Single Probe Scintillation Scanner Laboratory. (3) Appledorn
Practical applications of the single probe scintillation scanner, including collimation, pulse
height analysis, and range differential requirements, in a variety of clinical settings. Pre­
requisite: 313; corequisite: 341. <Fall, Spring>

317L. Clinical Dual Probe Scintillation Scanner Laboratory. (3) Havey
Practical application of the dual probe scintillation scanner, as listed for single scanner;
plus interdigitation of dual probe height analysis; coincidence counting and subtraction
modalities, in a variety of clinical settings. Prerequisite: 313; corequisite: 341. <Fall,
Spring>

321. Nuclear Radiation Biology. (2) Barnes
Interaction of alpha, beta, gamma, and high LET particle radiations from nuclear inter­
actions 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) Appledorn, Grant
Principles and demonstrations of ionization chambers, G-M tubes, scintillation and solid­
state detectors, pre-amplifiers, amplifiers, pulse height analysis, and read-out instrumen­
tation. Prerequisite: 201. <Fall-Spring continuum>

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.
<Fall-Spring continuum>

352L. Radioimmunoassay Laboratory. (3) Standefer
Laboratory investigation of competitive binding assay and radioimmunoassay of hormones,
mediators, and drugs. Pre- or corequisite: Pharm 416. <Fall, Spring>
371L. Clinical Radionuclide Imaging Laboratory. (3-5) Staff
Intensive experience in radionuclide imaging using a variety of instrumentation in a
typical clinical setting. The experience is primarily at Lovelace Clinic, but may include
other area clinical laboratories. Prerequisite: 313; corequisite: 341. <Fall, Spring>

391. Special Problems. (1-3) Barnes, Keese, Shoap, Grant
Supervised investigation in radiopharmaceutical effects and tissue localization. Pre- or
corequisites: 311-312L, 341-342L, Pharm 412. <Fall, Spring>

MODERN AND CLASSICAL LANGUAGES

PROFESSORS S. R. Ulibarri, Ph.D., (Chairman); P. H. Fernandez, Ph.D.; J. Kolbert, Ph.D.; R. R.
MacCurdy, Ph.D.; M. R. Nason, Ph.D.; W. H. Roberts, Ph.D.; A. Rodriguez, Ph.D.; C. M. Sen-
ninger, Ph.D.; J. E. Tormins, Ph.D.; J. E. White, Ph.D. (Assistant Chairman); VISITING PRO-
FESSOR D. Cvtianovic, Ph.D.; ASSOCIATE PROFESSORS E. T. Book, Ph.D.; R. Cobos, M.A.;
R. Holzapfel, Ph.D. (Associate Chairman of German); T. Holzapfel, Ph.D.; R. C. Jespersen,
G. M. Slavin, Ph.D.; INSTRUCTOR R. Welsh, M.A.; PART-TIME INSTRUCTORS L. Hoshour,
B.A.

Explanation of footnotes not indicated will be found on p. 194.

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 begin­
ning 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 in­
tend 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 de­
cscribed under COMPARATIVE LITERATURE offerings on p. 229.

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 under-
graduate 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

*516. Old Provencal-Old Catalan. (3) White

*517. Comparative Romance Philology. (3) White

*518. Medieval Romance Lyric. (3) Tomlins, White
   Prerequisites: 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.)

*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>

103-104. Basic Medical Navajo. (3,3)
   Fundamentals of Navajo for students in the medical profession. Does not satisfy language
   requirement of College of Arts and Sciences. <Offered upon demand>

105. Written Navajo. (3)
   Introduction to Navajo writing and reading; for native speakers of Navajo only. 101
   and 105 may not both be counted for credit.

203-204. Intermediate Navajo. (3,3)
   Prerequisite: 101-102 or 105 or equivalent. <203—Fall, 204—Spring>

206. Creative Writing and Advanced Reading. (3)
   For native speakers of Navajo only. Prerequisite: 105 or permission of instructor.

*401. Navajo Linguistics. (3)†
   Study of selected aspects of the structure of the Navajo language. Emphasis on in­
   dividual 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.

*311-312. Introduction to Quechua. (3,3) Bills
   Emphasis on the grammatical structure of Bolivian Quechua. Permission of instructor is
   required and a working knowledge of Spanish is desirable. <Offered upon demand>

ZUNI

No major or minor study offered.

*105. Reading and Writing Zuni. (3)
   For native speakers of Zuni.

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.

† Offered at the University of New Mexico-Gallup Branch only.
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. 229.

FRENCH

MAJOR STUDY

30 hours in French courses numbered above 290, including 301, 302, 345, 346, 351, 352, 405; and 2 years of college work in another foreign language (or reading knowledge).

MINOR STUDY

15 hours in French courses numbered above 290, including 301 or 302 and 345 or 346.

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Students who have studied French in high school and who plan to continue it at the University are expected to take a placement test administered by the department.

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.

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)
Prerequisite: 252 or the equivalent.

*335. French Literature in Translation. (3) Kolbert, Murphy
Does not count for the French major or minor.

*345-346. French Civilization. (3, 3)
345: Origins to French Revolution; 346: French Revolution to the present. Prerequisite: 252 or the equivalent.

*351-352. Survey of French Literature. (3, 3) Murphy, Senninger, White
351: Origins to 1800; 352: 1800 to present.

*401. French Stylistics and "Explication de Textes." (3) Kolbert, Senninger
Analysis of texts of poetry, prose, and drama, and review of literary movements. Required for the M.A. degree.

*405. French Phonology. (3) Book
Phonetic and phonemic system of French. Required for the undergraduate major.
*411. French Poetry of the Renaissance. (3) Kolbert
Development of French poetry from Marot through M. Régnier with special stress on La Piétade (Du Bellay and Ronsard).

*412. French Non-Poetic Literature of the Renaissance. (3) Kolbert, Murphy
Major concentration on Rabelais and Montaigne with briefier 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.

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
Required for the M.A. degree.

*502. Readings in Medieval French Literature. (3) White

*503. Proseminar in Medieval French Genres. (3)‡ White

*505. Introduction to Research Methods. (1) Kolbert, Senninger
Required for the M.A. degree.

*510. History of French Literary Criticism. (3) Kolbert
Required for the Ph.D. degree.

*515. Medieval Paleography. (3) White
(See M Lang 515.)

*516. Old Provençal-Old Catalan. (3) White
(See M Lang 516.)

*517. Comparative Romance Philology. (3) White
(See M Lang 517.)

*518. Medieval Romance Lyric. (3) Tomlins, White
(See M Lang 518.)

*520. French Thought (3) Murphy, Senninger
GERMAN

MAJOR STUDY
A student may select one of the following two options with the approval of the German adviser.

1. 33 hours in German courses above 300, including 301 and 302 or the equivalent.

2. 27 hours in German courses above 300, and 2 years of college work, or the equivalent, in another foreign language.

MINOR STUDY
15 hours in German courses numbered above 300.

PLACEMENT EXAMINATION AND EXAMINATION TO VALIDATE CREDIT FOR PREVIOUS WORK
Students who have had previous exposure to German in high school or elsewhere and who plan to continue at the University are expected to take a placement test administered by the Department. This examination is for advisement only, and no student will be forced to take a course for which he 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. (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.

SUPPLEMENTAL COURSES TO BASIC GERMAN
103-104. Elementary German Conversation. (2, 2) Jespersen, Staff
Supplementary course to German 101-102 for students interested in additional practice in speaking. Intensive use of German in the classroom based on a variety of audio-visual stimuli. Students not concurrently taking 101-102 must obtain permission of instructor to enroll.
107-108. Elementary German Reading. (1, 1) Jespersen, Staff
Supplementary course to German 101-102 for students interested in additional practice in reading. The course stresses individual study, using a variety of reading texts.

110. Individualized Basic German. (2-6) Hannemann
A self-study course utilizing instructional material designed for individualized learning. Reading, writing, listening, and speaking are developed, by means of a language laboratory program. A student must enroll for a minimum of 2 credit hours but may earn up to a total of 6 hours in one semester. While the course is basically a self-study course an instructor is assigned to the class for students who need assistance. May be repeated to a maximum of 6 hours credit. Completion of 3 hours of 110 is equivalent to 101; completion of 6 hours of 110 is equivalent to 101-102. Permission of instructor only.

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

All second-year German students should enroll in Intermediate German (201-202) which continues the development of reading, writing, speaking, and listening.

201 and 202 may each be supplemented by a 2-hour conversation course (203-204), and/or a reading course (207-208) for either 1 or 2 hours credit. The supplemental courses are intended for students who wish more intensive practice in a specific language skill than the intermediate course alone permits. They are taught as parallel courses to 201-202 but are open in special cases to any student with a first-year foundation or equivalent preparation. Those intending to go beyond the second year are encouraged to take the conversation course (203-204) in addition to 201-202. Transfer students and those who have studied German in high school should take the placement test and/or seek advice from a member of the German staff.

201-202. Intermediate German. (3, 3) R. Holzapfel and Staff
Continues development of reading, writing, speaking, and listening at the second-year level.

SUPPLEMENTAL COURSES TO INTERMEDIATE GERMAN

203-204. Intermediate German Conversation. [Intermediate German—Oral Emphasis] (2, 2)
Supplemental course to German 201-202 for students desiring additional practice in speaking and listening. Intensive use of German in the classroom. May be taken by students not concurrently enrolled in 201-202 only with the permission of the instructor.

207-208. Intermediate German Reading. (1-2, 1-2)
Supplemental course to German 201-202 for students desiring additional practice in reading. The course stresses individual study, using a variety of advanced reading texts. Open to all students with a first-year foundation or equivalent preparation.

256. German Folksongs. (1)‡
Informal study and singing of German folksongs. May be repeated to a maximum of three hours credit.

German 202 or equivalent is prerequisite to all courses below except 336.

*301-302. Advanced German. [Advanced Conversation and Composition.] (3, 3) Hannemann, Pabisch
Written and oral work for the third-year student.
303. Advanced German Conversation. (1)‡
Small conversation groups for advanced students. It is recommended that this course be taken concurrently with 301-302. May be repeated to a maximum of three hours credit.

307. Introduction to German Literature. (3) Peters
307 is a prerequisite for all literature courses listed below, except 336.

*336. Special Topics in German Literature in Translation. (3)‡
Topics will deal with individual authors, genres, or periods. Does not count for the major or minor.

*345. German Civilization. (3) Welsh

*351. The Age of Goethe. [Survey of German Literature.] (3)

*352. 19th Century German Literature. [Survey of German Literature.] (3)

*353. 20th Century German Literature. (3)

*401-402. Contemporary Germany. (3, 3) Hannemann, Pabisch
Development of language skills on an advanced level using cultural materials from contemporary Germany. Prerequisite: 302 or equivalent.

*405. Advanced Grammar and Phonology. [German Phonology.] (3)

*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.

*451. The Novel. (3)

*452. [477] The Drama. [Modern German Drama] (3)

*453. [485.] Lyric Poetry. (3)

*454. [480] The "Novelle." (3)

497. Undergraduate Problems. (1 to a maximum of 6)

499. 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
Topics 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. (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)
   Prerequisite: 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. (3) Tomlins
Readings in the various medieval genres with special emphasis on Hispano-Arabic lyric and the Cancioneiros; the Cancioneiro Geral and the Italian modes; Gil Vicente and his school; Camões and the lyric, the drama, and the epic; Erasmian humanism.

*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
Required for the M.A. degree. Prerequisite: Latin 351, or equivalent.

*504. Seminar in Ibero-American Studies. (3) Dolkart, Floyd, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Ib Am, and Span 504.) <Fall, Spring>

*515. Medieval Paleography. (3) White
(See M Lang 515.)

*516. Old Provençal-Old Catalan. (3) White
(See M Lang 516.)

*517. Comparative Romance Philology. (3) White
(See M Lang 517.)

*518. Medieval Romance Lyric. (3) Tomlins, White
(See M Lang 518.)

*551. Problems (1-6 hrs. per semester) Tomlins
For M.A. candidates.

*560. Seminar in Portuguese Literature. (3)

*570. Seminar in Brazilian Literature. (3)

*599. Master's Thesis. (1-6 hrs. per semester)

*651. Problems. (1-6 hrs. per semester) 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 Tiutchev and in the prose of Tolstoy, Dostoevsky, and Chekhov. Emphasis on increased reading comprehension in Russian and on major literary aspects of the individual authors.

*308. Russian Poetry. (3) Lindsey
Prerequisite: 252, or the equivalent.

*338. Russian Literature in Translation. (3) T. Holzapfel, Lindsey
(Also offered as Comp L 343.) Readings in Russian literature since the revolution: Sholokhov, Maiakovsky, 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. Special Topics in Russian Literature. [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, 453, and at least nine additional hours of literature courses from Section III below; 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, and at least three additional hours of literature courses from Section III below.

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 112 cannot receive credit for 102; 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.

1. 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. Under
graduates may not enroll without permission of instructor. <Spring semester on demand>

109-110. Professional Spanish. (3, 3) Márquez and Staff
Intensive course for overseas field researchers and technical programs, with attention to
specialized professional vocabularies. Restricted to faculty, staff and doctoral candidates in
Latin American fields. Permission of instructor is required.

112. Espanol elemental para estudiantes de habla espanola. (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. Espanol avanzado para estudiantes de habla espanola. (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. (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 and Staff
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) Fernández
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>

Required of all new teaching and graduate assistants in Spanish; others by permission of instructor only. <Fall, Spring>

*501. History of the Spanish Language. (3)
<Offered every Spring>

*515. Medieval Paleography. (3) White
(See M Lang 516.)

*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

*541. Research Methods for Teachers. (3) Bergen, Lamadrid
Required for all candidates for the M.A.T.S. degree.

*542. The Structure of Spanish. (3) Bergen, Bills
Prerequisite: 554.

*554. Spanish Linguistics: Theory and Application to Teaching. (3) Bergen
Bilingualism. Pre- or corequisite: 453.

*556. Spanish Linguistics: Problems of Language Instruction. (3) Bergen
Prerequisite: 554.

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.

*351-352. Survey of Spanish Literature. (3, 3) Fernández, Guyler
351: 11th through 17th centuries; 352: 18th, 19th, and 20th centuries. <Fall, Spring>

*370. Topics in Spanish Literature. (3)
Variable topics, depending on instructor and student interest.

*415. Eighteenth Century Spanish Literature. (3) Rodríguez
Study of major authors and works of the 18th Century.

*422. [421] Modern Spanish Drama. [Nineteenth Century Spanish Drama.] (3)
Development of Spanish Theatre in the 19th and 20th centuries, or since Romanticism, with major stress on the contemporary.

*450. [350] Nineteenth Century Spanish Novel. (3) Fernández, Rodríguez, Ulibarri
Analysis of the development from costumbrista and romantic novels to regional and naturalistic novels.

*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) Fernández
20th Century Spanish literature from Modernism and the Generation of 98 to Post-Civil
War writers. <Fall>

*462. Spanish Novel Since the Civil War. (3) Timm
Major novelists of the post-Civil War and contemporary generations. Collateral inde­
dependent research is required of each student.

*466. Lope de Vega and His Contemporaries. (3) MacCurdy
Survey of the Spanish drama from the Auto de los reyes magos through Lope de Vega
and his major contemporaries.

*467. Calderón and His Contemporaries. (3) MacCurdy
A continuation of 466. Emphasis on Calderón, Francisco de Rojas, and Agustín Moreto.

*475. Cervantes: The Quijote. (3) MacCurdy
A detailed analysis of the Quijote and treatment of its place in world literature.

*476. Cervantes: Other Works. (3) MacCurdy
Works other than the Quijote with emphasis on the Novelas Ejemplares and the
theater.

*502. Proseminar in Medieval Spanish Genres. (3) Tomlins
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)†

*565. Seminar in the 20th Century Spanish Essay. (3) Fernandez

*568. Seminar in Spanish Drama [Seminar in 20th Century Spanish Drama] (3)† Fernandez

*571. Seminar in Spanish Poetry. (3)† Ulibarri

*578. Seminar in the Spanish Picaresque Novel. (3) Guyler

B. Spanish American Literature

*334. Spanish American Literature in Translation. (3)
Does not count for the Spanish major or minor.

*357-358. Survey of Spanish American Literature. (3, 3) Nason, T. Holzapfel, Roberts
357: from the Discovery to 1880; 358: 1880 to the present. <Fall, Spring>

*371. Topics in Spanish American Literature. (3)
Variable topics, depending on instructor and student interest.

*455. Special Topics in Spanish American Literature. (3)†
Topic will deal with individual authors, genres, or periods.

*458. Spanish American Short Story. (3) 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)
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, T. Holzapfel, Lieuwen, Nason, and Tomlins
   (Also offered as Hist, Ib-Am, and Port 504.) <Fall, Spring>

*561. Seminar in the Drama of Spanish America. (3) T. Holzapfel

*562. The Modernist Movement in Spanish American Poetry. (3) Roberts

*563. Seminar in 20th Century Spanish American Fiction. (3)‡

*564. Seminar in Spanish American Essay (3)

*567. Seminar in Spanish American Literature. (3)‡

IV. CIVILIZATION AND FOLKLORE

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. (3) Fernández, Ulibarrí

*346. Ibero-American Civilization. (3) Cobos
   Development of European culture in Latin America and the fusion with the various
   indigenous cultures. Taught in Spanish. <Spring>

*361. Hispanic Folktales. (3) Cobos
   Transmission of the folk tale 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.

*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

PROFESSOR W. E. Rhoads, M.M.E. (Chairman); PROFESSORS J. Batcheller, Ph.D.; D. McRae,
M.A.; G. Robert; M. Schoenfeld, M.M.; ASSOCIATE PROFESSORS F. Bowen, B.M.; L. Felberg,
Hinterbichler, M.M.; L. McLeod, A.A.; D. Randall, B.F.A.; S. Wilkinson, M.M.; F. Williams,
M.M.; 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. 149-151.

MINOR STUDY

1. For a minor in music: 20 hours, including a total of 4 hours in music
theory and 4 hours in ear-training; 6 hours selected from 139-140 or 371-372; 4 hours in applied music; and 2 hours of electives in music.

2. For a minor in music education see p. 365.

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. (3)
   Introduction to music. The basic materials and properties, media and forms. <Fall and alternate Summers>

140. Music Appreciation. (3)
   Introduction to music literature. Symphony, opera, religious music, solo song, dance music, and other major categories. <Spring and alternate Summers>

171. Music Today. (2)
   Music in today's society, covering popular, serious, experimental, avant garde, and electronic music. <Fall>

295. Music in Recreation. (2)
   Social foundations and practices of music in recreation. Emphasis on equipping the recreational leader with effective means to deal musically with children and adults. Covers all phases of public performance from planning to production. <Fall>

296. Music in Recreation. (2)
   Prepares the major in recreational leadership for practical supervision of recreational music programs covering appreciation of music, music in the hospital as entertainment and therapy, music in the industrial plant, and music in the community center. Prerequisite: 295. <Spring>

371. General History of Music. (3)
   From antiquity through the Baroque. 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. Class instruction in applied music is provided for students whose experience and background do not qualify them for private instruction. Course numbers are:

   Piano, 111-112, 211-212
   Voice, 109-110; and
   Other instruments, 155-001 through 155-010.

Private Instruction. Two series of course numbers are available here:

1. Courses carrying 1 or 2 hours credit: 119-120, 219-220, 319-320, and 419-420. If your major program is in Theory and Composition, Liberal Arts, or Music Education, follow this series of numbers beginning with your freshman year.

2. Courses carrying 2 or 4 hours credit. If your major program is in Performance or Pedagogy, enroll for 119-120 your first year and then follow this series of numbers for your major instrument: 201-202, 301-302, and 401-402.

   Note: If you study a secondary instrument or instruments, use the series of numbers under paragraph 1 above.
109. Group Voice I. (1)
Open to beginners in voice except voice majors. <Fall>

110. Group Voice II. (1)
Prerequisite: 109. <Spring>

111. Group Piano I. (1)
Open to beginners in piano except piano majors. <Fall, Spring>

112. Group Piano II. (1)
Prerequisite: 111. <Fall, Spring>

113. Mexican Guitar. (1)
Group instruction. Audition required.

114. Mexican Guitar. (1)
Continuation of 113. Audition required.

119-120. Applied Music. Freshman major, secondary or elective course. (1 or 2 hrs. each semester) <Summer, Fall, Spring>

155. Orchestral Instruments. (1)
Group instruction in woodwind, brass, percussion, string instruments, and guitar. Music education majors only. <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 except piano majors. Prerequisite: 112. <Fall>

212. Group Piano IV. (1)
Open to all students except piano majors. Preparation for the piano proficiency examination emphasized. Prerequisite: 211. <Spring>

219-220. Applied Music. Sophomore Secondary or Elective Course. (1 or 2 hours each semester) <Summer, Fall, Spring>

2301-302. Applied Music. Major Junior Course. (2 or 4 hrs. each semester) <Summer, Fall, Spring>

2*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>

2*401-402. Applied Music. Major Senior Course. (2 or 4 hours each semester) <Summer, Fall, Spring>

2*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) <Summer, Fall, Spring>

CONDUCTING

2363. Conducting. (2)
Basic theory and technique of conducting. Prerequisites: 206, 208; junior standing in the major field; piano and voice proficiency examinations. <Fall>

2364. Choral Conducting. (2)
Choral conducting techniques, score reading, interpretation. Prerequisite: 363. <Spring>

2365. Instrumental Conducting. (2)
Instrumental conducting techniques, score reading, interpretation. Prerequisite: 363. <Spring>

*564. Advanced Choral Conducting. (2)
Prerequisites: 363 and 453 or the equivalent. <Alternate summers>

φ Open only to graduate students and to undergraduates enrolled in pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairman of the Department.
*565. Advanced Instrumental Conducting. (2)
Prerequisites: 363 and 453 or the equivalent. <Alternate summers>

ENSEMBLE

143. University Chorus. (1)#
Open to all University students. <Fall, Spring>

230. Opera Studio. (1)†
Basic training in music theater. Open by audition to singers, conductors, pianists, stage directors, and producers. <Fall, Spring>

231. Chamber Music. (1)†
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)#
Study and performance of concert band literature. Marching band required of wind and percussion concentrations in music education during freshman and sophomore years. <Fall, Spring>

243. Concert Choir. (1)#
Auditions required. Open to all University students. <Fall, Spring>

*395. Accompanying. (1)†
Study and performance of accompaniments for other students. <Fall, Spring>

*430. Advanced Opera Studio. (1-2)†
Advanced performance in music theater and opera, culminating in major performances. Open by audition to singers, conductors, pianists, stage directors, and producers. Prerequisite: 230. <Fall, Spring>

HISTORY AND LITERATURE

261. History of Music I. (3)
Forms, styles, schools, principal composers and representative masterworks from antiquity through Baroque. Music majors only. <Fall>

262. History of Music II. (3)
Continuation of Music 261, from Baroque to the present. Music majors only. Prerequisite: 261. <Spring>

374. Concerto. (2)
Its form and principal composers from Bach to the present. Prerequisites: 261, 262. <Summer>

375. Symphonic Literature. (2)
Developments in orchestral music from Bach to the present. Prerequisites: 261, 262. <Fall, alternate years>

411. Contemporary Period. (2)
Music of the twentieth century and study of representative works by principal composers. Prerequisites: 261, 262. <Spring, alternate years>

412. Baroque Period. (2)
Music of Western Europe from 1600 to 1750 with emphasis on forms, styles, principal composers, and performance practices. Prerequisites: 261, 262. <Spring, alternate years>

437. Special Studies in Music Literature. (2)‡
Intensive study of one composer or genre of composition, designated by the instructor. Prerequisites: 261, 262. <Offered upon demand>

449. Music Repertory. (2)†
Comprehensive study of solo repertory for voice or individual instruments. Specific area is announced in the class schedule when the course is offered. Prerequisites: 261, 262. <Fall, Spring>

471. The Classical Period. (2)
Music of Haydn, Mozart, and Beethoven, their immediate forerunners and contemporaries. Prerequisites: 261, 262. <Fall, alternate years>

# 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.
° Qualified sophomores may enroll with piano faculty approval.
$ Open only to graduate students and to undergraduates enrolled in pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairman of the Department.
MUS 472. The Romantic Period. (2)
Music in the nineteenth century after Beethoven; leading composers and their works. Prerequisites: 261, 262. <Spring, alternate years>

MUS 473. Opera. (2)
Opera and its principal composers. Prerequisites: 261, 262. <Summer>

MUS 476. The Medieval Period. (2)
Music from the Early Christian era to mid-fifteenth century. Prerequisites: 261, 262. <Fall, alternate years>

MUS 477. The Renaissance Period. (2)
Music of Western Europe from the Middle of the fifteenth century to the close of the sixteenth century. Prerequisites: 261, 262. <Fall, alternate years>

MUS 478. History of Chamber Music. (2)
Chamber music literature from the Baroque to the present. Prerequisites: 261, 262. <Spring, alternate years>

MUS 479. Choral Literature. (2)
Choral music from Gregorian Chant to the present. Prerequisites: 261, 262. <Summer>

MUS 493. United States Composers. (2)
Music of the United States from the 17th century to the present. Prerequisites: 261, 262. <Summer>

- *531. Bibliography and Research. (3) <Fall>

- *533. Seminar in Music. (3) Subject matter determined by instructor and class. <Spring>

- *537. Selected Topics in Music Literature. (3) <Offered upon demand>

MUSIC THEORY

103. Fundamentals of Music Theory. (2)
Notation, scales, key signatures, and intervals. Credit not allowed toward a major in music or music education. 103 and 104 must be taken concurrently. <Summer, Fall>

104. Basic Ear-Training. (2)
Aural apprehension of materials learned in Music 103 through sight-singing, rhythmic and melodic dictation. Credit not allowed toward a major in music or music education. 103 and 104 must be taken concurrently. <Summer, Fall>

105. Music Theory 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 B. <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>

* Open only to graduate students and to undergraduates enrolled in pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairman of the Department.
208. Ear-Training IV. (2)
Continuation of advanced singing and dictation. Prerequisite: 207 with grade of C or better. <Spring>

309. Form and Analysis. (3)
Structural elements of music from Gregorian Chant to the present. Prerequisites: 206, 208, 261, 262. <Fall>

405. Counterpoint. (2)
Analysis and writing in the style of the 16th century. Prerequisites: 206, 208. <Fall>

406. Counterpoint. (2)
Analysis and writing in the style of the 18th century. Prerequisites: 206, 208. <Spring>

409. Composition. (2)
Techniques and procedures in the composition of music. Prerequisite: 309. <Spring>

410. Composition. (2)
Continuation of 409. Composition majors only. Prerequisite: 409. <Fall>

453. Orchestration. (2)
Scoring for orchestra, including properties and limitations of string, wind, and percussion instruments, notation, principles of combination and balance, and characteristics of the various "schools" of orchestration. Prerequisite: 309. <Fall>

463. Band Arranging. (2)
Scoring for band and large wind ensemble, including properties and limitations of wind and percussion instruments, and principles of combination and balance. Prerequisite: 309. <Spring>

505. Advanced Composition. (2)†
May be repeated to the limit of 4 hrs. credit. <Fall, Spring>

535. History of Music Theory. (3)
<Offered upon demand>

540. Studies in Musical Analysis. (3)
Material will vary with interests of the class and instructor. <Offered upon demand>

PEDAGOGY

388. Music Pedagogy. (2)
For the music student who plans to teach privately—preparation for beginners at various age levels. Prerequisite: junior standing. <Fall>

389. Music Pedagogy. (2)
Continuation of 388, treating problems in teaching intermediate and moderately advanced students. Prerequisites: 388 and junior standing. <Spring>

PROBLEMS

391-392. Undergraduate Problems. (1-3 hrs. each semester)
Prerequisite: junior standing. <Summer, Fall, Spring>

551-552. Problems. (1-3 hrs. each semester)

SPECIALIZED COURSES

209. Diction for Singers. (2)
The International Phonetic Alphabet and its application. <Fall>

387. Vocal Coaching. (1)†
One-half hour of private instruction per week. <Fall, Spring>

400. Review for Graduate Students. (3)
Material adapted to needs of students. <Offered upon demand>

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)
Open only to graduate students and to undergraduates enrolled in pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairman of the Department.
MUSI C 365

*599. Master's Thesis. (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

MUSIC EDUCATION

CURRICULUM
See p. 151.

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)
Designed to assist the student in discovering his personal strengths and weaknesses
relative to a career as a professional music educator. <Fall>

293. Cultural Awareness Through Music Skills. (2)
The music of global ethnic groups with emphasis on the musical skills needed to assist
the elementary teacher toward relevant enrichment in teaching the humanities.
<Summer, Fall, Spring>

294. Teaching Music in the Elementary Schools. (2)
Prerequisite: 293 for non-music majors; 194 for music majors. <Summer, Fall, Spring>

313. Administration of Choral and Instrumental Music. (2)
Administration and organization of programs for chorus, band, and orchestra in the
secondary schools. Prerequisites: 294 and junior standing in music. <Fall>

366. Beginning Student Teaching in Music. (2)
Orientation in practice teaching. Prerequisites: 294, admission to student teaching, and
junior standing in music. <Spring>

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
See Department of Music Handbook for prerequisites. <Fall, Spring>

*429. Workshop. (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For
degree restrictions see p. 98 of this catalog or consult the Graduate School Bulletin.
<Summer>

*440. Laboratory Experiences in Music Education. [Investigations in Music Education.] (3)
Music in the open classroom, in general music classes, in the humanities, and team teaching.
Prerequisite: junior standing. <Summer>

*443. Music for the Preschool Child. (2)
The teacher in private preschool institutions, church school, kindergarten, and the music
consultant. Prerequisite: junior standing. <Offered upon demand>

*444. Supervision of Music in the Elementary Schools. (2)
The role of the music consultant, curriculum development, and materials of instruction.
Prerequisite: 294. <Spring>

*445. Junior High-Middle School Music Education. [Junior High School Music.] (3)
A curriculum in music for the adolescent. Prerequisite: junior standing. <Fall>

*446. Secondary School Music. (2)
Students, music curricula, methods and materials in secondary schools. Prerequisite: junior
standing. <Spring>

*451. Foundations of Musical Behavior. (3)
Acoustics, perception, learning and affective response in musical behavior. Prerequisite:
junior standing. <Fall>

Education.] (3)
Melodic harmonic interpretation, creative writing, directed listening and movement.
Prerequisite: junior standing. <Summer>
NATIVE AMERICAN STUDIES

Coordinator: Harvey D. Paymella, M.S., Assistant Professor of Elementary Education.
Assistant Coordinator: Junella Haynes

Courses offered in the area of Native American Studies help students to understand and appreciate more fully both the cultural heritage received from the native people of the American continents and the distinctive life and culture of contemporary Native Americans. Another function of the program is to guide and assist Native American students in growth toward positions of leadership. To this end the Native American Studies Center, staffed by Native American professional people, provides counseling, a gathering place for Native American students, and assistance with financial matters related to tribal scholarships and grants from the Bureau of Indian Affairs.

CURRICULUM

Amer St. 301. Interdepartmental Studies in the Culture of the United States. (3)
- The Five Civilized Tribes.
- The Indian and the Law.
- Seminar: Indian Law.
- Introduction to Native American Literature.
- Native American Literature.
- Pueblo Indian History.
- Reservation Economic Development.
- Southwest Indian Lifestyles.

Amer St. 302. Interdepartmental Studies in the Culture of the United States. (3)
- The Indian in a Multicultural Setting.

Anth. 315. Current American Indian Problems. (3)


NAVAL SCIENCE

Colonel James R. O'Mara, USMC (Director), Commander B. L. Corley, USN, Lt. Commander L. L. Emareine, USN, Major R. E. Ablowich, USMC, Lieutenant T. A. Gibson, USN, Lieutenant W. J. Irwin, USN, Lieutenant T. D. Stanley, USN.

CURRICULUM

See Naval Science Department.

010. Naval Professional Laboratory. (0)
- Drills and information for NROTC students. (30 hours each semester)

105-106. Naval Ship Systems I & II. (3, 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, Spring)
303-304. Navigation and Naval Operations. (3, 3) Gibson
Theory, principles, and procedures of ship navigation and employment. Included are spherical trigonometry, mathematical analysis, spherical triangulation, sights, sextants, and publications and report logs. Tactical formations and dispositions, relative motion, and maneuvering board and tactical plots are analyzed. Rules of the road, lights, signals, and navigational aids including inertial systems are studied. <Fall, Spring>

331. Evolution of Warfare. (3) Ablowich, O'Mara
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 1975 and alternate years>

407. Principles of Naval Organization and Management. (3) Emarine, 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>

409. Flight Instruction. (3) Gibson
Aviation meteorology, aerodynamics, principles of flight, federal aviation regulations, aircraft systems, visual and radio instrument navigation, flight publications, emergency procedures, 36½ hours airborne instruction. Successful completion results in FAA certification as a private pilot. Prerequisite: Qualified senior students enrolled in Naval Science program.

431. Amphibious Warfare. (3) Ablowich, O'Mara
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>

NURSING


CURRICULUM
See p. 172.

129. Workshop. (1-3)
An opportunity for nurses to update their knowledge and skills in nursing process in maintenance, preventive, therapeutic, and restorative health care.

201. 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; corequisites: 3 to 4 hours of microbiology or bacteriology. <Fall>

202. Nursing Process Continued. (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: 201; corequisite: 203; 3-4 hours pharmacology and Biol 236L. <Spring>

203. Nursing Process Continued. (2)
Laboratory experience to provide implementation of knowledge and skill acquired in 202. Corequisite: 202. <Spring>

303. Medical-Surgical Nursing. (6)
Acquisition and application of theoretical content basic to caring for adult patients with medical and surgical conditions. Study includes the natural history, pathophysiology, and factors which influence illness and recovery from illness. Prerequisites: 202, 203; 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. (3)
Principles of growth and development from birth through adolescence guiding the nursing care of children at home, in the hospital, and in the community. Surveys 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)
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>

352. Fundamentals of Community Health Nursing. (2)
Some of the fundamentals of community health nursing including 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)
Principles and practice of nursing care of patients with psychiatric disorders: interpersonal, physiological, emotional, cultural factors. Emphasis on prevention. Prevention and treatment of mental illness. 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)
Boca Theory and practice of nursing in the community in a variety of settings. Application of family centered nursing through health teaching and guidance; survey of and projects in the community. 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. (5)
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)
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: 30 hrs. of nursing and permission of instructor. <Fall, Spring>
498. Honors Study (3)
First part of two courses in Departmental Honors. Prerequisites: junior standing in the College of Nursing and a 3.2 or better grade point average. <Fall, Spring>

499. Honors Study. (3)
Second part of Departmental Honors. Prerequisite: 498. <Fall, Spring>

PALEOCOLOGY

COMMITTEE IN CHARGE: PROFESSORS R. Y. Anderson, Ph.D. (Geology), Chairman; J. S. Findley, Ph.D. (Biology); F. C. Hibben, Ph.D. (Anthropology); L. D. Potter, Ph.D. (Biology).

Interdepartmental undergraduate and graduate minors in Paleoecology are offered to majors in the Departments of Anthropology, Biology, Chemistry, and Geology.

UNDERGRADUATE MINOR

The minor requires 30-36 hours in courses listed in the "Paleoecology Pool" including Paleoe 209 or 539. No more than 18 hours may be taken in any one department and courses in the major field may not be used for the minor. The following courses have been approved (see appropriate departmental listings for course descriptions and prerequisites):

Anth 366F, 303L, 307L
Chem 101L, 102L or 122L, 253L, 301, 302, 303L, 304L, 311, 312
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 Paleoecology. (2, 2)

*539. Environmental Reconstruction. (3) Anderson
(Also offered as Geol 539.) Concepts and methods of reconstructing sedimentary environments and ancient ecosystems, from the standpoint of variability of physical, biological and geochemical parameters. Prerequisite: permission of instructor. <Spring 1973 and alternate years>

*551-552. Problems. (2-3 hrs. each semester)

PHARMACY


Explanation of footnotes not indicated will be found on p. 194.

CURRICULUM

See pp. 179-182.

244. [234] History of Pharmacy. (2) Fiedler
Historical development of pharmacy as a profession. Prerequisite: enrollment in the first professional year. <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 subdivisions 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>

291. [231] Pharmacy Orientation. (2) Levchuk
A survey of the profession of pharmacy, with emphasis on aspects of pharmacy education, professional practice, and other career opportunities. <Fall>

292. [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: 291 or permission of instructor. <Spring, Summer>

296. [236] O.T.C. Drugs and Products. (2) Keesee
Discussion of the non-prescription drugs and products found in a pharmacy, with emphasis placed on antacids, sleep-aids, antihistamines, nasal decongestants, antitussives, internal analgesics, external analgesics, laxatives, vitamins, dentifrices, and anthelmintics. Prerequisite: 291. <Spring, Summer>

334. Clinical Pharmacy I (4) Shoop, Jeffrey
(Also offered as Nucl Med 291.) 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. Corequisite: 336L or permission of instructor. 3 lectures, 1 hr. seminar. (NOTE: 334 and 336L replace 345 and 346L.) <Spring>

336L. Clinical Pharmacy IA. (2) Calvert, Griffin, Grogan, Jeffrey
Practical application of knowledge of disease processes and related drug therapy. An introduction to the pharmaceutical aspects of patient interviewing, with emphasis on obtaining drug histories. The interrelating roles of other health professionals are also examined. Prerequisite: concurrent enrollment in 334 or permission of instructor. 4 hrs. lab. (NOTE: 334 and 336L replace 345 and 346L.) <Spring>

341L. Operative Pharmacy I. (4) Fiedler
Pharmacy technology, including principles and processes involved in formulation and basic manufacturing; a survey of the preparations of pharmacy. Prerequisite: enrollment in the College of Pharmacy, passing grade in Chem 302-304L. Pharm 343 must be taken concurrently with Pharm 341L (but Pharm 343 may be taken before Pharm 341L). 3 lectures, 3 hrs. lab. <Fall>

342L. Operative Pharmacy II. (4) Fiedler
A continuation of 341L. Prerequisites: Passing grade in 341L. 3 lectures, 3 hrs. lab. <Spring>

343. Pharmaceutical Calculations. (2) Fiedler
Metrology and the arithmetic involved in compounding and prescription work. (343 is pre- or corequisite for 341L.) <Summer, Fall>

*373. [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. <Summer, Fall>

392. [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: 292 and permission of instructor. <Offered upon demand>

Introduction to animal husbandry and animal health problems. The interrelationship of pharmacy and veterinary medicine and the social and economic relationships between man and animals. Prerequisite: third year standing. <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. Prerequisites: Chem 324, Biol 430L, or permission of instructor. <Spring>

418L. Radiopharmacy Rotation. (3) Keesee
Rotation through UNM College of Pharmacy Radiopharmacy, BCMC (Dept. of Nuclear Medicine), Presbyterian Hospital (Dept. of Nuclear Medicine), and Lovelace Clinic (Dept. of Nuclear Medicine). Prerequisite: 412L. 9 hrs. lab. <Spring>

421. Pharmacy Accounting and Financial Management. (3) Bober
Principles and practices involved in basic accounting, the keeping of records, financial analysis, and the interpretation of financial reports applicable to community pharmacy. Prerequisite: 291 or permission of instructor. <Fall>

422. Pharmacy Law (3) Bober
Laws and regulations relating to the practice of pharmacy. Includes all federal and state drug laws, business law pertinent to pharmacy practice, fair trade laws, and review of current health-related legislation. Prerequisite: 5th year standing or permission of instructor. <Spring>

423. Principles of Pharmacy Administration and Organizational Behavior. (3) Bober
An integration of administrative and behavioral science principles applicable to the practice of pharmacy. Prerequisite: 291. <Fall>

424. [423] Pharmacy Retailing Management. [Pharmacy Management] (3) Bober
General management activities involved in the operation of a community pharmacy. Includes such elements of merchandising as buying, selling, advertising, promotion and pricing. Prerequisites: 291, 421. <Spring>

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: 5th year standing or permission of instructor. <Fall>

426. Pharmaceutical Marketing. (3) Bober
The pharmaceutical market and marketing institutions with emphasis on the industrial sector. Includes principles of drug product development, pricing, promotion, distribution, control, and competition. Prerequisite: 291. <Spring>

435L. [445L] Clinical Pharmacy III. (4) Calvert, Grillin, Grogan, Jeffery
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. Prerequisites: 334 and 336L, or permission of instructor. 1 lecture, 9 hrs. lab. <Fall>

436L. [446L] Clinical Pharmacy IV. (4) Calvert, Grillin, Grogan, Jeffery
Directed experience with the student working at a basic level as a member of the health team in a controlled environment. Prerequisite: 435L or permission of instructor. 1 lecture, 9 hrs. lab. <Spring>

437L. [447L] Clinical Pharmacy V. (3-8) Calvert, Grillin, Grogan, Jeffery
A directed experience with the student working at an intermediate level as a member of the health care team in a varied environment. Prerequisite: 436L or permission of instructor. 3 lectures, 0-15 hrs. lab. <Fall>

438L. [448L] Clinical Pharmacy VI. (9-15) Calvert, Grillin, Grogan, Jeffery
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: 437L or permission of instructor. 3 lectures, 18-36 hrs. lab. <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 their formulation. Prerequisites: 342L, grade of C or better in 343, Physcs 151, Physcs 152, and Physcs 153L. 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. <Spring>
449L. [458L] Pharmacokinetics. (3) Strahl
Application of mathematical principles to the evaluation of drug absorption, distribution and elimination profiles of drugs in man. Prerequisite: 444. 2 lectures, 3 hrs. lab. <Fall>

450. Clinical Pharmaceutics. (3) Strahl
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 and nursing 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 and nursing facilities. Prerequisite: 451. <Spring>

453. Seminar in Hospital Pharmacy Administration. (2) Levchuk
A "theory-into-practice" seminar: application of selected aspects of administrative theory and organizational behavior to the hospital environment, using administrative models and an "in-basket" approach to analyzing and solving current problems and issues Pre- or corequisite: 451 and 423. <Fall>

455. Nursing Home Pharmacy. (1) Levchuk
A directed independent study of the roles of the consultant pharmacist, the delivery of pharmaceutical services, and management of the pharmacy program for facilities in which pharmaceutical services are provided by part-time or consultant pharmacists. Prerequisites: 5th year standing and permission of instructor. <Offered upon demand>

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>

A study, from the chemical viewpoint, of organic substances used in pharmacy and medicine. Prerequisite: Chem 324; corequisite: 475L. <Fall>

462. [464] Organic Pharmaceutical Chemistry II. (3) Stahl
A continuation of 461. Prerequisite: 461; corequisite: 476L. <Spring>

463. Advanced Pharmaceutical Chemistry I (3) Stahl
A comprehensive study of organic medicinal agents, with emphasis on the synthesis, properties, and relationships between chemical constitution and physiological activity. Prerequisites: 462, 476L. <Fall>

464. Advanced Pharmaceutical Chemistry II. (3) 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 253; pre- or corequisite: 461. 1 lecture, 6 hrs. lab. <Fall, Summer>

466L. Organic Pharmaceutical Chemistry Laboratory II. (3) Stahl
A continuation of 465L. Prerequisite: Chem 253L; pre- or corequisite: 462. 1 lecture, 6 hrs. lab. <Spring, Summer>

467. Chemistry of Natural Products I. (3) Stahl
The study of drugs of biological origin with emphasis on active constituents, their biosynthesis, structure, properties, and medicinal applications. Prerequisites: 462, 476L. <Fall>

468. Chemistry of Natural Products II. (3) Stahl
A continuation of 467. Prerequisite: 467. <Spring>

*475L. Pharmacology II. (5) Hurwitz
A continuation of 373. 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: 373. 4 lectures, 3 hrs. lab. <Fall>

*476L. Pharmacology III. (4) Hurwitz
A continuation of 475L. Prerequisite 475L. 3 lectures, 3 hrs. lab. <Spring>

477L. Biological Assays. [Pharmacology III] (3) Hurwitz
Principles, methods, and techniques employed in the biological standardization of drugs are presented together with information relative to the statistical evaluation of potency data. Prerequisite: 476L. 1 lecture, 6 hrs. lab. <Fall>
478L. [479] Psychopharmacology. (2) Hurwitz
A study of mental disease states utilizing films and site visitations to state mental
institutions. Laboratory will consist of operant conditioning techniques to study the bio­
chemical correlates of behavior. Prerequisites: 476L and permission of instructor. 1
lecture, 3 hrs. lab. <Spring>

482. [483] Toxicology I [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 to­
ward industrial, economic, and therapeutic toxicity problems encountered by the hospital
and community pharmacist. Drug interactions, toxic side effects, and idiosyncratic reac­
tions will be considered. Prerequisites: 475L and 476L or permission of instructor.
<Spring, Summer>

484L. Biochemical Pharmacology. (4) Hadley
Study of drug metabolism and the biochemical changes produced by drugs. Both the
lecture and the laboratory are directed towards methods used in biochemical pharma­
cology. Prerequisite: permission of instructor. 2 lectures, 6 hrs. lab. <Spring>

488L. Toxicology II. [Advanced Toxicology] (4) Hadley
488L.
The study of the sources and effects of environmental contaminants and the effects of
acute exposure to higher concentrations of chemicals. Techniques and instruments used in
toxicology research will be considered. Prerequisites: 475L and 476L or permission of
instructor. 2 lectures, 6 hrs. lab. <Spring>

492. [482] Drug Education. (2-3) Levchuk
Interdisciplinary approach, utilizing in-class and out-of-class learning experiences, to the
development of knowledge and skills related to the planning and provision of comprehen­
sive community-based drug abuse/misuse programs. (Enrollment for the third unit entails
independent study in addition to regular course requirements.) <Spring>

497. Problems in Pharmacy. (1-5)†
Research and library problems in some phase of pharmacy. Prerequisite: permission of
instructor. <Fall>

498. Problems in Pharmacy. (1-5)†
Research and library problems in some phase of pharmacy. Prerequisite: permission of
instructor. <Summer, Spring>

PHILOSOPHY

PROFESSOR Paul F. Schmidt, Ph.D., (Chairman); PROFESSORS H. Alexander, Ph.D.; M. Evans,
Ph.D.; ASSOCIATE PROFESSORS H. Elstein, Ph.D.; C. McDermott, Ph.D.; H. Tuttle, Ph.D.;
ASSISTANT PROFESSORS M. Casalis, Ph.D.; R. Goodman, Ph.D.; D. Lee, Ph.D.; B. O'Neil,
Ph.D.; F. Schueler, Ph.D.; C. Stern, M.Phil.

Philosophical studies are one basic way to focus a liberal education. The
philosophy major is designed to meet the needs of several different groups of
students: (1) as a central background for a liberal education; (2) as a pre-pro­
fessional 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. 194.

MAJOR STUDY
30 hours, which may include 6 hours at the 100 level if taken at the be­
ginning, 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. 263-264, 304, 334, 336, 365, 431, 432, 441 (when topic is appropriate), 442 (when figure is appropriate); Anthro 398, 399; Arch 261; Art Hi 270, 351, 352; Engl 341; Hist 311, 325, 337; Greek 101-102; Music 476; Soc 422. (Sanskrit and Hebrew will also satisfy when they become available at UNM.)

DEPARTMENTAL HONORS
Consult department adviser.

PERIOD MINOR
For requirements, see Comparative Literature, p. 229.

100. Introduction to Philosophical Problems. (3)
Selected problems in values, knowledge and reality. Social, political and religious philosophy.

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 orientation.

145. Thought and Expression. (3)
Processes of communicating, symbolizing, thinking abstractly, imagining, generalizing, defining and inferring.

201. Ancient European Philosophy. (3)
An historical study; especially of Greek philosophy.

202. Modern European Philosophy. (3)
An historical study from the Renaissance through Kant.

241. Philosophic Problems. (3)
Topic to vary. An elementary treatment of some major philosophic issue.

242. Greater Thinkers. (3)
Figure will vary. A study of the thought of some major world thinker.

253. Introduction to Philosophy of Science. (3)
The place of science in the culture. Science and society. Elements of theory of meaning and truth; elements of deductive and inductive logic in application to problems of scientific methodology.

254. Philosophy of Science. (3)
Selected ontological and methodological problems of empirical sciences. Prerequisite: 253, or 255, or 257.

255. Scientific Method. (3)
Meaning and verification, scientific truth, hypotheses, models, empirical evidence, measurement, induction and probability, statistical knowledge.

256. Introduction to Logic. (3)
Fallacies of argument; traditional forms of deductive and inductive inference.

257. Introduction to Symbolic Logic. (3)
Methods and techniques of modern logic.

263. Eastern Religions. [Comparative Religions] (3)
Confucian, Taoist, Buddhist and Hindu religions.

264. Western Religions. [Comparative Religions] (3)
Judaic, Christian, Moslem and Humanist religions.

301-302. Interdepartmental Studies in the Culture of the U.S. (3, 3)
(See Am St 301-302.) May be taken for departmental credit only with the consent of the Chairman.

*303. Hellenistic Philosophy. (3)
Stoicism to Neoplatonism. <Offered upon demand>

*304. Medieval European Philosophy. (3)
Major thinkers from Augustine through Ockham.

*305. Topics in Medieval Philosophy. (3)
PHILOSOPHY 375

*323. Hispanic and Latin-American Philosophy. (3)
Major movements and trends.

*332. North American Philosophy. (3)
Early developments, idealism, pragmatism, naturalism, realism, and analysis.

*334. Indian Philosophy. (3)
Upanishads, Bhagavad-gita, Jainism, Buddhism, the six Hindu systems, and recent developments.

*335. Topics in Indian Philosophy. (3)

*336. Chinese Philosophy. (3)
Confucian, Taoist, Mohist, Legalist schools and their influence on Buddhist and modern developments. <Offered upon demand>

*337. Topics in Chinese Philosophy. (3)

341. Philosophic Questions. (3)
An investigation of some important philosophic debate.

342. Selected Philosophers. (3)
A treatment of the thought of a major philosopher.

*344. 19th Century Philosophy. [Recent Philosophy] (3)
From Kant to Twentieth Century. Prerequisite: one previous Philosophy course. <Fall>

*346. 20th Century Philosophy. [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.

*350. Introduction to Philosophical Problems of Physics. (3)
Introduction to Philosophical problems concerning space, time, laws of nature, causality, in the light of fundamental theories of physics.

*352. Theory of Knowledge. (3)
Problems and theories of epistemology. Prerequisite: 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.

*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.

*367. Philosophy of Art and Aesthetics. (3)
Concepts and theories about aesthetic experience and judgment; artistic meaning and evaluation.


375. Philosophy of Life. (3)
Questions concerning the meaning of existence, consciousness, Freedom, death, hope, despair, joy, etc.

*380. Philosophy of Law and Morals. (3)
Nature and function of public law and its relation to moral belief. Prerequisite: one previous Philosophy course. <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>
*415. Foundations of Mathematics. (3)
(Also offered as Math 415.) This course will consider the following questions and topics.
What is a number? Do numbers exist? What is a set? Do sets exist? What is an axiom system?
Gödel's theorem, Banach-Tarski paradox. Prerequisite: serious interest in philosophical
and historical aspects of modern mathematics.

*429. Aesthetics Institute Workshop. (1)
A one-week session in Taos, New Mexico, at the Lawrence Ranch and Harwood Foundation,
featuring lectures in general aesthetics, discussions. Carries graduate credit when
specifically approved by the Graduate Committee. May be repeated to a maximum of 3
hours. <Summer only>

Old Testament. Hermeneutic analysis of Scripture. Prerequisite: permission of instructor.

Hermeneutic analysis of Scripture. Prerequisite: permission of instructor.

*441. Philosophical Movements. (3)†
Topic varies.

*442. Individual Philosophers. (3)†
Figure varies. <Summer, Fall, Spring>

*443. Problems in Space, Time, and Causality. [Philosophical Problems of Physics] (3)†
Einstein
Mainly problems concerning space, time, causality. Selected epistemological problems.
Prerequisite: 253 or 254 or Math 102 or Physcs 102.

*445. Philosophy of Language. (3)
Philosophies of meaning with special attention to the relations between language and
thought. Prerequisite: 145 or 201 or 202 or 257 or 356 or permission of instructor.

*450. Philosophical Problems of Physics. (3)
A more advanced treatment of topics from 350.

*455. Philosophy of the Natural Sciences. (3)
Critical examination of methods and concepts of the natural sciences.

*465. Philosophy of the Social Sciences. (3)
Examination of the structure, methods and presuppositions of social sciences.

*470. Philosophy of History. (3)
(Also offered as Hist 470.) Nature, structure and presuppositions of theories of history
and historical methods.

*480. Philosophy and Literature. (3)
(Also offered as Eng-Ph 480.) Prerequisites: 6 hours of literature and 3 hours of philos-
ophy from the courses specified as requirements for the program.

*485. Philosophical Foundations of Economic Theory. (3)
(Also offered as Ec-Ph 485.) Prerequisite: Econ 201.

497. Honors Seminar. (3)†
For departmental honors in philosophy. <Offered upon demand>

498. Reading and Research. (1-3)† <Offered upon demand>

499. Senior Thesis. (3)†
For departmental honors. <Offered upon demand>

*501. Interdepartmental Seminar in the Culture of the United States. (3)
(See Am St 501.)

*526. Seminar in Asian Philosophers. (3)† <Offered upon demand>

*541. Seminar in Philosophical Movements. (3)†

*542. Seminar in Individual Philosophers. (3)†

*543. Seminar on the Problems of Space, Time, Causality (3)†
Prerequisite: 253 or 254 or 354 or 443 or Math 102 or Physcs 102.

*551. M.A. Problems. (1-3 hrs. per semester)†

*599. 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)

*655. Ph.D. Seminar in Epistemology. (3)

*656. Ph.D. Seminar in Logical Theory. (3)
PHYSIC SAN DASTRONOMY 377

*658. Ph.D. Seminar in Value Theory. (3)

*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


PHYSICAL SCIENCE

No major or minor study offered.

261-262. Introduction to Physical Science. (3, 3)
Prerequisite: permission of instructor.

PHYSICS AND ASTRONOMY

PROFESSORS V. H. Regener, Dr.-Ing., (Chairman); H. S. Ahluwalia, Ph.D.; C. L. Beckel, Ph.D.;
H. C. Bryant, Ph.D.; C. Dean, Ph.D.; J. R. Green, Ph.D.; J. L. Howarth, Ph.D.; C. P. Leavitt,
J. D. Finley III, Ph.D.; D. S. King, Ph.D.; A. W. Peterson, Ph.D.; D. B. Swinson, Ph.D.;
ASSISTANT PROFESSORS B. D. Dieterle, Ph.D.; D. M. Wolfe, Ph.D.; ADJUNCT PROFESSORS
F. M. Wu, Ph.D.

Explanation of footnotes not indicated will be found on p. 194.

Prerequisite to major and minor study in Physics and in Astrophysics are
the basic courses Physics 160, 161, 163L§, 262, 264L§, and Math 264, 265. Fresh­
man 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 Physics 161 and Math 163 in their second semester.

Undergraduate students, especially those anticipating graduate study in
physics or astronomy, or interested in research training, are invited to apply to
the Department for details of the Undergraduate Honors Program during the
second semester of their junior year. Note: Physcs 496, 497, 498L, and 499L.

MAJOR STUDY IN PHYSICS

Physcs 301, 302, 303, 304, 305, 306, 307L, 308L, 491, 492; Math 312, 316,
or 361, 362; Chem 101L, 102L.

MINOR STUDY IN PHYSICS

Four courses selected from Physcs 301, 302, 303, 304, 305, 306; Math 316 or
361.

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.

§ Not required for the minor study in Astrophysics.
MINOR STUDY IN ASTROPHYSICS

Physics 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, Kieffaber, King, Peterson
   An elementary course, primarily for non-science majors, including observations with the telescope. <Fall, Spring>

Physics 102. Introduction to Physics. (3) Dean, Haworth, Regener, Wolfe
   An elementary course, primarily for non-science majors, including demonstrations. <Summer, Fall, Spring>

Physics 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>

Physics 104. Introduction to Environmental Physics. (3) Hyder
   An elementary course addressed to the physical aspects of environmental problems. <Offered upon demand>

Physics 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>

Physics 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) Dean, Haworth, 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, preental, 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. <Fall, Spring>

154L. General Physics Laboratory. (1)
   Electricity, magnetism, optics. Pre- or corequisite: 152. 3 hrs. lab. <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 150 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. <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. <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. <Fall>

**302. Optics. (3) Alpert, Bryant, Dean, Finley, Green, Howarth, Leavitt, Thomas Geometrical optics; wave theory of light; Fresnel and Fraunhofer diffraction; polarization; dispersion, absorption and scattering. <Spring>

**303-304. Analytical Mechanics. (3, 3) Alpert, Bryant, Dean, Finley, Green, Leavitt, Thomas Statics and dynamics of particles and rigid bodies; introduction to Lagrange's method. Pre- or corequisites: Math 312, 316. <303-Fall, 304-Spring>

**305-306. Electricity and Magnetism. (3, 3) Ahluwalia, 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>

*400. Seminar. (1 hr. per semester) <Fall, Spring>

*403. Acoustics. (3) Dean General wave phenomena, studied through applications in acoustics. Topics in radiation, absorption, interference, acoustical holography. <Offered upon demand>

*430. Physics of Matter. (3) Dean, Green, Leavitt Structural, mechanical, thermal, electrical, and optical properties of various states of matter including gases, weakly ionized gases, plasmas, and especially solids as observed experimentally and as deduced from fundamental laws and principles. Prerequisite: 330 or equivalent. <Fall>

*433. Molecular Biophysics. (3) Beckel (Also offered as Biol 433 and Chem 433.) Physico-chemical properties and dependence of biological function on these properties for amino acids, proteins, nucleotides, DNA, and RNA. <Offered upon demand>

*434. Radiological Physics. (3) Howarth Radiation dosimetry, applications to diagnostic and therapeutic radiology, the use of radioactive materials in biology and medicine. <Offered upon demand>
*435. Introduction to Plasma Physics. (3) Ahluwalia
Adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves in plasmas, pinch effect, dimensionless parameters, applications. <Offered upon demand>

*436. Atmospheric Optics. (3) Peterson
(Also offered as Astr 436) Transmission, absorption, and scattering in clear air. Color phenomena of celestial objects. Aerosols and aureoles. The rainbow, haloes, glory, and cloud coronae. <Offered upon demand>

*437. Introduction to Space Physics. (3) Ahluwalia, Leavitt, Peterson
(Also offered as Astr 437) Solar activity and the solar wind, interplanetary particles, solar-terrestrial effects, the earth's magnetosphere and radiation belts, lunar and planetary measurements, cosmic radiation in space. <Offered upon demand>

*440. Atmospheric Physics. (3) Dean
Atmospheric gases; cloud physics; the high atmosphere; radiation, atmospheric motions and turbulence; aerosols. <Offered upon demand>

*445. Cosmic Radiation. (3) Ahluwalia, Swinson
(Also offered as Astr 445) Primary cosmic radiation, the production and detection of secondary radiation, time variations, extensive air showers, applications to high-energy physics. <Offered upon demand>

*451-452. Problems. (1, 1)

*453-454. Problems. (2, 2)

*461-462. Research Methods. (1, 1)

*463-464. Research Methods. (2, 2)

*466. Methods of Theoretical Physics. (3) Alpert, Beckel, Dean, Finley, Thomas
(Also offered as Math 466:) 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. <Offered upon demand>

*495. Theory of Special Relativity. (3) Ahluwalia, Finley
Relativistic kinematics and dynamics, relativistic electromagnetism, applications to nuclear physics and astrophysics. <Offered upon demand>

496-497. Contemporary Physics Honors. (3, 3) Bryant, Dean, Dieterle, Green, Leavitt, Regener, Swinson
<496-Fall, 497-Spring>

498L-499L. Contemporary Physics Honors Laboratory (2, 2) Bryant, Swinson, Wolfe
<Offered upon demand>

*500-501. Advanced Seminar. (1-3, 1-3) <Fall, Spring>

*503. Classical Mechanics I. (3) Chandler, Finley, Green, Thomas
<Fall 1974 and alternate years>

*504. Classical Mechanics II. (3) Chandler, Finley, Thomas
<Spring 1975 and alternate years>

*505. Statistical Mechanics and Thermodynamics. (3) Thomas
<Spring 1975 and alternate years>

*511. Electrodynamics I. (3) Alpert, Green, Thomas
<Fall 1975 and alternate years>

*512. Electrodynamics II. (3) Green, Thomas
<Spring 1976 and alternate years>

*521. Quantum Mechanics I. (3) Alpert, Finley, Thomas
<Spring>

*522. Quantum Mechanics II. (3) Finley, Thomas
<Fall>

*523. Quantum Mechanics III. (3) Finley, Thomas
<Spring 1976 and alternate years>

*524. Quantum Mechanics IV. (3) Thomas
<Fall 1976 and alternate years>
PHYSICS AND ASTRONOMY

530. Selected Topics in Solid State Physics. (3) Dean
Prerequisite: 521. <Offered upon demand>

531. Atomic Structure. (3) Beckel
Prerequisite: 521. <Offered upon demand>

532. Molecular Structure. (3) Beckel
Prerequisite: 531. <Offered upon demand>

534. Selected Topics in Biophysics. (3) Howarth
<Offered upon demand>

537. Selected Topics in Space Physics. (3) Ahluwalia, Leavitt
<Also offered as Astr 537.> <Offered upon demand>

539. Selected Topics in Laser Physics. (3) Alpert
Prerequisites: 302 and 521. <Offered upon demand>

540. Introduction to Nuclear Physics. (3) Dieterle, Leavitt
<Offered upon demand>

542. Selected Topics in Theoretical Nuclear Physics. (3) Chandler, Finley
Prerequisites: 521, 540. <Offered upon demand>

543. Selected Topics in High-Energy Physics. (3) Chandler, Dieterle, Finley, Leavitt
Prerequisite: 521. <Offered upon demand>

547. Selected Topics in High Energy Astrophysics. (3) Ahluwalia, Finley, King
<Also offered as Astr 547.> <Offered upon demand>

551-552. Problems. (1-4 hrs. each semester)

566. Advanced Methods of Theoretical Physics. (3) Beckel, Thomas
<Offered upon demand>

570. Theory of Relativity. (3) Finley
Prerequisite: 503 <Offered upon demand>

599. Master's Thesis. (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

699. Dissertation. (3-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

ASTRONOMY

101. Introduction to Astronomy. (3) Hyder, Kieffaber, King, Peterson
An elementary course, primarily for non-science majors, including observations with the telescope. <Fall, Spring>

270-271. General Astronomy. (3) King, Peterson
The solar system, stellar astronomy, the galaxy, extra-galactic systems, cosmology. Pre- or corequisite: Math 150 or 162. <270-Fall, 271-Spring>

272L-273L. General Astronomy Laboratory I and II. (1,1) King, Peterson, 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

370. The Solar System. (3) King, Peterson
The sun, planets, satellites, comets; the interplanetary medium. Prerequisite: 270-271. <Fall>

371. Stars and Galaxies (3) King, Peterson
The structure and evolution of stars, their distribution in space, gaseous nebulae and the interstellar medium, galaxies and cosmology. Prerequisite: 270-271. <Spring>

421. Introduction to Astrophysics. (3) King
Observational results, radiation laws, absorption and emission of radiation, simple applications to a variety of astrophysical problems. <Fall>

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>

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>
382 POLITICAL SCIENCE

*436. Atmospheric Optics. (3) Peterson
(Also offered as Physics 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 Physics 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 Physics 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 Physics 537) <Offered upon demand>

*547. Selected Topics in High Energy Astrophysics. (3) Ahluwalia, Finley, King
(Also offered as Physics 547.) <Offered upon demand>

POLITICAL SCIENCE


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. (2)
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. May be repeated for credit. <Fall, 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) Garcia
Analysis of the similarities and variations of American state politics with emphasis on policy outputs. Prerequisite: 200. <Spring>

*303. U.S. Politics and Education. (3) Garcia
A course for the education student and educator on the political theory, institutions, processes, issues and behaviors involved in American politics. Emphasis on the relationship of these subjects to education and to political education in the schools. (Students may not receive credit for both this course and 200.)

*304. The Government of New Mexico. (3) Lupsha, Hain
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>

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>

*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, Spring>

*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, Spring>

*350. Public Finance. (3)
(Also offered as Econ 350.) Taxation, government borrowing, financial administration, and public expenditures. Prerequisite: Econ 201.

*351. Comparative Politics: Developing Countries. (3) Vincent-Smith <Fall>

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>
(3) Needler  
The political dynamics of the Latin American republics, considered on a country-by-country basis. Recommended preparation: Hist 282. <Fall>  

*356. Governments and Politics of Latin America II. [Governments and Politics of Latin America]  
(3) Vincent-Smith  
Selected topics considered cross-nationally. <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 Learning and Political Culture. [Political Socialization] (3) Garcia  
A survey and analysis of orientations of people toward their country, government and politics; the development of these attitudes, values, and beliefs from early childhood to maturity; the influence of the school, family, peers, media and other agents of political socialization. <Spring>  

*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. Chicoano 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)  
Selected contemporary problems of international politics. 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. (3) Sorenson
Examination of problems, policies, postures, and options of Communist China. <Spring>

*455. Major Powers of Latin America. (3) Needler
Politics of Argentina, Brazil, and Mexico (in some years a fourth country may be added). Recommended preparation: 355 or 356. <Spring>

*459. Soviet Foreign Policies. (3) 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. Topics in Comparative Politics. [Comparative Politics: The Industrial Democracies] (3)
Topics will be noted in appropriate class schedules. <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>

*477. The Indian and the Law. (3) Deloria
Introduction to Indian legal status. <Fall>

*480. Survey of Political Science as a Discipline and a Profession. (3)
Topics include: scope and component fields of political science; relationships with other social sciences; problems of explanation and prediction including theories, models, and approaches. (Required of all graduate students in political science and recommended to undergraduate majors.) <Fall>

*490. Introduction to Empirical Research. (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>

*491. Methods of Empirical Political Analysis. (3) Conway
(Also offered as Soc 480.) 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>

499. Independent Study [Senior Thesis] (3)
Open to senior majors with 3.3 G.P.A. and permission of department.

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)‡
May be repeated for credit. <Fall>

*520. Pro-Seminar: Comparative Government and Politics. (3) <Offered upon demand>

*521. Research Seminar in Comparative Government and Politics. (3) <Offered upon demand>

*522. The Administrative Process. (3) Connerley, Smithburg
(Also offered as Pub Ad 522) Prerequisite: 421, or comparable experience. <Spring>

*525. Pro-Seminar on Latin American Politics. (3)
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)
Prerequisite: graduate standing. <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, Ph.D. (Chairman); D. T. Benedetti, Ph.D.; H. C. Ellis, Ph.D.; D. P.
Ph.D. (Assistant Chairman); ASSOCIATE PROFESSORS D. M. Feeney, Ph.D.; R. J. Harris, Ph.D.;
P. J. Johnson, Ph.D.; K. P. Koenig, Ph.D.; B. K. Ruebush, Ph.D.; ASSISTANT PROFESSORS
C. E. Conrad, Ph.D.; T. P. Friden, Ph.D.; J. P. Gluck, Ph.D.; M. H. Irwin, Ph.D.; P. D. Kottler,
Ph.D.; S. Roll, Ph.D.; VISITING ASSISTANT PROFESSOR J. A. Parsons, Ph.D.

ADJUNCT ASSOCIATE PROFESSORS A. Bruner, Ph.D., J. Schenkel, Ph.D.; ASSISTANT PRO-
FESSOR J. P. Cardillo, Ph.D.

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—Indi
dividual Topics in Psychology. (The third number has no systematic meaning
except, where indicated, year-long courses are numbered sequentially.) Fre­
quently, 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 Psychol­
ogy. Within these, the B.A. degree requires either 200 or 201, a laboratory
course numbered above 300, and a minor in or distributed among A & S depart­
ments other than Biology, Chemistry, Computer Science, Mathematics, or Physics.
The B.S. degree requires 201, 202, a laboratory course numbered above 300, and
a minor in or distributed among Biology, Chemistry, Computer Science, Mathe­
matics, or Physics. For a distributed minor with a B.A. or B.S. there must be at
least one advanced course in each of two or more areas, and a total minimum of
30 hours. The Honors major requires 29 hours beyond 8 hours General Psy­
chology, 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 ad­
mission to the undergraduate Honors Program beginning in the junior year.
Students participating in this program are eligible to graduate with Depart­
mental 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) Staff
A general introductory course covering the major topics in Psychology. Intended for special summer school students; not acceptable as a substitute for 101 or 102. <Summer only>

200. Statistical Principles. (3) 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 graduate study in any field are advised to take 201-202. <Summer, Fall, Spring>

201. Introduction to Probability and Statistics. (3) Staff
(Also offered as Math 102.) An introduction to sampling and probability theory, descriptive and inferential statistics, including essential mathematical and computational details. Prerequisite: knowledge of algebra at high school level, such as provided by Math 020. <Summer, Fall, Spring>

202. Psychological Research Techniques. (2) Staff
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, Parsons, Rosenblum
An overview of the contributions of psychological theory, research and methods to our understanding of the educational process. Prerequisite: 101 or 102. <Fall, Spring>

211. Applied Psychology. (3) Norman
Topics in applications to everyday life, such as personnel selection, consumer psychology, and environmental problems. Prerequisite: 101 and 102. <Spring>

230. Psychology of Adjustment. (3) Stoff
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. Prerequisite: 101. <Fall, Spring>

270. Interpersonal Relations. (3) Harris
Exploration of the relative merits of literature, philosophy, psychoanalytic case studies, observations of real-life interactions and laboratory experiments as sources of understanding interpersonal relations. Prerequisite: 102. <Spring 1974 and alternate years>

271. Psychology of Sexual Identity. (3) Conrad
Exploration of the ways in which sexual identity influences or fails to influence intellectual, emotional, and social behavior. <Spring>

*300. Intermediate Statistics. (3) Friden, Harris, Johnson
Complex analysis of variance designs (factorial, mixed-model, Latin square, unequal-n) and nonparametric tests. Prerequisite: 200 or 201. <Fall 1975 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) Parsons
The study of the young child with emphasis on research, theory and methodology. Studies using preschool and lower elementary school children are examined in terms of methodology, theoretical basis, results and interpretations. Prerequisite: 101. <Fall>

*322L. Child Research Laboratory. (2) Parsons
Research projects related to topics in 321. Pre- or corequisite: 321. (Students must have 4 hr. block of time during normal school hours and means of transportation.) 4 hrs. lab. <Fall>

*331. Psychology of Personality. (3) 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) Koening
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. Human Learning and Memory. (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 Learning and Memory Laboratory. (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) Conrad
Laboratory projects related to topics in 365. Corequisite: 365. 4 hrs. lab. <Spring>

*367. Introduction to Psycholinguistics. (3) Staff
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 1975 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) Gluck
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
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) Harris
Survey of mathematical descriptions of behavior. Prerequisite: 200 or 201 <Fall 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 assess­
ment 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.
(Spring 1974 and alternate years)

*413. Industrial Psychology. (3) Staff
Application of psychological principles to industrial needs. Prerequisite: 102. (Fall)

*414. Engineering Psychology. (3) Staff
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 pro­
grammed instructional materials, with practice in frame-writing, construction and evalua­
tion of programs. (Summer only)

*424. Learning, Motivation, and Perception in Children. (3) Parsons
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 Intellectual Exceptionality. [Psychology of Mental Retardation] (3)
Rosenblum
Theory and research dealing with various aspects of mental retardation, giftedness, and
creativity in children and youth. Prerequisite: 320. (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: 320.
(Spring)

433L. Child Clinical Psychology Laboratory. (2) Rosenblum
Supervised practicum experience with children manifesting a variety of learning and
developmental disturbances in school and treatment settings. Pre- or corequisite: 432
and permission of instructor. (Spring)

*441. Brain Mechanisms of Information Processing and Storage. (3) 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. Pre­
requisite: 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 1975 and alternate years)

*446L. Comparative Psychology Laboratory. (2) Gluck
Laboratory projects related to topics in 445. Prerequisite: 200 or 201; corequisite: 445.
4 hrs. lab. (Fall 1975 and alternate years)
*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>

*448. Primate Behavior. (3) Gluck
In-depth survey of primate developmental-social patterns as studied in both field and laboratory contexts. Emphasis also placed on the study of learning abilities in the primate order. Prerequisite: 101, 260. <Fall 1974 and alternate years>

*449L Primate Behavior Laboratory. (2) Gluck
Research techniques relevant to the study of social behavior and learning abilities of nonhuman primates. Students will conduct and design small research projects. Corequisite: 448. <Fall 1974 and alternate years>

*450. Special Topics in Psychology. (1-3 hrs. each semester) Staff
Study of any psychological topic not otherwise included in the curriculum upon expression of mutual interest by students and faculty. <Offered upon demand>

*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. <Spring>

*463. Cognitive 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. Prerequisite: 320 or 321. <Spring>

*464L Cognitive 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) Conrad
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
<Fall>

*502. Design of Experiments. (3) Ellis

*503. Seminar in Teaching. (3) Benedetti

*505. Research Techniques in Experimental Psychology. (2) Ferraro

*512. Theory in Educational Psychology. (3) Logan

*521. Research Methods in Child Development. (3) Parsons

*522. Seminar in Social Development of the Child. (3) Rosenblum

*524. Seminar in Functional Analysis of Child Development. [Seminar in Learning, Motivation, and Perception in Children] (3) Parsons

*525. Seminar on Piaget. (3) Irwin

*528. Seminar in Cognitive Development. (3) Johnson

*531. Seminar in Clinical Psychology. (3) Ruebush

*532. Seminar in Behavior Pathology. (3) Koenig

*533. Psychological Evaluation: Cognitive Functions. (3) Norman

*534L Assessment of Cognitive Functions Laboratory. (2) Roll

*535. Psychological Evaluation: Personality Functions. (3) Roll
*536l. Assessment of Personality Functions Laboratory. (2) Roll
*537. Seminar in Developmental Abnormalities. (3) Rosenblum
*538. Seminar in Psychoanalytic Ego Psychology. (3) Roll
*541. Animal Learning: Complex Processes. (3) Gluck
*542. Seminar in Sensory Neuropsychology. (3) Feeney
*547. Seminar in Psychochemistry. (3) Kottler
*551. Graduate Problems. (1-3) Conrad
*560. Seminar in Child Language. (3) Conrad
*561. Theories of Learning. (3) Ferraro, Logan
*562. Human Learning and Cognition. (3) Johnson
*563. Seminar in Human Learning: Transfer and Memory. (3) Ellis
*564. Seminar in Classical Conditioning. (3) Gluck
*566. Experimental Analysis of Operant Behavior. (3) Ferraro
*567. Theories of Perception. (3) Friden
*568. Cognitive Processes. (3) Johnson
*569. Seminar in Semantics. (3) Conrad
*571. Advanced Social Psychology. (3) Harris
*572. Theories of Personality. (3) Norman
*573. Seminar on Cross-cultural Research in Cognitive Development, Learning, Thinking, and Perception. (3) Irwin
*599. Master's Thesis. (1-6)

PUBLIC ADMINISTRATION

PROFESSORS A. H. Rosenthal, Ph.D. (Director); G. L. Boyle, Ph.D.; F. Heady, Ph.D.; D. W. Smithburg, Ph.D.; VISITING LECTURERS V. Berniklau, M.A.; C. Spath, M.A.

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

*522. The Administrative Process. (3) Smithburg (Also offered as Pal Sc 522.) Prerequisite: 421 or comparable experience. <Spring>

*525. Public Personnel Administration. (3) Rosenthal Prerequisite: 421. <Spring>

*551-552. Problems. (1-3 hrs. per semester, to a maximum of 6) Rosenthal, Smithburg

*595. Seminar: Public Science Policy and Administration. (3) Rosenthal Prerequisite: 421.

*596. Seminar: Public Science Policy and Administration. (3) Rosenthal Continuation of 595.

*597. Research Methodology. (3) Required. Prerequisite: 421 or concurrently.

*599. Thesis. (1-6 hrs. per semester) Rosenthal, Smithburg See the Graduate School Bulletin for total credit requirements.

RECREATION

RUSSIAN
See Modern and Classical Languages.

RUSSIAN STUDIES

COMMITTEE IN CHARGE: ASSISTANT PROFESSOR R. Robbins, Ph.D. (History), Chairman; PROFESSORS R. Murphy, Ph.D. (Geography); J. Sorenson, Ph.D. (Political Science); ASSOCIATE PROFESSORS P. Chung, Ph.D. (Economics); R. Holzapfel, Ph.D. (Modern Languages); ASSISTANT PROFESSOR B. Lindsey, Ph.D. (Modern Languages).

The combined major in Russian Studies is administered by the interdepartmental committee listed above. The object of the program is to provide the student with a broad knowledge of modern Russia through study of the social 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
Pal Sc 357, 459

HISTORY, 9 hours
Hist 102, 348, 349

ADDITIONAL REQUIREMENTS, 18 hours to be selected following consultation with the adviser.

Minor in Russian Studies, 21 hours

FOREIGN LANGUAGE
Russ 101, 102, 251, 252
ADDITIONAL HOURS CHOSEN FROM:
Econ 450, 455
Geog 333
Pol Sc 357, 459
Hist 303, 348, 349
Russ 307, 338, 345

SOCIOMETRY


MAJOR STUDY

36 hours of course work, including 101, 280, 281, 371, 471, 481L, and including two courses in Economics, Political Science, and/or Anthropology at the 200 level or above.

MINOR STUDY

18 hours in Sociology courses, of which 9 hours must be above 300, and including 101 and 371 or 471.

MINOR FOR SOCIOLOGY MAJORS

Sociology majors may minor in a single department or, with the consent of the chairman, may pursue an interdisciplinary minor in American Studies (for requirements, see American Studies).

101. Introduction to Sociology. (3) Huaco, Tomasson, Woodhouse
Basic course in sociology; prerequisite for all other sociology courses. <Fall, Spring>

161. The City. (3) Anderson
Interrelations of the physical form and the social, economic, political, and cultural life of the contemporary city. <Fall, Spring>

211. Social Problems: Selected Topics. (3) Bogart, Onwubu
Sociological approaches to selected social problems. <Fall, Spring>

215. Social Stratification. (3) Gehlen, Meier
Structure and dynamics of class, status, and power in society; social consequences of stratification.

221. Sociology of Rich and Poor Nations. (3) Merkx
Patterns of development and change in nation-states; relationships between Third World and industrial nations; the impact of class conflict, war, revolution, reform, and colonialism on national development.

225. Structure and Functions of the Family. (3) Meier
Functional analysis of marriage and family institutions in varying societal contexts; alternative patterns of family role organization and interconnections with social structures of wider social systems. <Spring>

226. Sociology of the Barrio. (3) Onwubu
Survey and analysis of the sociological structure of the Spanish-speaking barrio, emphasizing urban conditions as products of American social and political processes.

227. Chicanismo: Contemporary Mexican-American Society. (3) Bogart
The nature of contemporary Chicano society. Analysis of Chicano social protest movements from the standpoint of a comparison of social bases. Prerequisite: competence in Spanish.

230. Society and Personality. (3) Bogart
Social psychological processes involved in the development of personality characteristics and problems; problems of individual and group identity. <Spring>
280. [102] Introduction to Probability and Statistics. (3)
(Also offered as Math 102.) Pre- or corequisite for 281; prerequisite for 481L. Introduction to basic principles of statistical treatment of numerical data; basic ideas of probability, sampling, and statistical inference. Prerequisite: knowledge of algebra. <Fall, Spring>

Prerequisite for 481L. Problems involving elementary applications of statistical methods to sociological problems and data. Pre- or corequisite: 280. <Fall, Spring>

301-302. Interdepartmental Studies in the Culture of the United States. (3, 3)
(See Am St 301-302.) May be taken for major or minor credit in Sociology only with consent of the chairman.

*305. Nature of Social Inquiry I. (3)
Philosophy and methodology of social inquiry, covering basic problems of sociological explanation.

*306. Nature of Social Inquiry II. (3)
Problems of theory construction and testing, including mathematical models. Prerequisite: 305 or Phil 465 and either Math 122 or a statistics course.

308. Sociology of Sex Roles. (3)
Cross-cultural analysis of sex roles; sex role differentiation, socialization, and stereotyping.

310. Black Family in America. (3) Onwubu
Changes in the structure of the Black family from its historical roots in Africa through slavery and reconstruction up to the contemporary setting in the U.S. Effects of social and economic conditions on Black family life.

*312. Juvenile Delinquency. (3)
The causes and nature of juvenile delinquency; its prediction, prevention, and control.

*313. Criminology. (3) David, Bogart
The sociological dimensions of crime, types of criminal behavior, explanations of crime. <Fall, Spring>

*314. Sociology of Corrections. (3) David
The police, courts, prisons, probation and parole, and recent developments in the control of crime. Prerequisite: 312 or 313.

*321. Sociology of Medical Practice. (3)
Analysis of medical care settings with special attention to professional roles of medical practitioners and the role of the patient.

325. Social Psychology of Marriage and the Family. (3) St. George
Interpersonal dynamics of marital and family relationships; conflict and solidarity in families; appraisal of research, education, counseling, and the treatment and prevention of family problems. <Fall>

*331. Collective Behavior. (3) Gehlen, Onwubu
Theoretical analysis of the spontaneous emergence of collective activity in response to social stresses; social behavior in the forms of panics, crazes, hostile outbursts, and social movements.

335. Sociology of Mass Communication. (3) St. George
Analysis of mass communication in society with emphasis on their role in western industrial societies; impact of mass communication on social movements and on sectors of the social structure; social psychology of mass communications.

*338. The City in History. (3) Roebuck
(Also offered as Arch 338 and Hist 338.) Overview of the development of urban forms through history, with special emphasis on the modern era; causes of urban growth and change; impact of cities on the development of western society.

345. Sociology of Youth. (3) McNamara
An analysis of youth in varying social contexts. Intergenerational problems, role transitions, youth subcultures, and the relationships of youth to major social institutions. <Fall>

*351. The Urban Community. (3) McNamara
The forms and development of urban community; demographic, spatial, functional, and temporal patterns; metropolitan development and city-hinterland relations.

*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 societies.
365. Urbanization in Latin America. (3)
(Also offered as Anth 365.) Analysis of processes of urbanization in Latin America; comparative studies of the impact of industrialization and rural-urban migration; emphasis on social and cultural changes accompanying rural-urban migration.

371. History of Social Thought. (3) Woodhouse
The rise of sociology as a scientific discipline, principally during the 19th century; special attention to the contributions of Comte, Marx, Durkheim, Tönnies, Simmel, and Weber. <Fall, Spring>

381. Sociology of Science. (3)
The sociological structure of science and its role in society; science as a social institution, values of science, science in public policy.

411. Deviant Behavior. (3)
Theory and research on deviant behavior; types of individual and subcultural deviance.

416. Workshop in Intercultural Relations. (4)
(Also offered as Ed Fdn 416.) <Summer only>

420. Sociology of Ideology and Literature. [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 factors. <Fall>

421. Sociology of Education. (3) Bachelor, Gehlen
Comparative study of the structure and functioning of educational institutions in the United States and other societies.

422. Sociology of Religion. (3) Bogart, McNamara
The development, structure, and functioning of religious institutions in western and non-western societies. <Spring>

425. Latin American Institutions. (3) Merkx
Studies of selected institutional arrangements in Latin American societies.

428. Sociology of Knowledge. (3) Huaco
The social bases of ideology; ideological phenomena as distortions of social reality; isomorphism in social and cultural patterns; social causation of ideology. <Spring>

441. Formal Organizations. (3) Bogart
Structure and functional dynamics of formal organizations; the role of bureaucracy in modern social organization. <Fall>

445. Occupations and Professions. (3) Woodhouse
Comparative studies of occupational subcultures; patterns of interaction and social norms in relations among colleagues and with clients; recruitment, mobility, and the process of professionalization. <Fall>

451. Population Problems. (3)
The composition of populations; fertility, mortality, migration; sources and evaluation of demographic data.

461. Social Change. (3) Woodhouse
Conditions and processes producing new social structures; emergence of new values and norms; reform movements, political revolution, and cultural diffusion; theories of social change. <Spring>

465. City Planning Methods. (3) Antoniades
(Also offered as Arch, Econ, and Pol Sc 465.) Multidisciplinary introduction to urban studies with emphasis on planning and control; decision-making and planning theory, national and regional settlement policy, public control over development, and direct action techniques.

471. Contemporary Sociological Theory. (3) Huaco, Merkx
Comparative analysis of major contributions to sociological theory since 1900, considering their continuity with older theoretical positions and applications in contemporary research. <Fall, Spring>

478. Seminar in International Studies. (3) Slavin
(Also offered as Econ, Geog, M & CL, and Pol Sc 478.) Designed to provide seniors from several disciplines an opportunity to apply an international perspective to their undergraduate training. Each student presents a term project drawing upon his major disciplinary background and related to international concerns.
*480. Intermediate Statistics for Social Research. (3) St. George
(Also offered as Pol Sc 491.) Prerequisite for 581. Foundations of statistical inference with emphasis on social science applications; distribution theory, estimation, hypothesis testing, measures of association, multivariate techniques. Prerequisite: 280 (Math 102) or equivalent, or permission of instructor. <Fall>

481L. Research Methods in Sociology. (4) Meier
The sociological research enterprise from problem formulation to the interpretation and report findings; principles of theory verification, research design, instrumentation, and analysis of empirical data. Three lectures and one two-hour laboratory meeting per week. Prerequisite: 280 and 281 or equivalents, or permission of instructor. <Fall, Spring>

*485. Seminario de Investigación sobre la Sociedad Mejicano-Americana. (3) Merkx
El análisis de investigaciones empíricas sobre la organización cultura, y ecología de la sociedad mejicana-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 481L, o permiso del instructor.

490. Directed Study. (1-3, to a maximum of 6)
Tutorial arrangement with a member of the Sociology faculty. Restricted to students with substantial background in sociology.

*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

*503. Seminar: Political Sociology. (3) Gehlen, Woodhouse

*504. Seminar: The Control of Deviance. (3) David
Prerequisite: 312, 314, or 411.

*505. Seminar: Theory of Complex Organizations. (3)

*506. Seminar: Comparing Nations. (3) Merkx, Tomasson
Topics change from year to year. <Spring>

*507. Sociological Theory: Selected Topics. (3) Abel, Huaco
Topics vary with instructor.

*508. Seminar: Comparative Latin American Social Systems. (3) David, Merkx
Prerequisite: 425 or permission of instructor.

*509. Seminar: Sociology of Science. (3)

*510. Seminar: Social Movements. (3) Gehlen

*511. Proseminar in Sociology. (3) Meier
Required of all graduate students and normally taken in the student's first semester. <Fall>

*512. Seminar in the Sociology of Literature. (3) Huaco

*513. Survey of Contemporary Schools of Sociological Theory I. [Graduate Lectures in Contemporary Sociological Theory I.] (3) Huaco
<Fall>

*514. Survey of Contemporary Schools of Sociological Theory II. [Graduate Lectures in Contemporary Sociological Theory II.] (3) Huaco
<Spring>

*521. (581) Seminar: Sociology of Education. (3) Bachelor, Gehlen
(Also offered as Ed Fdn 581.)

*531. Sociology Teaching Practicum. (3) Tomasson
Meetings throughout academic year, but credit for Spring semester only. <Spring>

*531-552. Problems. (2-3, each semester)
Tutorial arrangement with member of the graduate faculty. <Fall, Spring>

*580. Methods of Social Research I. (3) St. George, Bogart
Design of a research project to be carried out in 581 the following semester. Prerequisite: 481L or equivalent. <Fall>

*581. Methods of Social Research II. (3) St. George
Prerequisite: 480 or equivalent, or permission of instructor. <Spring>

*584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Anth, Econ, Hist, and Pol Sc 584.) <Spring>
SPEECH COMMUNICATION


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 and Organizational, Rhetorical, 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. (3, 3)
Principles and concepts of communicative behavior; demonstrations and laboratory experiences. <Fall, Spring>

200. Forensics. (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>

215. Problems of Interpersonal Communication. (3)
Application of transactional analysis as a model of dyadic and small group relationships in the family, church, and community. <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, Spring>

250. Parliamentary Procedure. (1)
Study and practice of the rules governing the proceedings of groups and deliberating assemblies. <Fall, Spring>

251. Telecommunication. (3)
Survey of theoretical approaches to the processes and effects of the telecommunication media. History, ethics, regulation, and evaluation. <Fall>

255. Public Discourse. [Public Speaking.] (3)
Principles of rhetorical theory applied in public speaking situations. <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. (3)
Survey of the various approaches to media production. Contributions of radio, television, motion picture and still photography, theatre, and multimedia-concepts to contemporary media production. 2 hrs. lecture, 2 hrs. video lab. <Summer, Fall, Spring>

277. Problem Solving, Creativity, and Communication. (3)
Analysis and application of creative and communicative abilities to solving problems in groups. <Spring>

278. Argumentation. (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 and Ling 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>

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>

320. Nonverbal Communication. (3)
Body motion, paralanguage, proxemic, and other non-language codes and modes of communicating. <Summer, Spring>

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. <Fall>

346. Introduction to Empirical Research. (3)
Basic principles, methods and techniques of conducting empirical research in speech communication. <Fall>

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 TA 351.)

352. Advanced Television Drama Production. (3)
(See TA 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. <Summer>

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. (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. <Summer, Spring>

*411. Theories of Communication. (3)  
Critical analysis of contemporary theories, concepts, models, and empirical research relevant to communicative process. <Fall>

*412. Strategies of 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. <Spring>

*415. Interviewing. (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. 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. (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. <Summer>

*475. Tele-Mediated Instruction. (3)  
Analysis of the values and use of video materials in instructional applications. <Fall>

*485. Advanced Telecommunication Methods. (3)  
Non-print media communication emphasizing purposive integration of media. Application of theories of media effectiveness in individual and team projects. <Spring>
THEATRE ARTS

*490. Administration of the Forensic Program. (3) Problems and methods of directing forensics, managing tournaments, and coaching competitive and non-competitive activities. <Spring>

*491. Forensic Practicum. (3) Companion course to 490. Students will apply theory in a practicum setting. Upper division and graduate students will actually direct high school students in preparation for forensic participation. <Summer>

*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. (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>

*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. <Spring>

*498. Persuasion. (3) Application of principles of attitude change in practical persuasion. <Spring>

*499. Rhetorical Theory. (3 per semester to a maximum of 6) Historical survey of major contributors and contributions to the development of contemporary rhetorical theory. <Fall, Spring>

*500. Introduction to Graduate Study. (3) Required of all graduate students. <Fall>

*501. Teaching the Basic Course. (1)

*520. Seminar: Telecommunication Processes and Effects. (3) <Spring>

*524. Seminar: Telecommunication Policy and Regulations. (3) <Spring>

*529. Seminar: Persuasion. (3) <Spring>

*540. Seminar: Reasoned Discourse. (3) <Fall>

*541. Contemporary Rhetoric. (3) <Spring>

*543. Seminar: Interpersonal Communication. (3) <Fall>

*544. Seminar: Organizational Communication. (3) <Spring>

*545. Seminar: Public Address. (3)

*546. Communication Research. (3) <Fall>

*547. Seminar: Rhetorical Criticism. (3)

*550. Seminar: Language Behavior. (3) <Spring>

*551-552. Problems. (1-3 hrs. each semester)

*555. Seminar in Linguistics and Language Pedagogy (1-3) (See Ling 555)

*570. Seminar: Communication Education. (3) <Spring>

*580. Seminar: Intercultural Communication. (3) <Fall>

*599. Master's Thesis. (1-6 hrs. per semester) <Summer, Fall, Spring>

STATISTICS
See Mathematics & Statistics.

THEATRE ARTS

MAJOR STUDY

College of Fine Arts: see pp. 152-153.
For Teacher Education and Certification: see p. 153.

MINOR STUDY

24 hours including 101, 102, 115, 116 and 12 hours selected from either acting-directing or technical courses.

Students are reminded that charges for classroom supplies and services for certain theatre arts courses must be paid at the Fine Arts box office during the first three weeks of each semester. Refunds will be given according to the refund schedule in the student expense section of this catalog, page 31.

101. Voice and Diction. (3)
Training in effective use of the speaking voice; principles of voice production, diction and phonetics. Non-majors only. <Fall, Spring>

102. Voice and Diction. (3)
Training in use of the voice for oral interpretation and for preparation to enter speech-oriented careers. Prerequisite: 101 or equivalent. <Spring>

103. Voice Technique for Theatre. (3)
Training in all aspects of voice production for the actor. TA majors only. <Fall>

104. Voice Technique for Theatre. (3)
Prerequisite: 103. <Spring>

115. Theatre Appreciation. (3)
Introduction to theatre in terms of the rewarding experience and personal pleasure it provides. Non-majors only. <Summer, Fall>

116. Theatre Appreciation. (3)
Continuation of 115. <Spring, Summer>

125. Introduction to Theatre. [Theatre Practice I.] (3)
Background and working knowledge of theatre. Participation in departmental productions required. <Fall>

126. Introduction to Theatre. [Theatre Practice II.] (3)
Prerequisite: 125. <Spring>

129. Stage Craft. (3)
Materials and techniques of stage carpentry. Scenic crews on departmental productions required. <Fall, Spring>

130. Stage Craft. (3)
Prerequisite: 129. <Fall, Spring>

185. Costume Craft. (3)
Materials and techniques of costuming. Costume crews on departmental productions required. <Fall, Spring>

235. Theatre History. (3)
Development of dramatic writings and production techniques of theatre, beginning with the Greeks. <Fall>

236. Theatre History. (3)
Continuation of 235 to present day. <Spring>

240. [140] Makeup. (3)
The art of makeup for stage and television. Makeup crews on departmental productions required. <Fall, Spring>

255. Stage Lighting. (3)
Theory and practice of lighting for the stage. Lighting crews on departmental productions required. Prerequisite: 126 or equivalent. <Fall>

256. Stage Lighting. (3)
Prerequisite: 255. <Spring>

260. Oral Interpretation. (3)
(See Sp Com 260.) Prerequisite: TA 101. <Fall, Spring>

* Open to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the department chairman.
275. Technical Production. (3)
Analysis, planning and construction of stage scenery and properties; study of the theatre plant. Scenic crews on departmental productions required. Prerequisites: 126 and 129. <Fall>

276. Technical Production. (3)
Prerequisite: 275. <Spring>

285. Acting Technique. (3)
Basic methods of acting for theatre. Prerequisites: 104, 126, 160 or equivalent. <Fall>

286. Acting Technique. (3)
Prerequisite: 285. <Spring>

290. Professional Theatre Tour. (1-3)‡
Comprehensive tour of New York or London theatre. Post-trip critique required. Offered upon demand. <January, Summer>

299. Theatre Workshop. (1-3)‡
For Theatre Arts majors who participate in a prearranged series of departmental productions. Cannot exceed 6 hours without permission of the Committee on Studies. <Fall, Spring, Summer>

305. Rehearsal and Performance. (3)
Techniques for the director in rehearsal and performance. Prerequisite: 286. <Fall>

306. Rehearsal and Performance. (3)
Prerequisite: 305. <Spring>

350. Theatre Management. (3)
Principles of production, organization, programming, house management, budgets, advertising and box office. Participation in departmental productions required. Prerequisite: 126 and upper-division standing. <Fall>

351. Television Drama Production. (3)
Basic techniques for the dramatic television program. Prerequisites: 104, 126 and Sp Com 265. <Offered upon demand>

352. Advanced Television Drama Production. (3)
Prerequisite: 351. <Offered upon demand>

360. Advanced Oral Interpretation. (3)
(See Sp Com 350.) Prerequisite: Sp Com 260. <Spring>

365. Advanced Acting. (3)
Acting styles as related to periods of theatre history. Prerequisite: 286. <Fall>

366. Advanced Acting. (3)
Prerequisite: 365. <Spring>

375. Scene Design. (3)
Techniques and methods of design and painting. Scenic crews on departmental productions required. Prerequisite: 276 or equivalent. <Fall>

376. Scene Design. (3)
Prerequisite: 375 <Spring>

385. Costume Design. (3)
Techniques and methods of design for theatre. Costume crews on departmental productions required. Prerequisite: 185 and upper-division standing. <Fall>

386. Costume Design. (3)
Prerequisite: 385. <Spring>

414. Experimental Music Theatre. (1-4)‡
The content and form of this course will vary each time offered, normally culminating in a public performance involving both departments of music and theatre arts. <Offered upon demand>

Organization and teaching of drama in the schools with emphasis on educational theatre as an integral part of the school curriculum and the student activities program. <Fall>

Acting, directing and technical production; rehearsal methods and production organization. May not be taken by Theatre Arts majors for credit. Prerequisite: 415. <Spring>

* Open to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the department chairman.
417. [317] Educational Theatre Workshop. [Educational Theatre.] (3-6)
Participation in prearranged workshop productions. Prerequisite: 416 or equivalent. Not to exceed 9 hours without permission of the Committee on Studies. <Fall, Spring, Summer>

455. [355] Playwriting. (3)
Writing techniques of the theatre. Analysis of student plays. Prerequisites: 126, 236 or equivalent. Alternate years. <Fall>

456. [355] Playwriting. (3)
Prerequisite: 455. Alternate years <Spring>

461. [361] Advanced Rehearsal and Performance. (3)
Advanced study of directing techniques; analysis of scripts and methods of interpretation in production. Prerequisite: 306. <Fall>

462. [362] Advanced Rehearsal and Performance. (3)
Prerequisite: 461. <Spring>

491. Professional Apprenticeship. (1-6)†
Qualified students accepted by a professional company, (e.g., The Santa Fe Opera), may register for credit in technical production or in acting apprenticeship. Prerequisite: average of 3.0 or better in Theatre Arts courses. <Summer, Fall, Spring>

499. Thesis. (1-6)†
Directed study in any major field of Theatre Arts. Prerequisite: accumulative average of 3.0 or better in Theatre Arts courses, and permission of the departmental Thesis Committee. May not be repeated for more than 9 hrs. credit. <Summer, Fall, Spring>

DANCE

109. Modern Dance I. (1)
(Also offered as PE 126.) Techniques and practice of basic motor skills and their application to aesthetic communication. <Summer, Fall, Spring>

159. Stage Movement I. (3)
Movement training for the actor. Basic exercises to effect alertness and responsiveness on stage and to induce relaxation and sensory awareness. TA majors only. <Fall>

160. Stage Movement II. (3)
Prerequisite: 159. TA majors only. <Spring>

259. Modern Dance II. (2)††
Various techniques in modern dance in America; (e.g. Graham, Humphrey, Weidman, and Limon.) Prerequisite: 109, or equivalent. Audition required. <Fall, Spring>

262. History of Dance I. (2)
Cultural influences on dance throughout western civilization; primitive, ancient, and medieval. 2 lectures, 1 hr. lab. <Fall>

263. History of Dance II. (2)
Renaissance to the present day. 2 lectures, 1 hr. lab. Prerequisite: 262. <Spring>

309. Modern Dance III. (2)‡‡
Prerequisite: 259. Audition required. <Fall, Spring>

359. Dance Workshop. (1-3)‡‡†
Participation in workshop productions under faculty supervision. Cannot exceed 9 hrs. without permission of the Committee on Studies. <Summer, Fall, Spring>

366. Teaching of Modern Dance. (2)
(Also offered as PE 366.) Methods and materials for teaching modern dance. Supervised practice teaching in local elementary, junior, and high schools. <Spring>

368. Ethnic Dance. (2)‡‡†
Movement experiences in various ethnic dance forms. Film viewing and analysis of dance works. <Fall, Spring>

† Open to graduate students and to undergraduates enrolled in the pre-professional curricula of the College of Fine Arts. Exceptions may be made with permission of the department chairman.
‡‡ May be taken three times for credit. Instructor and the Committee on Studies must approve additional repetition of this course.
‡‡† 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.
FILM

Students are reminded that charges for classroom supplies and services for certain film courses must be paid at the Fine Arts box office during the first three weeks of each semester. Refunds will be given according to the refund schedule in the student expense section of this catalog, page 31.

210. Introduction to 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)
History of the motion picture from its beginning up to the era of sound. Prerequisite: 210 or equivalent. <Fall>

*328. History of the Film. (3)
Continuation of 327 to the present day. Prerequisite: 210 or equivalent. <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>

WOMEN STUDIES

COMMITTEE IN CHARGE: ASSISTANT PROFESSORS G. Baker, Ph.D. (American Studies), Coordinator; G. Argersinger, M.Phil. (American Studies), B. C. Pope, M.A. (History), M. J. Power, Ph.D.; (English), and representative students, staff and community women.

Women Studies is an interdisciplinary program concerned with women's distinctive roles and contributions in history and culture as well as with the special problems women confront in the contemporary world. At present no major or minor is offered, but it is possible to arrange an emphasis in Women Studies. Additional courses on particular figures and topics are frequently scheduled; a complete listing of Women Studies courses is available at the Women Studies office.

CURRICULUM

Am. St. 301-302. Interdepartmental Studies in the Culture of the United States. (3, 3)†
American Women Writers, Classics of American Feminism, La Mujer Chicana, Women and the Law in the United States.

Am. St. *501. Interdepartmental Seminar in the Culture of the United States. (3)†
American Women as Social Critics, Feminism in American Writing.

Ed. Fdn. *447. Topics. (1·3)
Psychology of Women, Women and Self Education.

Engl. 101. Writing with Readings in Exposition. (3)
Each semester some sections focus on feminism and women writers.

Engl. 102. Writing with Readings in Literature. (3)
Each semester some sections focus on feminist literature.

Engl. 280. Readings in Literature. (3)†
The Fallen Women in Literature, The Literary Heroine.

Engl. 300. Studies in Literature. (3)†
Women in Literature.

Engl. 459. Irish Literature. (3)

Gen. St. 299. Individual Study. (1·3)‡
Introduction to Women Studies.

Hist. *315. [201] History of Women from Ancient Times to the Enlightenment. (3) Pope

†† May be taken three times for credit. Instructor and the Committee on Studies must approve additional repetition of this course.
Central Campus Legend of Buildings
(Numerical Listing)
(The first number listed matches map numbering, the letter-number combination designates location by map coordinates.)

2. Art Department Crafts Annex  E-3
3. Parsons Hall  E-3
4. Carlisle Gym  E-4
5. Pharmacy Annex  E-3
6. Lecture Hall  E-2
7. Yahaka Hall  D-4
8. Bandelier East (Departmental Offices)  D-3
9. Marron Hall (Departmental Offices)  F-3
10. Administration (Scholes Hall)  E-3
11. Anthropology  D-2
12. State Public Health Laboratory  E-3
13. Parking and Campus Safety (1821 Rama NE)  C-4
14. 1819 Rama NE  C-4
15. Bandelier Hall (Departmental Offices)  D-3
16. T-1  C-4
17. Pharmacy  E-3
18. Speech Communications  C-3
19. Biology (Centner Hall)  F-4
20. Chemistry (Clark Hall)  E-3
21. Mitchell Hall (Classroom)  D-3
22. Geology (Northrop Hall)  C-4
23. Alumni Memorial Chapel  D-3
24. 1717 Rama NE  C-3
25. 1815 Rama NE  C-3
26. 1812 Las Lomas NE  C-3
27. 1820 Las Lomas NE  C-4
28. 1908 Las Lomas NE  C-3
29. 1905 Las Lomas NE  C-3
30. 1815 Rama NE  C-4
31. Psychology  F-3
32. Physics Labs and Lecture Hall  F-2
33. 1824 Las Lomas NE  C-4
34. 1804 Las Lomas  "-E
35. President's Home  C-4
36. Zimmerman Library  D-5
37. Mesa Vista Hall (Departmental Offices)  C-5
38. 1915 Rama NE  C-5
39. Hokona Hall (Dormitory)  G-6
40. Johnson Gymnasium  E-4
41. New Mexico Union  E-5
42. Santa Clara Hall (Dormitory)  C-7
43. Fine Arts Center  F-5
44. Education Office Building  C-5
45. Industrial Arts  C-6
46. Education Administration  D-6
47. Home Economics  D-6
48. Education Classroom Building  D-5
49. Art Education  D-5
50. King  D-6
51. Manzano Center (Educational Laboratory)  D-6
52. Santa Ana Hall (Dormitory)  D-8
53. Popejoy Hall  F-5
54. Student Health Center—University College and Counseling Center  E-6
55. Laguna Hall (Dormitory)  C-7
56. DeVargas Hall (Dormitory)  C-7
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-4
Automotive Building (216) F-3
Cancer Research (207) F-3
Cancer Research Center (under construction) (227) F-3
Continuing Education (203) F-3
Golf Course Club House (206) K-3
KNME-TV Studio (217) B-3
Low (Bratton Hall) (218) C-4
Medicine, School of Animal Facilities (213 & 214) E-4
Basic Medical Sciences (211) F-4
Department of Community Medicine (209) E-4
Department of Medicine-Research (209) E-4
Department of Neurology and Convulsive Disorder Unit (210) E-4
Department of Psychiatry (202) F-4
Laboratory Science-Regional Medical Program (209) E-4
Library of Medical Sciences (201) F-4
Maternity and Infant Care Project (215) D-4
Regional Medical Program (226) F-7
Regional Medical Program Annex (212) F-4
Naval Science (151) G-4
New Mexico Accident Investigation Facility (219) E-3
North Campus Chilled Water Plant (224) G-6
Nursing-Pharmacy (under construction) (228) F-7
Observatory (208) E-4
Physics-Astronomy (207) G-5
Services Building (204) E-3
Surge Building (201 Frontier Pl. NE) (204) F-7
Temporary Storage Building (203) 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-2
202. Department of Psychology E-7
203. Continuing Education E-4
204. Services Building E-3
205. Temporary Storage Building D-3
206. Golf Course Club House D-5
207. Physics-Astronomy G-5
208. Observatory E-4
209. Laboratory Sciences, Regional Medical Program; Department of Community Medicine, Research, Department of Medicine E-6
210. Department of Neurology and Convulsive Disorder Unit E-6
211. Basic Medical Sciences Building, School of Medicine F-6
212. Regional Medical Program Annex F-8
213. 214. Animal Facilities, School of Medicine E-6
215. Maternity and Infant Care Project, School of Medicine D-6
216. Automotive Building D-3
217. KNME-TV Studio B-3
218. Low (Bratton Hall) C-6
219. New Mexico Accident Investigation Facility E-3
220. 1837 Lomas NE F-4
221. 1000 Stanford NE E-7
222. 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-4
228. Nursing-Pharmacy (under construction) F-7
302. University Stadium South Campus
302. University Arena South Campus
307. Athletics South Campus

For buildings north of Lomas Blvd., see North Campus map on following pages
Veterans' Affairs (5) E-3
INDEX

Absences, 52
Academic Calendars, 4, 5
Academic Regulations, 47
Accounting, See Business and Administrative Sciences courses, 216
Accounts, Student, 31
Accreditation, University, 13; Architecture, 13; Chemistry, 221; Continuing Education, 13; Engineering, 13, 126; Journalism, 13; Law, 13, 157; Medicine, 13, 158; Music, 13, 149; Music Education, 13, 149; Nursing, 13, 167; Pharmacy, 13, 173
ACT, See American College Tests
Activities, See Student Activities
Activity fee, Air Force, 30, 191; See also Associated Students fee
Address, change in, 28
Administrative offices and officers, 6, 7, 8, 9, 10, 11, 12
Admission, general regulations, 17; by certificate, 18; by examination, 19; early, 19; of freshmen, 17; of non-degree, 24; or readmitted, 23, 24; students from other countries, 26; of transfers, 21
Adult Education Programs, 187
Advance housing deposit, 33
Advance payment of tuition and fees, 30
Advanced Placement Program, 19
Advisement, 17, 27, 41, 43, 57, 60, 145, 169, 178
Aerospace Studies, Department of, 194; curriculum, 192
Afro-American Studies, 195
Aid, student, see Financial Aid
Air Force, ROTC, 191; see also Aerospace Studies, 192; Activity fee, 30; B & AS, 83; Engineering, 127; Pharmacy, 173
Alumni Memorial Chapel, 45
American Association of Colleges for Teacher Education, 13
American Association of Colleges of Pharmacy, 13
American Association of University Women, 13
American Bar Association, 13
American Boards of Examiners in Speech Pathology and Audiology, 13
American Chemical Society, 221
American College Tests, 17
American Council on Education for Journalism, 13
American Council on Pharmaceutical Education, 13
American Dental Hygienists Association, 184
American Society for Engineering Education, 126
American Students Abroad, 42
American Studies, 155, 196
Andean Study and Research Center, 77, 189
Anthropology, Department of, 197; field session, 4; Maxwell Museum, 14
Apartments, see Housing
Application fee, 17
Application for admission, 17; deadline, 4, 5, 17, 21, 184
Applied music, 150; Fees, 29, 360
Archaeology, see Anthropology
Architecture, Department of, 203; curriculum, 147
Art, Department of, 205; curriculum, 147; galleries, 14; museum, 14; teacher curriculum, 148
Art Education, Department of, 241; curriculum, 100; minor, 101
Art History, courses in, 209
Art Studio, courses in, 206
Arts and Sciences, College of, 68; Admission to, 68; graduation requirements, 69; group requirements, 69; major and minor studies, 70, 73; certification to teach in high school, 71; departments or programs of instruction, 72; elective courses, 72; pre-professional curriculum, 73
Asian Studies, 211
Assistantship, 155
Associate of Arts degree in Community Services, 163; in Education, 91, 98
Associate of Science degree in Dental Hygiene, 184; Laboratory Technology, 64; Instrumentation Engineering Technology, 144; Medical Engineering Technology, 142
Associate of Science degree in Radiologic Technology, 164; in Nuclear Medicine, 165
Associated Students, fee, 31
Association of American Law Schools, 13
Association of American Medical Colleges, 13
Association of American Universities, 13
Astronomy, 381
Astrophysics, major, 377
Athletic coaching, minor in, 109
Athletics, 45; scholarships, 35
Attendance, 52
Audited courses, 51
Awards, 38
Bachelor of Engineering options, 139
Bachelor of University Studies, 62; admission, 63; degree requirements, 64
Bachelor's degrees, see Degrees
Basic training, credit, 26
Bilingual education, composite major, minor, 104, 236
Biology, Department of, 211
Board, see Housing
Botany, see Biology
Branch Colleges and Residence Centers, 188
Breakage, 30
Bureau of Business Research, 15
Bureau of Personnel Training, 15
Business and Administrative Sciences, School of, 188; admission to, 80; BBA Program, 80; concentrations, 84; degrees offered, 79; courses offered, 216; graduation requirements, 82; scholastic regulations, 80; three-two program, 86
Business Education, courses offered, 265; curricula, 101; minor, 102; two-year secretarial program in University College, 66
Business Research, Bureau of, 15
Calendar, 4, 5
Campus and buildings, see campus maps at back of catalog
Career Services Center, 43
Center for Environmental Research and Development, 16
Center for Human Resources Development, 16
Center for Leisure and Recreation, 16
Certificate, admission by, 18
Certificates, 62, 90, 91, 159
Certification, Communicative Disorders, 227; Cytotechnology Program, 160; Dental Programs, 183; Medical Lab Programs, 159; Medical Technologist, 75; Nursing, 167; Pharmacist, 175; teacher, Arts and Sciences, 71
Certified Medical Laboratory Assistant Program, 159
Change in address, 28; in college, 29; in enrollment, 49; in grades, 48; program of studies, 49; in residence status, 31; in grading options, 50
Chemical Engineering, Department of, 274; curriculum, 131; laboratory, 131
Chemistry, Department of, 221
Chicano Studies, 227
Choreography, see Dance
Churches, see Religious life of Campus
Civil Defense Program, 187
Civil Engineering, Department of, 276; cooperative education program, 133; combined program, 133; curriculum, 133; honors, 132; laboratories, 133; accreditation, 13
Class hours, see Credit hours
Classical Languages, see Modern and Classical Languages
Classics, major and minor, 347
Classification of courses, 194
Clinical facilities, Nursing, 170
Clinical Science, courses in, 338
Collections, 14
College Enrichment Program, 16
College Entrance Examination Board, Advanced Placement Program, 19
College Level Examination Program, 20
College Work-Study Program, 37
Colleges of the University, see Arts and Sciences, 68; Business and Administrative Sciences, 79; Education, 90; Engineering, 125; Fine Arts, 145; Graduate School, 155; Law, 137; Medicine, 158; Nursing, 167; Pharmacy, 173; University, 60; See also Community College, 187
Combined curricula or programs, 71, 87; Engineering, 127, 133, 135, 176, 323, 382
Commencement, 56; see also Academic calendar
Communication Arts, composite in, 119
Communicative Disorders, Department of, 227
Community College, 187
Community Services, degree, 163; courses in, 342
Comparative literature, courses in, 229
Composite teaching areas in Elementary Education, 104; in Secondary Education, 118
Computational facilities, 133
Computer Science, in Electrical Engineering, 134, 140, 190; mathematics and statistics, 326
Computer Science option, 134, 140
Computers, 131, 133
Computing and Information Science, Division of, 190; courses offered, 231
Computing Center, 190
Concentrations in B & AS, 84; in music, 150; in Sec Ed, 116
Concerts, 15
Concurrent enrollment, 23
Conferences, 187
Construction option, 132
Continuing Education, 187
Contract, Housing, 33
Cooperative Education Program, in Civil Engr, 127; courses in, 273
Correspondence courses, see Independent study
Counseling, see Advisement
Counseling Center, 41
Course numbering system, 47, 194
Courses of Instruction, 194
Crafts, see Art
Credentials, 17, 21, 23, 155, 157, 176
Credit grade option, 48
Credit hours, 47
Curricula, see Colleges and Courses of instruction
Curriculum and Instruction, courses in, 242
Cytotechnology Program, 160
"D" grades, 22, 47, 69, 178
Dance, courses in, 404
Data Processing, course offered, 266
Deadline, for application, 4, 5, 17, 21; Dental
INDEX

Hygiene, 183; Graduate School, 155; Medicine, 158; Nursing, 167, Pharmacy, 176
Dean of students, 41
Deferment, Selective Service, 28
Degree requirements, 54; Arts and Sciences, 69; BUS, 64; B&AS, 82; Dental Hygiene, 186; Education, 98; Engineering, 129; Fine Arts, 146; Nursing, 172; Pharmacy, 179; University College, 62
Degrees, double, 55; offered, 62, 64, 68, 79, 80, 86, 91, 97, 126, 147, 148, 155, 157, 185
Dental Assisting, 183; courses in, 235; curriculum, 183
Dental Hygiene, 184; admission, 184; application deadline, 184, Associate of Science degree, 184; courses offered, 234; curriculum, 185; BS degree, 185; curriculum for BS, 186
Dental Programs, 183
Dentistry, see Pre-dentistry
Departmental Honors, 56; Education, 91; Civil Engr, 132; Elec Engr, 135; Engl, 294; Fine Arts, 146; Math, 326; Nursing, 170; Psych, 387
Dietetics, 112
Dining halls, see Housing
Diploma fee, see Graduation fee
Dishonesty in academic matters, 21, 53
Dismissal, disciplinary, 21, 52; see also Suspension
Distinction, degree with, 59
Distributed minors, 73, 196, 230, 294, 310, 319, 369, 382
Dividends and penalties, 98
Division of Computing and Information Science, 190
Division of Continuing Education, 187
Division of Government Research, 16
Division of Inter-American Affairs, 77
Division of Public Administration, 189
Doctor of Education, 91, 155
Doctor of Philosophy, 91, 106, 128, 155
Dormitories, see Housing
Dramatic Art, see Theatre Arts

Early admission, 19
Early Childhood Education, composite minor, 105
Economics, Department of, 236; Economics-Philosophy, 240
Education, Art, see Art Education
Education, Business, see Business Education
Education, College of, 90; accreditation, 90; admission, 93; certification, 90; degrees, 97; graduation requirements, 98; curriculum, 99
Education, Elementary, Department of, 102; composite minors, 104; curriculum, 102; minor, 104
Education, Music, see Music Education

Education Placement, see Career Services Center
Education Specialist, Certificate of, 90, 106
Educational Administration, courses in, 244
Educational Foundations, courses in, 246
Educational media, 245; see also Library Science
Educational Opportunity Grants, 39, 40
Electives in A&S, 73; in B&AS, 83, Latin American Studies, 319; Pharmacy, 180
Electrical Engineering and Computer Science, Department of, 281; accreditation, 13, 126, 281; curriculum, 135; Honors Program, 135; laboratories, 135; minor with math, 326
Electronics, see Electrical Engineering
Elementary Education, Department of, 248; curriculum, 104
Employment, student, 37; also see College work-study
Engineering, courses for non majors, 272
Engineering, College of, 125; accreditation, 13, 126; admission to, 126; combined curricula, 127; Cooperative Education, 127; curricula, 129; degrees offered, 126; graduate study, 128; graduation requirements, 129; maximum semester hour load, 129; scholastic regulations, 128
Engineers Council for Professional Development, 13
English, Department of, 294; Comparative Literature, 229; English-Philosophy, 299; Tutorial Program, 66
English-Philosophy, major in, 299
Enrollment, see Registration changes in Enrollment, 49
Ensemble music, 362
Entrance, see Admission
Estimate of expenses, 31
Ethnic Studies, see Afro-American Studies, Chicano Studies, Native American Studies
Ethnology, see Anthropology
Evaluation of transferred credits, 21, 22, 23, 177
Evening courses, 187; see Community College, 187
Examination, admission by, 19
Examinations, Advanced Placement, 19; American College Tests, 17; College Entrance Examinations, 19; College Level Examination, 20; to establish or validate credit, 21, 53; General Educational Development Tests, 19; regular, 53, special, 53
Expenses, 29; estimate of, 31
Extension courses and independent study, 187; acceptance in Engineering, 129; addition of, 51; allowed toward degree, 55; in graduate school, 156; transferred credit in, 23
Extracurricular activities, see Student services
INDEX 413

Faculty, see Courses of instruction
Federal Loan Program, 37
Fees, 29, 30, 31; undergraduate, 29; law and
graduate, 29, 31; Medical School, 29; pay­
ment, 30; refunds, 31; Special Services, 30
Fellowships, 155
Film, 405
Financial Aid, 35
Fine Arts, College of, 145; courses in, 300; ad­
mission to, 145; departmental honors, 146;
departments of, 145; graduation require­
ments, 146; scholastic standards, 146; tea­
er education, 146
Food Service Management, 113
Foreign language, see Modern and Classical
Languages
Foreign students, see International Students
Forestry, see Pre-forestry
Fraternities, 46
French, 348
Freshman orientation period, 27; see also Ac­
ademic calendar
Freshman programs, in A&S, 72; B&AS, 80; in
Dental Hygiene, 183; Educ, 100, 101, 102,
107, 111, 114, 117, 121; in Engr,
130; in Fine Arts 146, 147, 149, 152; in
Med Tech, 76; in Nursing, 172, in Pharmacy,
180; in 2-year secretarial program, 66
Freshmen, admission of, 17
Fulbright Program, 42
GI Bill, see Veterans
Galleries, art, 14
Gallup Branch College, 188
General academic regulations, 47
General Business curricula, in Educ, 101; minor,
102
General Educational Development tests, 19
General Studies, honors in, 57; B&AS, 83,
courses in, 301
General Honors Program, 56
Geography, Department of, 301
Geology, Department of, 305
German, 350
Goals of the University, 13
Government Research, Division of, 16
Grade points, 47, 49
Grades, 47; change in, 48; "D" on transfer, 22,
69; Honors courses, 48
Graduate assistants, 155
Graduate credit for courses offered, 194; for
extension and independent study, 187, 156;
for work taken as undergraduate, 55
Graduate Nurse examination, 167
Graduate Programs, 155; in Education, 91; in
Engineering, 128; in Fine Arts, 145
Graduate School, 155; admission to, 155;
course numbering, 155; degrees, 155; fees,
29, 30
Graduate Student Association fee, 31
Graduation, fees, 30; with distinction, 59; with
honors, 58; see also Degree requirements
and Degrees
Greek, 352
Guidance, 27, 41, 60
Guidance and Counseling, Department of, 250;
curriculum, 106; programs, 106
Harwood Foundation, 15
Health Education, courses in, 251; curriculum,
106; minor, 107
Health, Physical Education and Recreation, De­
partment of, 251; curricula, 106
Health Insurance, 43, 29
Health Service, 42; see also Student Health
Service
High school, admission from, 17
High school teaching curriculum; see Secondary
Education
History, Department of, 309; American Studies,
196
Home Economics, Department of, 260; in A&S,
112; curriculum, 111; in Education, 111;
Home Management fee, 30; laboratories, 97;
minor, 113
Home Economics Education, courses in, 262;
curriculum, 111
Honorary and Service Organizations, 46
Honors, degree with, 56; see also Departmental
honors
Honors work, 56
Housing, 33
Human Performance Laboratory, 97
Ibero-American Studies, 317
Incomplete, grade of, 48; removal fee, 30
Independent study courses, 187; addition of, 51
Index, scholarship, 49
Industrial Education, courses in, 267; curricu­
um, 113; laboratories, 97
Infirmary, see Student Health Center
Institute of Social Research and Development,
15; Bureau of Business Research, 15; Bureau
of Revenue Training Program, 15; Technol­
ogy Application Center, 15; Center for En­
vironmental Research and Development, 16;
Center for Leisure and Recreation, 16; Divi­
sion of Government Research, 16
Instrumental music concentration, 150
Instrumentation Engineering Technology, 127
Insurance plan, 43
Inter-American Affairs, Division of, 77
Intercollegiate athletics, 44
International Programs and Services, 42
International students, 26
Intramural programs, 45
Italian, 317

Jobs, see Employment
Johnson Gallery, 15
Journalism, Department of, 317
Junior college transfer from, 22

Laboratories, Education, 96, 97; Engineering, 131, 135, 138; language, 346
Laboratory Technology, Associate of Science degree in, 64
Language Laboratory, 346
Languages, see English, and Modern and Classical Languages
Late payment fee, 30
Late registration, 27; fee, 30
Latin, 353
Latin American Center, 77
Latin American Studies, 319

Law, School of, 157; accreditation, 157; admission, 157; courses in, 320; fees, 29
Learning Materials Center, 96
Liaison Committee of the Council on Medical Education of the American Medical Association, 13

Libraries, 14
Library Science Education, 245
Linguistics, 323; in A&S, 323, in Anth, 202; E/Ed 104; in Sec Ed, 120
Literature, see Comparative Literature, English and Modern and Classical Languages
Loan Funds, 36
Los Alamos Graduate Center, 189
Lower division, course numbering in, 47

Major and minor studies in A&S, 70, 73; distributed minor in A&S, 71; see also Courses of Instruction
Manzanita Center, 97
Maps, in back of catalog
Marine Corps, see Naval ROTC
Marking system, 47
Married student housing, 33

Master’s degrees, 155, in B&AS, 79, in Educ, 91, 106; in Engr, 128; in Fine Arts, 146
Mathematics and Statistics, Department of, 325
Mathematics 010 and 020, 325; fees, 29, 327
Matriculation fee, 29
Maxwell Museum of Anthropology, 14
Meals, see Housing
Mechanical Engineering, Department of, 136; Cooperative Education Program, 136; Combined MEMBA Program, 136; courses in, 288; curriculum, 137
Medical Biology, courses in, 338
Medical College Admission test, 158
Medical examinations, see Examinations
Medical Dietetic Nutritionist, 112; curriculum, 112; minor, 113
Medical Engineering Technology, 127, 142; courses in, 292; curriculum, 143
Medical Laboratory Assistant Program, 159
Medical Laboratory Sciences Program, 159; see also Medical Technology courses in, 341
Medical Laboratory Technician Programs, 64
Medical sciences, courses in, 338
Medical Technology, 75; program, 160; admission to program, 161; curriculum, 162; fees, 162
Medicine, School of, 158; accreditation, 13, 158; admission, 158; courses offered, 337; fees, 29, 159; Associate of Arts in Community Services, 163; Medical Lab Sciences Program, 159; Radiological Sciences Program, 164; see also Pre-medicine
Meteoritics, Institute of, 15
Military, residence for tuition purposes, 31
Military credits, 26
Military deferment, 28
Military training, 191; see also Air Force ROTC and Naval ROTC
Military withdrawal, 50
Minor studies, see Major and minor studies

Modern and Classical languages, Department of, 346; Comparative Literature major, 229; freshman placement, 346; laboratory, 346
Modern Languages, courses in, 346
Museums, 14
Music, Department of, 149; accreditation, 149; courses in, 359; curriculum, 149; NASM membership, 13, 149; fees, 360
Music, private instruction, see Applied music
Music Education, courses in, 365; curriculum, 151; minor, 265
Music Literature, historical, 151

National Architectural Accrediting Board, 13
National Association of Schools of Music, 13, 147
National Council for Accreditation of Teacher Education, 13
National League for Nursing, 13
National University Extension Association, 13
Native American Studies, 356
Navajo, 347
Naval ROTC, 193; in B&AS, 83; in Engineering, 127; in Pharmacy, 173
Naval Science, Department of, 366; curriculum, 192
New Mexico Division of Vocational Rehabilitation, 38
New Mexico Student Loan Program, 37
New Mexico Union, 44
News-Editorial Sequence, 317
Non credit courses, 187
Non-degree status, 24, 52, 187; credit limitations, 25; scholastic regulations, 187
Non-resident tuition, 29
North Central Association of Colleges, 13
Northern Branch College, 188
Nuclear Engineering, Department of, 138; Bachelor of Engineering options, 139; courses in, 291; curriculum, 139; laboratories, 138
Nuclear Medicine Technology, courses in, 345
Nursing, College of, 167; accreditation, 167; admission, 168; courses offered, 367; curriculum, 172; facilities, 170; federal loans, 170; graduation requirements, 172; honors programs, 170; licensure, 167; regulations, 171
Nursing student loans, 36
Off-campus branch colleges and residence centers, 188
Office training, see Business Education
Orchestra, see Music
Organ concentration, 150; see also Music
Orientation, 27; see also Academic Calendar
Painting, see Art
Paleoecology, courses offered, 369; minors in, 369
Parish, William J. Memorial Library, 14
Payments, see Fees, & Housing
Penalties and dividends, 98
Period minor, 230
Ph.D., see Doctor of Philosophy
Pharmacy, College of, 173; accreditation, 173; admission to, 176; courses offered, 369; curriculum, 179; licensure, 175; scholarships and loans, 174; scholastic regulations, 177
Philosophy, Department of, 373; Economics-Philosophy, 240; English-Philosophy, 299
Photography, see Art
Physical Education, 253; courses in, 253; curriculum, 106; minor, 108; see also Athletics
Physical examinations, see Examinations, medical
Physical science, 377
Physicians, University, 42
Physics and Astronomy, Department of, 377
Piano concentration, 150; see also Music
Political Science, Department of, 382
Popejoy Hall, 15
Portuguese, 353
Practice teaching, see Student teaching
Predentistry, 73
Pre forestry, 73
Preslow, 73
Premedicine, 73
Probation, 51
Professional Laboratory Experiences, 94
Professional organizations, 46
Program of Studies, change in, 31
Psychology, Department of, 386
Public Administration, Division of, 189; courses in, 392
Public laws, see Veterans
Public speaking, see Speech Communications
Publication, student, 46
Radio, see Electrical Engineering, Speech Communication, Tele-Communication Television-Radio
Radiological Sciences Program, 164; courses in, 343
Radiological Tech, 164
Rates, see Fees and Housing
Readmission, 23
Recitals, music, 149
Recreation, courses in, 258; curriculum, 110; minor, 110
Recreational facilities, 45
Refunds, 31
Regents of the University, 6
Registration, 27; changes in dates for, 4, 5; fees, 29; orientation, 27
Regulations, general academic, 47; see also Attendance, Housing, Scholastic
Religious life on campus, 45
Remedial reading, 41, 243
Remedial speech see Communicative Disorders
Repetition of course, 51
Research and Development, Institute of, 15
Reservations, see Housing
Residence Centers, off-campus, 188
Residence credit definition, 54
Residence credit requirements, 54; in major and minor, 54
Residence halls, see Housing
Residence status, 31
Residence tuition, 29
Responsibility, student, 28
Retardation, mental, minor, 123
Revenue Training Program, Bureau of, 15
Romance languages, see Modern and Classical Languages
Room and board, see Housing
Room reservations, see Housing
ROTC, see Air Force and Naval
Russian, 354
Russian Studies, 393
Scholarship index, 49
Scholarships and loans, 35, 36; Pharmacy, 174
Scholastic regulations, 51
Scholastic status, 51
Science, composite in, 119
Secondary Education, Department of, 115; composites, 118; courses in, 263; curriculum, 117
Secretarial program, two-year, 66
Selective Service regulations, 28
Semester hours, see Credit hours
Senior residence requirements, see Residence requirements
Service credits, see Military credits
Service organizations, 46
Shop, see Industrial Education
Shorthand, see Business Education
Social groups, 46
Social Studies, composite in, 105, 119
Sociology, Department of, 394
Sororities, social, 46
Southwestern Biology, Museum of, 14
Spanish, 355
Special Education, Department of, 270; curriculum, 122; minor, 123
Special Physical Education Pool, 97
Special Services Program, 16
Speech Communication, Department of, 398; emphasis in communication disorders, see Communicative Disorders; emphasis in Telecommunication, 398
Statistics, see Mathematics & Statistics
Student aids, see Financial aid
Student Bar Association, 157
Student employment, see Financial aid
Student Health Center, 43
Student health insurance, 43
Student organizations, 45
Student payment record, 29
Student publications, 46
Student services, 41
Student teaching, 94; Elementary, 96; Secondary, 95
Student welfare, see Student services
Students, Dean of, 41
Students from other countries, 26; see also International students
Subject matter preparation, 18
Summer Session, see Academic calendar
Suspension, 52
Swahili, 359

Tamarind Institute, 154
Teacher Education Program, 92
Teachers, certification of, 90; placement, 43
Teaching, see Education, College of
Teaching English to speakers of other languages, 120
Technical institutes, credit from, 23
Technology Application Center, 15
Telecommunication, emphasis in, 398
Television-Radio Sequence, 317
Testing Division, 67

Tests, see Examination
Theatre Arts, Department of, 401; curriculum, 152; major and minor, 401
Theory and composition, concentration, music, 150
Therapeutic Physical Education Laboratory, 97
Therapeutic Physical Education Playground, 97
Three-two program in B&AS, 86
Tourism, see Food service management
Traineeships, 155
Transcripts, 21; see also Credentials
Transfer from University College, 62; to A&S, 69; B&AS, 81; BUS, 63; Educ, 93; Engr, 126; Fine Arts, 145; Nursing, 168; Pharmacy, 177
Tuition, 29; tuition and fees, 27
Two-year Secretarial Program, 66
Typewriting, see Business Education
Unaccredited institutions, admission from, 23
Undergraduate Seminar Program, 58; courses in, 301
Uniforms, AFROTC, 191; NROTC, 193
Union, see New Mexico Union, 44
University Art Museum, 14
University College, 60; admission requirements, 61; Bachelor of University Studies, 62; certificate of completion, 62; transfer from, 62
University Studies, Bachelor of, 62; admission to, 63; degree requirements, 64
Upper division, course numbering in, 47
USAFi courses, acceptance of, 27
Validation, college credit, 21
Veterans, admission of, 26
Veterans Affairs, see Counseling Center
Vocational Counseling, see Counseling Center, 41
Vocational Guidance, 41
Vocational Rehabilitation, 38
Voice, see Music
Wind instruments, see Music
Withdrawal, from a course, 49; from the University, 50; military, 50; refunds, 31

Women Studies Program, 405
Women's Center, 44
Work, see Employment
Work Study Program, see College Work-Study Program
Workshops, dance, 404; Education, 215
Writing, see English

Zimmerman Library, 14
Zoology, see Biology
Zuni, 347