Located at the hub of five valleys, the University of Montana’s main campus is bordered by the Clark Fork River, Mount Sentinel and an attractive Missoula residential district. With more than 6,500 students, faculty and staff members, the University community supplements the local population of more than 36,500. The location and environment of the University of Montana make it an ideal spot for learning and leisure. The curriculum stresses liberal arts, fine arts, science, education, business, pharmacy, journalism, forestry and law. Cocurricular activities, ranging from year-round recreation to participation in student affairs, fill the social calendar.
The pastels of autumn contrast with the deep blue of the “Big Sky” as fall quarter begins at the University of Montana. The days grow shorter and the evenings brisk as the chill of a fading year brings a quickening pace to studies and student life on the Missoula campus. Pictured above is Main Hall, the first structure constructed on campus and the present administration building.
Students stroll on tree-shaded walks lining acres of green grass during summer session. Missoula's gentle climate contributes to a pleasing academic environment. Pictured above is Knowles Hall, one of the University's modern residence halls conveniently located near classroom buildings, the student activity center and parking lots.
During winter months, University of Montana students enjoy snowshoeing, skiing, luge racing and sledding on mountains of unparalleled beauty. Summer is filled with sunny days for fishing, boating, water skiing and other water sports at the many lakes and streams near Missoula.

MONTANA: THE "BIG SKY" COUNTRY

Winter transforms Montana into a magic land of quiet serenity and awesome beauty. Snow-laden trees bow on the slopes of glistening mountains that tower over ice-topped rivers and frozen lakes. It is a land apart—and yet the same—for during every season, Montana is the spiritual home for those whose hearts belong to the outdoors.
MASON, Sudie

MASON, David

MARVIN, Edwin L., M.A., Harvard

MARTIN,

MARTINEAU, EARL W., B.A., University of Montana; Director of Foreign Languages

MARSILLO, Lino

MANSFIELD, Michael

MANNING, William M., M.Mus., Drake University; Assistant Professor of Chemistry

MALOUF, Kenneth V., Ed.D., Harvard University; Professor of Philosophy

FRED JANE (Mrs.), M.Mus., College Conservatory of Music of Cincinnati; Assistant Professor of Music

LEAPART, C. W., S.J.D., Harvard University; Dean Emeritus and Professor Emeritus of Law

Lester, John L., B.Mus., Southwestern University; Professor of Music

LEWIS, George D., M.Mus., University of Montana; Assistant Professor of Music

LEWIS, Harley W., M.S., University of Montana; Track and Cross Country Coach and Instructor in Health and Physical Education

LEWIS, Venetta (Mrs.), M.Ed., University of Montana; Assistant Professor of Forestry

LIE, Robert C., M.A., Harvard University; Professor Emeritus of Business Administration

LIU, Jane Jin-Ping, M.L.S., University of Pittsburgh; Catalog Assistant in the Library (Instructor)

LOGAN, John F., Ph.D., University of Texas; Assistant Professor of Forestry

Lohn, Sherman V., LL.M., Harvard University; Lecturer in Law (part-time)

Loomis, Emma B., (Mrs.), M.A., University of Montana; Assistant Registrar (Instructor)

Lorenz, Marvin M., M.S., University of Washington; Assistant Professor of Health and Physical Education

Loring, Emily (Mrs.), M.A., University of Montana; Instructor in Political Science

Lory, Earl C., Ph.D., Johns Hopkins University; Professor of Chemistry

Lott, Leo B., Ph.D., University of Wisconsin; Chairman and Professor of Political Science

Lottick, Kenneth V., Ed.D., Harvard University; Professor of Education (on leave Winter Quarter 1967)

LOWE, James H., Jr., Ph.D., Yale University; Assistant Professor of Forestry

LYON, L. Jack, Ph.D., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

Magar, Edgar E., Ph.D., University of California; Assistant Professor of Chemistry

Malouf, Carlingen I., Ph.D., Columbia University; Professor of Anthropology

Mannis, Merle E., Ph.D., University of Oregon; Assistant Professor of Mathematics

Manning, William M., M.Mus., Drake University; Assistant Professor of Music

Mathew, Michael J., M.A., University of Montana; Professor of History (on leave)

Marcello, Lino A., LL.B., University of Montana; Lecturer in Business Administration (Management) (part-time)

Martell, Earl W., B.A., University of Montana; Director of Student Activity Facilities; Business Manager of Athletics (Instructor)

Martin, Ruby R. (Mrs.), M.A., University of Montana; Lecturer in Foreign Languages

Martinson, Alvin J., M.Ed., University of Montana; Acting Chairman and Associate Professor of Business Education and Office Administration (Business Administration)

Marvin, Edwin L., M.A., Harvard University; Chairman and Professor of Philosophy

Mason, David R., S.J.D., Harvard University; Dixon Professor of Law

Mason, Susan D. (Mrs.), M.S., University of Tennessee; Instructor in Home Economics (part-time)

Mattill, Charles R., M.Ed., University of Montana; Assistant Professor Emeritus of Education

McGiffert, Robert C., M.A., Ohio State University; Visiting Lecturer in Journalism

McGinnis, Ralph Y., Ph.D., University of Denver; Professor of Speech Pathology and Audiology

McHugh, Helga H. (Mrs.), M.Ed., University of Montana; Instructor in Home Economics (part-time)

McLaverty, Bernard J., M.D., Jefferson Medical College; Lecturer in Pathology and Medical Technology, Department of Microbiology (Faculty Affiliate)

Means, Harwood F. (Lt. Col.), M.A., George Washington University; Chairman and Professor of Aerospace Studies (Faculty Affiliate)

Means, John R., Ph.D., University of Colorado; Assistant Professor of Psychology

Medley, Bruce E. (Capt.), B.S., University of Oklahoma; Assistant Professor of Aerospace Studies (Faculty Affiliate)

Merriam, Harold G., Ph.D., Columbia University; Professor Emeritus of English

Merrill, A. S., Ph.D., University of Chicago; Vice President Emeritus; Dean Emeritus of the Faculty; Professor Emeritus of Mathematics

Metcalfe, Marilyn, M.A., Indiana University; Instructor in Foreign Languages

Meyer, Raleigh R. (Major), B.A., University of Oregon; Associate Professor of Military Science (Faculty Affiliate)

Midgent, Adelaide S. (Mrs.), B.A., University of Montana; Assistant Catalog Librarian (Assistant Professor)

Miller, Charles N., Ph.D., University of Michigan; Assistant Professor of Botany

Miller, Donald C., M.A., University of South Dakota; Assistant Professor of Journalism

Miller, J. Earl, Ph.D., University of Illinois; Professor Emeritus of History

Miller, Paul D., J.D., University of Montana; C.P.A., Montana; Assistant Professor of Business Administration (Management)

Mills, George H., Ed.D., University of Illinois; Professor of Education

Mills, Douglas E., M.A., University of California; Head of Technical Services and Acquisitions Librarian (Associate Professor)

Mills, Kelsey C., Ph.D., Tulane University; Lecturer in Medical Microbiology (Faculty Affiliate)

Milenkov, Fannie E. (Mrs.), M.S., Washington State University; Associate Professor of Home Economics (Accounting)

Mitchell, George L., LL.B., University of Montana; Assistant Professor of Business Administration (Management)

Moore, Lois H., Ph.D., Occidental College; Assistant Professor of English

Moore, John E., M.A., University of Michigan; Professor of English

Morris, Melvin S., M.S., Colorado State University; Professor of Forestry

Munro, James J., R., Ph.D., University of Washington; Associate Professor of Education

Musselman, Joseph A., Ph.D., Syracuse University; Associate Professor of Music

Mutch, Robert W., M.S., University of Montana; Research Associate in Forestry (Faculty Affiliate)

Myers, William M., Ph.D., Ohio State University; Chairman and Professor of Mathematics

Nakamura, Mitsuru J., Ph.D., Boston University; Chairman and Professor of Microbiology

Nash, James J., M.A., University of Hawaii; Visiting Instructor in Geography

Nelson, Rita (Mrs.), B.A., University of Montana; Assistant Acquisitions Librarian and Serials Librarian (Assistant Professor)

Newman, William, M.S.L.S., Columbia University; Reference Librarian (Assistant Professor)

Nielson, Thomas J., Ph.D., University of Wisconsin; Associate Professor of Forestry

Nishman, Joan L., M.A., Columbia University; Instructor in Art

Noltemacher, Patricia J. (Mrs.), M.A., Northwestern University; Instructor in Foreign Languages (part-time)

Nor, Ronald V., B.S., University of Wisconsin; Head Basketball Coach; Instructor in Health and Physical Education

Orland, Lloyd, M.Mus., Northwestern University; Professor of Music

Olson, Jack R., Ph.D., Ohio State University; Visiting Assistant Professor of Speech Pathology and Audiology

Ornesbee, R. A., Ph.D., Brown University; Lecturer in Biochemistry, Department of Microbiology (Faculty Affiliate)
UNIVERSITY OF MONTANA
CALENDAR 1967-68

See Law School section of catalog for Law School Calendar
(Semester System)

1967

AUTUMN QUARTER

September 18-23, Monday through Saturday Orientation
September 21, 22, Thursday and Friday Registration
September 25, Monday Instruction begins
November 11, Saturday Veterans' Day, a holiday
November 23, Thursday Thanksgiving Day, a holiday
December 17-18, Monday through Friday Examinations
December 15, 5:20 p.m. Christmas recess begins

1968

WINTER QUARTER

January 3, Tuesday Registration
January 3, Wednesday Instruction begins
February 17, Saturday Charter Day
March 11-15, Monday through Friday Examinations
March 15, 5:20 p.m. Winter Quarter ends

SPRING QUARTER

March 25, Monday Registration
March 26, Tuesday Instruction begins
June 3-7, Monday through Friday Examinations
June 7, 5:20 p.m. Spring Quarter ends
June 9, Sunday Commencement

SUMMER QUARTER

June 17, Monday (9 week and First Half-Session) Instruction begins
July 4, Thursday Independence Day, a holiday
July 17, Wednesday First Half-Session ends
July 18, Thursday Second Half-Session begins
August 18, Friday, 5:20 p.m. Summer Quarter ends

AUTUMN QUARTER

September 23-28, Monday through Saturday Orientation Week and Registration
September 26-27, Thursday and Friday Registration
September 30, Monday Instruction begins
November 11, Monday Veterans' Day, a holiday
November 28, Thursday Thanksgiving Day, a holiday
December 16-20, Monday through Friday Examinations
December 20, 5:20 p.m. Autumn Quarter ends

OFFICIAL DIRECTORY, 1966-1967

EXECUTIVE BOARD

Mrs. Robert Haugen, Missoula
Theodore Jacobs, Missoula
Alex M. Stepanoff, Missoula

ADMINISTRATIVE OFFICERS

Robert T. Pantzer, LL.B. President
Laurence E. Gale, Ph.D. Academic Vice President
Norman E. Taylor, Ph.D. Administrative Vice President
Calvin L. Murphy, B.A. Business Manager and Controller
James L. Athearn, Ph.D. Dean, School of Business Administration
Nathan E. Blumberg, Ph.D. Dean, School of Journalism
Charles W. Bolen, Ph.D. Dean, School of Fine Arts
Arnold W. Bolle, D.P.A. Dean, School of Forestry
Linus J. Carleton, Ed.D. Acting Dean, School of Education
Robert W. Coonrod, Ph.D. Dean, College of Arts and Sciences
Fred S. Honkala, Ph.D. Dean, Graduate School
Robert E. Sullivan, LL.B. Dean, School of Law
Robert L. Van Horne, Ph.D. Dean, College of Pharmacy
Earle C. Thompson, M.L.S. Dean of Library Services
Walter C. Schwank, Ph.D. Coordinator of Summer Session
Andrew C. Cosgwell, M.A. Dean of Students
Maurine Clow, Ph.D. Associate Dean of Students
Robert B. Curry, M.D. Director of Health Service
Robert E. Gorman, Ed.D. Director of Counseling Center
Charles E. Hoon, M.A. Director of Placement
Leo Smith, M.A. Registrar
Homer E. Anderson, M.A. Director of Admissions
Robert B. Blakey, B.S. Director of Food Services
James A. Brown, M.S. Director of Housing
Keith T. Larson, B.A. Manager of Family Housing
Thomas J. Collins, B.S. Administrative Assistant to the President; Director of Public Service
Hugh F. Edwards, M.E. Executive Secretary, Alumni Association
James A. Parker, B.S. Director of Physical Plant
Lawrence D. Stuart, B.A. Director of Information Services
Jack Swarthout, B.A. Director of Athletics

THE FACULTY

Adams, Haby F., M.S., University of Washington; Head Track Coach Emeritus; Professor Emeritus of Health and Physical Education
Adams, Alfred C. (Major), B.A., Norwich University; Associate Professor of Military Science (Faculty Affiliate)
Alexander, Paul B., Ph.D., University of Oregon; Assistant Professor of Geography (on leave Spring Quarter 1967)
Allen, Charles K., Ph.D., Ohio State University; Assistant Professor of Psychology
Alt, David D., Ph.D., University of Texas; Assistant Professor of Geology
Armstrong, R. B., Ph.D., State University of Iowa; Professor of Psychology
Anderson, C. LeRoy, Ph.D., Ohio State University; Assistant Professor of Sociology
Anderson, Hal E., B.S., Central Washington State College; Research Associate in Forestry (Faculty Affiliate)
Anderson, Homer E., M.A., University of Montana, Director of Admissions (Instructor)
Andrews, Eugene M., University of Washington; Professor of Music
Anuwyn, Keith (La. Col.), B.A. University of Wyoming; Chairman and Professor of Military Science (Faculty Affiliate)
Armstrong, Lucille J. (Mrs.), B.A., University of Montana; Assistant Professor Emeritus, President's Office
THE MONTANA UNIVERSITY SYSTEM

The Montana University System is constituted under the provisions of Chapter 92 of the Laws of the Thirteenth Legislative Assembly, approved March 14, 1913. The general control and supervision of the University System are vested in the State Board of Education—Ex-Officio Regents of the Montana University System. For each of the component institutions there is a local executive board.

MONTANA STATE BOARD OF EDUCATION
Ex-officio Regents of the Montana University System
TIM HANCOCK, Governor, Ex-Officio President
PORRIS H. ANDERSON, Attorney General, Ex-Officio
HARRIET E. MILLER, Sup't of Public Instruction, Ex-Officio
JOHN E. FRENCH, Secretary of State, Ex-Officio
D. MULLENDORE, 1928
CHARLES P. MOORE, 1938
JOHN E. O'NEILL, 1970.
A. A. ARBOGAST, 1971
MAURICE E. RICHARD, 1972
MRS. JOE C. KING III, 1973
BOYD G. PAIGE, 1974

The University System comprises the following institutions, schools, and departments:

THE UNIVERSITY OF MONTANA, MISSOUA
Established February 17, 1893, and consisting of
The College of Arts and Sciences
The School of Law
The School of Pharmacy
The School of Forestry
The School of Journalism
The School of Business Administration
The School of Education
The School of Fine Arts
The Summer Session
The Graduate School
Robert T. Pantzer, President

MONTANA STATE UNIVERSITY, BOZEMAN
Established February 16, 1893, and consisting of
The College of Agriculture
The College of Engineering
The College of Letters and Science
The College of Professional Sciences
School of Architecture
School of Art
School of Education
School of Home Economics
School of Nursing
The College of Graduate Studies
The Summer Session
The Division of Student Affairs and Services
The Agricultural Experiment Station
The Montana Grain Inspection Laboratory
Leon H. Johnson, President

THE MONTANA COLLEGE OF MINERAL SCIENCE AND TECHNOLOGY, BUTTE
Established February 17, 1893, and consisting of
The Curriculum in Mining Engineering
The Curriculum in Metallurgical Engineering
The Curriculum in Mineral Dressing Engineering
The Curriculum in Geological Engineering
The Curriculum in Petroleum Engineering
E. G. Koch, President

WESTERN MONTANA COLLEGE, DILLON
Established February 23, 1893, and consisting of
The Four-year Course in Teacher Education, Elementary and Secondary
The Summer Session
The Teacher Service Division
The Graduate Division
James E. Short, President

EASTERN MONTANA COLLEGE, BILLINGS
Established March 12, 1925, and consisting of
The Division of Education
The Division of Elementary, Secondary, and Graduate
The Division of Humanities
The Division of Language and Literature
Stanley J. Heywood, President

NORTHERN MONTANA COLLEGE, HAVRE
Established March 8, 1929, and consisting of
The Four-Year Course in Teacher Education, Elementary, Secondary and Vocational-Technical
The Three-Year Associate Degree Program in Engineering Technology
The Two-Year Associate Degree Program in Nursing
Joseph R. Crowley, President

PURPOSE OF CATALOG

The catalog provides information to be used by prospective students, their parents, their teachers, and advisers; by college students, faculty members, and administrative officers; by registrars and accrediting agencies. It also provides a historical record.

The catalog is planned to furnish the prospective student with information needed for selecting a school and making long-range educational plans leading to a chosen career. Students without well defined objectives may attend for a year or two as "general" majors, taking courses that meet general requirements for graduation and that provide general education as a foundation for more specific work selected not later than the end of the sophomore year.

USE OF CATALOG

1. Students should study with care those sections on REGISTRATION AND GENERAL REGULATIONS and on GRADUATION REQUIREMENTS. This information should be reviewed before registration periods.

2. When checking on particular courses, be sure to review COURSE DESCRIPTIONS (see Index).

3. Detailed fall quarter class schedules carry course forecasts for winter and spring quarters, for which detail is usually available by the middle of each preceding quarter.

4. If you have selected a major, study carefully the specific additional requirements for graduation listed under your chosen field. You are responsible for planning your program.

5. When in doubt as to meanings or interpretation of listed information, consult your adviser or department chairperson.

TABLE OF CONTENTS

Official Directory .................................................... 2
The University of Montana ........................................ 9
Accreditation .................................................. 9
Support and Endowment ...................................... 9
Control and Administration ................................ 9
Functions and Goals ........................................ 9
Campus and Facilities ....................................... 9
Requirements for Admission ................................ 10
Registration and General Regulations .................. 11
Degrees and Majors ........................................... 12
Requirements for Graduation ................................ 13
Summer Session ................................................ 15
The Graduate School .......................................... 15
Financial Obligations .......................................... 15
Student Services ............................................... 17
Standards of Student Conduct ................................ 18
Absences from Class ........................................ 19
Student Contracts and Obligations ......................... 19
Activities ...................................................... 20
Organization of Instruction ................................ 20
Course Numbering System .................................... 20
Explanation of Course Descriptions ..................... 20
Details of Curricula ........................................... 21
Index .................................................................. 79

UNIVERSITY OF MONTANA BULLETIN

Number 522 June, 1967
Published at Missoula, Montana. Issued four times yearly, February, March, June and July. Entered as second-class matter at the post office at Missoula, Montana 59801, under Act of Congress, August 24, 1912.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Role</th>
<th>Institution</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walters, H. A., Ph.D.</td>
<td>Associate Professor of Religion (Faculty Affiliate)</td>
<td>Pennsylvania State University</td>
<td></td>
</tr>
<tr>
<td>Wallace, Robert F.</td>
<td>Visiting Instructor in Psychology (Management)</td>
<td>Washington State University</td>
<td></td>
</tr>
<tr>
<td>Waldron, George F.</td>
<td>Professor of History</td>
<td>University of California at Los Angeles</td>
<td></td>
</tr>
<tr>
<td>Waldrop, Robert R., Ph.D.</td>
<td>Visiting Lecturer</td>
<td>University of Wisconsin</td>
<td></td>
</tr>
<tr>
<td>Walsworth, M. A., M.A.</td>
<td>Assistant Professor of Psychology</td>
<td>University of Wisconsin</td>
<td></td>
</tr>
<tr>
<td>Ward, Suzanne M., M.A.L.S.</td>
<td>Assistant Reference Librarian (Instructor)</td>
<td>University of Michigan</td>
<td></td>
</tr>
<tr>
<td>Watkins, John G., Ph.D.</td>
<td>Director of Clinical Training and Professor of Psychology</td>
<td>Columbia University</td>
<td></td>
</tr>
<tr>
<td>Watson, Frank J., M.A.</td>
<td>Associate Professor of Economics</td>
<td>Northwestern University</td>
<td></td>
</tr>
<tr>
<td>Weisberg, John P., Ph.D.</td>
<td>Professor of Geology</td>
<td>University of Illinois</td>
<td></td>
</tr>
<tr>
<td>Weggeman, Robert M., Ph.D.</td>
<td>Associate Professor of Geology</td>
<td>University of California</td>
<td></td>
</tr>
<tr>
<td>Wenczo, Eugene, B.Mus.</td>
<td>Professor of Music</td>
<td>Yale University</td>
<td></td>
</tr>
<tr>
<td>Wessel, George F., Ph.D.</td>
<td>Professor of Zoology</td>
<td>University of California at Los Angeles</td>
<td></td>
</tr>
<tr>
<td>Wendi, Rudolph, M.Mus.</td>
<td>Associate Professor of Music</td>
<td>Eastman School of Music</td>
<td></td>
</tr>
<tr>
<td>White, Elaine, M.A.</td>
<td>Associate Librarian and Reference Librarian Emeritus (Professor Emeritus)</td>
<td>University of Montana</td>
<td></td>
</tr>
<tr>
<td>White, Roy C., M.S.T.</td>
<td>Instructor in Education</td>
<td>University of Montana</td>
<td></td>
</tr>
<tr>
<td>White, William P., B.A.</td>
<td>Instructor in Speech (Spring Quarter 1967)</td>
<td>University of Montana</td>
<td></td>
</tr>
<tr>
<td>Whitmore, James M., Ph.D.</td>
<td>Associate Professor of Psychology</td>
<td>University of Colorado</td>
<td></td>
</tr>
<tr>
<td>Whitwell, David E., Ph.D.</td>
<td>Assistant Professor of Music</td>
<td>Catholic University of America</td>
<td></td>
</tr>
<tr>
<td>Wick, John H., Ph.D.</td>
<td>Associate Professor of Economics</td>
<td>University of Illinois</td>
<td></td>
</tr>
<tr>
<td>Wicks, Ronald B.A., Ph.D.</td>
<td>Visiting Lecturer in Music (part-time)</td>
<td>Washington State University</td>
<td></td>
</tr>
<tr>
<td>Williams, Ross, M.P.</td>
<td>Dean and Professor Emeritus of Forestry</td>
<td>Yale University</td>
<td></td>
</tr>
<tr>
<td>Wilson, Brenda F. (Mrs.)</td>
<td>Assistant Professor of Business Administration</td>
<td>University of Southern California</td>
<td></td>
</tr>
<tr>
<td>Wilson, John A., M.A.</td>
<td>Professor of Health and Physical Education</td>
<td>New York University</td>
<td></td>
</tr>
<tr>
<td>Winston, Donald, II, Ph.D.</td>
<td>Assistant Professor of Management</td>
<td>University of Texas</td>
<td></td>
</tr>
<tr>
<td>Woodsbury, George W., Ph.D.</td>
<td>Assistant Professor of Chemistry</td>
<td>University of Minnesota</td>
<td></td>
</tr>
<tr>
<td>Wren, John P., Ph.D.</td>
<td>Chairman of History</td>
<td>State University of Iowa</td>
<td></td>
</tr>
<tr>
<td>Wright, Benjamin W., M.A.</td>
<td>Lecturer in Sociology</td>
<td>University of Montana</td>
<td></td>
</tr>
<tr>
<td>Wright, Philip L., Ph.D.</td>
<td>Professor of Zoology</td>
<td>University of Wisconsin</td>
<td></td>
</tr>
<tr>
<td>Wright, Richard F., M.A.</td>
<td>Instructor in Political Science</td>
<td>University of Utah</td>
<td></td>
</tr>
<tr>
<td>Yates, Leland, M., Ph.D.</td>
<td>Associate Professor of Chemistry (in charge of the storeroom)</td>
<td>Washington State University</td>
<td></td>
</tr>
<tr>
<td>Zimmermann, Robert B., Ph.D.</td>
<td>Visiting Lecturer in Psychology</td>
<td>University of Wisconsin</td>
<td></td>
</tr>
</tbody>
</table>
The University of Montana was chartered on February 17, 1893, by the Third Legislative Assembly. Later legislation changed the name to the State University of Montana and Montana State University. On July 1, 1959, it again became the University of Montana.

Missoula is a city of about 50,000 located at an elevation of 3,205 feet on the western slope of the Rocky Mountains at the confluence of five valleys—Lower Flathead, Bitterroot, Clark Fork, Blackfoot, and Frenchtown.

ACCREDITATION. The University of Montana is fully accredited by the Northwest Association of Secondary and Higher Schools.

Each of the professional schools, or departments, with additional accrediting is approved by the appropriate national accrediting organization: the American Association of Colleges of Business, the American Chemical Society, the National Council on Accreditation of Teacher Education, National Association of Schools of Music, Society of American Foresters, American Council on Education for Journalism, Association of American Law Schools, and the American Council on Pharmaceutical Education.

SUPPORT AND ENDOWMENT. Federal land grants made available during territorial days were allocated to the University on its creation. It continues, however, to receive its main support in the form of biennial legislative appropriations and student fees. It also receives gifts, grants, and endowments for scholarships, teaching, development, and research from private and other sources. The University of Montana Foundation, among others, is a separately chartered and managed trust which receives, manages, and distributes private contributions for University purposes.

CONTROL AND ADMINISTRATION. Subject to the Constitution and statutes, general control and supervision of all Montana state institutions of higher education are vested in the eleven-member State Board of Education, ex-officio Regents of the Montana University System. There is also a local three-member Executive Board for each institution. The administration of each institution is vested in a president.

By statute the State's combined system of higher education is called the Montana University System. The office of the executive secretary is located in the State Capitol at Helena, Montana.

The right is reserved to change any of the rules and regulations of the University at any time including those relating to admission, instruction, and graduation. The right to withdraw curricula and specific courses as well as to impose or increase fees is similarly reserved. All such changes are effective at such times as the proper authorities determine and apply not only to prospective students but also to those who, at such times, are already enrolled in the University.

FUNCTIONS AND GOALS. The University of Montana is responsible for: (1) providing undergraduate education in the arts and sciences, (2) professional and advanced professional education based on a sound foundation of arts and sciences, (3) graduate education, including doctoral programs, in selected fields, (4) research and other creative activities supported by both public and private sources, and (5) maintaining a vigorous program of service as part of its responsibility to state and nation.

The University's program of undergraduate education makes available to the student a fund of knowledge pertaining to the world in which he lives and to the heritage of free men and institutions. It seeks to liberate his intellectual capacities for continued learning and to deepen his awareness of ethical and aesthetic values. These goals it fosters through (1) teaching that stimulates the student and inspires him to continue, on his own, the search for knowledge; (2) a campus environment that sustains the efforts of teachers and students to achieve the basic objectives for which the University exists; and (3) a curriculum that: (a) provides reasonable depth in the several liberal arts disciplines—the biological, physical and social sciences, the humanities, and the fine arts, (b) requires demonstrated literacy in use of the English language and encourages competence in foreign language, (c) provides opportunity for development of professional and technical competence as a practitioner in some field of endeavor by focusing knowledge and experience from many fields as it applies to the profession concerned, emphasizing the principles and methods basic to the field through study in areas fundamental to the profession, cultivating needed skills, and inculcating the profession's standards, (d) reveals man's great insights and discoveries of the past and stimulates the individual to seek new insights and discoveries, (e) provides maximum opportunities for each student to develop his individual talents and capacities, and (f) encourages a growing awareness of the significance of ethical values and the personal and social responsibilities of the educated person.

CAMPUS AND FACILITIES. The Main Campus at the foot of Mt. Sentinel spreads over 117 acres. There is an additional 624 acres on Mt. Sentinel. The South Campus consists of 154 acres and at present contains married student housing and the University Golf Course. The University also owns 286 acres at Ft. Missoula in Southwest Missoula. Educational facilities outside of Missoula include 26,850 acres of land in the Lubrecht Experimental Forest and 200 acres of Forestry Nursery. On Flathead Lake, about 90 miles north of Missoula, the University owns 167 acres on which is located the Biological Station.

The University's libraries have over 450,000 volumes in their collections, including extensive holdings of periodicals, microtext, government publications, and a special Northwest History collection. The Library is a regional depository for United States Government documents.

THE UNIVERSITY BIOLOGICAL STATION is located at Yellow Bay on the east shore of Flathead Lake, 90 miles north of Missoula. The University controls 300 acres, including four islands and also has permission to carry on investigation on Wild Horse Island which has an area of approximately 2,000 acres.

Facilities include an administration-recreation building, a four-room laboratory, three one-room laboratories, a kitchen and dining hall, three bath houses, thirty-five one-room and eleven two-room cabins, and as well as various maintenance buildings.

Construction of a $115,000 research laboratory began during the summer of 1966, supported by an NSF Grant, and will be ready in June, 1967.

During the summer, field courses and research in Botany and Zoology are offered for upper division and graduate students. By virtue of the station's location, there is opportunity for research in many fields of Biology.

For further information write to the Director, Biological Station, the University of Montana.

THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH of the School of Business Administration is set up to provide Montana businessmen with the types of statistics useful to them in conducting their businesses, to disseminate information of general interest on the economic and social aspects of the state; and to engage in studies in the areas of economic and other social sciences which show promise of making contributions to knowledge, or to the development of methods of analysis, regardless of whether such studies are directly related to the state.

Publications include the MONTANA BUSINESS QUARTERLY; the MONTANA TRADE ASSOCIATION DIRECTORY, issued annually; and various monographs. Contributors include members of the Bureau staff, the faculty, and on occasion, the student body.
THE FOREST AND CONSERVATION EXPERIMENT STATION, School of Forestry, the University of Montana, operates under Chapter 141, Laws of Montana of 1897. The Dean of the School of Forestry was designated as director. The Act specifies that the purpose of the Station is: "To study the growth and the utilization of timber. To determine the relationship between the forest growth, conservation and waterflow regulation; the forest and pasturage for domestic livestock and wildlife; the forest and recreation and those other direct and indirect benefits that may be secured by the maintenance of or the establishment of forest or woodlands. To study and develop the establishment of windbreaks, shelter belts and woodlots on the farms of the State. To study logging, lumbering and milling operations and development of the industry in connection with the products of forest soils with special reference to their improvement."

"To cooperate with the other departments of the Montana University System, the state forester and the state board of land commissioners, the state fish and game commission, the state livestock commission. the United States government and its branches as a land grant institution, or otherwise, in accordance with their regulations."

"To collect, to compile and to publish statistics relative to Montana forests and forestry and the influence flowing therefrom: to prepare and publish bulletins and reports to collect a library and bibliography of literature pertaining to or useful for the purpose of this act. To establish such field experiment stations ... accept for and in behalf of the State of Montana, such gifts of land or other donations as may be made."

The station is supported by funds appropriated by the Congress and the State of Montana, income from the sale of forest products, grazing, mining and special leases, and by private grants. Research is concentrated on the 27,000-acre Libby Experimental Forest, and at appropriate locations throughout the State—much of it in cooperation with private, state and federal agencies.

Information derived from research conducted by the staff is made available to the people of the State in printed bulletins, leaflets, and circulars.

WILDLIFE RESEARCH UNIT. The Montana Cooperative Wildlife Research Unit was established at the University of Montana in 1949. The Unit is staffed and supported cooperatively by the Montana Fish and Game Commission, the Fish and Wildlife Service of the U.S. Department of Interior, the Wildlife Management Institute of Washington, D.C., and the University of Montana.

The purpose of the Cooperative Wildlife Research Unit is stated in the Memorandum of Understanding signed by representatives of the above cooperating agencies as follows: "to provide full active cooperation in the advancement, organization, and operation of wildlife education, research, extension and demonstration programs ..."

The Montana Unit through its graduate research fellowship program investigates wildlife problems approved by the Unit Coordinating Committee in order to make it possible for the Commission to improve management of the wildlife resources for the benefit of the citizens of Montana. At the same time this research work carves on under the supervision of the Unit Leader and University Faculty contributes to the training of graduate students in the fields of Wildlife Management and Wildlife Biology.

Graduate work in wildlife may be taken within the area of concentration either in wildlife management or in wildlife biology. It will ordinarily require two years work beyond the Bachelor's Degree to fulfill the requirements for a degree of Master of Science in wildlife biology or a Master of Science in Wildlife Management. Concentration in the area of wildlife management will ordinarily lead to the degree of Master of Science in Wildlife Management.

The Cooperative Wildlife Research Unit allocates funds for three or more graduate research fellowships for students working toward the degree of Master of Science in Wildlife Biology or a Master of Science in Wildlife Management. Candidates for fellowships should submit formal applications with a transcript of college credits and letters of reference by March 1.

For further information with regard to curricula and requirements for graduate work in the wildlife field, write to the Unit Leader, Dean of the School of Forestry, or Chairman of the Department of Zoology.

UNIVERSITY MUSEUM contains anthropological, archaeological, art, botanical, geological, historical, and zoological collections. The historical and part of the Indian collections are on display in the Fine Arts Building, while the other collections are housed with the departments most intimately concerned.

The Historical and Indian displays are open to the public from 9:00 to 5:00 o'clock on Mondays through Thursdays and on Sundays from 2:00 to 4:00 o'clock while the University is in session. The other collections may be visited by request to the department concerned.

THE BUREAU OF PRESS AND BROADCASTING RESEARCH undertakes research and service projects as part of the program of the School of Journalism. It is responsible for THE MONTANA JOURNALISM REVIEW and other publications of value to the press and broadcasting media.

THE DIVISION OF EXTENSION AND PUBLIC SERVICE is the agency through which the University carries on off-campus activities and services. In it are the Extension Division, the School for Administrative Leadership, and the Division of Indian Services.

The division works directly with communities in surveys, institutes, forums, short courses, conferences and community action programs.

REQUIREMENTS FOR ADMISSION

Applications for admission should be sent to the Director of Admissions, University of Montana, Missoula, Montana, on forms which may be obtained from the high school principal or by writing to the Director of Admissions at the University. If possible, applications for admission should be sent in at least a month before registration. The following credentials are required: (a) Completed application and high school transcript on forms provided by the University of Montana. (b) Official transcript from each college attended, including institutions attended while in military service, carrying a statement of honorable dismissal from the last college attended. (c) A completed University Health Record Form signed by a qualified physician, and mailed by him directly to the University Health Service.

All new freshmen, and transfer students with less than a full year in college, are required to take the AMERICAN COLLEGE TESTING PROGRAM examination, preferably in October or December. The test is also offered in February, May and August. Complete information and registration forms are sent to all high schools well in advance of each test date. Check with your High School Counselor or Principal. If information is not available, write to the REGISTRAR, University of Montana, Missoula, Montana.

Results of these examinations are used for general advising purposes, to assist in identifying students with high potential who may be seeking scholarships, for placement in English, and as part of the information used to determine non-resident admissions.

New Freshmen who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance and have the results sent to the University, will pay the $6.00 registration fee and take it on campus before they register.

GENERAL ADMISSION. Applicants for admission must be of good moral character. Veterans of any branch of the United States Armed Forces should present a discharge marked other than "dishonorable."

Graduates of any fully accredited Montana high school or academy are admitted to regular standing. The completion of a high school or preparatory course of four years,
including three years of English and one year of American history and government, is the standard for regular admission.

NON-RESIDENT ADMISSIONS. Entering freshmen (no previous college work) must be in the upper 50 per cent of their high school graduating class. If rank in class is not available they must pass an entrance examination which establishes the equivalent level of competency. The American College Testing Program examination will be used for this purpose.

Non-resident transfer students must: (a) meet general admission requirements, (b) be eligible to return to the school from which they are transferring, and (c) have a C average on all college work attempted.

Changing schools or objectives may result in loss of time. Excess credits earned in completing a two-year course of study may not be used to decrease the two years usually required to complete senior college work at the University of Montana.

HIGH SCHOOL PREPARATION. Although general admission to the University is granted as indicated above, additional units of high school work are needed for certain admission requirements. High school courses should be chosen to meet requirements for the curriculum selected, otherwise additional time may be required in college. The student should check the curriculum of his choice and take in high school those courses listed as “needed” where such courses are indicated under “High School Preparation.” The recommended courses under “High School Preparation” would be helpful, but no loss of time would be involved if the student did not take them in high school.

STUDENTS FROM NON-ENGLISH SPEAKING COUNTRIES who wish to qualify for admission to the University must give evidence of proficiency in English. Students should arrange to take the Test of English as a Foreign Language (TOEFL). Requests for information on test procedures and applications should be directed to:

Test of English as a Foreign Language Educational Testing Service Princeton, New Jersey 08540

When the student arranges to take the test, he may request the Educational Testing Service (ETS) to send the examination results to the Director of Admissions, University of Montana, Missoula, Montana.

ADVANCE REGISTRATION FEE. For all new applicants, except graduate students, the registration fee of $15.00 ($22.50 semester) must accompany the application for admission. If the student registers, this fee is credited to his account. For entrance on the quarter (semester), for which application was made (see STUDENT FEES), but it is not refundable if the student fails to register for the term indicated for entrance. This fee will be refunded if admission is refused.

ADMISSION BY EXAMINATION. A person not a graduate of an accredited high school may meet regular admission requirements by passing examinations on not less than fifteen units of secondary school work. These examinations must cover the specifically required courses in English and American history and government. Credit is allowed the student for any courses taken in an accredited high school; thus the examinations need cover only those units of work lacking for general admission.

The State Superintendent of Public Instruction issues a high school equivalency certificate under authorization of the State Board of Education on the basis of the General Educational Development Tests, to service personnel, honorably discharged veterans and non-veteran adults, provided the applicant meets requirements. Detailed information will be sent on request.

EARLY ADMISSION may be granted to a limited number of high school students who have completed their junior year, with specific agreement and recommendation of the High School and the University.

CONDITIONAL ADMISSION. A person who has attended an accredited high school for four years, but lacks one course for graduation therefrom other than the required course in English and American history or government, will be admitted on condition that the deficiency is made up within a year.

ADMISSION OF MONTANA RESIDENTS BY TRANSFER. A transfer student who is a Montana resident must meet the final admission requirements by passing examinations on not less than fifteen units of secondary school work. These examinations must cover the specifically required courses in English and American history and government. Credit is allowed the student for any courses taken in an accredited high school; thus the examinations need cover only those units of work lacking for general admission.

When the student arranges to take the test, he may request the Educational Testing Service (ETS) to send the examination results to the Director of Admissions, University of Montana, Missoula, Montana.

ADVANCED PLACEMENT with college credit may be granted from high schools offering college level courses. Such courses are to be agreed upon in advance by the high school involved and the University. Suitable means of validation by comprehensive examinations will be determined by the University. Advanced placement examinations of the College Entrance Examination Board may be accepted.

ADMISSION AS SPECIAL STUDENTS. Persons 21 years of age or over who are not graduates of high schools, who cannot offer all the requirements for admission, and who are not candidates for degrees may be admitted as special students upon passing general aptitude and English placement tests and the submission of satisfactory evidence that they are prepared to pursue successfully the courses they desire. Such special students may acquire status as regular students and become candidates for degrees either (a) by taking entrance examinations or (b) by transferring to entrance credit sufficient credits earned in the University to make up all entrance requirements for admission to regular standing. A special student may not register for his seventh quarter of residence, including summer quarters, until all entrance units required for admission to regular standing are made up.

UNCLASSIFIED STUDENTS. Under certain circumstances, older students, permitted to select courses without reference to the requirements of any prescribed course of study, may register as unclassified students.

REGISTRATION AND GENERAL REGULATIONS

REGISTRATIONS are during Orientation week, in advance of, and at the beginning of other quarters. A student's registration is subject to approval by the appointed faculty advisor until choice of major field of study has been determined; after this choice, the head (or his delegate) of the department or school in which the curriculum is offered becomes the advisor. Students may not register after one week of classes.

ORIENTATION WEEK. The first week of autumn quarter is set aside for the orientation and registration of new students. The program includes: (1) Acquainting the student with the campus, the classroom buildings, and residence halls. (2) Explaining the University program in detail—the types of instruction offered and the careers for which a student may prepare at the University. (3) Various tests to help the student determine University aptitudes and the courses in which he or she will learn most effectively. (4) Social gatherings at which students become acquainted with fellow classmates, students of other classes, and members of the faculty. (5) Official registration in the University, with
the assistance of a member of the faculty in the selection of courses.

REQUIRED COURSES. Regular students must so arrange their studies, quarter by quarter, that they will normally complete all required courses and group requirements by the end of their third year at the University except in their field of specialization.

WAIVER OF PREREQUISITE. Instructors must file with the Registrar's Office a "Waiver of Prerequisite" form for any student allowed in a course without meeting the stated prerequisite.

MAXIMUM CREDIT LOAD. Except for students registering in an approved curriculum the maximum credit load is 18 hours. To be included within the maximum of 18 credit hours are English 001, Math 001, and Basic ROTC. Courses which carry no credit such as English 001, Math 001, and Basic ROTC. Courses which carry no credit count toward the maximum load according to the number of class hours per week.

All requests for credits beyond the maximum must be approved by the student's major dean (professional schools) or department chairman (College of Arts and Sciences).

MINIMUM SCHOLASTIC REQUIREMENTS. A student may be dropped from the University if placed on probation any quarter if his record is very unsatisfactory.

<table>
<thead>
<tr>
<th>Number of Credits Attempted</th>
<th>Minimum Cumulative GPA Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-44</td>
<td>1.5</td>
</tr>
<tr>
<td>45-89</td>
<td>1.6</td>
</tr>
<tr>
<td>90-134</td>
<td>1.7</td>
</tr>
<tr>
<td>135-149</td>
<td>1.8</td>
</tr>
<tr>
<td>150 or more</td>
<td>1.9</td>
</tr>
</tbody>
</table>

In order to graduate, a minimum grade-point average of "C" or 2.0 is required in (1) all college work attempted, (2) all college work undertaken at the University of Montana, and (3) all work attempted in the major field.

Students entering autumn quarter 1962 and thereafter who at the end of any quarter do not, based on credits attempted, attain and maintain grade-point averages (GPA's) as shown above are placed on scholastic probation.

Students placed, or continued, on probation are urged to check in at the Counseling Center for possible assistance.

A student, placed on scholastic probation, will be dropped at the end of the probationary quarter if his GPA for that quarter is below 2.0 even though his cumulative GPA may be above the minimum requirement. After two consecutive quarters on probation, a student will be dropped if his cumulative GPA falls below minimum standards.

A student dropped for the first time, after the lapse of three quarters from the time dropped, may be readmitted upon application to the Registrar. A student thus readmitted is on scholastic probation.

A student (a) dropped more than once, or (b) wishing to be readmitted after the first time dropped, before the lapse of three quarters, may be readmitted only by the Dean of the College or School to which he wishes to be admitted. A student so readmitted is on scholastic probation.

The burden of proving clearly that his case should be an exception to the rules is upon the student.

CHANGES IN PROGRAM OF STUDIES. Courses may be added during the first week of a quarter. After the first week, courses may be added only with the consent of the advisor, the instructor, and the student's Department Chairman (or Dean). To drop or add courses, change from credit to listener or vice versa, the student must secure a Drop/Add card from the Registrar's Office and return it to that office after getting the required signatures. Withdrawal from a course is permitted during the first three weeks of instruction with a "W" (withdrawal, no credit). Withdrawal after three weeks with a "W" or a change from credit to listener status will be granted upon petition only in exceptional cases and upon the signed approval of the student's advisor. An "F" will be assigned for a withdrawal after the 3rd week unless a petition has been granted. All exceptional requests will be reviewed by the faculty Graduation Committee whose decision will be final. Advisors are required to meet with the Graduation Committee or supply the Committee with a written statement in support of their advisee's petition for exceptional consideration.

WITHDRAWALS FROM THE UNIVERSITY. Students who withdraw from the University during a quarter are required to fill out withdrawal forms in the Registrar's Office. If this is not done the student will not be entitled to certification of honorable dismissal and "F" grades are assigned. When withdrawal forms signed by the Dean or Associate Dean of Students are filed before the end of the ninth week of a quarter grades of "W" are assigned. After the ninth week, the student who withdraws receives a grade: an incomplete, an F, or a completed grade with credit.

REPETITION OF A COURSE. If a course with credit earned is repeated and a passing grade or F is received, the first grade and credit are cancelled and only the credit attempted and last grade received are counted, even if the last grade is lower. A second F (or more) for a course does not cancel an F. Unless repeated with a passing grade, all hours of F for an attempted course are used in calculating the grade point average.

INDEPENDENT WORK. Credit is allowed superior students of junior and senior standing for independent work in topics or problems chosen by themselves with the approval of the departments concerned and with the supervision of instructors. Such work must be registered for at the beginning of the quarter. The student cannot obtain a larger number of credits than he is registered for, but a smaller number may be completed and credit obtained with the instructor's approval.

REGISTRATION UNDER P.L. 634 or 815. Subsistence payments from the Veterans' Administration are based on the number of hours of work for which the student is registered. A minimum of 14 credit hours is required for full payment.

UNIVERSITY EMPLOYEES' REGISTRATION. With approval of the school dean or departmental chairman and the Academic Vice-President, regular full-time employees of the University may register for programs of not more than 6 credits in a quarter.

DEGREES AND MAJORS

Bachelor's, Master's, Doctor of Education, and Doctor of Philosophy degrees are offered at the University of Montana.

The degrees Bachelor of Arts and Bachelor of Science are the degrees typically awarded upon completion of a four-year academic course in the arts and sciences. These degrees require satisfaction of the foreign language requirement and completion of a major—a concentration in a single discipline or stated interdisciplinary program—of not more than 70 quarter credits. The Bachelor of Science degree is awarded in Home Economics and in Health and Physical Education without a foreign language.

Professional degrees with stated exceptions, provide for a suitable emphasis upon knowledge and skills appropriate to the profession concerned, as well as for suitable background in other areas of knowledge including those basic to the profession. The degrees Bachelor of Arts in Business Administration (not the B.S. in Business Administration), Bachelor of Arts in Journalism, and Bachelor of Arts in Radio-Television require satisfaction of the foreign language requirement.

Details about degree requirements are found under the curricula listed alphabetically later in the catalog.

Graduate degrees offered at the University, including detailed degree requirements, are listed in the Graduate School bulletin which may be secured from the Dean of the Graduate School.
COLLEGE OF ARTS AND SCIENCES

Bachelor of Arts, with majors in:

- Anthropology
- Biology
- Botany
- Chemistry
- Economics
- Economics-Political Science
- Economics-Sociology
- English
- French
- Geography
- Geology
- German
- Health and Physical Science
- History
- History-Political Science
- Home Economics
- Music
- Music Education
- Philosophy
- Physics
- Political Science
- Political Science-Economics
- Pre-Medical Sciences
- Psychology
- Russian
- Social Welfare
- Sociology
- Sociology-Economics
- Speech Communication, Speech Pathology and Audiology
- Zoology

Bachelor of Science, with majors in:

- Chemistry
- Health and Physical Education
- Home Economics
- Health and Physical Science
- History
- History-Political Science
- Home Economics
- Music
- Music Education
- Philosophy
- Physics
- Political Science
- Political Science-Economics
- Pre-Medical Sciences
- Psychology
- Social Welfare
- Sociology
- Sociology-Economics
- Speech Communication
- Speech Pathology and Audiology
- Zoology

SCHOOL OF FINE ARTS

Bachelor of Arts, with majors in:

- Art
- Drama
- Music

Bachelor of Fine Arts with major in Art

Bachelor of Music, with majors in:

- Applied Music
- Music Education
- Theory or Composition

PROFESSIONAL SCHOOLS

Bachelor of Arts in Business Administration
Bachelor of Science in Business Administration
Bachelor of Arts in Education
Bachelor of Science in Forestry
Bachelor of Science in Resource Conservation
Bachelor of Arts in Journalism
Bachelor of Science in Pharmacy
Bachelor of Arts in Radio-Television

ADVANCED PROFESSIONAL DEGREES

Bachelor of Laws
Juris Doctor

REQUIREMENTS FOR GRADUATION

CATALOG GOVERNING GRADUATION. A student may graduate under University requirements for the year in which he was enrolled for the first time in any institution of higher education in the United States, provided he completes graduation requirements within a continuous six-year period. If a student interrupts his attendance a year or more he must graduate under a later catalog than that under which he entered. A change of major requires the student to change only to major course requirements in effect at that time. A student may, with the approval of his Dean or Department Chairman, graduate under a later catalog than that under which he entered.

CANDIDACY FOR A DEGREE. Students of the University who are admitted as candidates for a degree must have satisfied the following conditions: (a) they must have fulfilled the entrance requirements of regular students; (b) they must complete the general University requirements shown in the following paragraphs. Students who are can-

CREDITS REQUIRED FOR A DEGREE. Normally credits assigned to a course are equated in the following way: one credit for each 45 minutes of lecture or with two hours of preparation for the lecture expected of the student. Credit granted for laboratory work is normally one credit for each 45 minutes of lecture and one credit for each two hours of laboratory session. A total of 180 credits plus six credits earned in required physical education and any credits in Basic ROTC is necessary in all courses for graduation with a bachelor's degree except that more are required in Forestry, Law and Pharmacy. Candidates for the degree of Bachelor of Science in Forestry must complete 192 credits in addition to regular requirements in Physical Education. Candidates for the degree of Bachelor of Laws or Juris Doctor must complete three years of Law totaling 90 semester hours in addition to the entrance requirements of the School of Law. Admission requirements of candidates for the degree of Juris Doctor include graduation from an approved college or university. Candidates for the degree of Bachelor of Science in Pharmacy must complete a five-year course. Candidates for the Bachelor of Arts degree in the College of Arts and Sciences must complete 93 credits in that college, except that credits in Art and Drama may be included.

GRADING SYSTEM. The class work of the student will be rated on a system of letter grades:

A—Work of the best grade; B—work better than average; C—average work; D—work below average but barely passing; F—failure; P—pass without defining the grade, applies only to (1) non-credit courses, and (2) certain seminars and other courses in the 300-600 series stressing independent work, which are designated by the department or school and announced in advance. The P grade must apply to all registrants in the course in the quarter concerned. The grade I—incomplete, is given if all the work in a course has not been completed and there is sufficient reason for this. An I will be changed to an F if the work is not completed during the student's next quarter of residence.

In research and thesis courses the letter "n." not accompanied by a grade, is assigned at the end of each quarter to indicate that the student is entitled to continue the course; upon completing the course, a grade is given which applies to the whole course.

Grade points are computed as follows: 4 grade points for each credit of A; 3 grade points for each credit of B; 2 grade points for each credit of C; 1 grade point for each credit of D. In a subject in which an "incomplete" grade has been received, grade points are counted only after this incomplete has been removed.

The cumulative grade-point average is computed by dividing total grade points earned by the total number of hours undertaken, excluding courses in which grades of W, P, I, or N (unfinished continuous course) are received.

QUALITY OF WORK. A minimum grade point average of "C" or 2.0 is required in (1) all college work attempted, (2) all college work undertaken at the University of Montana, and (3) all work attempted in the major field.

To continue in third year major courses, at least a 2.0 (C) average is required on all credits previously registered for and for which final grades have been received in major courses. This also applies to teaching majors.

CREDITS REQUIRED FOR A MAJOR. Students may be required to complete from 45 to 70 credits in the chosen field. For degrees in education, the number of credits is from 40 to 70. In curricula allowing 5 credits of a survey course to count as part of major requirements, the total maximum of 70 credits allowed in the major includes these 5 credits. This rule on maximum credits allowed does not apply in the Schools of Business Administration, Forestry, Journalism, Law, Music, or Pharmacy. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.
CREDIT LIMITATIONS. Not more than 70 credits in one foreign language and not more than 90 credits in all foreign languages may be counted towards graduation in that area.

Not more than 90 credits of English, Drama, and Speech for a combined major and teaching minor may be counted toward graduation.

Not more than 18 credits in advanced ROTC courses nor 15 credits in religion may be counted towards graduation. Credit in denominational religion courses is not accepted.

Except in the Music Department, not more than 12 credits in applied music (Music 100, 101 through 403, 151 through 453, 114 through 119; 125, 126, 127, 129) nor 6 credits in ensemble music (Music 105 through 110, and 140) may be counted towards graduation.

Only students majoring in Business Administration, or those taking a teaching major or minor in Business Administration are allowed to present more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189 and 190-191.

CORRESPONDENCE STUDY. Up to 30 credits earned by correspondence study may be counted towards graduation.

CREDIT BY EXAMINATION. Under certain circumstances, a student may challenge and receive credit for a course in which he has not been regularly registered. The challenge system does not apply to law or pre-law courses.

Each school or department determines which, if any, courses within the department may be challenged. The dean of the school or head of the department must approve any arrangements prior to testing for challenge credit.

A student must have a 2-point grade average in all courses in which he has registered and an entering freshman must have a scholastic record equivalent to a 2-point grade average in order to challenge a course.

A student who has credit for equivalent material in high school cannot receive University challenge credit for it.

Challenge credit will be granted on a grade of B or better earned in an examination which must be at least in part written.

Maximum challenge credit allowed is 30 credit hours with no more than 20 credit hours in any one department.

A fee of $3.00 per credit hour is charged. Such examinations are available only to regularly enrolled students.

SPECIALIZATION. A student must select a major field of study before entering the junior year at the University.

REQUIRED COURSES. All candidates for the Bachelor's degree must meet the following requirements:

1. Physical Education, 6 quarters (6 credits), required of all students unless excused for cause. Discharged veterans and students 27 or more years of age are excused from this requirement.

2. English Composition

Unless exempted by the English Department, all students are required to complete the English 150-250-350 sequence (3 quarters, 9 credits). All students, unless exempted by the English Department, must take English 150 during their freshman year. English 250 and 350 may be taken during any two of the three remaining years, but in no case will any student be allowed to take both English 250 and English 350 in the same year. Students registering for the first time take a placement examination; those who fail to demonstrate an acceptable college standard must take English 001 without credit and receive a "pass" before enrolling in English 150. English 001 is offered through the Extension Division.

Candidates for the advanced professional degrees, Bachelor of Laws and Juris Doctor, who are graduates of an accredited college or university may be excused upon application, from not to exceed 3 quarter credits of English Composition.

GROUP REQUIREMENTS. All candidates for the Bachelor's degree must present for graduation, credits from the 4 groups listed below. Distribution requirements will be met by completing approved courses in groups as follows: Groups I and II. Complete Alternative A or B:

A. At least 12 credits in Group I or Group II, with at least one quarter in a laboratory course and at least 8 of the 12 credits in one discipline; and an additional course of at least 3 credits in the other group.

B. General 131-132 and two additional courses in Group II.

Groups III and IV. At least 12 credits in each of Groups III and IV; in each group at least 8 of the required 12 credits must be in one discipline.

Group I Life Sciences

- Biology: Only General 131-132
- Botany: All courses
- Microbiology: All except 205
- Psychology: Only 200, 212, 310-311-312
- Zoology: All courses

Group II Physical Sciences and Mathematics

- Chemistry: All courses
- Geology: All except 300, 305
- Mathematics: All except 118, 130, 220, 249
- Physics: All courses

Group III Social Sciences

- Anthropology: All except 358
- Economics: All courses
- Geography: All except 301, 302, 360, 370, 371
- Political Science: All courses
- Sociology: All except 204 and 205

Group IV Humanities

- Art: Art History courses 200-202, 280-289, 393-394
- Drama: 112, 261-262-263, 301-302-303
- General: Only 151-152-153
- History: All except 392-393-394
- Literature: All English and all lit. courses except 161, 162, Foreign Languages, all lit. courses except 211, 212 when offered to meet foreign language requirements.
- Music: Either 134 or 135
- Philosophy: All except 210, 301, 302, 303
- Religion: All courses

Students in the combination major, History and Political Science, may meet only Group III or Group IV requirements with courses in History and Political Science.

Elementary Education majors may meet requirements in Group I and II with General 125-126-127 and 9 credits in Mathematics excepting 113, and 249.

Forestry 421, Forest Economics, may apply to Group III, for degrees in Forestry.

FOREIGN LANGUAGE REQUIREMENT. For the degree of Bachelor of Arts in the College of Arts and Sciences, Bachelor of Arts in the School of Fine Arts, Bachelor of Arts in Business Administration and Bachelor of Arts in Journalism, a knowledge of either a modern or classical foreign language is required. This requirement may be satisfied by demonstrating a reading knowledge at the level of attainment expected of a student who has passed at least five quarters in a language, by five quarters (23 to 25 credits) in one language at the University, or by three quarters or equivalent in each of two foreign languages. A student who has received credit for a modern foreign language in high school (but not in a college or university) and who wishes to continue that foreign language at this university should enroll as follows: four years of a language in High School; courses numbered 300 and above; three years in High School, 212 or 202; two years in High School, 211, or 201; one year in High School, 102, or if some time has intervened, 101.
Arrangements for reading examinations must be made by the end of the fourth week of any quarter. Such examinations must be taken at least two weeks before final grades for the quarter are due. Foreign Language placement and reading examinations are given and certified by the Department of Foreign Languages.

RESIDENCE REQUIREMENTS. Students who transfer credits earned elsewhere and seek a degree from the University must, in addition to meeting other requirements, earn not less than 45 credits, and devote not less than three quarters to resident study at the University; and 35 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count towards residence requirements for undergraduate degrees, but correspondence credits do not.

REQUIREMENTS OF PARTICULAR CURRICULA. Candidates for a Bachelor's degree must comply with any requirements announced under a particular curriculum, in addition to meeting the general requirements listed here under requirements for graduation.

SENIOR EXAMINATIONS. Some departments and schools in the University require a senior comprehensive examination as part of graduation requirements. This examination does not in any way replace the regular quarterly examinations except that departments adopting or using these senior examinations may excuse their major students during the senior year from regular quarterly examinations in major department subjects. The examination is a written examination of at least three hours length, and in addition further oral or written examinations may be given. Examinations are given the last quarter of senior residence and are arranged in each department or school at the convenience of the persons concerned. If the student fails to pass this special examination, he shall be given another opportunity within the next six months without the necessity of taking additional courses. In case of a second failure, further opportunity will be granted at the discretion of the department or school concerned and the committee on graduation. For details, check under the alphabetically listed curricula in the catalog.

GRADUATION WITH HONORS OR HIGH HONORS. A student with a grade-point average at the beginning of his last quarter, of 3.1 or higher for all credits attempted on his entire record as well as in the major field, will be graduated with honors. To graduate with high honors the student must meet these requirements with a grade-point average of 3.5 or higher during his last quarter, and in addition, must pass an honors examination (written or oral), administered by the department or school. The results of such examinations are to be certified by the Department Chairman or Dean to the Registrar as "A" or "B" level.

A student who transfers credits earned elsewhere to this university must meet these requirements on grades earned at the University of Montana as well as on his entire record.

After these qualifications have been met, the candidate for honors or high honors must receive the recommendations of his major department and the faculty of the University of Montana.

In the School of Law, the grade-point average is computed on Law credits only.

SUMMER SESSION. The summer session consists of two 4½ week half-sessions, and a concurrent nine-week session. Students may attend either half-session or the full nine-week session. The 1968 summer session will open June 17 and close August 16; the first half-session, June 17 to July 17; the second half-session, July 18 to August 16.

Regular university students may accelerate their programs by taking summer classes. Students may earn 16 quarter credits in the nine-week session.

Completion of 45 credit hours, including one full summer quarter, will satisfy the residence requirements for the Master's degree.

Courses will be offered in all of the basic Arts and Sciences, as well as in the areas of Business Administration, Education and Fine Arts. Both graduate and undergraduate work is offered in most of these areas.

Courses required for Montana secondary and elementary teachers certificates will be offered. Graduate work will include courses for secondary teachers, elementary teachers, and for administrator's credentials.

Special field work in Botany and Zoology is given at the University Biological Station at Flathead Lake. Regular courses in Botany and Zoology are given on campus.

Students in the summer quarter who are not registered as candidates for degrees will, upon request to the Registrar, receive a certified transcript of courses completed.

Full information regarding the summer quarter may be obtained from the individual department or school of instruction.

THE GRADUATE SCHOOL

For information on graduate degrees offered, admission to the Graduate School, general requirements for graduate degrees, and graduate courses, write to the Dean of the Graduate School. For a copy of the Graduate School Catalog send complete return address, including zip code number.

Detailed information on requirements for particular degrees may be secured by writing to the Dean of the School or the Department Chairman involved.

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

SUMMARY OF EXPENSES. This does not include fees for special purposes such as Applied Music and Forestry.

Married students living in university operated family housing pay rental rates varying from $60.00 to $101.50 a month depending on the size and type of apartment.

Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.
## ORGANIZATION

**ALL STUDENTS REGISTERED FOR SEVEN OR MORE CREDITS**

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>$15.00</td>
</tr>
<tr>
<td>Student Activity Fee (for laboratory supplies in all courses, locker fees, gymnasium towel service, diploma, etc.)</td>
<td>$50.00</td>
</tr>
<tr>
<td>Building</td>
<td>$20.00</td>
</tr>
<tr>
<td>Student Union Building</td>
<td>$10.00</td>
</tr>
<tr>
<td>Student Activity</td>
<td>$14.00</td>
</tr>
</tbody>
</table>

For support of activities sponsored by the Associated Students of the University of Montana. (Optional to students who have a B.A. or B.S. degree and to students registered for less than seven credits.)

| Health Service (Required of all students enrolled for class work.) | $10.00 |
| Motor Vehicle Registration Fee (drivers only) | $2.00 |

**WAR SERVICE FEE EXEMPTIONS.** The registration and incidental fees are waived for honorably discharged persons who served with United States armed forces in any of its wars and who were bona fide residents of Montana at the time of their entry into the armed forces. This is in accordance with an act of the Legislature of 1943 as amended by the Legislature of 1945. These exemptions are not available to students who are eligible to qualify for benefits under Federal laws. Students must apply for these war service exemptions, at which time the original or certified copy of discharge must be submitted for identification purposes.

**LIMITED REGISTRANTS** (students registered for less than seven credits): Registration Fee $15.00; Incidental Fee $25.00; Building Fee $10.00; Student Union Building Fee $5.00; Health Service Fee $10.00; Student Activity Fee $14.00 (optional). Non-residents pay (in addition to other fees stated here) $26.00 per credit, plus $11.25 additional Non-resident Building Fee. Students who are enrolled as regular students, who wish to drop to limited registrants, see statements under regular refund schedule.

**LISTENERS** (students who enroll for courses without credit) pay the same fees as students enrolled for credit. This applies to regularly registered students only.

**GRADUATE STUDENTS** pay the same fees as undergraduate students except that graduate students whose programs require expensive equipment, laboratory supplies and additional books may be required to pay a graduate laboratory-incidental fee not to exceed $50.00 per quarter. The student activity fee is optional to students who have a B.S. or B.A. degree.

**FEES FOR SPECIAL PURPOSES:**

**LATE REGISTRATION,** payable by students who did not register during the period designated for registration, unless their late registration was due to the fault of the University. The fee is also payable by students who register during the prescribed registration period except for payment of fees or securing a deferment. If a bank declines payment of a personal student check and returns it to the University, and such action is due to fault of the student, the fee shall be charged from the date of the check tendered by the student to the University. ($5.00 for the first day, plus $2.00 per day thereafter to a maximum of $15.00.)

**CHANGE OF ENROLLMENT.** Effective the fourth day of classes, $2.00.

**SPECIAL EXAMINATION.** For each special examination, $2.00; maximum, $5.00 for any one quarter.

**REMOVAL OF INCOMPLETE.** $2.00 per course.

**TRANSCRIPT OF RECORD.** $1.00 each after the first which is free of charge.

**CREDIT BY EXAMINATION.** A fee of $3.00 per credit hour is charged.

**FIELD TRIPS.** Certain departments require field trips, the cost of which is a personal expense prorated among the students in the course. Check the department involved for such courses.

**SUMMER FEES** are listed in the Summer Session and Biological Station Bulletins.

**REFUNDS.** All fees, except the $15.00 Registration fee, are refunded to students who withdraw before the beginning of classes. No fee refunds are made after the fourth week of instruction (except Music). Students who withdraw after the beginning of classes but before the end of the fourth week will be refunded according to the refund schedule published below.

Applied Music refund is based on a charge of $1.75 per ½ hour lesson for the number of weeks elapsed since the beginning of the quarter.

Refunds are calculated from date of application for refund and not from date of last attendance at classes except in cases of illness or other unavoidable causes. No refunds are made if application for refund is delayed beyond close of quarter for which the fees were charged.

**REGULAR STUDENTS**

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular Fee</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Building</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Student Union Building</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Student Activity</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Health Service</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

(No refund if medical service furnished or physical examination taken.)

**Non-Resident Tuition ($180.00)**

### WEEKLY REFUNDS

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular Fee</strong></td>
<td>80%</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Building</strong></td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Student Union Building</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Student Activity</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Health Service</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Afer the third week of instruction there shall be no refunds of fees except that in the fourth week of classes, 20% of the non-resident fee will be refunded.

**REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS**

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular Fee</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Incidental</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Building</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Student Union Building</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Student Activity</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Health Service</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Non-Resident Tuition</strong></td>
<td>Varies with number of credits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PAYMENT OF FEES by check in exact amount of bill is preferable. The University does not accept non-bankable paper in payment of bills. Personal checks are not cashed except in payment of University bills.

RAILWAY FARE REFUND. In accordance with the provisions of Chapter 41 of the Session Laws of 1925, enacted by the Nineteenth Legislative Assembly, and under regulations established by the State Board of Education, railroad fare in excess of fifteen dollars actually paid by any student for a round trip by the most direct route available between his Montana home and the University of Montana once each year, will be refunded. The amount of the refund will be based upon the railroad or bus fare over the shortest route and at the lowest rate. Students must present receipts for the fare thus paid.

In order to be entitled to the refund students must carry satisfactorily a normal amount of work and must be in attendance either throughout the college year or through the summer quarter.

Claims for refunds must be presented within thirty days after the close of the term in which the student was last in attendance.

STUDENT SERVICES

At the University of Montana student services are coordinated through the offices of the Dean and Associate Dean of Students. Satisfactory student growth, socially, emotionally, and educationally, is the purpose of the program. Student services concerned with the welfare of students include the counseling center, health service, placement service, student housing, student union, student loans, and undergraduate scholarships.

THE OFFICE OF THE DEAN OF STUDENTS has general supervision over all student welfare. The Associate Dean has specific responsibility for the social and academic welfare of women students.

THE COUNSELING CENTER has a general function of giving guidance and assistance to students in the following areas: (1) selection of appropriate area of major study; (2) assessment of abilities and the most efficient, effective application of those abilities to allow for maximum learning in college; (3) diagnoses of difficulties leading to less than maximum performance academically, and the use of remedial procedure where indicated; (4) selection of appropriate vocational area.

The Counseling Center has a further responsibility to: (1) administer, report, and aid in the interpretation of freshman entrance tests and other standardized tests; (2) act as a consultant to University departments and high schools in the establishment of effective testing programs; (3) assist University personnel and welfare groups in their guidance function; (4) assist advisers, upon request, in working with students.

Services of the Counseling Center are available without charge to regularly enrolled students. Charges are made for services to non-students.

THE STUDENT HEALTH SERVICE is available to registered students who pay the Student Health Service fee. This Service safeguards the health of students through health education, preventive medicine, and medical treatment of acute diseases.

The services provided are comprehensive and include medical attention and advice from the University's full-time physicians and from certain consulting specialists in the local medical society. The student is protected by this service only while enrolled and not during vacation periods and between quarters. Therefore it is strongly suggested for students to enroll in a supplemental Blue Cross health insurance program which is inexpensive and extends protection to the student through the vacation periods between quarters and during the summer. This insurance is offered at the time of registration.

The Health Service building contains a dispensary and semi-private patient rooms for students requiring confinement for general medical care or isolation for communicable disease. The Health Service staff includes physicians, nurses, laboratory technician, and an X-ray technician. Facilities are available 24 hours a day with dispensary hours from 9:00 a.m. to 12:00 noon and 1:30 p.m. to 5:00 p.m.

A medical examination, tuberculin skin test (or chest X-ray), and immunizations are required of all entering students. These are performed by a licensed physician of the student's own choice and at the student's expense before he arrives on campus. The health record containing the above information must be submitted to the University prior to registration.

Health Service privileges are not available to members of the faculty or members of the student's family (see below for family protection under Blue Cross). Obstetrical care and non-emergency surgery are not covered. Accidents and illnesses arising from activities contrary to University regulations or due to use of alcohol are not covered. Injuries resulting from automobile accidents are not covered; therefore it is advised that automobile insurance be adequate to take care of medical costs.

Hospitalization in local hospitals is provided when necessary through the Student Health Service. The Health Service may pay for 15 days hospitalization at $15.00/day, and $100.00 may be applied to extras (medicine, X-ray and laboratory work).

The Health Service building also houses the State Mental Hygiene Clinic and the Speech Pathology and Audiology Clinic which are operated separately.

THE OPTIONAL BLUE CROSS SUPPLEMENTAL HEALTH PLAN has been worked out through the Faculty-Student Health Committee to make it possible for students to obtain low-cost year-around health care protection during the four or more years they are undergraduates at the University of Montana, and to allow married students health care protection for their dependents. Under this plan which costs the single student $3.00 per quarter for the autumn, winter and spring quarters and $4.50 for the summer, the student may protect himself against the costs of illnesses that exceed 15 days per quarter of hospitalization (the limit under the Student Health Service Plan) and illness and accidents occurring between quarters and during the summer months. The maximum amount paid for any illness or accident is $150.00 per quarter for the autumn, winter and spring quarters and for the summer period. Details of the plan are available from Montana Blue Cross, 3360 10th Avenue South, Great Falls, from the Dean of Students Office and from the University Health Center.

THE SPEECH AND HEARING CLINIC provides needed services, without charge, to any student desiring them. These services include detailed diagnostic evaluations, consultation and therapy, and referral to other clinics as individual needs are indicated.

THE PLACEMENT CENTER endeavors to assist university graduates in finding positions suitable to their interests and professional training. These services are available to the graduates of any college, state or, department of the University.

Interview scheduling, employer information, and vacancy listings are available for positions in schools, colleges, business, industry, and government service. The Placement Center also aids the University graduates in later years in finding new positions for which both a degree and experience are required.

University Placement services are provided free of charge to graduates except for a $5.00 fee for compiling credentials. No additional charge is made in subsequent years. All University students are invited to make use of these services. The Placement Center is located in the Liberal Arts building.
STUDENT HOUSING includes eight residence halls, three housing areas for married students, a women's cooperative house, nine fraternity and six sorority houses. Rooms are available also in private homes of Missoula.

Freshman students, both men and women, who are unmarried and under 21 years of age and who are not living in a program of the University, are required to live in University residence halls unless excused as special cases by the Dean or Associate Dean of Students.

Upper-class unmarried, undergraduate women under the age of 21 are required to live in women's residence halls or with approved student living groups unless excused as special cases by the Associate Dean of Students. Women students who live on the first floor of four-story residence halls are required to live in residence halls or with approved living groups until the end of that quarter. Thereafter, if they are living in University residence halls and if they so desire, they may move to other quarters.

Women between the ages of 21 and 24, inclusive, may live in the residence halls only as space is, or becomes, available. Women students over 21 who are admitted to the residence halls will be required to remain there for all quarters of the academic year.

Women students 25 years of age or over, or married women, must have special permission of the Associate Dean of Students to live in residence halls.

All students who contract to live in the residence halls, do so for the entire academic year, or that portion of it for which they are enrolled.

RESIDENCE HALLS. Application forms and detailed information may be obtained by writing the Admissions Office, University of Montana. A prepayment on board and room as announced in the residence halls bulletin must accompany each room application. If a room reservation is cancelled, notice in writing must be received by the Manager of Residence Halls on or before September 21 for fall quarter, January 2 for winter quarter, and March 25 for spring quarter. Students who live in the residence halls are required to board in the Lodge. See Residence Halls Bulletin for board and room rates.

Dormitory charges must be paid in advance at the beginning of the quarter or in installments as arranged with the University of Montana TREASURER.

An installment payment plan is available to aid students who might not be able to enroll by making available a schedule of payments throughout the year in lieu of the usual large initial payment each quarter for regular fees, and board and room. An additional charge of $7.00 a yer is assessed to those who wish to use the installment plan. Inquiries regarding this plan should be addressed to the Business Office, University of Montana, Missoula, Montana 59801.

Social life in the halls is encouraged through residence hall clubs and numerous activities. Adult counselors cooperate with the students in making living in the halls enjoyable and beneficial. A fee of $2 per quarter is assessed the residents in each hall. This fund is expended for social activities which are planned by the group.

Board is provided in the Lodge for the residents of all halls. Experienced dietitians provide appetizing and nutritionally adequate meals.

All University food and housing operations are conducted on a self-sustaining basis. Land is acquired, buildings are built, and maintenance and operation are financed out of payments for such housing or meals. When costs go up, charges for these services may go up unless the services themselves are to be allowed to suffer unduly in quality or quantity. New or additional services, when demanded, also require additional charges. Such charges are fixed from time to time, effective upon the dates similarly specified.

FAMILY HOUSING. Married students may apply to the Family Housing Office for accommodations in low-cost temporary housing or permanent apartment-type units. One, two, three and four-bedroom units are available.

THE WOMEN'S COOPERATIVE HOUSE provides an opportunity for women to gain experience in group living while reducing living expenses by sharing in the work of the house. This residence is under supervision of an approved housemother. Information may be obtained by writing to the President, Synadelphic House, in care of the Dean of Students Office.

FRATERNITY AND SORORITY HOUSES. Nine national fraternities and six national sororities maintain their own residences under University supervision. Membership in fraternities and sororities is by invitation, but eligibility for pledging is based on satisfactory academic performance in the University. Sorority houses are under the immediate supervision of resident housemothers who are appointed with the approval of the Associate Dean of Students.

STUDENT ACTIVITIES CENTERS. The Lodge is the extra-curricular center of student life. It is the home of student social and governmental activities. Every student registered at the University of Montana is a member of this program and is entitled to use the building. Here students may hold meetings, have social functions, meet friends, and participate in activities. Facilities in the Lodge include a student organizations center, conference rooms, social center, reading room, coffee shop, lounge, recreation room, and food service. Bowling alleys and a swimming pool located in other buildings are also maintained for recreational use by students.

EDUCATIONAL LOANS. National Defense, United Student Aid, and Henry Strong loans, as well as loans from University sources are available to qualified students in need of financial aid to complete their college work. Information about these may be obtained from the Financial Aids Office.

WORK-STUDY PROGRAM. Students from low-income families also may receive financial assistance through the federally sponsored Work-Study program. This program makes it possible for students to combine campus employment with loans and/or grants in financing their university education. For detailed information on this program write the Financial Aids Office.

EDUCATIONAL OPPORTUNITY GRANTS. For those who qualify on a basis of need, federal education opportunity grants are available to undergraduates. For detailed information write the Financial Aids Office.

COLLEGE SCHOLARSHIP SERVICE. The University of Montana participates in the College Scholarship Service (CSS), which assists colleges and universities in determining the student's need for financial assistance. Entering freshmen seeking financial help through loans, grants or the Work-Study program should submit a copy of the Parent's Confidential Statement (PCS) to the College Scholarship Service by March 1. The student should indicate on the statement that he intends to enroll at the University of Montana. The PCS form may be obtained from a secondary school or the College Scholarship Service, P. O. Box 1055, Berkeley, California 94704.

SCHOLARSHIPS AND PRIZES. The University offers many rewards for outstanding academic achievement. Many are available through the generosity of friends and alumni of the University. Graduate scholarships are administered by the Graduate Dean and undergraduate scholarships by the Dean of Students. Prize awards related to specific departments are awarded by the department concerned.

STANDARDS OF STUDENT CONDUCT

Personal honor and self-discipline play a large part in one's success in the University. A record, built during undergraduate years, for integrity and personal honor is as important for future success as academic accomplishment. The policy of the University, therefore, is pointed toward student development along both lines.
This policy begins with the assumption that all students coming to the University have common sense and normal conceptions of honor, morality, integrity and respect for order and the rights of others. It also assumes that all students have a respect for the University and regard their attendance here as a privilege and not a right; that, in a sense, each generation of students feels it has a responsible stewardship and desires to leave for future generations of students a University even better in fame and reputation than the one they have known.

Because of these assumptions it is unnecessary to spell out a long list of restrictions and laws that are essential in a less selective community to protect the rights of the responsible, from those who are not.

Every student knows that to be personally honorable he cannot lie, cheat, steal, be destructive of public or private property, participate in rituals or any of the acts of immorality or incivility, be inconsiderate of the person and lives of others or be oblivious to the laws of city, state or nation. Guilt in any of these areas, he knows, is not good citizenship and can result in the withdrawal of his privilege of attending the University.

Consistent with the above, therefore, the University expects all of its students to conform to the usual standards of society and law-abiding citizenship. Every organization affiliated with the University or using its name is expected to conduct all its affairs in a manner creditable to the University. Organizations and individuals will be held to this principle.

USE OF MOTOR VEHICLES. Students who bring motor vehicles to the University campus must register them with the Traffic Security Office of the University. Regulations relative to the use of motor vehicles on the campus may be obtained there.

Because the University Health plan does not cover injuries sustained in motor vehicle accidents and the optional Student Blue Cross policy (if taken) limits liability to $1,000.00, all students who drive cars should be adequately covered by insurance (liability, property damage, medical payments, etc.).

LIQUOR. The use or possession of intoxicating liquor (including beer) in the buildings and on the grounds of the University or at functions of University students or University organizations (including athletic events) is forbidden. Students violating this regulation are liable to suspension. Furthermore, Student University students are expected to abide by State and Federal law in the use or possession of intoxicating liquor or drugs.

STUDENT MARRIAGES. The Montana Statutes on marriage require (a) parents’ (or guardian’s) consent for men under 21 and women under 18 years of age; (b) a five-day waiting period between the filing of the marriage license; (c) a blood test for both parties. Persons residing in the State of Montana who attempt to evade any of these requirements by excursions into neighboring states run the risk of having the validity of their marriages questioned, conceivably at a later date.

University students are expected to abide by the spirit and intent of the Montana law and, furthermore, must report their marriages to the Dean of Students’ Office immediately.

FALSIFICATION OR WILFUL SUPPRESSION of any information called for on any university form will be grounds for cancellation of registration.

RIGHT OF APPEAL. Students who for disciplinary reasons have been suspended or expelled from the University have a right to appeal by letter to a faculty-student Board of Judicial Review within three academic days following their suspension.

The Board of Judicial Review is made up of four full-time faculty members selected by the Faculty Senate and three student members chosen by Central Board, governing body of the Associated Students. If three members of the board agree that the case should be reviewed, the student is given a hearing. His status as a student does not change during the period of the review.

After hearing the case, the Board reports its recommendation to the Dean of Students, who either accepts the recommendation or, in the event he disagrees, refers it to the President of the University for final decision.

A complete outline of the organization, functions and procedures of the Board of Judicial Review may be obtained from the office of the Dean of Students.

Occasionally a student has a disagreement with a University staff member concerning which he feels he should have a right to appeal. In such an event, he should consult the office of the Dean of Students for advice.

FREEDOM OF EXPRESSION. The Faculty Senate reaffirms that a fundamental right in the University is the freedom of expression and that it must be upheld. Freedom of expression includes peaceful assembly and demonstration which does not interfere with the normal operation of the University.

ABSENCES FROM CLASS

DUE TO ILLNESS. Students who are confined to the infirmary or who report to doctors at the infirmary may receive excuses directly from the Health Service for the time they have been so confined or detained by the doctors. The Health Service is not authorized to give excuses except in instances where the student has actually used its services. All other excuses must come from the Dean of Students Office.

DUE TO EXTRA-CURRICULAR ACTIVITIES. When a student’s absence from classes is due to his participation in extra-curricular activities, i.e., athletics, debate, drama, etc., the time of his absence must be reported in advance to the Dean of Students by those in charge of the activity. In all cases students must fill out a leave of absence card obtained from either the Dean of Students office or the person in charge of the activity. This card must be presented to the student’s instructors before being returned to the Dean of Students office.

DUE TO FIELD TRIPS. At least two weeks in advance of a proposed field trip the instructor in charge should send a memorandum to the Dean of his School or College stating the proposed arrangements for and date of the trip as well as the list of the students who will be participating. If the Dean of the school or college approves the trip he will submit the memorandum to the Dean of Students Office for final approval. When the student returns the trip in charge will receive from the Dean of Students office leave of absence cards which will be distributed to the affected students. Each student is responsible for having his cards signed by his various instructors and returned to the Dean of Students office for filing.

LEAVES OF ABSENCE. A student who is compensated for personal reasons to be absent from the University should obtain a leave of absence in advance from the Dean of Students office and from his instructors. In case of emergency when it is not possible for the student to see his instructors, the student should notify the Dean of Students office or the Registrar’s office of his intended absence.

In all cases, work which a student has missed through absence must be made up as his instructors direct.

STUDENT CONTRACTS AND OBLIGATIONS

STUDENT ORGANIZATIONS. The State Board of Education has made the following rule: "No contract shall be made into and no financial obligation assumed by any student organization without the approval of the President or some member of the faculty designated by him."

INDIVIDUAL STUDENTS who owe bills to the University for fees, fines, board and room in the residence halls, and such other sums if charged for by the University, shall at the end of the succeeding quarter, secure transcript of record, or obtain diplomas, until the obligation is paid or satisfactorily adjusted. Similar action is taken when students owe bills to student
organizations whose books are kept in the business office of the University of Montana, including charges for board and room in fraternity and sorority houses.

ACTIVITIES

The University encourages a full and well-rounded program of activities designed to stimulate students' intellectual, vocational, and social interests. Among the types of student extra-curricular activities are student government, societies and clubs of students engaged in particular studies, professional and honorary organizations, athletic clubs or teams for men or women, student publications, musical organizations, church groups, and residence hall clubs.

ATHLETICS. Athletics, including intercollegiate athletics, are a useful and valuable part of the University program for the development and growth of interested students. Facilities are provided for participation in some form of athletics by every member of the student body. Aid to students participating in athletics may be given only in conformity with the regulations of the National Collegiate Athletic Association and the Big Sky Athletic Conference, of which the University is a member.

OFFICIAL RECOGNITION OF STUDENT ORGANIZATIONS. Every student organization is required to register with and obtain recognition from the Dean of Students office. Until such recognition has been granted, the organization is not entitled to the use of space in campus buildings, mention of its activities in campus publications, or the use of the name of the University.

ORGANIZATION OF INSTRUCTION

For administrative purposes, various courses and curricula are organized within Departments, Schools, or Colleges as shown immediately following. The detailed listing of curricula and courses later in the catalog is alphabetical, and includes combined curricula.

COLLEGE OF ARTS AND SCIENCES

| Biology          | Mathematics     |
| Botany           | Medical Technology |
| Chemistry        | Microbiology     |
| Economics        | Philosophy       |
| English          | Physical Therapy |
| Foreign Languages| Physics          |
| French           | Political Science|
| German           | Pre-Medical Sciences|
| Greek (no major) | Psychology       |
| Italian (no major)| Reserve Officers Training |
| Latin            | Corps            |
| Russian          | Air Science (no major) |
| Spanish          | Military Science (no major) |
| Geography        | Sociology, Anthropology, Social Welfare |
| Geology          | Speech-Communication, Speech Pathology and Audiology |
| Health and Physical Education | |
| History          | Wildlife Biology |
| Home Economics   | Zoology          |

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

| Accounting        | Management |
| Business Education| Marketing  |
| Finance           | Office Management |

SCHOOL OF EDUCATION

| Administration and Supervision | Elementary Education |
| Guidance and Counseling        | Library Service     |
| Secondary Education            | Music (continued)   |

THE SCHOOL OF FINE ARTS

Art
Drama
Music
Music Education
Elementary Teacher Training
Secondary Teacher Training
Music History and Literature

SCHOOL OF FORESTRY

Forestry
Forest Management
Forest Engineering
Wood Utilization
Range Management
Wildlife Management
Forest Recreation

SCHOOL OF JOURNALISM

Advertising
Magazines

SCHOOL OF LAW

SCHOOL OF PHARMACY

AFFILIATED SCHOOL OF RELIGION (no major)

COURSE NUMEROUS SYSTEM

Effective starting with the summer of 1957, all courses are numbered as follows:

001-099 Courses below college level. No college credit given.
100-199 Freshman courses
200-299 Sophomore courses
300-399 Junior courses
400-499 Senior courses
500-699 Graduate courses

In the School of Pharmacy, senior courses (5th year) are numbered 500 to 599.

Courses are listed under headings, FOR UNDERGRADUATES, FOR UNDERGRADUATES AND GRADUATES, or FOR GRADUATES. Courses listed under the first heading may not be taken for graduate credit even if the numbers are in the 300 or 400 series. Courses under the second heading may be taken for graduate credit if the student secures proper authorization from the Graduate School. Courses under the last heading may be taken by graduate students only.

Thesis and independent studies courses may be so listed as to provide for indication of the subject matter on the permanent record, provided the topic is printed in the schedule of classes.

The University reserves the right to withdraw any course for which fewer than five students are enrolled before the opening of the course.

COURSE DESCRIPTIONS

When reading course descriptions please note the following:

COURSE NUMBERS: 150, 207-208, 121-122-123, illustrate courses of one quarter, two quarters, and three quarters. Hyphenated numbers indicate a course with the same title in a two or three quarter sequence. Unless otherwise stated in a description, 207 would be required before a student could take 208, 121 before 122, 122 before 123.
ANTHROPOLOGY—21

FOR UNDERGRADUATES AND GRADUATES

*Course offered every other year

305 *RACE AND ETHNIC RELATIONS 3 prerq 154 and Soc 101. Racial and ethnic differentiation and its social consequences. (Credit not allowed for this course and identical Sociology 380)

309 *MUSEUM TECHNIQUES 3. A general course in cataloging, repairing, and displaying archaeological, ethnological and historical materials and small museum operation.

345 *PRIMITIVE RELIGION 3 prerq 152 or 153 and one course in ethnology. Theories and practices of the supernatural phenomena found among primitive peoples throughout the world.

351 *PREHISTORIC CULTURES 3 prerq 152 or 153 or =. Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.

352 *ARCHAEOLOGY OF MONTANA 3 prerq 152 or 153 or =. The origins and distribution of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field trips in which actual archaeological sites will be excavated and techniques demonstrated.

353 *ARCHAEOLOGICAL SURVEY Any quarter in which field parties are organized. V 5-9 R 18 prerq 152 or 153 or =. A field course in Montana archaeology.

354 *OLD WORLD ARCHAEOLOGY 4 Su 3 prerq 152 or 153 or =. The development of civilization from the Neolithic Age to the dawn of written history.

355 *ARCHAEOLOGY OF NORTH AMERICA 4 prerq 152 or 153 or =. The origins, backgrounds and development of pre-Columbian North American peoples and cultures.

358 PHYSICAL ANTHROPOLOGY 4 prerq 152 or =. The history, evolution, and present nature of human civilization. Identification and determination of age and sex of human osteological materials.

360 *INDIANS OF THE SOUTHWESTERN UNITED STATES 3 prerq 152 or =. The development of Indian cultures in southwestern United States from the most ancient evidences of man to the present.

361 INDIANS OF NORTH AMERICA 4, Su 3 prerq 152 or 153 or =. The native cultures of North America, north of the Rio Grande.

362 *INDIANS OF SOUTH AMERICA 4, Su 3 prerq 152 or 153 or =. The cultures of the peoples of South America.

363 *PEOPLES OF AFRICA 4, Su 3 prerq 152 or 153 or =. The aboriginal cultures of Africa.

365 *INDIANS OF MONTANA 3 prerq 152 or 153 or 10 credits in social science, and c/i. The history and culture of the Indian tribes of Montana.

366 NORTHWEST ETHNOLOGY Any quarter in which field parties are organized. V 1-5 R-15 prerq 152 or 153 or =. A field course. Indian tribes of Montana and related areas.

368 *PEOPLES OF THE PACIFIC 4 prerq 152 or 153 or =. The peoples who inhabit the islands of the Pacific Ocean, including Polynesia, Melanesia. Micronesia and larger islands around Australia.

369 *PEOPLES OF CENTRAL AMERICA 4 prerq 152 or 153. The historic remains of the high civilizations and ethnic groups, and the effects of European contact on these cultures.

371 CULTURE AND PERSONALITY 4 prerq 152 or 153 or =. The role of culture in the formation of personality.

372 CULTURE AND THEORY 4 prerq 152 or 153 or =. The development of theory and method in cultural anthropology to the present. Various archaeological, ethnological, and socio-psychological theories in the light of historical anthropology.

385 *HISTORICAL LINGUISTICS 4 prerq 152 or 153 or =. Gen 360. Some significant theories and methodological assumptions of selected schools of linguistic theory.

388 LANGUAGE AND CULTURE 3 prerq 152 or 153 or =. Analysis of relationships between languages and cultures of the world.

389 PEOPLES OF THE FAR EAST 4 prerq 152 or 153 or =. The peoples and culture of China, Japan, Korea, Southern Asia, and adjacent areas.

390 PEOPLES OF WESTERN ASIA 4 prerq 152 or 153 or =. The peoples and culture of the area from the Mediterranean Near East to India.


451 ADVANCED PROBLEMS V 1-2 6-15 prerq 152 or 153, and c/i.

452 MODERN INDIAN PROBLEMS 3 prerq 152 or 153 or =. Social, health problems, legislation, education, and economic conditions of Indians of the United States.

453 SOCIAL ANTHROPOLOGY 3 prerq 152 or 153 or =. The principles and theories of social organization and institutions.

454 CULTURAL DYNAMICS 3 prerq 152 and 153. The processes of cultural change, acculturation and integration.

458 *LINGUISTIC METHODS 3 prerq 152 or 153 or =. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant.

ANTHROPOLOGY is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It deals particularly with pre-literate or primitive societies. Bachelor of Arts and Master of Arts degrees are offered in anthropology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE: In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in anthropology courses are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) The 50 credits in anthropology must include the following courses: Anth 152, 153, 209, 371, 572, and 280. In addition, one course in ethnology and one course in archaeology must be taken. The following sociology courses must be completed: Soc 101, 201, and 205. Geography 338, Religion 364, and Speech 119 may be counted toward a major in anthropology.

GRADUATE WORK. See Graduate School FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

152 MAN AND HIS CULTURE 5. The origin and development of man, and his culture, and the processes involved in culture change, e.g., acculturation, diffusion.

153 CULTURAL ANTHROPOLOGY 5. The social life of man: his family structures, his groups and institutions—economic life, religion, political forms, education, and arts.

154 RACE AND MINORITIES 3. Problems of assimilation of racial and cultural minorities.

251 PRIMITIVE TECHNOLOGY 3 prerq 152 or 153. Technological processes used by people in preliterate societies and early civilizations.
ART

is man’s visual means of communication and expression in two and three dimensional form. The art curriculum aims at developing the most effective skills and knowledge possible for each student who is concerned with becoming competent in such visual communication-expression. A student may choose to emphasize one area of art somewhat more than others as a preparation for a particular type of career. The important areas are: drawing, design, painting, sculpture, ceramics, printmaking, and history of art. Careers are to be found in teaching, in a great variety of commercial areas, and in the “free-lance” or independent field.

The Art Department offers the following degrees: Bachelor of Arts, Bachelor of Fine Arts, Master of Arts in Art, and Master of Fine Arts. The specific requirements for the respective Masters’ Degrees may be found in the Graduate School Catalog.

The Department reserves the right to retain, exhibit, and reproduce student work submitted for credit.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Bachelor of Arts Degree with a major in Art: 56 or more credits (up to a maximum of 70) including Art 123 (9 cr.), 125-126-127, 200-201, 235-236 (9 cr.), 240 (1 cr.), and 232 (4 cr.). The Foreign Language requirement listed earlier in the catalog must be satisfied.

The Bachelor of Fine Arts is a professional degree which requires a minimum of 90 credits in art, including the courses listed for the B.A., and 90 credits outside the department. A foreign language is not required. The degree is planned for a limited number of students of superior ability. A student may apply at the beginning of the Sophomore year and is expected to have a 3.0 index in Art and 3.5 in academic work. A portfolio or slides must be presented for a staff jury.

Specific requirements may be obtained from the Art Department upon request.

Suggested first year program:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr. Cr.</td>
<td>Cr. Cr.</td>
<td>Cr. Cr.</td>
<td>Cr. Cr.</td>
</tr>
<tr>
<td>Art 123</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Art 125-126-127</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Art 129</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>English 150, Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective from Groups or Lang.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H &amp; PE 100</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

123 DRAWING 3, Su 2, R-3. Variable credit by extension. Objective and expressive drawing, using varied methods and subject matter.

125-126-127 DESIGN 2. Creative design and use of color theories, methods and problems.

129 CERAMICS 2 R-6. Clay projects, building, throwing, glazing, and firing. Offered for one credit by extension.

160 LETTERING 2. Pen and brush lettering and layout.

200 PRINCIPLES OF ART HISTORY 3. The formal analysis of works of art; iconography, techniques, materials; a brief historical survey of major styles; basic references.

201 MESOPOTAMIA to 1300 3 prereq 200.

202 1300 to PRESENT 3 prereq 200 (The 3 quarters 200, 201, 202 offered summers in rotation).

233 (133) PRINTMAKING 2 R-9 prereq 9 credits of 123. Methods and techniques.

235 (135) SCULPTURE 3 R-9 prereq 9 credits of 123. Methods and techniques.

239 (139) WATERCOLOR 3, Su 2 R-6 prereq 9 credits of 123. Offered by extension for 1 credit. Watercolor techniques and expressive use of subject matter.

240 (140) PAINTING 3, Su 2 or 5, R-9 prereq 9 credits of 123. Variable credit by extension. Techniques of oils and related media. Individual criticism of technique and expression.

FOR UNDERGRADUATES AND GRADUATES

Courses 330, 331, 332, 333, 334, 335, 386, 387, 388, 389, 390 and 394 are offered on a 3-year cycle.


323 (151) DRAWING II 2 R-6 prereq 9 credits of 123. Expressive drawing from models, anatomical constructions, and advanced drawing projects.

325 ADVANCED DESIGN V 2-6 R-6 prereq 125-126-127. Advanced problems of a specialized nature.

329 (330) ADVANCED CERAMICS V 2-6 R-6 prereq 6 credits of 129. Advanced problems in ceramic techniques.

333 (334) ADVANCED PRINTMAKING V 2-6 R-6 prereq 6 credits of 333. Advanced work in printmaking media.

335 ADVANCED SCULPTURE V 2-6 R-6 prereq 9 credits of 335. Advanced problems in sculpture media.

340 ADVANCED PAINTING V 2-6 R-6 prereq 9 credits of 340. Advanced work in painting media.

350 ANCIENT NEAR EAST, GREECE 3 prereq c/i. Ancient Near East, Aegean and Greek Art.

381 HELLENISTIC TO BYZANTINE ART 3 prereq c/i.

382 ROMANESQUE, GOTHIC 3 prereq c/i.

383 EARLY RENAISSANCE 3 prereq c/i (to be offered 1967-68).

384 HIGH RENAISSANCE 3 prereq c/i (to be offered 1967-68). North and South.

385 BAROQUE AND ROCOCO ART 3 prereq c/i (to be offered 1967-68). Rubens through Fragonard.

386 EUROPEAN ART 1750-1825 3 prereq c/i.

387 EUROPEAN ART 1825-1870 3 prereq c/i.

388 EUROPEAN ART 1870-1900 3 prereq c/i.

393 MODERN EUROPEAN ART 1900-1914 3 prereq c/i.

393 AMERICAN ART—19TH CENTURY 3 prereq c/i.

394 AMERICAN ART—20TH CENTURY 3 prereq c/i (to be offered summer 1968).

425 INDEPENDENT WORK IN DESIGN V 2-6 R-15 prereq 6 credits of 325.

429 INDEPENDENT WORK IN CERAMICS V 2-6 R-15 prereq 6 credits of 329.

433 INDEPENDENT WORK IN PRINTMAKING V 2-6 R-15 prereq 6 credits of 333.

435 INDEPENDENT WORK IN SCULPTURE V 2-6 R-15 prereq 6 credits of 335.

440 INDEPENDENT WORK IN PAINTING V 2-6 R-15 prereq 6 credits of 340.

450 SEMINAR V 1-3 R-6 prereq 9 credits in art history and c/i.

FOR GRADUATES

525 SPECIAL PROBLEMS V 2-6 R-30 prereq c/i. Specialized advanced work in design.

529 SPECIAL PROBLEMS V 2-6 R-30 prereq c/i. Specialized advanced work in ceramics.

533 SPECIAL PROBLEMS V 2-6 R-30 prereq c/i. Specialized advanced work in printmaking.

535 SPECIAL PROBLEMS V 2-6 R-30 prereq c/i. Specialized advanced work in sculpture.

540 SPECIAL PROBLEMS V 2-6 R-30 prereq c/i. Individual research in art history or art theories.

699 THESIS AND TERMINAL PROJECT V R-15.
Biology

This program provides basic education in the biological sciences. Those students who wish to teach biology should elect a degree in education with a major in biological sciences. Those who hope to do graduate work should enroll for a degree in botany, zoology, or microbiology.

Special Requirements for the Undergraduate Degree in Biology.

In addition to the general requirements listed earlier in the catalog the following special requirements must be completed for a Bachelor of Arts degree with a major in Biology: 55 or more credits in Biology including Botany or Zoology 111 (Introduction to Biology), Botany 112 (General Botany), Botany 225 (Plant Physiology), Botany 437 (Cytology), Microbiology 250 (General Microbiology), Zoology 112 (General Zoology), Zoology or Botany 485 (Genetics), and 10 additional credits in 200 or 300 level courses in biological sciences. Zoology 530 (Cellular Physiology) recommended.

The following courses in allied sciences must be completed: Chemistry 121-122-123 (College Chemistry), Chemistry 261-262 (Organic Chemistry), Chemistry 370 (Survey of Physical Chemistry), Physics 111-112-113 (General Physics) or Physics 221-222-223 (General Physics), Math 116 (College Algebra), Math 117 (Trigonometry), and Math 118 (Introduction to Calculus).

The foreign language requirement listed earlier in the catalog must be satisfied.

Employment opportunities for both men and women trained in botany are available in numerous fields. Graduates in botany may find employment as biology teachers in high schools, or in research institutes and government agencies such as the Forest Service, experimental stations, Park Service, and plant quarantine, or in industrial establishments such as pharmaceutical, food, drug, paint, seed and oil companies, florists and nurseries. Good students are encouraged to go into graduate work. The better positions in the field require a master's or doctor's degree. For most teaching positions in colleges and universities the doctorate is essential.

For Undergraduates

For explanation see Course Descriptions (Index)

100 Field Botany 2 (0-6). The collection, preservation and identification of plants and consideration of where they grow. Given only as an extension course. Credit not allowed toward degree in Biology.

111 Introduction to Biology 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanics of evolution and adaptation. Credit not allowed toward the course and Zoool. 111.

112 General Botany 5 (3-4) prerequisite 111 or any. An introduction to the anatomy, physiology and ecology of higher plants.

113 General Botany 5 (3-4) prerequisite 112 or any. A survey of the morphology, reproduction and evolutionary relationships of the various plant groups.

225 Plant Physiology 5 (3-4) prerequisite 112 and Chem 160 or 162. An introduction to the chemical and physical basis of metabolism, photosynthesis, nutrition, water relationships and growth of plants.

250 Elements of Plant Ecology 3 (3-0) prerequisite 225. An introduction to ecological principles, including aspects of plant ecology not taken up in regular courses.

292 Introduction to Biological Principles 5 (3-0) prerequisite 112. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

392 Problems in Plant Physiology V 1-6 (0-3 cr) prerequisite 112 and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

394 Problems in Plant Morphology V 1-6 (0-3 cr) prerequisite 225, 441, 442 or 443, and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

459 Problems in Plant Ecology V 1-6 (0-3 cr) prerequisite 225 or 355 and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant ecology not taken up in regular courses.

469 Problems in Plant Taxonomy V 1-6 (0-3 cr) prerequisite 285 and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant taxonomy not taken up in regular courses.

479 Problems in Mycology and Forest Pathology V 1-6 (0-3 cr) prerequisite 285 or 225 and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of mycology and plant pathology not taken up in regular courses.

489 Problems in Paleobotany V 1-6 (0-3 cr) prerequisite 285 and c/i. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of paleobotany not taken up in regular courses.

300 Cellular Physiology (see Zoology)

301 Microtechnique 3 (1-4) prerequisite 15 cr. in Botany. Techniques in preparing cleared whole mounts, cytoplasmic ghosts, wooden and non-wooden cellodid mount; maceration of wood; use of freezing, sliding and rotary microtomes.

355 Principles of Plant Ecology 5 (3-4) prerequisite 225, 265 or 285 and c/i. Plants and plant communities in relation to their physical and biotic environment.

565 Systematic Botany 5 (2-8) prerequisite 113 or any. The identification, principles of classification, phylogeny, methods of collecting and preserving of vascular plants. (Credit not given for both 285 and 365. Given for 6 cr. at the Biological Station.)
AGROSCIENCE 5 (2-6) prereq 265 or =. Application of the rules of nomenclature to plant classification.

PHYTOLOGY 5 (2-6) prereq 225, Chem 262 and Phys 113 or =. The respiratory mechanisms in plants, relationships of respiration to other processes in the plant, photosynthesis, nitrogen metabolism.

PLANT VIEWS 4 (2-4) prereq 112 or =. Micro 420. Plant viruses and the diseases which they cause. The isolation, purification, identification and host range of selected plant viruses.

MORPHOGENESIS 5 (4-3) o/y prereq 225 or =. The effect of internal and external factors on the growth and forms of organisms.

ADVANCED MICROTECHNIQUE 4 (1-8) prereq 20 cr in Botany (Zool.) or c/i. Training in techniques such as photomicrography, photography, audio-radio, in vitro culture, etc.

PLANT ANATOMY 5 (2-6) o/y prereq 113 or =. The finer structures of the plant cell in relation to its functions.

CYTOLOGY 5 (3-4) e/y prereq 113 and Chem 160 or =. The finer structures of the plant cell in relation to its functions. The finer structures of the plant cell in relation to its functions.

PHYSIOLOGY 5 (2-6) e/y prereq 113 or =. Morphology, taxonomy and ecology of the algae, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

BRYOLOGY 5 (2-6) o/y prereq 113 or =. The morphology, taxonomy and ecology of the bryophytes, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

PTERIDOLOGY 5 (2-6) o/y prereq 113 or =. The morphology, taxonomy and ecology of the pteridophytes, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

SPERMATOPHYES 5 (2-6) e/y prereq 113 or =. The morphology and life histories of the gymnosperms and angiosperms.

PRINCIPLES OF BOTANICAL NOMENCLATURE 2 (2-0) e/y prereq 113. Application of the rules of nomenclature to plant classification.

MYCOLOGY 5 (3-4) o/y prereq 113 or =. The morphology, taxonomy and ecology of the fungi, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

PALEOBOTANY 5 (3-4) o/y prereq 113 or =. An introduction to the study of fossil plants.

GENETICS. (See Zoology.)

EVOLUTION 3 (3-0) prereq 265, 485; Zool 113. The nature of and processes by which evolution occurs. (Credit not allowed for this course and Zool 486.)

SEMIRAN IN BIOLOGY 1 (2-0). Special problems in biology. (Credit not allowed for this course and Zool 486.)

SENIOR WILDLIFE SEMINAR (See Forestry)

UNDERGRADUATE SEMINAR 1 (2-0) R-3.

FOR GRADUATES

HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prereq graduate standing in a biological science. (Credit not allowed for this course and Zool 502.)

RADIATION BIOLOGY 4 (2-4) prereq Botany (Zool) 330. The influence of ionizing and nonionizing radiation on biological systems.

BSCS BIOLOGY 6 prereq Bachelor's degree: major preparation in Biology, at least 2 years' teaching experience in Biology at the secondary level. Basic concepts of biological ecology as applied to the use of American Institute of Biological Sciences, Biological Sciences Curriculum Study (BSCS) Green-Version materials in teaching high school biology. Not to be allowed for a major in Botany.
The student may elect to pursue a program of studies leading to the degree of Bachelor of Science in Business Administration or of Master of Science in Business Administration (with concentrations in accounting, business education, finance, management, or marketing). The MBA program is particularly suited to those students whose undergraduate training has been in areas other than business administration. Further details may be obtained from the Graduate Studies Bulletin or by specific inquiries directed to: Director of Graduate Studies, School of Business Administration.

**PRE-BUSINESS PROGRAM**

Upon entering the University as a freshman, a student who desires to major in Business Administration registers as a pre-business administration major. In the first two years of study the student completes courses toward meeting the general university requirements and prerequisite course work for courses to be taken subsequently in the School of Business Administration.

The general university and pre-business administration requirements include: Health and Physical Education 100 (6 quarters, 6 credits), English 150, 250, and English 350 (taken in the junior or senior year); requirements from Group I; requirements from Group II including Mathematics 116, Statistics, and Economics 101, 102, and 103; requirements from Group IV; Speech 111 or 112; Business Administration 201, 202, and 203. Pre-business requirements are prerequisites for all business administration courses numbered 300 and above.

**ADMISSION AND GRADE POINT REQUIREMENTS**

Admission to the School of Business Administration requires junior standing, completion of the pre-business administration requirements, and a minimum of a "C" average on all credits attempted. To continue work in the School of Business Administration the student must maintain at least a "C" average in all course work in Business Administration and for course work in the area of concentration selected.

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION**

To achieve the degree of Bachelor of Science in Business Administration, the student must:

- Complete the general university and pre-business administration requirements.
- Complete core courses: Economics 301, Bus Ad 322, 340, 342, 354, 357-358, 360, 414, and 446.
- Select before the beginning of the third quarter of the junior year an area of concentration from the following: Accounting; Business Education, Finance, General Business, Management—Option A or Option B, Marketing, Office Administration. This selection of an area of concentration is to be indicated by registering for the prescribed form available in the office of the Dean of School of Business Administration and by filing the completed form in that office.
- Complete the core course work required in the selected area of concentration as indicated by the appropriate curriculum of the area of concentration below.
- Offer not less than a total of 78 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 78 credits are: all courses offered by the Department of Economics; English 450; History 473, 474; and courses listed in the curricula of the areas of concentration.
- Present not less than 90 credits (exclusive of Health and Physical Education) of work taken in departments and schools other than the School of Business Administration.
- Offer at least 180 credits plus 6 credits in Health and Physical Education.
- Attain an average grade of "C" on all credits in business administration courses for which a grade is received and on all credits in the area of concentration selected for which a grade is received.

**CURRICULA OF THE AREAS OF CONCENTRATION**

Students majoring in accounting must complete the following requirements in addition to the basic requirements of the School of Business Administration:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 303-304</td>
<td>Elementary Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 305-307</td>
<td>Cost Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 308-309</td>
<td>Intermediate Accounting</td>
<td>8</td>
</tr>
<tr>
<td>Bus. Ad. 391-392</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 412</td>
<td>Accounting Theory</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 413</td>
<td>Governmental Accounting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Advanced Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 422</td>
<td>Analysis and Forecasting of Business</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 444</td>
<td>Personnel Management</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 445</td>
<td>Regulation of Industry</td>
<td>4</td>
</tr>
</tbody>
</table>

It is recommended that students preparing for the public accounting profession take the following additional courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 193-194</td>
<td>Advanced Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 195-196</td>
<td>Stenography</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 197-198</td>
<td>Beginning Secretarial Practice</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 199-200</td>
<td>Records Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 201-202</td>
<td>Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 203-204</td>
<td>Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 205-206</td>
<td>Methods of Teaching Bookkeeping and</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Basic Business</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 207-208</td>
<td>Office Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 209-210</td>
<td>Methods of Teaching Shorthand and</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Transcription</td>
<td></td>
</tr>
</tbody>
</table>

**FINANCE**

This program is designed to give a broad understanding of the role of finance in our economy including private and public financial institutions, banking, investments, and security markets and the technical training necessary in preparation for managerial positions in financial work in large and small scale business.

- Bus. Ad. 429—Investments: 3
- Bus. Ad. 340—Analysis and Forecasting of Business Conditions: 4
- Bus. Ad. 430—Analysis of Financial Problems: 3
- Bus. Ad. 431—Finance Seminar: 2
- *Econ. 311—Intermediate Economic Analysis: 4
- *Bus. Ad. 347—Managerial Economics: 4

*Students are advised to take Econ 311 before Bus Ad 347.

**GENERAL BUSINESS**

This curriculum is designed to give broad training in the field of business. Requirements for a concentration in General Business are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 347</td>
<td>Managerial Economics</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 353</td>
<td>Analysis of Marketing Communication</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 400</td>
<td>Marketing Management</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Analysis and Forecasting of Business</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 441</td>
<td>Personnel Management</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 444</td>
<td>Regulation of Industry</td>
<td></td>
</tr>
</tbody>
</table>

**MANAGEMENT**

Two optional areas of concentration are offered in the field of Management:

- Option A. Industrial Organization and Management (Production)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 441</td>
<td>Personnel Management</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 445</td>
<td>Personnel Management</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Analysis and Forecasting of Business</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 444</td>
<td>Regulation of Industry</td>
<td></td>
</tr>
<tr>
<td>Econ. 321—Labor Economics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ. 322—Labor Economics</td>
<td></td>
<td>Any two</td>
</tr>
<tr>
<td>Econ. 324—Industrial Relations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
26—BUSINESS ADMINISTRATION

Option B. Personnel Management and Human Relations

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301—Administrative Accounting</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 441-442—Personnel Management</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 444—Regulation of Industry</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Psych. 342—Personnel Psychology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Econ. 321—Labor Economics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ. 322—Labor Economics</td>
<td>Any two</td>
<td>6</td>
</tr>
<tr>
<td>Econ. 324—Industrial Relations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

29

MARKETING

The curriculum in Marketing is designed to equip the student with those analytical skills that will enable him to assume managerial roles in retailing, wholesaling, advertising, marketing research, sales, and sales administration.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301—Administrative Accounting</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 302—Analysis of Consumer Behavior</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 303—Analysis of Marketing Communication</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 304—Marketing I, II</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 462—Pricing Policies and Practices</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 466—Marketing Research</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Engl. 450—Problems in Composition</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

OFFICE ADMINISTRATION

In addition to the basic requirements of the School of Business Administration, students concentratng in Office Administration must include the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 183—Advanced Typewriting</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 184—188—189 Stenography</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 190—191—Advanced Shorthand Transcription</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 192—Beginning Secretarial Practice</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 194—Records Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 203—Elementary Accounting</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 402—Office Machines Practice</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 382—Advanced Secretarial Practice</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 383—Office Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ. 450—Problems in Composition</td>
<td>3</td>
<td>49</td>
</tr>
</tbody>
</table>

*BOffice Administration students are not required to take Speech 111 or 112, Bus. Ad. 322, 346, 347, 354, 414, or 446.

BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

The requirements for the degree of Bachelor of Arts in Business Administration are identical to those for the degree of Bachelor of Science in Business Administration except that, in addition, the candidate must satisfy the general university foreign language requirement.

ACCOUNTING

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)


202 ACCOUNTING PRINCIPLES 3 prereq 201. Continuation of 201.

203 ELEMENTARY ACCOUNTING 3 prereq 202. Application of elementary accounting principles, including the mechanics and procedures required to classify, record and report accounting data. For accounting and non-accounting majors who wish additional training in basic techniques.

FOR UNDERGRADUATES AND GRADUATES

Bus. Ad. 301, 303, 306, and 401 are available for graduate credit to non-accounting majors only.

301 ADMINISTRATIVE ACCOUNTING 4 prereq 203. Open only to non-accounting majors. The significance of accounting data without involvement in mechanical techniques: interpretation of financial statements, internal control, budgeting, costing of products manufactured and sold, and accounting reports for administrative control.

303 COST ACCOUNTING 3 prereq 203. The methods of accumulating material, labor and manufacturing costs; the development of specific cost systems applicable to various types of production situations, e.g., job order, process and standard cost systems. The significance of cost information in relation to managerial activities which includes reports to management, budget preparation, break-even analysis, and cost-volume-profit relationship.

304 COST ACCOUNTING 3 prereq 303. Continuation of 303.

305 GOVERNMENTAL ACCOUNTING 2 prereq 203. Accounting principles and problems as applied to state and local government and other public institutions.

306 INTERMEDIATE ACCOUNTING 4 prereq 203. The fundamentals of valuation as applied to the balance sheet, and income determination as related to the operating statement. Problems involving the application of the above theories.

307 INTERMEDIATE ACCOUNTING 4 prereq 306. Continuation of 306.

401 INCOME TAX 3 prereq 203. The accounting aspects of the federal income tax law. The tax statutes as applied to individuals with problems that emphasize the filing of individual returns.

402 INCOME TAX 3 prereq 401. Corporate and partnership returns, special problems of federal, estate and gift taxes. Federal and state tax research.

403 AUDITING 3 prereq 307. The general scope and purpose of auditing, encompassing generally accepted auditing standards and procedures, the audit program, and analysis of internal control. Problems involve verifying balance sheet and operating accounts; preparation of audit working papers, reports, and submission of the auditor’s opinion.

404 AUDITING 3 prereq 403. Continuation of 403.


410 ADVANCED ACCOUNTING 3. The theory and preparation of consolidated statements.


414 ELECTRONIC INFORMATION PROCESSING 3 prereq 410. Problems involved in the application of the latest developments in computer equipment and logic, programming, and information flow analysis. (Graduate credit available for non-business majors only.)

417 ACCOUNTING INTERNSHIP 3 prereq c/l. Students are placed with public accounting firms to receive training during the winter quarter. Written reports are required.

418 C.P.A. REVIEW 5 prereq 304, 404, 410. Primarily for students preparing to take the examinations for the certificate of Certified Public Accountant. Comprehensive review of questions and problems in practice, theory, and auditing given by the American Institute of Certified Public Accountants.

499 SEMINAR V 2-4.

FOR GRADUATES

503 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 3 prereq 410 and approval of the graduate committee. Modern accounting theory and practice. The development of the accounting thought since 1900 and the social significance.

504 THEORY OF INCOME DETERMINATION 3 prereq 410 and approval of the graduate committee. The theories underlying the accounting calculation and disclosure of periodic net income. Economic, legal and tax concepts of income.


599 RESEARCH V R-6. Special research problems.

605 ADMINISTRATIVE ACCOUNTING CONTROLS 3. The use of accounting information for business decision making and the responsibility of the controller in providing an effective information system for over-all financial planning and control. Concentration on complex control problems involving relevant costing, capital budgeting, transfer-pricing and return on investment as a measure of profitability.

690-691-692 GRADUATE SEMINAR 3. Enter any quarter. Select topics. May be conducted as a formal seminar or may consist of individual programs in the field under the guidance of the instructor.

697 PROFESSIONAL PAPER 5. A professional paper written in the area of the student’s major interest based on either primary or secondary research. Subject matter must be approved by graduate advisor.

699 THESIS V R-9.
FINANCE

FOR UNDERGRADUATES

329 PERSONAL INVESTMENTS 2. Savings accounts, purchasing a home, purchasing insurance, securities, investment trusts. The basic facts with which a layman should be acquainted. (Not open to Business Administration majors. Available as cognate graduate credit for Education degrees.)

FOR UNDERGRADUATES AND GRADUATES

322 BUSINESS FINANCE 3 prereq all pre-business requirements. Forms of business organization: financial aspects of promotion and organization; sources of financing and the administration of income tax; failure and reorganization. (Graduate credit available for non-business majors only.)

327 COMMERCIAL BANKING 4 prereq Econ 301. Liquidity, loan and investment policy, credit analysis, loan administration, interbank borrowing, bank operating costs, bank earnings, and relationships with customers, government, and the public.

217 REAL ESTATE 3 prereq Econ 301. Understanding real estate values, real estate law and the mechanics of buying and selling; property management and landlord-tenant relationships; taxation; the role of government in financing.

320 PRINCIPLES OF INSURANCE 3 prereq Econ 203. Basic risk analysis; introduction to fire, casualty, life and health coverages; business and personal insurance needs; company organizations and industry practices; the liability peril; automobile insurance laws; claims procedure; government regulation. (Graduate credit available for non-business majors only.)

331 LIFE AND HEALTH INSURANCE 3 prereq 230. Analysis of individual and group insurance; human values and insurance needs; estate planning and the impact of taxation; business continuation; estate protection needs and annuities for business and individual retirement programs.

332 PROPERTY AND CASUALTY INSURANCE 3 prereq 330. Concentrated analysis of coverages; insurance management problems facing special types of business and personal risks: multiple-line policies; legal interpretation and analysis; practical case problems in liability and direct loss situations.

420 INVESTMENTS 3 prereq Econ 301. Selection of risk assets, and evaluating the income and capital returns associated with alternative investment opportunities under conditions of uncertainty.

421 ANALYSIS AND FORECASTING OF BUSINESS CONDITIONS 3 prereq Econ 301. Investigation of determinants of overall business conditions as background for business and investment decision analysis and analytical tools for controlling business fluctuations and evaluation of forecasting techniques.

423 ANALYSIS OF FINANCIAL PROBLEMS 4 prereq 322. Problems of asset management, financing, and capital budgeting, and current problems of financial management created by changing economic conditions through case analysis.

424 MONEY AND CAPITAL MARKETS 3 prereq Econ 301. Development of interest rates and the effects of monetary and fiscal policies on their impact on financial decisions and interrelationships among sections of the economy associated with monetary and fiscal policy.

FINANCE SEMINAR 2 prereq senior standing. Selected topics in finance with emphasis on individual study and research.

SEMINAR V 2-4.

FOR GRADUATES

522 SECURITY ANALYSIS 3 prereq 531. Principles and techniques of investment. Emphasis on the analysis of security analysis work with financial institutions (banks, insurance companies, trust institutions, investment companies, investment banking firms, security dealers and brokers, and others).

523 FINANCIAL MANAGEMENT 3 prereq Econ 510-511-512. A study of financial problems of corporate enterprises involving the planning, procuring, and controlling of financial resources. The theoretical and practical aspects of management from the point of view of the individual business unit are analyzed together with case studies of problems that arise out of changes in corporate structures and financial markets.

599 RESEARCH V R-6. Special research problems.

581 PROBLEMS IN FINANCIAL MANAGEMENT 3. Internal and external aspects: impact on the financial manager, resource allocation in relation to the investment and financing process, the impact of changes in technique applicable to capital budgeting and the cost of capital, the impact of economic environment on financing and investment decisions.

690-691-692 GRADUATE SEMINAR 3. Enter any quarter. Selected topics. May be conducted as a formal seminar. (May consist of individual programs of study in the field under the guidance of the instructor.)

697 PROFESSIONAL PAPER 5. A professional paper written in the area of the student's major interest based on either primary or secondary research. Subject matter must be approved by graduate advisor.

699 THESIS. V R-9.

MANAGEMENT

FOR UNDERGRADUATES

250 INTRODUCTORY BUSINESS STATISTICS 4 prereq Math 116. Methods of collection, analysis, and presentation of economic, social, and business data; frequency distributions, averages, variability, sampling error, and measures of association.


257 LEGAL ENVIRONMENT OF BUSINESS 3 prereq all pre-business requirements. An introduction to the legal and ethical aspects of business environment. What is law, sources and classifications of law, judicial system and legal procedures for resolving conflicts, principles of tort and criminal law, trends in law and business.

258 LEGAL ENVIRONMENT OF BUSINESS 3 prereq 357. Legal principles relating to business transactions: contracts, agency, business organizations, sales, negotiable instruments, real and personal property, and security devices.

259 C.P.A. LAW REVIEW 3 prereq 358. Primarily for accounting majors intending to take the CPA examinations, but open to all students. Review of contracts, negligence, other concepts, interspersed review of other law subjects up to the time of the CPA examinations. Course examinations will usually be taken from former examinations given by the American Institute of Certified Public Accountants.

FOR UNDERGRADUATES AND GRADUATES

340 PRODUCTION MANAGEMENT 3 prereq all pre-business requirements. Management process applied to design and operation of production systems, application of the scientific method rather than as a strictly manufacturing activity; and research and development and the role of human resources as valued by the firm, material management, process design, production planning and control. (Graduate credit available for non-business majors only.)

342 ORGANIZATIONAL HUMAN RELATIONS 3 prereq all pre-business requirements. Emphasis on organizational structure and behavior of individuals and groups; emphasis on interpersonal, motivational, and attitude change processes. Application of psychological and sociological concepts to management of people in the firm, situational analysis, organizational analysis, problems of delegation of authority and acceptance of responsibility. (Graduate credit available for non-business majors only.)

344 AMERICAN INDUSTRIES 4 prereq 340, 390. Economic problems and technological changes in manufacturing and communications industries. Location factors, company structures, mergers and competition and national policy relating to oligopoly.

347 MANAGERIAL ECONOMICS 4 prereq 340. The application of economic analysis to the operation of a business. Demand and cost analysis, competitive and non-competitive pricing, and multi-line production and marketing problems.

353 SAMPLING AND STATISTICAL CONTROL 3 prereq 250 or Math 125. Applications of sampling to business, statistical control of product quality, industrial processes, and inventories.

354 QUANTITATIVE DECISION PROCESSES 3 prereq all pre-business requirements. Formulation and analysis of problems within the framework of decision theory; development of statistical inference, linear regression, correlation, general concepts in multiple regression; problem definition, construction of models and hypotheses, control and implementation of results of system and research, and organizational implications in the use of quantitative aids in management.

355 TIME SERIES ANALYSIS 3 prereq 250 or Math 125. The construction and historical analysis of economic time series including index number theory, techniques of the National Bureau of Economic Research, and regression studies.

441 PERSONNEL MANAGEMENT 4 prereq 340 and Psych 110. Personnel function in the industrial organization; selection, employee and executive development, job evaluation, human relations.

442 PERSONNEL MANAGEMENT 4 prereq 441. Analyzing selected problems: job evaluation, executive and supervisory appraisals and development, work simplification and labor management relations.

444 REGULATION OF INDUSTRY 4 prereq 340, 360, and Econ 301. Economic concepts and practices, and the economic environment in which the regulation process is carried on. Statutory law, administrative law, and the role of the industry regulatory agencies in the economic environment. (May be taken in one of last two quarters before graduation.) Top-management oriented to develop an integrated view of the regulatory process and its impact on the industry. Specialization in the field of resource pricing and the analytical tools involved in problem solving and in coordination.

449 MANAGEMENT SEMINAR V R-6. Selected projects for developing analytical tools used in general management in the decision-making process.

450 BUSINESS STATISTICS SEMINAR V R-6. prereq credits in statistics of 200 courses and 0/1. Projects or topics selected in consultation with instructor.

499 SEMINAR V 2-4.
FOR GRADUATES

540 INDUSTRIAL HUMAN RELATIONS 4. Analysis of management of people in the firm and relations of consumer to the firm through use of behavioral models drawn from contemporary psychology and social psychology.

542 RESEARCH METHODS 2. Sources of data, governmental and non-governmental; quality of data, problems of use and interpretation of problem formulation, research design, and planning; case studies and evaluation of selected research reports.

543 MANAGEMENT OF ENTERPRISE 3. Management as an art and a science. Describes and analyzes management functions, management practices and processes emphasize functions of: planning, organizing, staffing, controlling, directing, measuring, appraising, coordinating, communicating, decision making, and determining objectives, policies, and procedures. An integrative approach to diagnosis of management situations, problem solving, decision making, and incorporating current interdisciplinary research techniques in understanding human behavior in industrial systems.

550 STATISTICAL METHODS 4 prereq Math 116 or =. The origin, processing, use and interpretation of accounting and statistical data by business firms; problems and methods of analysis associated with the qualitative approach to decision making in business; specific topics covered include elements of probability, simple regression analysis, sampling, time series, index numbers, graphical presentation and modern data processing.

557 LEGAL ENVIRONMENT 3. Includes classification of the law, the judicial process, the attorney-client relationship, available remedies, settlement of disputes, government administrative regulation, and regulatory legislation.

561 BUSINESS HISTORY 3. Literature from the colonial period to present, emphasizing methodology and techniques of economic interpretation of business history. (Credit not allowed for both Bus Ad 561 and Hist 561.)

599 RESEARCH V R-6. Special research problems.

648 ADVANCED MANAGEMENT PROBLEMS 3. Interdisciplinary approach to the analysis of problems encountered by senior administrative managers; determination of profit objectives and strategies to achieve objectives; organization of executive personnel to implement policies; coordination of the organization; appraisal and adjustments of the organization to changes in environment.

647 MANAGERIAL ECONOMICS 3. The use of various analytical tools in the decision-making process of business managers; discussion of selected problem-solving techniques (e.g., mathematical programming, decision theory, statistical methods) with application to dynamic real-world situations.

650 QUANTITATIVE ANALYSIS 4. Application of subjective probability and modern utility theory to business problems arising out of risk and uncertainty; application of selected techniques, such as mathematical programming, queuing theory, game theory, simulation and Monte Carlo.

660 BUSINESS AND ITS ENVIRONMENT 3. Institutional and cultural factors, both national and international, which influence industrial leaders in their enterprise and community relations roles. The social-economic setting: the impacts and significance of population growth, economic-geographic influences, and technological development. Analysis of education’s relationship to scientific progress, technological development, innovation and the socio-managerial impacts of technology.

685 INTERNATIONAL ASPECTS OF BUSINESS 3. Trends and contemporary problems in international operations management, business relations and services, economic policies, and related subjects. The significance and effect of different institutions and political, social, and economic conditions.

690-691-692 GRADUATE SEMINAR 3. Enter any quarter. Selected topics. May be conducted as a formal seminar, or may consist of individual programs of study in the field under the guidance of the instructor.

697 PROFESSIONAL PAPER 5. A professional paper written in the area of the student’s major interest based on either primary or secondary research. Subject matter must be approved by graduate advisor.

699 THESIS V R-9.

MARKETING

FOR UNDERGRADUATES AND GRADUATES

360 MARKETING 3. prereq all pre-business requirements. Promotion, policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation. (Graduate credit available for non-business majors only.)

361 INDUSTRIAL MARKETING 4 prereq 360. Economic factors affecting marketing policy are analyzed, Deals with buying practices, channels, sales organization, industrial distributors, price, market, credit, and research services.

362 ANALYSIS OF CONSUMER BEHAVIOR 3 prereq 360. Selected conceptualizations in Social Psychology are studied. Application to current business is emphasized through controlled observation and analysis by students.

363 ANALYSIS OF MARKETING COMMUNICATION 3 prereq 360. The broad area of marketing communications is analyzed. Deals with mass media communication and personal communication as they relate to the total marketing process.

386 INTERNATIONAL MARKETING 4 prereq 360 (prereq waived for seniors majoring in Political Science). Theories, principles and methods of international trade.

460 MARKETING MANAGEMENT I 3 prereq 362, 363. Planning, coordination, and control functions in marketing management.

461 MARKETING MANAGEMENT II 3 prereq 460. Individual and class analysis of case studies in marketing management.

462 PRICING POLICIES AND PRACTICES 4 prereq 461. The roles of pricing strategy and competition in marketing decision making. Administrative marketing problems related to elasticity of demand, cost curves, marginal analysis and competitive price behavior. Marketing policies and strategies as they relate to competition.

466 MARKETING RESEARCH 3 prereq 362, 363. Research techniques and methods including statistical analysis, quantitative experimentation, and simulation. Survey of current research practices in marketing and participation in class field project.

468 MARKET ANALYSIS AND PLANNING 3 prereq 466. Utilization of statistical and accounting techniques in analyzing past and planning future marketing performance.

479 MARKETING SEMINAR 2 R-6 prereq 15 credits in marketing and c/l.

499 SEMINAR V 2–4.

FOR GRADUATES

562 MARKETING MANAGEMENT 3. The business activities involved in the marketing of goods and services; the techniques, problems and policies of marketing management. Marketing institutions, functions, costs, regulation, and current issues are appraised with special emphasis on the decision-making processes.

588 COMMUNICATION PRACTICES 4. (a) Speech—communication in the organizational setting; theories, principles and techniques of public speaking and small-group interaction, with emphasis on the latter area. (Four contact hours per week are required.) (b) Writing—critical analysis of the student's writing in his professional field.

599 RESEARCH V R-6. Special research problems.

690-691-692 GRADUATE SEMINAR 3. Enter any quarter. Selected topics. May be conducted as a formal seminar, or may consist of individual programs of study in the field under the guidance of the instructor.

697 PROFESSIONAL PAPER 5. A professional paper written in the area of the student’s major interest based on either primary or secondary research. Subject matter must be approved by graduate advisor.

699 THESIS V R-9.

BUSINESS EDUCATION AND OFFICE ADMINISTRATION

Not more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189, and 190-191 may be applied toward graduation in Business Administration; the student must earn a grade of B or better in Business Administration or earning a teaching major or minor in Business Administration. To register for any course in stenography or secretarial practice, the student must be concurrently enrolled in English 180-181 or 182-183, 184, 185.

186 BEGINNING SECRETARIAL PRACTICE 2 prereq 182.

187 BEGINNING SECRETARIAL PRACTICE 2. Application of basic skills to productio n jobs.

190-191-192 ELEMENTARY TYPWRITING 3 prereq placements for 181-182. Development of basic skills. With 1 H.S. entrance unit, no credit in 180; 2 units, no credit 180, 181.

193 ADVANCED TYPWRITING 2 prereq 182 or placement. Application of basic skills to production jobs.

184-185-186 STENOGRAPHY 5. Theory, dictation, transcription. With 1 H.S. entrance unit, no credit in 184; 2 units, no credit 184, 185.

187-188-189 ADVANCED STENOGRAPHY 5 prereq 187: 188 or placement in 187-188; 189 and 191 or placement. Review, speed development, Civil Service and State Merit tests. Concurrent enrollment in 190-191.

190-191 ADVANCED SHORTHAND TRANSCRIPTION 1 prereq 186 or placement. Concurrent enrollment in 187-188 required.

192 BEGINNING SECRETARIAL PRACTICE 2 prereq 182. Duplicating, dictating and transcribing machines.

194 RECORDS MANAGEMENT 2 prereq 182 and c/l. Alphabet, Numeric, Automatic, Geographic, Subject, Decimal, and Soundex filing.

292 OFFICE MACHINES PRACTICE 2. Calculators and Adding.

FOR UNDERGRADUATES AND GRADUATES

380 METHODS OF TEACHING TYPWRITING 2 prereq 183 or teaching experience in business subjects. Required of teaching majors and minors in Business Administration.
CHEMISTRY—29

CHEMISTRY

Is the science which involves the study of atoms and molecules—their structures, their combinations, their interactions, and the energy changes accompanying their interactions.

The Department of Chemistry offers Bachelor of Science and Bachelor of Arts Degrees. The requirements for the B.S. Degree meet the latest standards of the American Chemical Society for professional education in Chemistry and these graduates are certified to the American Chemical Society as meeting these standards. The M.S., M.S. for Teachers of Chemistry, M.S. in Biochemistry and Ph.D. degrees are also offered. (See Graduate School)

A departmental honors program has been established for chemistry majors who have attained a high scholastic record through their first two years. This program is based upon independent study and research under the direction of individual faculty members. In many cases financial support is available on a part-time research assistantship basis from research grants obtained by individual faculty members.

Prospective students desiring further information should write the Chairman, Chemistry Department.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra, geometry and trigonometry. It is desirable that the student complete two years of Algebra, Chemistry, German or French.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Science degree with a major in Chemistry: a total of 180 credits excluding Phys. Ed. and basic R.O.T.C., 70 Chemistry credits including Chem 121-122-123, 245, 265-266-267, 371-372-373, 376-376-377, 431-432-433, 446, 452, 453, 466, and 6 credits selected from Chem 465, 466, 464, 474, 490, graduate courses in Chemistry with the consent of the department, Geol 427, Geol 429, Geol 445, Geol 528, and advanced courses in Mathematics or Physics. (Chemistry courses 485 and 490 may not be used to satisfy all of these 6 elective credits.) At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or five quarters of German. College Physics and Mathematics through 251, and Mathematics 252 or 253, are required. Every student is required to pass a senior comprehensive examination in Chemistry. The requirements for the Bachelor of Arts degree with a Major in Chemistry are the same as for the Bachelor of Science degree except for the deletion of Chemistry 466, 6 credits of advanced Chemistry, Chem 453, Mathematics 252 or 253. (See also Pre-Med Sciences option.)

CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

Freshman Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121-2-3</td>
<td>Math 121-151-152</td>
<td>English 150</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV electives (or French or Russian)</td>
<td>2-3</td>
<td>4-6</td>
</tr>
<tr>
<td>2-3</td>
<td>4-6</td>
<td>4-6</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
<td>R.O.T.C. 101-2-3 (Optional)</td>
<td>0-2</td>
</tr>
<tr>
<td>1</td>
<td>0-2</td>
<td>0-2</td>
</tr>
<tr>
<td>16-19</td>
<td>15-17</td>
<td>15-19</td>
</tr>
</tbody>
</table>

(Beginning Math course actually dependent on placement test.)

Sophomore Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 265-6-7</td>
<td>Math 183, 261</td>
<td>Physics 221-2-3</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German 101-2-3</td>
<td>Group III or IV electives, or Eng. 250</td>
<td>0-5</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
<td>R.O.T.C. 301-2-3 (Optional)</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>0-2</td>
</tr>
<tr>
<td>15-18</td>
<td>18-18</td>
<td>18-18</td>
</tr>
<tr>
<td>(Can defer Physics 223 to spring quarter Junior Year and replace by 5 cr. elective.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 253</td>
<td>Chem. 371-2-3</td>
<td>Chem. 375-6-7</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>German 101-2-3</td>
<td>Phys. Ed. 100</td>
<td>Electives (to include Engl. 250 or 350)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2-5</td>
</tr>
<tr>
<td>5-8</td>
<td>5-8</td>
<td>5-8</td>
</tr>
<tr>
<td>16-19</td>
<td>14-17</td>
<td>14-17</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 431-2-3</td>
<td>German 211, 212</td>
<td>German 211 , 212</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chem. 446</td>
<td>Chem. 452</td>
<td>Chem. 453</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 466</td>
<td>Electives (must include 6 cr. of Advanced Chem.), Eng. 350</td>
<td>5-8</td>
</tr>
<tr>
<td>5</td>
<td>7-10</td>
<td>8-11</td>
</tr>
<tr>
<td>15-18</td>
<td>15-18</td>
<td>15-18</td>
</tr>
</tbody>
</table>

(Recommended electives other than Group III and IV requirements and other Chemistry include further Mathematics, Physics, advanced Geology and French or Russian.)

PRE-MEDICAL SCIENCES CURRICULUM WITH B.A. MAJOR IN CHEMISTRY

Freshman Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys. Ed. (and Mil. Sci.—optional)</td>
<td>2-3</td>
<td>4-6</td>
</tr>
<tr>
<td>4-6</td>
<td>4-6</td>
<td>4-6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 221-2-3</td>
<td>For. Lang. 101, 102, 103</td>
<td>Zool. 111-2-3</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 404</td>
<td>Phys. Ed. (e.g., Zool. 304) or Eng. 380</td>
<td>Psychology 110</td>
</tr>
<tr>
<td>5-8</td>
<td>0-3</td>
<td>5</td>
</tr>
<tr>
<td>0-3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15-18</td>
<td>15-18</td>
<td>15-18</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys. Ed. 221-2-3</td>
<td>For. Lang. 211, 212</td>
<td>Chem. 446</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>For. Lang. 404</td>
<td>Chem. 452</td>
<td>Chem. 461, 462</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives or Eng. 350</td>
<td>4-5</td>
<td>3-6</td>
</tr>
<tr>
<td>3-6</td>
<td>15-17</td>
<td>15-18</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For. Lang. 211, 212</td>
<td>Chem. 446</td>
<td>Chem. 452</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 451, 452</td>
<td>Chem. 451, 452</td>
<td>Electives or Eng. 350</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>(Zool. 485)</td>
<td>6-5</td>
<td>3-6</td>
</tr>
<tr>
<td>15-17</td>
<td>15-18</td>
<td>15-18</td>
</tr>
</tbody>
</table>
GRADUATE WORK. See Graduate School. For details on the four summer programs leading to the Master of Science for Teachers, write to the chairman of the chemistry department.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101-102 GENERAL CHEMISTRY 4 (5-2). The basic laws, properties, and reactions of elements and compounds. For students desiring a one year general course only.

121-122-123 COLLEGE CHEMISTRY 5 (5-4). For science majors and those students wishing more than one year of chemistry. The principles and theories of chemistry, properties and reactions of elements and inorganic compounds, including qualitative analysis. Students who have completed Chem 101-102 may not receive credit for 121-122.

160 SURVEY OF ORGANIC CHEMISTRY 5 (5-4). Normally to follow Chemistry 101-102 as the 3rd quarter of chemistry for students in non-science majors desiring a one year general course. Chemistry 160 is also open for credit to students who have completed Chemistry 122 or 123 or an equivalent two quarters of a full one year course in general or college chemistry.

246 QUANTITATIVE ANALYSIS 5 (3-6) prereq 123. Gravimetric, volumetric and colorimetric methods of analysis; theory of error as applied to chemical analysis; introduction to analytical separations.

261 ORGANIC CHEMISTRY 1 5 (4-4) prereq 102 or 122. Credit not allowed for both Chem 160 and 261.

265 ORGANIC CHEMISTRY 2 5 (4-5) prereq 123. Designed for chemistry majors.

FOR UNDERGRADUATES AND GRADUATES

239 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY 3 (3-4) prereq 123 or 263. Designed to familiarize prospective high school chemistry teachers with texts, demonstrations and laboratory experiments used in newer approaches to teaching of high school chemistry (CBA and CHEMS). Credit not allowed toward bachelor's degree in chemistry.

348 ADVANCED QUALITATIVE ANALYSIS 3 (2-4) prereq 123. The use of modern techniques and methods of qualitative analysis.

361 CHEMISTRY OF PLANT CONSTITUENTS 4 (3-4) prereq 160 or 261. Chemistry and analysis of plant components, including sugars, glycosides, polysaccharides, lignin and extractives. (Same as Bot 160 and For. 161.

362 CHEMISTRY OF WOOD PRODUCTS 3 (3-0) prereq 261. The chemistry of pulp, paper, cellulose derivatives, naval stores, industrial polymers, flame retardants, modified woods, and other wood products. (Same as For. 362.)

370 SURVEY OF PHYSICAL CHEMISTRY 5 (5-4) prereq 102 or 122, 160 or 261, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medicine.

371-372-373 PHYSICAL CHEMISTRY 3 (3-0) prereq Math 251 and Physics 222. The more important methods, results and problems of theoretical chemistry.

375-376-377 PHYSICAL CHEMISTRY LABORATORY 1 (0-4) prereq 245, and 371-372-373 or concurrent enrollment.

384 PHYSIOLOGICAL CHEMISTRY 3 (3-0) or 5 (5-4) prereq 160, 263 or 266. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

431-432-433 SEMINAR 1 (0-0) R 2 (4-3) R prereq 263 or 267, and a reading knowledge of German. Presentation and discussion of current literature of chemistry. Use of the library.

446 INSTRUMENTAL ANALYSIS 5 (3-6) prereq 245, 371 and 375. Theory and practice of chemical instrumental and instrumental analysis.

453 INORGANIC CHEMISTRY 3 (3-0) prereq 123, 263 or 267, 371 or 375. The principles of systematic inorganic chemistry.

453 CHEMISTRY OF THE REPRESENTATIVE ELEMENTS 3 (3-0) prereq 453.

455 INORGANIC CHEMISTRY LABORATORY 2 (0-0) prereq 123, 263 or 267 and C/L. The techniques in preparation of inorganic compounds.

461 CARBOHYDRATES 3 (3-0) prereq 263 or 267, 361. Structure, reactions, derivatives and biological aspects of carbohydrate compounds.

463-466 THEORETICAL ORGANIC CHEMISTRY 3 (4-0) prereq 263.

466 ORGANIC QUALITATIVE ANALYSIS V 3-5 (2-4 to 8) prereq 263 or 267. Systematic methods of identification of pure organic compounds and mixtures; general class reactions of organic chemistry.

474 CHEMICAL THERMODYNAMICS 3 (3-0) prereq 263, 373. The principles of thermodynamics and their application to chemical systems.
DRAMA—31

FOR UNDERGRADUATES AND GRADUATES

306 PLAYWRITING 2 R-6 prereq c/l. Techniques and practice in writing the one-act play and the full-length play.
307-308-309 THE DRAMA (see English)
313 THEATER IN THE COMMUNITY 2 c/l prereq c/l. The place in society of the children's theater, and the community and history.
321 THEATER PRODUCTION IN THE HIGH SCHOOL 3. Problems of high school theater including play selection, staging, acting, promotion, organization.
322 ADVANCED STAGECRAFT 3 prereq 131. Principles and practice in scene painting, properties, lighting, and costume. Students will work on set pieces of lighting and costume. Students will work on major productions.
341 STAGE COSTUMING 3 prereq 112. History of costumes of various periods. Students will work on costumes for major productions.
342 ACTING FOR TELEVISION 3 prereq 121. Theory and the practice of acting before the television camera.
343 STAGE LIGHTING 3 prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment and instruments and their use. Students will work on lighting for major productions.
351 ADVANCED DIRECTION 3 prereq 223. Special directing problems involved in areas such as musical and dramatic literature. Students will work on directing a major production.
352 DRAMATIC INTERPRETATION 3 prereq 3 hrs. of Speech. Theory and practice of play-reading using a wide variety of dramatic materials and forms.
364 CREATIVITIES FOR CHILDREN 3 prereq 121. Children's literature suitable for adaptation to dramatic form; improvisational and other playmaking techniques; the dramatic method in teaching non-theater subjects, such as science and others with c/i on basis of satisfactory work in drama and the theater. Independent work in design, playwriting and the technical phases of dramatic production and to give him experience in these areas; to prepare him to teach and direct in the high school theater and the college and university theater; and to relate through the study of the art of the theater the place of theater in the societies of the past and the present.

The University of Montana Drama Department offers work leading to the Bachelor of Arts degree in drama and the Master of Arts degree in drama.

University of Montana graduates in theater and drama are presently teaching in high school, college, and university theater programs in the state, and working in community theater, radio, the motion picture, television, and the professional theater.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DRAMA. In addition to the general requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree with a major in drama: Drama 112, 121, 131, 231, 251, 261-262-263, 301-302-303, 322, 351, 352, 401-402-403 (4 cr.), 491 (3 cr.), plus a minimum of 21 additional credits in Speech-Drama-English.

The following courses outside the drama department are required: Speech, 3 hrs.; English 343.

The foreign language requirement listed earlier in the catalog must be satisfied.

Senior comprehensive examinations are required for all graduating students.

Seniors must submit for graduation an original play, or a prompt book for the production of a play and also must direct a play.

DRAMA MAJORS PLANNING TO TEACH in Montana secondary schools must take, in addition to their drama major, a teaching major in another area for certification purposes. They will be certified in drama as a teaching minor. If the teaching major chosen is English (highly recommended), the student should follow the English requirements in the English broad fields major listed under Education, or Schedule C: Teaching under English. The English electives should be chosen in part by English 344 and 341 (12 hours). Drama majors electing a teaching major will not be required to include Drama 150 or five credits of drama electives, as part of their drama degree.

In addition to the above requirements state certification requires 24 hours in education (Education 200, 204, 405, 406, 407) plus Psychology 110. See Education listings.

Suggested first year program:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 112</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Drama 223</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Drama 231</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Speech 112</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>English 150</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Language (French recommended)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H. &amp; P. E. 100 (Dance or Fencing)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Elective from Groups I, II, III</td>
<td>3-4</td>
<td>3-4</td>
<td>3-4</td>
</tr>
<tr>
<td>15-16</td>
<td>14-16</td>
<td>14-16</td>
<td></td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 REHEARSAL AND PERFORMANCE 1 R-6. Enter any quarter. Prereq c/l. Students engaged in any aspect of production including acting, directing, lighting, stagecraft, makeup, costumes, properties, business and publicity, are eligible for registration.

121 INTRODUCTION TO THE THEATER 3. A survey of the elements which make up the art of play production. The principles underlying all the arts.

122 ELEMENTARY ACTING 2 (2-3). Principles of pantomime and characterization with attention to expressive bodily action.

221 ELEMENTARY STAGECRAFT 2 (2-4). Principles and practice in the construction, rigging, and handling of stage scenery. Students will work on construction crews of major productions.

223 ELEMENTARY DIRECTION 3 (3-2) prereq 121. Principles and techniques of stage direction and rehearsal. The planning and directing of the one-act play form will be considered and used in this course.

251 STAGE MAKEUP 2. Principles of and practice in theatrical makeup. Students will work on makeup for major productions.

261-262-263 DRAMATIC LITERATURE 2. Enter any quarter. Plays of various periods. Period and plays will vary from quarter to quarter, including Greek and Roman, British Renaissance, French Classic, The Restoration, 19th Century, Modern European, Modern American. Emphasis upon the performed play.

401-402-403 THEATER PROJECTS 5-4-3. Independent work in drama courses or in Education. 401-402-403 demonstrate ability in theater and drama; to others with c/l on basis of much work in drama and the theater. Independent work in design, lighting, costume design, playproduction, playwriting, study of drama.

422 ADVANCED DIRECTION 3 prereq 121, 131, and 223. Technique of rehearsing and directing long plays. Principles of producing farce, fantasy, comedy, melodrama, tragedy.

431 SCENE DESIGN 3 prereq 112, 131. The principles of stage design and the relation of the scene to the play. Practice in designing stage settings.

441 ADVANCED MAKEUP 2 prereq 251 or experience and c/l. Principles and techniques of creating makeup for characters from dramatic literature. Students will work on makeup for major productions.

443 ADVANCED STAGE LIGHTING 3 prereq 343. Lighting for the theater and related forms, with special attention to modern lighting control and equipment, scenery projection, variety forms of staging, and lighting design. Students will light productions.

491 SEMINAR 2 R-6 prereq 10 credits in drama courses or in English 347, 348, 399, 431-432-433, and c/l. Intensive study of dramatic theory relating to acting, directing, design, and dramaturgy.
ECONOMICS

is that branch of the social sciences which deals with man's efforts to satisfy his wants by utilizing the scarce means provided by nature. The department considers its teaching goals to be three fold: (1) To present to students the basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them as civic leaders. (2) To introduce students majoring in economics to the various special fields of study within economics. This training along with extensive work in the other liberal arts and sciences, is intended to instill breadth of intellectual interest, critical habits of thought, a problem-solving attitude, and facility of expression. (3) To help meet, through graduate work, the increasing demands for competent professional economists in industry, commerce, government and education.

Courses cover general economic theory, public finance and taxation, labor economics, monetary theory and prices, international economics, public utilities, comparative economic systems, and the economics of Montana.

Students may major in economics or a combination of economics and political science or sociology. Graduate work leading to a Master of Arts degree with a major in economics is given.

Special Requirements for the Undergraduate Degree. In addition to the general requirements for graduation listed earlier in the catalog, 25 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics.

Unless circumstances peculiar to the student's best interest indicate otherwise, the student should take in the sophomore or junior year, Economics 201-202-203; Mathematics 125, 249; Political Science 201-202-203; History 261-262; Anthropology 152 or Sociology 101; in the junior or senior year, Economics 301 and 311.

The following may be counted as part of the 50 credits required for a major in Economics: Geography 211; History 347-348-349, 373-374-375, 473-474; Political Science 365; Mathematics 344-345; Business Administration 203, 204-205, 220-221. It is recommended that Advanced Placement Examination 201-202 be taken. A foreign language is required.

Combined Majors. Minimum of 60 credits. Combined majors in economics and political science or sociology may be earned by meeting the following requirements with the remainder of credits selected according to the student's interests. Economics 201-202-203; Mathematics 125; Economics 301, 311, and at least 12 additional credits in upper division courses. Political Science 101, 203-205 and 15 additional credits of which 12 must be in upper division courses. Sociology 101, 204, 308 and at least 12 additional credits in upper division courses. A comprehensive examination is required of seniors with a major in the Economics-Political Science Concentration.

Graduate Work. See Graduate School.

For Undergraduates

For explanation see Course Descriptions (Index)

101 CULTURAL ECONOMICS 5. Institutional development of economic society; nature, origins and problems of modern capitalism.


For Undergraduates and Graduates

201 MONEY AND BANKING 4 prereq 203 Role of money: banks as suppliers of money; Federal Reserve System as regulator of money; monetary theories, history and policy.

203 SOCIAL SCIENCE METHODS (See Sociology).

204 PUBLIC FINANCE W 4, Su 3 prereq 203. Principles and problems of Federal financing.

205 STATE AND LOCAL TAXATION 4 prereq 203. Revenues and expenditures on state and local levels.

311-312 INTERMEDIATE ECONOMIC ANALYSIS 4 prereq 203. (311) Theory of the firm. (312) Input analysis and welfare conditions.

315-316 DEVELOPMENT OF ECONOMIC THEORY W 4, S 2, Su 3 prereq 203. (315) Economic ideas from early times to 1890. (316) Economic theories from 1890 to the present.

221-222 LABOR ECONOMICS 3 prereq 203. (221) Institutional and legal background of labor problems. (222) Economics of labor markets.

324 INDUSTRIAL RELATIONS 3 prereq 203. Problems and public policy in labor-management relations.

325 SOCIAL SECURITY 3 prereq 203. Theoretical analysis and problems of public policy.

331-332 INTRODUCTION TO INTERNATIONAL ECONOMICS A, W 3, Su 3 prereq 203. (331) Theoretical analysis; (332) Problems of policy-making.


345 ECONOMIC DEVELOPMENT 4 prereq 203. Theoretical determinants of economic growth in poor and rich countries.

365 PUBLIC UTILITY ECONOMICS 3 prereq 203. Analysis of costs and pricing policies; economic aspects of regulation.

369-370 ECONOMICS OF TRANSPORTATION 3, prereq 203. (369) Economic significance, systems, freight rates and their relations to location of industries and market centers, regulation. (370) Waterways, highways, pipelines, and airways.

374 COMPARATIVE ECONOMIC SYSTEMS 4 a/y prereq 203. Capitalism, fascism, socialism, communism; evaluation.

375 THE RUSSIAN ECONOMY 4, Su 3 prereq 203.

376 MONOPOLY AND COMPETITION 3 prereq 311. Theories of imperfect markets and workable competition as applied to public policy.

378 ECONOMICS OF MONTANA 3 prereq 203. Factors and forces determining the economic well-being of the people of Montana.

380 AGRICULTURE ECONOMICS 4 prereq 203. Agricultural industry, supply of and demand for farm products, farm finance, taxation, agricultural policies.

382 CONTEMPORARY ECONOMIC PROBLEMS 3 prereq 203.

406 MONETARY THEORY 4 prereq 301.

410 ADVANCED ECONOMIC ANALYSIS 4 prereq 25 credits in economics including 311.

451 MATHEMATICAL ECONOMICS 4 prereq 312 and Math 125.

490 ADVANCED PROBLEMS V 1-2 R-6 prereq 12 credits in economics and c/l.

495 SEMINAR IN ECONOMICS V 1-2 R-6 prereq 16 credits in economics and c/l.

For Graduates

501 GRADUATE RESEARCH V R-6.

510-511-512 ECONOMICS 3. Elements of analytical economics: the American economy, characteristics, performance; macro-economics, money and banking, monetary and fiscal policy, growth and stabilization; markets, pricing of outputs and inputs, government regulation; distribution theory and public policies; the public economy; the world economy, and the economic development. (Open only to MBA and MRA students.)

699 THESIS V R-15.

EDUCATION

Education at the University of Montana prepares for teaching in any of the twelve grades. Prospective elementary and secondary teachers must have earned a bachelor's degree, have satisfactorily completed certain specified courses, and have demonstrated competence in student teaching before they become eligible for recommendation by the University of Montana for state certification to teach. Patterns of courses to be completed are planned in terms of the particular fields in which the student expects to teach.

After they have been granted a bachelor's degree and have been certified to teach, positions in Education may take advanced work at the graduate level which will prepare them for specialized positions such as school administrator, supervisor, counselor, curriculum coordinator, reading specialist, and research director; or build up their backgrounds in the field or fields which they teach. The University of Montana offers graduate work leading to the master's and doctor's degrees.

A six-year program in school administration (two years of graduate work beyond the bachelor's degree) is offered. The program is designed for practicing and prospective school administrators of demonstrated ability and promise. Admission to the Graduate School is a prerequisite for admission to graduate programs.
General certification requirements for Montana's elementary, junior and senior high schools are set forth below. In addition to satisfying course, credit, and degree requirements, an applicant for certification in Montana must be (1) a citizen of the United States (provisional certification is available for non-citizens upon request of a board of trustees), (2) at least 18 years of age, and (3) able to present a satisfactory health certificate signed by a physician. Additional information may be secured from the Dean of the School of Education.

GENERAL INFORMATION. The School of Education at the University of Montana is fully accredited by the National Council for the Accreditation of Teacher Education and by the Northwest Association of Secondary and Higher Schools.

Students preparing to teach in the elementary grades should major in Education: those preparing to teach particular subjects, either in junior or senior high schools, major in the principal subject to be taught or in Education; those preparing for library work major in Education, take courses in Library Service; those preparing for counseling, supervising, administering, or research work usually major in Education.

Other areas in which courses are acceptable for Education credit include Art, Business Administration, Chemistry, English, Foreign Languages, General Education—Home Economics, Journalism, Mathematics, Music, Physics, and Religion.

ADMISSION TO TEACHER EDUCATION. All students preparing to teach must apply for admission to teacher education at the time they enroll for Education 200, or no later than the beginning of the junior year. To be admitted to teacher education, a student must have completed the following: (1) enroll for Education 200, or no later than the beginning of the junior year. To be admitted to teacher education, a student must have completed 16 credits, or have the consent of the Director of Student Teaching. Normally, the professional quarter occurs during the student's senior year.

Elementary: to qualify for this assignment, the student must (1) be eligible to continue in teacher education, (2) have a minimum of 2.3 grade point average on all courses attempted, (3) have the consent of the Director of Student Teaching. For elementary teachers, Group I and II requirements may be satisfied by the following: General 125, 126, 127, and Mathematics 130, 220.

The School of Education at the University of Montana is fully accredited by the National Council for the Accreditation of Teacher Education and by the Northwest Association of Secondary and Higher Schools.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN EDUCATION. In addition to the general requirements for graduation listed earlier in the catalog, candidates for the degree of Bachelor of Arts in Education will meet the following requirements:

Preparation for Teaching in the Secondary Grades: Candidates must earn a minimum of 40 credits in Education, including the following required courses totaling 35 credits: Education 200, 205, 365, 342, 405 (10 credits), 407, 450 and 452 or their equivalents, and elective courses totaling 5 credits selected from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 45 or more credits in a teaching major and 20 or more credits in a teaching minor. Requirements in a teaching major and minor patterns in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in Secondary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements, Life Sciences</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements, Physical Sciences</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 100 or 115—Physical Education or Prof. Activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu. 200—Orientation to Education</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 230—Intermediate Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 201—United States History</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Math. 120—Theory of Arithmetic</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Psych. 230—Child and Adolescent Psychology</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Pol. Sci. 201—American Government</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Soc. Sciences—Elective Courses</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H &amp; PE 100 or 115—Physical Education or Prof. Activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 40 credits: Education 200, 202, 305, 309, 310, 404, 407.

In addition, the student will complete work in the following areas: English, 21 credits; Social Studies, 28 credits; Science, 15 credits; Mathematics, 9 credits; Health and Physical Education, 8 credits; Psychology, 10 credits; Art, 6 credits; and Music, 6 credits.

For elementary teachers, Group I and II requirements may be satisfied by the following: General 125, 126, 127, and Mathematics 130, 220.

It is recommended that elementary teachers take Health and Physical Education 115 as part of their required work in Physical Education during the freshman and sophomore years.

Elementary Education majors may use their electives to strengthen any of the required academic fields, or to complete a minor in a field of the following areas: Art, Music (vocal only), Foreign Language, Health and Physical Education, Special Education. Approved minor patterns are available at the School of Education Office.

Any student who plans to do student teaching in the kindergarten must have completed Education 331. Early Childhood Education, before registering for student teaching.

Suggested Curriculum in Elementary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gen. 125-156—Science for Elementary Teachers</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Speech 111—Principles of Public Speaking</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 110—Introduction to Psychology</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Gen. 151-152—Introduction to the Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 101—Elements of Geography</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Music 125—Musical Elem. Schools</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 100 or 115—Physical Education or Prof. Activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu. 305—Secondary School Teaching Procedures</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Edu. 407—Problems in Teaching</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 452—Secondary School Guidance</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Edu. 452—Educational Measurement</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives or Courses to complete Teaching</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 40 credits: Education 200, 202, 305, 309, 310, 404, 407.

In addition, the student will complete work in the following areas: English, 21 credits; Social Studies, 28 credits; Science, 15 credits; Mathematics, 9 credits; Health and Physical Education, 8 credits; Psychology, 10 credits; Art, 6 credits; and Music, 6 credits.

For elementary teachers, Group I and II requirements may be satisfied by the following: General 125, 126, 127, and Mathematics 130, 220.

It is recommended that elementary teachers take Health and Physical Education 115 as part of their required work in Physical Education during the freshman and sophomore years.

Elementary Education majors may use their electives to strengthen any of the required academic fields, or to complete a minor in a field of the following areas: Art, Music (vocal only), Foreign Language, Health and Physical Education, Special Education. Approved minor patterns are available at the School of Education Office.

Any student who plans to do student teaching in the kindergarten must have completed Education 331. Early Childhood Education, before registering for student teaching.

Suggested Curriculum in Elementary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gen. 125-156—Science for Elementary Teachers</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Speech 111—Principles of Public Speaking</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 110—Introduction to Psychology</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Gen. 151-152—Introduction to the Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 101—Elements of Geography</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Music 125—Musical Elem. Schools</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 100 or 115—Physical Education or Prof. Activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu. 305—Secondary School Teaching Procedures</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Edu. 407—Problems in Teaching</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 452—Secondary School Guidance</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Edu. 452—Educational Measurement</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives or Courses to complete Teaching</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>
**EDUCATION**

**Junior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 340</td>
<td>Survey of Children's Literature</td>
<td>3</td>
</tr>
<tr>
<td>Educ 308</td>
<td>Teaching Elem. School Reading</td>
<td>5</td>
</tr>
<tr>
<td>Educ 398</td>
<td>Teaching Early Childhood</td>
<td>3</td>
</tr>
<tr>
<td>Educ 310</td>
<td>Teaching Elementary School Science and Social Studies</td>
<td>4</td>
</tr>
<tr>
<td>Eng 356</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Art 303</td>
<td>Elementary School Art</td>
<td>3</td>
</tr>
<tr>
<td>Gen 306</td>
<td>Conservation of Natural and Human Resources in Montana</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 359</td>
<td>Physical Education in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>HPE 339</td>
<td>The School Health Program</td>
<td>3</td>
</tr>
<tr>
<td>Soc Sci 318</td>
<td>Electives-Coursework</td>
<td>4, 6</td>
</tr>
<tr>
<td>Electives</td>
<td>16, 16, 16</td>
<td></td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 404</td>
<td>Student Teaching: Elementary</td>
<td>15</td>
</tr>
<tr>
<td>Educ 407</td>
<td>Problems in Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>16, 16, 16</td>
<td></td>
</tr>
</tbody>
</table>

**RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATIONS.** The University of Montana recommends its graduates who meet state certification requirements to the State Department of Public Instruction. All such recommendation must be approved by the Dean of the School of Education. Students who expect to teach in states other than Montana should investigate specific requirements because they differ in various states.

Academic and professional requirements for University recommendations for certification to teach in the fully accredited high schools of Montana are as follows:

1. A bachelor’s degree from the University of Montana or other approved institution of higher education.
2. Twenty-four or more quarter credits in Education designated by the Dean of the School of Education (see Preparation for Secondary Teaching).
3. A teaching major (45 or more credits) and a teaching minor (30 or more credits) in fields commonly taught in high schools (see Course Requirements in Teaching Major and Minor Fields below).

Academic and professional requirements for University recommendation for certification to teach in the fully accredited high schools of Montana are as follows:

1. Bachelor’s degree from the University of Montana or other approved institution of higher education, and the holder has completed a four-year course of elementary school education.
2. Specific requirements in general education that have particular reference to teaching areas in the elementary grades.

Students who expect to be certified to teach in the secondary grades must be approved by the Dean of Education. A bachelor’s degree is required in the area of education. Students planning to teach in the elementary grades must complete a minimum of 54 quarter credits in approved courses before spending the quarter preceding the quarter of practice teaching a statement of their intended teaching fields. Those students who expect to be certified to teach in the elementary grades must, with the Dean of Education, set forth their programs. Each candidate for a certificate who has not already received credit in Student Teaching must register for that course. The student teaching program in the professional quarter includes as many observation and participation in the training week as is feasible. The program is preceded in the professional quarter by Educ. 404 or 405.

**SEQUENCE OF CERTIFICATION COURSES IN SECONDARY EDUCATION TO BE TAKEN BY STUDENTS NOT MAJORING IN EDUCATION.**

- Freshman year: Psych 110 (not counted among the 24 credits required for secondary certification).
- Sophomore year: Educ 200, 2 credits.
- Junior year: Educ 205, 4 credits.
- Senior year: Educ 305, 5 credits; 405, 10 credits; 407, 3 credits.

**SEQUENCE OF CERTIFICATION COURSES IN ELEMENTARY EDUCATION.** Since certification for teaching at the elementary level is based solely on the Bachelor’s Degree in Elementary Education, see the preceding section on preparation for teaching in the elementary grades for requirements.

The University of Montana does not offer a two-year diploma program leading to provisional elementary certification. Variations from these patterns of required courses for elementary and secondary standard teaching certification are permissible only with the approval of the Dean of the School of Education.

**PREPARATION FOR PROFESSIONAL CERTIFICATION.** The Montana professional certificate is issued to applicants having 3 or more years successful teaching experience who have completed a minimum of 45 quarter credits in approved courses below the baccalaureate degree. Students intending to qualify for this certificate are required at the beginning of the program to outline such programs with and receive approval from the Dean of the School of Education.

**PREPARATION FOR SCHOOL LIBRARIANS.** The library service program is designed to train school and teacher-librarians to meet the requirements of the Northwest Association of Secondary and Higher Schools and of the state of Montana. The minimum requirement for schools of under 100 enrollment includes Education 323, 344, and 345. The student planning a more extended program should consult the library service instructor for advice on additional courses.

**GRADUATE WORK.** See Graduate School.

**FOR UNDERGRADUATES**

**FOR EXPLANATION SEE COURSE DESCRIPTIONS (INDEX)**

**200 ORIENTATION TO EDUCATION 2 prereq Psych 110. Teaching as a profession. The American public school and its purpose. Problems, issues, and trends in education today.**

**202 THE ELEMENTARY SCHOOL CHILD 5 prereq 200 and Psych 200. Principles and concepts in psychology of learning as applied to the elementary school child. A minimum of 2 hours of library work will be spent in observation of children in the school environment.**

**205 EDUCATIONAL PSYCHOLOGY 4 prereq 200. The growth and developmental characteristics of adolescents. Psychological foundations of learning in the junior and senior high school.**

**210 OUTDOOR EDUCATION 2. Outdoor activities and materials to enrich the elementary science program.**

**235 SECONDARY SCHOOL TEACHING PROCEDURES 5 prereq 200 and 205. Methods of planning, presentation, evaluation, and diagnosis. As can be applied.**

**236 TEACHING ELEMENTARY SCHOOL READING AND OTHER LANGUAGE ARTS 5 prereq 202.**

**237 TEACHING SECONDARY SCHOOL MATHEMATICS 3 prereq 202, Math 130, 220.**

**238 TEACHING ELEMENTARY SCHOOL SCIENCE AND SOCIAL STUDIES 4 prereq 202.**

**231 METHODS OF TEACHING HOME ECONOMICS. (See Home Economics.)**

**233-234-235 SCHOOL MUSIC. (See Music.)**

**230 PRINCIPLES OF RELIGIOUS EDUCATION. (See Religion.)**

**234 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 5 prereq c/l. Objectives of library service, library routines and procedures, library building and equipment, the library’s place in governmental organization, library extension work.**

**235 METHODS IN TEACHING HEALTH. (See Health and Physical Education.)**

**404 STUDENT TEACHING: ELEMENTARY 15 prereq 200, 202, 300, 305, 310, 315. Consent of Director of Student Teaching. Classroom teaching. Student teaching is a full day’s work for a complete quarter, and although some observation and participation is included, the main emphasis is upon responsible student teaching. It includes as many of the regular duties and responsibilities of a teacher as can be arranged.**

**405 STUDENT TEACHING: SECONDARY 10 prereq 200, 205, 300, and consent of Director of Student Teaching. Classroom teaching at the secondary level. Student teaching is a full day’s work for a complete quarter, and observed and participated in is included. The main emphasis is upon responsible student teaching. It includes as many of the regular duties and responsibilities of a teacher as can be arranged.**

**407 PROBLEMS IN TEACHING 3 prereq 404 or 405 and concurrent registration. Current problems and issues in teaching.**

**415 LIBRARY PRACTICE 5 prereq 30 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under the supervision of a trained professional librarian. Weekly meeting with Director of Library Service.**

**FOR UNDERGRADUATES AND GRADUATES**

**302 ALGEBRA FOR TEACHERS. (See Mathematics.)**

**303 GEOMETRY FOR TEACHERS. (See Mathematics.)**

**307 METHODS OF TEACHING SECONDARY ART. (See Art.)**

**316 SCHOOL PUBLICATIONS. (See Journalism.)**

**322 METHODS OF TEACHING BIOLOGY. (See General.)**

**326 TEACHING OF CONSERVATION 3 prereq Gen 300 and 12 credits in Educ and c/l. Current programs and materials. Integral part of summer Conservation Education Workshop.**

**327 PROBLEMS IN CONSERVATION EDUCATION prereq c/l. Methods of solving problems in education. Precedes Educ 326 or for 6 credits if preceded by Educ 329 and Gen 300. Designing, selection, and evaluation of materials for the teaching of conservation.**

**328 METHODS OF TEACHING PHYSICS. (See Physics.)**

**329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY. (See Chemistry.)**

**331 EARLY CHILDHOOD EDUCATION 3 prereq 12 credits in Elementary Education or teaching experience and c/l. Theory and techniques of teaching in the kindergarten and primary grades as a unified program. A prerequisite to teaching in the kindergarten.**
334 REMEDIAL READING 3 prereq a basic course in teaching of reading or teaching experience, and c/i. Diagnosis and treatment of reading difficulties, remediation, secondary and collapsed level. Methods and materials for specialists, classroom teachers, and administrators who operate in remediial programs.

340 SURVEY OF CHILDREN’S LITERATURE 3.

342 THE SCHOOL LIBRARY IN TEACHING 3. The use of books and libraries. The use of library materials in subject enrichment and unit planning. (May not be counted in the teaching minor.)

343 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 4, Su 3. Objectives of school library service, library routines, procedures, quarters, equipment and costs. For part-time teacher-librarians without library training.

344 CATALOGING AND CLASSIFICATION 4, Su 3 prereq 341 or 343. Principles of classification and cataloging for small libraries.

345 MATERIALS SELECTION AND BIBLIOGRAPHY 4, Su 3 prereq 341 or 343. Book selection and order work for the small library. Book lists and bibliographies.

346 LIBRARY REFERENCE MATERIALS 4, Su 3 prereq 341 or 343. Basic reference books and bibliographies commonly found in small libraries; reference methods, citation, and bibliographic form.

347 AUDIOVISUAL COMMUNICATION 3. Classroom utilization of sound and visual teaching materials; intensive laboratory work including 16mm., filmstrip, slide, overhead, opaque, record player, tape recorder and related instructional material.

360 EDUCATIONAL SOCIOLOGY 3. Education in modern social, economic, and political life; the social role of special institution; problems of American life which affect and are affected by the work of the public schools.

376 THE TEACHER AND SCHOOL ORGANIZATION 3 prereq teaching experience. To develop understanding of the relationship of the organization, management, and financing of American public education with special emphasis on school problems, community relations, and organizational structure of schools.

373 THE SCHOOL HEALTH PROGRAM. (See Health and Physical Education.)

380 METHODS OF TEACHING TYPEWRITING AND TRANSCRIPTION. (See Business Administration.)

381 METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS. (See Business Administration.)

382 METHODS OF TEACHING ENGLISH (See English.)

384 METHODS OF TEACHING SHORTHAND AND TRANSCRIPTION. (See Business Administration.)

390 METHODS OF TEACHING FOREIGN LANGUAGES. (See Foreign Languages.)

400 FOREIGN LANGUAGE WORKSHOP. (See Foreign Languages.)

411 (311) SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 3 prereq teaching experience and c/i. Characteristics of good reading programs and their development in accordance with present day understandings of children and youth.

414 (314) SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 3 prereq teaching experience. Curriculum trends, instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.

417 (317) SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience or c/i. Curriculum trends, instructional materials, research, and supervisory techniques relevant to a modern elementary school arithmetic program.

418 (318) SUPERVISION AND TEACHING OF SCIENCE IN THE ELEMENTARY SCHOOL 3 prereq teaching experience or c/i. Educ 202. Curriculum planning development and use of instructional materials, teaching procedures.

420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq 205 or teaching experience, a science minor and c/i. Problems involved in development of an adequate high school science program; curriculum methods, instructional materials.

421 ADVANCED PROBLEMS IN TEACHING HOME ECONOMICS. (See Home Economics.)

425 SAFETY EDUCATION AND DRIVER TRAINING 3 prereq 205 or teaching experience, a science minor and c/i. Problems involved in teaching driving and theoretical aspects of driver education. General safety education. To prepare teachers for Safety Education and Driver Training courses in high schools and offered in cooperation with the American Automobile Association and the Montana Highway Patrol.

426 ADVANCED SAFETY EDUCATION AND DRIVER TRAINING 2 prereq a basic course in driver training or experience in teaching driver training. For students who have had experience in this field. General safety education. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.

428 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 205 or teaching experience. Problems involved in teaching of social studies in junior and senior high schools; curriculum planning, development and presentation of units of instruction, selection and use of instructional materials.

431 THE SLOW AND RETARDED LEARNERS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.

432 THE BRIGHT AND GIFTED PUPILS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.

434 REMEDIAL READING LABORATORY 3 or 5 credits R-4 prereq or coreq 334 and c/i. Supervised practice in diagnosis and remedial teaching. 1 hour per day work with selected elementary, secondary, or college students. Seminar meetings.

438 THE JUNIOR HIGH SCHOOL 3 prereq 205 or teaching experience. Objectives, organization, class scheduling, curriculum, and inter-curricular activities.

440 LIBRARY PROGRAMS IN ELEMENTARY SCHOOLS 3 prereq course in children’s literature. Functions and use of classroom, community and extra-curricular activities; occupational trends, experiences, reading guidance, and teaching library skills. Responsibilities of classroom teachers, elementary librarians, library supervisors, elementary principals and department chairmen.

441 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 2 prereq 12 credits in Library Service. Methods of evaluating and improving school library services to teachers and students.

442 LIBRARY WORK WITH CHILDREN 3 or 4 prereq 341 or 343 and a course in children’s literature. Work with children in public libraries, including planning and organized programs of work on problems of special interest within the workshop topic.

444 LIBRARY SEMINAR V 1-5 R-18 prereq 20 or more hours in Library Service and consent of the Director of Library Service. Independent study and research. Group analysis and discussion of individual projects.

450 SECONDARY SCHOOL GUIDANCE 4 prereq 205 or teaching experience. Orientation to the need, organization, and methodology of guidance services in the secondary schools.

451 GUIDANCE IN THE ELEMENTARY SCHOOL 4 prereq 308, 309, 310 or teaching experience. Orientation to the need, organization, and methodology of guidance services in the elementary schools.

453 EDUCATIONAL MEASUREMENT 4 prereq 205 or teaching experience. Basic principles of measurement of educational outcomes in elementary and secondary teaching; application of statistical techniques to educational data; analysis of standardized tests; construction and use of teacher-made tests.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 3. Historical and philosophical backgrounds of present American secondary education. Enter either quarter. (461) to 1650; (462) 1650 to present.

490 INDEPENDENT STUDY V R-10 prereq c/i. Selected topics under the guidance of a staff member. Term papers may be required.

494 SEMINAR V R-10 prereq 12 credits in Education and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

505 INTERNSHIP V 1-4 R-4. Supervised field experiences in administration, guidance, special education, curriculum. (Admission by application only.)

531 ELEMENTARY CURRICULUM 4, Su 3. Major trends in course content, grade placement, organization of materials, and evaluation of outcomes.


535 CURRICULUM WORKSHOP V R-10 prereq teaching experience and c/i.


552 INDIVIDUAL APPRAISAL IN COUNSELING AND GUIDANCE 3 prereq 450 or 451, and 452. Collecting and interpreting data concerning the individual use of such data in counseling.

553 GROUP COUNSELING AND GUIDANCE PROCEDURES 3. Behavioral group procedures used by counselors who work with students in groups. Emphasis upon group processes, interaction, and experience.

554 (454) OCCUPATIONAL INFORMATION 3 prereq 450 or c/i. Sources, including job analysis and surveys; occupational trends, classification, filing system, evaluation, selection, and use of occupational information.
Students study English for a variety of reasons. Some have practical purposes: they realize the need for greater clearness, precision and ease in their use of English. Some are motivated by a general cultural interest: they hope, through a study of literature to clarify and enrich their knowledge of themselves and their world. Others combine cultural purposes with specific vocational or professional objectives, such as professional writing or teaching. Those who choose English as their major usually fall into one of three groups:

**SCHEDULE A:** Potential critics, scholars and college teachers, who can increase their critical insight by studying the great literary works of the past and present, and can prepare themselves for graduate work by gaining an understanding of the methods and materials of literary study.

**SCHEDULE B:** Potential creative writers, whose powers can be tested and directed in an environment favorable to the development of their individual abilities in the writing of poems, short stories, novels, and plays.

**SCHEDULE C:** Prospective teachers in high school, who need a program which will provide them with an adequate background in their subject matter as well as required course work for secondary school certification.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ENGLISH:** In addition to the general requirements for graduation listed earlier in the catalog, the student seeking the degree of Bachelor of Arts with a major in English must complete a minimum of 50 credits in the major but not more than 66 credits in the department. The required courses are listed in the schedules given below. By the beginning of his junior year the student should have decided definitely which of the schedules he is to follow.

All students majoring or minoring in English, whether their degrees are taken in the department of English or the School of Education, will be required to take the basic core curriculum in English studies, Schedules A, B, and C presume such a core curriculum and build from that.

**CORE CURRICULUM**

I. All prospective English majors are expected to take, in the freshman year, English 161, 162—World Literature.

II. All students are expected to take, in addition, two quarters in one sequence and one in the other from English 211-212, 231-232-233; English 342 or 343; 3 credits from General 360 or English 371, 373; and English 460.

III. The foreign language requirement listed earlier in the catalog must be satisfied. Courses in Art, History, Philosophy, Psychology, and the Social Sciences are recommended.

**SCHEDULE A: LITERATURE**

Students who hope to do graduate study in English should supplement the above courses with the following required minimum.

English 455 (Chaucer); 3 credits from 491-492-493. The remaining credits required for completion of the minimum 50 may be selected from courses in General Literature: English, and American Literature numbered above 300. The maximum of courses up to 66 credits may include 401-402-403; 440, and 441.

**SCHEDULE B: CREATIVE WRITING**

Students whose major interest is the writing of fiction and poetry would substitute the core courses with the following minimum. This schedule is aimed at helping the student toward individual expression by giving him guided practice in writing, a working knowledge of modern techniques, and a foundation in critical self-appraisal.

**REQUIREMENTS:** English 301, 302, 303 (3 credits from 306 may be substituted for one quarter in this sequence); 401, 402, 403; 3 credits from 440, 441, 442; 3 credits from 491, 492, 493. The additional credits allowed up to a maximum of 66 may be taken from courses in General Literature or English and American Literature and numbered above 300.

**SCHEDULE C: TEACHING**

Students planning to teach English in high school should supplement the core courses with one of the following options:

**Option I**

English 232, 237, 362, 482; Speech 118.

**Electives:** Other electives may be chosen from courses in the department of English, from courses in General Literature and from...
the Related Fields. Among electives there must be at least one advanced course in American Literature and one advanced course in English Literature. Additional electives in Drama, Speech, and Journalism are strongly recommended.

**Option 2**

**English electives:** 18 credits (must include at least one advanced course in English Literature, one advanced course in American Literature, and may include courses in General Literature, and General 360.)

30 credits of electives chosen from the following Related Fields: Drama, Journalism, Speech.

Students following Option 2 must take a minimum of 45 credits in English and 30 credits in Related Fields, as defined above. The program qualifies the student for the Montana State teaching certificate in English (Broad Fields). This certificate does not require a teaching minor.

**GRADUATE WORK.** See Graduate School.

**COMPOSITION FOR UNDERGRADUATES**

*For Explanation see Course Descriptions (Index)*

**NOTE:** Unless exempted by the English Department, all students are required to complete the English 150-200-350 Composition sequence. All students, unless exempted by the English Department, must take English 150 during their freshman year. English 250 and 350 may be taken during any two of the three remaining years, but in no case will any student be allowed to take both English 250 and English 350 in the same year.

- **Option 1**
  - English 371, 382, 462; Speech 118.
  - English electives: 18 credits (must include at least one advanced course in English Literature, one advanced course in American Literature, and may include courses in General Literature, and General 360.)
  - 30 credits of electives chosen from the following Related Fields: Drama, Journalism, Speech.
  - Students following Option 2 must take a minimum of 45 credits in English and 30 credits in Related Fields, as defined above. The program qualifies the student for the Montana State teaching certificate in English (Broad Fields). This certificate does not require a teaching minor.

**LINGUISTICS FOR UNDERGRADUATES AND GRADUATES**

**INTRODUCTION TO LINGUISTICS.** (See General Courses.)

**THE STRUCTURE OF MODERN ENGLISH 3.** Phonological and grammatical structure from a modern linguistic point of view.

**THE HISTORY OF THE ENGLISH LANGUAGE 3.** The development of English phonology, grammar, and vocabulary from the Old English period to the present.

**OLD ENGLISH 3.** An introduction to the Old English language and literature.

**BRITISH LITERATURE MIDDLE ENGLISH 3.** Studies in Middle English language and literature.

**THE TEACHING OF ENGLISH AS A FOREIGN LANGUAGE 3 prereq General 350 or English 371 or c/i.** The application of principles of modern linguistics to the problems of teaching English as a foreign language. Will include a contrastive study of English and at least one other language.

**SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 3 prereq (English 352 or English 371 or c/i. A course designed for graduate students interested in the current problems of linguistics.)

**TEACHER TRAINING FOR UNDERGRADUATES**

**LITERATURE FOR UNDERGRADUATES**

**ADVANCED COMPOSITION 3.** Introduction to the problems of exposition.

**INTERMEDIATE COMPOSITION 3.** Continuation of English 150.

**ADVANCED COMPOSITION 3.** Continuation of English 250.

**ADVANCED COMPOSITION 3.** English majors may substitute this course for English 350. Non-majors c/i.

**FOR UNDERGRADUATES AND GRADUATES**

**ENGLISH 301-302-303 CREATIVE WRITING 3 prereq 150.** Creative writing course at the introductory level. Students may register for this course and must receive a "pass" in it before they will be allowed to enter English 150.

**ENGLISH 305 TECHNIQUES OF MODERN FICTION 3.** Intensive reading of such prose writers as T. S. Eliot, Wallace Stevens, and Robert Lowell. Primarily for advanced students in creative writing, but open to all English majors.

**ENGLISH 321-322-323 TECHNIQUES OF MODERN DRAMA.** (See Drama 491.)

**INDEPENDENT STUDIES 3 R-9.** Special projects in particular areas of literature and creative writing.

**FOR GRADUATES**

**FICTION WORKSHOP V R-15 c/i.** Fiction writing. Class and individual instruction.

**POETRY WORKSHOP V R-15 c/i.** Poetry writing. Class and individual instruction.

**FOR GRADUATES**

**FICTION WORKSHOP (See Drama 541.)**

**THEESIS V R-4 to 9.**
FOREIGN LANGUAGES

provide instruction and practice in speaking, reading, and writing the tongues of other peoples for commercial, governmental, or cultural purposes. Intercommunication among the nations of the world depends upon the knowledge of modern languages, and such understanding is particularly necessary as the importance of the United States increases in global affairs. Educated men and women find language skills not only important for social reasons, but as equipment for research in many fields of humanistic and scientific inquiry. Knowledge of a foreign language is also recognized as contributing greatly to the student's ability to use correctly his own tongue. Students of the modern languages are given an opportunity to supplement their classroom instruction with practice in an up-to-date language laboratory.

Language majors may find employment as teachers, interpreters, translators, airline hostesses, in commercial and scientific fields, and in various branches of the government.

The Department of Foreign Languages offers an undergraduate minor in Italian and majors in French, German, Latin, Russian and Spanish. The Master of Arts degree is offered in French, German, Latin, and Spanish.

**HIGHER PREPARATION.** A student who has received credit for a major foreign language in high school (but not in a college or university) and who wishes to continue that language at this University will enroll as follows: four years in high school, courses numbered 300 and above; three years in high school, 212 or 202; two years in high school, 211 or 201: one year in high school, 101, or if some time has intervened, 102.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES.** Not more than 90 credits in all foreign languages may be counted toward the Bachelor of Arts degree. The total number of credits required for a major in a foreign language varies with the student's high school preparation or language credit transferred from another college or university. Specific requirements are set forth below under the various languages.

**RECOMMENDED BACKGROUND COURSES FOR FOREIGN LANGUAGE MAJORS.** The Department of Foreign Languages strongly recommends that all foreign language majors take, as early as possible in their college career, the courses entitled Introduction to the Humanities (General 151-152-153) and Classical Mythology (General Literature 160).

**GRADUATE WORK.** See Graduate School.

**FRENCH**

**MAJOR REQUIREMENTS:** Candidates for the degree of Bachelor of Arts with a major in French must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. French 101 to 203 inclusive, or equivalent.

2. At least 21 credits of upper division work in French.

3. Four quarters, or equivalent, of another foreign language.

4. Two quarters in history of Europe, chosen from the following: History 207, 208, 215, 216, 307, 308, 309, 310, 311, 314, 318, 328, 329.

**FOR UNDERGRADUATES**

For Explanation see Course Descriptions (Index)

---

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-102-103</td>
<td>ELEMENTARY FRENCH 5.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>APPLIED LINGUISTICS 3</td>
</tr>
<tr>
<td>302</td>
<td>FRENCH COMPOSITION AND CONVERSATION 3</td>
</tr>
<tr>
<td>303</td>
<td>FRENCH CIVILIZATION AND CULTURE 3</td>
</tr>
</tbody>
</table>
305 FRENCH PHONETICS 2 prereq 203.
311-312-313 (301-302-303) SURVEY OF FRENCH LITERATURE 2 prereq 203. Enter any quarter.
421 (311) MEDIEVAL FRENCH LITERATURE 3 prereq 203.
422 (321) FRENCH RENAISSANCE 3 prereq 203.
423 (331) 17TH CENTURY FRENCH LITERATURE 3 prereq 203.
431 (341) 18TH CENTURY FRENCH LITERATURE 3 prereq 203.
423 (351) 19TH CENTURY FRENCH LITERATURE 3 prereq 203.
433 (361) CONTEMPORARY FRENCH LITERATURE 3 prereq 203.
490 (481) SEMINAR 3 R-18 prereq 203. Studies in major authors, periods, or genres.

FOR GRADUATES
500 DIRECTED READINGS V 1-3 R-9.
590 GRADUATE SEMINAR 3 R-9.
699 THESIS V R-15.

HUMANITIES
160 (161) CLASSICAL MYTHOLOGY 2. Deities and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.
220 (221) FOREIGN LITERATURES IN TRANSLATION 2. Periods and literatures vary from quarter to quarter. No knowledge of foreign language necessary.

GERMAN
MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in German must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. German 101 to 203, or equivalent.
2. At least 21 credits of upper division work in German, which must include 311-312-313. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division German.)
3. Four quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 321, 322.

FOR UNDERGRADUATES
101-102-103 ELEMENTARY GERMAN 5.
201-202-203 INTERMEDIATE GERMAN 4 prereq 103 or =.
Audio-lingual emphasis. For students who plan to obtain a major or minor in German, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 (213-215) GERMAN READINGS 4 prereq 103 or =.
For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.
217 GERMAN GRAMMAR REVIEW AND COMPOSITION 3 prereq 212 or =.

FOR UNDERGRADUATES AND GRADUATES
301 APPLIED LINGUISTICS 3 prereq 203. An introduction to the phonology, morphology, and syntax of standard High German.
302 (300) GERMAN CONVERSATION AND COMPOSITION 3 prereq 301.
303 GERMAN CIVILIZATION AND CULTURE 3 prereq 302 or c/l.
311-312-313 (301-302-303) SURVEY OF GERMAN LITERATURE 2 prereq 203. Enter any quarter.
431 (341) THE AGE OF GOETHE 3 prereq 311-312-313, or concurrent registration and c/l.
432 (341) FAUST 3 prereq 311-312-313, or concurrent registration and c/l.
441 (381) 19TH CENTURY REALISM 3 prereq 311-312-313, or concurrent registration and c/l.
442 (361) THE NOVELLE 3 prereq 311-312-313, or concurrent registration and c/l.
451 20TH CENTURY GERMAN LITERATURE 3 prereq 311-312-313, or concurrent registration and c/l.

460 HISTORY OF THE GERMAN LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/l.
490 (491) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES
111-112 ELEMENTARY READING GERMAN 0. An introduction to the structure of German with full emphasis on reading. Presently offered through Extension only, when demand is sufficient.
500 DIRECTED READINGS 1-3 R-9.
590 GRADUATE SEMINAR 3 R-9.
699 THESIS V R-15.

GREEK
No major is given in Greek.
101-102 ELEMENTARY GREEK 5.
103 ELEMENTARY GREEK 3 prereq 102.
211-212 (213-215) GREEK READINGS 3 prereq 103.

ITALIAN
No major is given in Italian.
101-102-103 ELEMENTARY ITALIAN 5.
211-212 (213-215) ITALIAN READINGS 4 prereq 103 or =.

217 ITALIAN GRAMMAR REVIEW AND COMPOSITION 3 prereq 212 or =.
311-312-313 (301-302-303) SURVEY OF ITALIAN LITERATURE 2 prereq 217. Enter any quarter.

LATIN
MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in Latin must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. Latin 101 to 213 inclusive, or equivalent.
2. At least 22 credits of Latin 490 (Greek 101-102 may be substituted for 4 credits of Latin 490.)
3. History 302 and 304 are also recommended for majors.

FOR UNDERGRADUATES
101-102-103 ELEMENTARY LATIN 5.
211-212 (213-215) LATIN READINGS 3 prereq 103 or =.
213 (217) LATIN LITERATURE 3 prereq 212 or =.
FOR UNDERGRADUATES AND GRADUATES
490 (481) MAJOR LATIN WRITERS V 2-3 R-30 prereq 213.

FOR GRADUATES
699 THESIS V R-15.

ROMANCE PHILOLOGY
FOR UNDERGRADUATES AND GRADUATES
360 (375) INTRODUCTION TO ROMANCE PHILOLOGY 3 prereq 203 or 217 (Latin or a Romance Language). The development of the Romance languages from Latin to their present-day forms.

RUSSIAN
MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in Russian must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. Russian 101 to 203, inclusive, or equivalent.
2. At least 21 credits of upper division work in Russian, which must include 311-312-313. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division Russian.)
3. Four quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 324, 350, 359.

FOR UNDERGRADUATES
101-102-103 ELEMENTARY RUSSIAN 5.
201-202-203 INTERMEDIATE RUSSIAN 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in Russian, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

FOREIGN LANGUAGES—39
FOR UNDERGRADUATES AND GRADUATES

301 APPLIED LINGUISTICS 3 prereq 203. An introduction to the phonology, morphology, and syntax of standard (Moscow-Leningrad) Russian.

302 RUSSIAN COMPOSITION AND CONVERSATION 3 prereq 201.

303 RUSSIAN CIVILIZATION AND CULTURE 3 prereq 203.

311-312-313 SURVEY OF RUSSIAN LITERATURE 2 prereq 203. Enter any quarter.

421-422 19TH CENTURY RUSSIAN LITERATURE 3 prereq 311-312-313 or concurrent registration and c/i. Enter either quarter.

423 20TH CENTURY RUSSIAN LITERATURE 3 prereq 311-312-313 or concurrent registration and c/i.

490 SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

SPANISH

MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts in Spanish must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Spanish 101 to 203 inclusive, or equivalent.

2. At least 27 credits of upper division work in Spanish, which must include 311-312-313 and 321-322-323. (Teaching majors may substitute The Teaching of Foreign Languages 360 for 3 credits of upper division Spanish.

3. Four quarters, or equivalent, of another foreign language.

4. Spanish majors are advised to take at least one quarter of Hispanic American History (History 283-286-287) when this course is offered.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY SPANISH 5.

111 SPANISH FOR ELEMENTARY TEACHERS 3 prereq c/i. Grammar, conversation, and methods of teaching Spanish in the elementary school.

201-202-203 INTERMEDIATE SPANISH 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in Spanish, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

211-212 (213-215) SPANISH READINGS 4 prereq 103 or =. For students who do not plan to continue beyond the fifth quarter, or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

217 SPANISH GRAMMAR REVIEW AND COMPOSITION 3 prereq 212 or =.

FOR UNDERGRADUATES AND GRADUATES

301 (300) APPLIED LINGUISTICS 3 prereq 203. An introduction to the phonology, morphology, and syntax of standard Spanish.

302 (300) SPANISH COMPOSITION AND CONVERSATION 3 prereq 301.

303 CONTEMPORARY HISPANIC CIVILIZATION AND CULTURE 3 prereq 203.

311-312-313 (301-302-303) SURVEY OF SPANISH LITERATURE 2 prereq 203. Enter any quarter.


421 (33S) SPANISH NOVEL TO 1800 3 prereq 311-312-313, or concurrent registration and c/i.

422 (351) 19TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/i.

423 (353) 20TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/i.

451 (35S) SPANISH DRAMA TO 1800 3 prereq 311-312-313, or concurrent registration and c/i.

452 (353) 19TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/i.

453 (361) 20TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/i.

461 (363) SPANISH POETRY 3 prereq 311-312-313, or concurrent registration and c/i.

460 HISTORY OF THE SPANISH LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/i.

FORESTRY

is the professional management of natural resources, primarily forests and forest lands. A forester analyzes and interprets the physical, biological, sociological, and economic problems involved in the continued production and utilization of these resources.

Forestry education provides a background of knowledge of soils, vegetation, water, and wildlife and the use of forest lands for sustained production of timber and related products, grazing by domestic and wild animals, watershed protection, and outdoor recreation. It is directed toward an understanding of the relationship of these elements to human institutions.

The four-year and five-year curricula lead to the degrees of Bachelor of Science in Forestry or Bachelor of Science in Resource Conservation. The Master of Forestry degree is offered in the continued pursuit of an understanding of the relationships among the sciences previously mentioned. The Doctor of Philosophy degree is offered in Forest Science.
English, mathematics, social studies, and the sciences. A minimum of one and one-half years of algebra and one year of geometry are desirable.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTY. A minimum of 192 credits, plus required work in physical education, is required. To continue coursework beyond the School of Forestry during the third, fourth and fifth years, students must maintain a grade-point average of 2.5 or above to be admitted to the School of Forestry.

Special Expense Charge: all students enrolled in the School of Forestry are assessed $15.00 per quarter for travel, student insurance, and related costs.

Bachelor of Science in Forestry: this degree meets the professional requirements for foresters. There are two majors: forest resource management and forest science. Within the forest resource management major there are several options with specific course requirements. Courses common to all options constitute the core curriculum.

### CORE CURRICULUM

(Courses required of all options in both Majors) (First Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 111—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 112—General Botany</td>
<td>5</td>
</tr>
<tr>
<td>Bot 265—Local Flora</td>
<td>4</td>
</tr>
<tr>
<td>Chem 110—Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Eng 150—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Math 117—Trigonometry</td>
<td>5</td>
</tr>
<tr>
<td>Math 116—College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>PE 100—Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

(Second Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 255—Plant Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 250—Plant Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Eng 250—Intermediate Composition</td>
<td>3</td>
</tr>
<tr>
<td>For 20—Slide Rule</td>
<td>6</td>
</tr>
<tr>
<td>For 200—Forest Mesuration</td>
<td>4</td>
</tr>
<tr>
<td>For 211—Forest Ecology</td>
<td>3</td>
</tr>
<tr>
<td>For 250—Forest Graphs</td>
<td>2</td>
</tr>
<tr>
<td>For 252—Surveying</td>
<td>5</td>
</tr>
<tr>
<td>For 200—Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>PE 100—Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

(Third Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 201—Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td>Eng 350—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>For 300—Silviculture</td>
<td>4</td>
</tr>
<tr>
<td>For 340—Forest Technology (or Alternate For 343)</td>
<td>5</td>
</tr>
<tr>
<td>For 390—General Range Management</td>
<td>4</td>
</tr>
<tr>
<td>*Two courses selected from the following: Forest Protection</td>
<td>3</td>
</tr>
</tbody>
</table>

(Fourth Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 401—Timber Management</td>
<td>3</td>
</tr>
<tr>
<td>For 450—Forest Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

### MAJOR IN FOREST RESOURCES MANAGEMENT

This major is for students who are preparing for work in resource management, administration, and staff specialties. Every student with a forest resources management major receives a broad basic education in Forestry, and a specialized education in some particular aspect of the field. There are options in forest engineering, range, recreation, timber, wildlife, and wood utilization. Each option has specific requirements in addition to those of the core curriculum, as well as electives which are worked out with the advisor.

Specific Requirements for Option Programs:

- Forest Engineering is a five-year program; all the others are four years. In addition to requirements listed below the student must meet all the general University requirements and the minimum of 192 credits plus P.E., required in Forestry.
- Forest Engineering: Math 118 Introduction to Calculus; Math 249 Introduction to Computer Programming; Physics 111 General Physics; Zool 112 General Zoology; Bot 266 Agrostology; For 261 Range Foreage Plants; 262 Range Ecology; 263 Range Livestock Production; 351 Aerial Photogrammetry; 350 Fire Control; 357 Principles of Wildlife Conservation; 460 Range Techniques; 461 Range Livestock Nutrition; 462 Range Economics; 464 Range Administration; 450 Integrated Resource Management.

- Recreation: Speech 111 Principles of Public Speaking; Math 249 Introduction to Computer Programming; Physics 111 General Physics; Zool 112 General Zoology; Bot 266 Agrostology; For 261 Range Forage Plants; 262 Range Ecology; 263 Range Livestock Production; 351 Aerial Photogrammetry; 350 Principles of Wildlife Conservation; 363 Forest Aesthetics; 365 Forest Recreation; 422-3 Resource Policy and Administration; 460-481 Integrated Resource Management; 464 Hydrologic Principles.

- Timber: Math 118 Introduction to Analytical Geometry and Calculus; Math 249 Introduction to Computer Programming; Bus. 237 Business Law; Physics 111, 112 General Physics; For 251 Aerial Photogrammetry; 370 Principles of Wildlife Conservation; 363 Forest Aesthetics; 380 Intermediate Silviculture; 382 Forest Products and Industries; 452 Logging; 453 Forest Engineering; 460 Integrated Resource Management.


Wood Utilization: 118 Introduction to Calculus; Physics 111, 112 General Physics; Bot 266 Agrostology; For 261 Range Livestock Production; 351 Aerial Photogrammetry; 350 Principles of Wildlife Conservation; 363 Forest Aesthetics; 380 Intermediate Silviculture; 327 Advanced Wildlife Conservation; 471 Big Game Conservation; 472 Wilderness Habitat Conservation; 480 Integrated Resource Management.

**MAJOR IN FOREST SCIENCE**

This major is for students who wish to prepare for graduate study in some specific area of forest science. It is open only to students who are approved by the Dean of the School of Forestry and maintain a G.P.A. of 2.7 or above.

Specific Requirements for the Forest Science Major:

- The core curriculum is required. The remainder of the curriculum consists of courses chosen by the student with the counsel of his major advisor.

**BACHELOR OF SCIENCE IN RESOURCE CONSERVATION**

This degree meets professional requirements in selected natural resource fields allied to forestry. Majors programs are offered in range, recreation, soil, water, and wildlife. There is no fixed core curriculum. The requirements for the Bachelor of Science in Resource Conservation are almost identical in course content to those required for the Bachelor of Science in the third year, the student elects a specific area of study, with a specialized program worked out with the advisor and approved by the faculty.

**GRADUATE WORK.** See Graduate School.

**FOR UNDERGRADUATES**

**FOR EXPLANATION see Course Descriptions (Index)**

50 SLIDE RULE 0 (1-0) prereq Math 117 or concurrent registration. Use of the slide rule in the solution of mathematics problems.

190-191 SURVEY OF FORESTRY 1 (1-0). Enter either quarter. General survey of the field and subject matter of forestry and introduction to the professions, functions and characteristics of forests, their benefits, use, distribution, importance, and conservation.

200 FOREST MENSURATION 6 (4-8) prereq sophomore standing in the School of Forestry. Measurements of timber in the log, and the stand and the stand's characteristics, including fire, and the presentation of field data for volume and yield tables.

210 ELEMENTARY SOILS 4 (3-3) prereq Chem 101-102 or = an introduction to the chemical, physical, biological, and morphological characteristics of soils.

211 FOREST ECOLOGY 3 (4-4) prereq 210, Bot 225, 250, 265. The individual factors of the environment as they influence the growth and development of plants and animals; the community and the specific problem of recognizing ecology as the basis for forest management practices. Taught during the second five weeks of spring quarter at Lubrecht forest.

250 FOREST GRAPHICS 2 (1-3). Instruction and practice in the use of drafting tools. Development of drafting techniques. Pictures and multiview drawings, graphs, charts, map symbols, map area measurements and freehand lettering.

252 SURVEYING 6 (4-8) at Lubrecht Forest, 5 (3-6) on campus prereq Math 117, 116 and For 50. Care, use and adjustment of instruments and equipment. Introduction to differential, traverse, transit, and plane table surveys, road location and earthworks. U.S. Pub-
lic Land Survey system. Establishment of horizontal and vertical control. Topographic survey, map construction and solar observations.

290-291 DENDROLOGY 3 (2-3), 2 (1-3) prereq sophomore standing in the School of Forestry or c/i. Identification, classification, silvical characteristics, range and economic value of the principal forest trees of the United States and Canada. (290) The broadleaf trees. (291) Conifers.

299 FARM FORESTRY 3 (2-4) prereq junior standing in the School of Forestry. The application of the principles of forest management, silviculture and soils to small woodland holdings.

311 SILVICULTURAL METHODS 5 (4-4) prereq 291. The production of forest crops including regeneration methods, nursery practices, intermediate cuttings and other cultural operations.

312 SEEDING AND PLANTING 3 (2-4) prereq 311. Artificial propagation of the forest; collection, extraction, storage, and testing of forest tree seed; direct seeding; nursery practice; forest planting.

321 FOREST FIRE PLANS 3 (3-0) prereq junior standing and 230. Area pre-suppression planning and fire use planning. Action plans, fire use project size maps.

340 WOOD TECHNOLOGY 4 (3-3) prereq 291. Wood identification and anatomy; introducing the relationships of the physical, chemical and mechanical properties to specific uses.

357 TIMBER MECHANICS 3 (2-2). Elementary statics and strength of materials, with particular emphasis upon wood as a structural material.

363 RANGE LIVESTOCK PRODUCTION 2 (2-4) prereq 360 and c/i. Selection, production, and management of range livestock.

FOR UNDERGRADUATES AND GRADUATES

390 FOREST STATISTICS 4 (3-3). The application of statistical methods to forest problems.

395 FOREST FIRE MANAGEMENT 3 (3-0). Forest fire prevention, pre-suppression, suppression, and the uses of fire in land management practices. The measurement of fire weather and the factors that influence fire control.


393 CHEMICALALLY DERIVED WOOD PRODUCTS 3 (3-4) prereq Chem 112, 113 or equivalent and 240. Generalized chemistry of wood. Survey of chemically derived products and processes including naval stores, pulp, paper and modified woods.

394 WOOD GLUING AND PHYSICAL PROPERTIES 3 (3-0) prereq 240 and junior standing in the School of Forestry. Theory and practice of wood gluing. Familiarization with glues, and glued wood construction. Bent wood, painting and finishing, nail holding capacity, insulation values, and other physical properties.

394 FOREST PRODUCTS AND INDUSTRIES 4 (3-4) prereq junior standing in the School of Forestry. Various types of wood products and their utilization; their sites, grades, performance characteristics, and primary conversion industries. By-products and residue utilization. Current trends and problems. (For non-wood utilization majors.)

395 ADVANCED SURVEYING 4 (3-4) prereq 250, 252, Math 116. Route surveys and design, forest transportation, system planning, and protected tree in surveys.

393 AERIAL PHOTOGRAMMETRY 3 (2-3) prereq 200, 282. The elements of photogrammetry, photogrammetric measurement planimetric and topographic mapping, introduction to photo-interpretation and air photo analysis with emphasis on applications to forestry.

396 GENERAL RANGE MANAGEMENT 4 (3-3) prereq c/i. An introduction to the field of range management, class of stock, grazing season, grazing capacity, and control and distribution of livestock on range. Range improvements; forest and range interrelationships.

381 RANGE FORAGE PLANTS 4 (0-8) prereq 360, Bot 366 and c/i. Economic range forage plants; forage value to different kinds of range animals; management problems in their use.

382 RANGE ECOLOGY 3 (2-3) prereq Bot 280. Applied ecology of forage. Use for grazing by domestic livestock and wildlife. The influence of biota, climate, fire, fertilizer, herbicides and mechanical treatments on natural vegetation.

383 PRINCIPLES OF WILDLIFE CONSERVATION 3 (3-0), prereq 111. The biology and role of populations and communities in terms of dynamics as a basis for the conservation of wild birds and mammals. The social, economic and political framework of wildlife administration.

390 THE RENEWABLE RESOURCES AND THEIR CONSERVA- 3 (3-0) prereq 210 and Bot 250. The interrelationships of resource conservation policy and the development and use of non-renewable resources to meet the needs of our expanding economy. Conservation practices and policies and the agencies involved in their application. (Not open for doctoral credit.)

383 FOREST AESTHETICS 3 (3-0) prereq c/i. Historical development and problems in recreational use of forest and wild lands. Appreciation of natural landscape values. State, national parks and wilderness areas.

385 FOREST RECREATION 4 (3-4) prereq 353. Physical development and planning in the recreational use of forest and other wild lands.

399 CHEMISTRY OF PLANT CONSTITUENTS. (See Chem 361 and Bot 360.)

391 CHEMISTRY OF WOOD PRODUCTS. (See Chem 361.)

400 FOREST MANAGEMENT 4 (0-8) prereq senior standing in Forestry. Inventory, evaluation and analysis of forest properties.

401 TIMBER MANAGEMENT 4 (4-0) prereq 311, 420, senior standing in Forestry. Organization and management of forest properties, determination of allowable cut and regulation of the growing stock.

402 FOREST MANAGEMENT 3 (3-0) prereq 400, 401. Organization and writing of a management plan for a forest property.

410 REGIONAL SILVICULTURE 2 (6-Field) prereq 310 and 311. Application of silvicultural methods to the principal commercial forest types, types and regions of the United States.

411 SOIL CHEMISTRY 2 (2-6) prereq 210. The chemical properties of soils, their measurement and influence on growth and distribution of plants.

412 SOIL PHYSICS 2 (2-6) prereq 210. The physical properties of soils, their measurement and influence on growth and distribution of plants.

420-421 FOREST ECONOMICS 3 (3-0) (420) prereq Econ 203. Discussion of the economic characteristics of time in forest resource management and inventory design. The evaluation of economic alternatives. (421) prereq or c/i. Economic problems involved in the use of the forest resource and in the distribution of forest products.

422-423 RESOURCE POLICY AND ADMINISTRATION 3 (3-0) prereq c/i. (422) The processes of resource policy formulation and implementation. Survey of major public resource policies interpreted in their political contexts. (423) prereq. Principles of resource administration. The general principles of resource policy in an administrative context. Case studies in administrative behavior.

424 FOREST TAXATION 3 (3-0) prereq senior standing or c/i. Systems of forest taxation and their effects on the economic management of forest resources.

425 INDUSTRIAL FORESTRY 3 (3-0) prereq Econ 263. Economic organization and management of industrial forest properties.

432 BIOLOGY OF FOREST INSECTS 3 (2-3) prereq Zool 113. Fundamentals of taxonomy, morphology, structures, and systems of forest insects, with an elementary consideration of their ecology. (Also see Zool.)

433 FOREST INSECT ECOLOGY 3 (2-3) prereq 432. Consideration of insect physiology and genetics in the study of forest insect population phenomena, principles of control, and the role of the insects in the forest ecosystem, principles of biological control. (Also see Zool.)

440 MECHANICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq junior standing in the School of Forestry. Various types of wood products are introduced, their sites, grades, performance characteristics, and primary conversion industries. By-products and residue utilization. Current trends and problems. (For non-wood utilization majors.)

452 LOGGING 3 (3-0) prereq 453 or 455. Application of forest and engineering principles to logging plans. Study of the different ways of utilizing stumpage systems, planning, location and design. (For nonforest engineering majors.)

452 LOGGING 3 (3-0) prereq Econ 202. Production-cost analysis; methods of work simplification and materials handling; fundamentals of logging plans.

453-454 FOREST ENGINEERING 5 (4-2) prereq 252. Forest transportation systems, planning, location and design. (For nonforest engineering majors.)

454-455-456 FOREST ENGINEERING 3 (3-0) 3 (2-2) prereq 350. 454 and 455 are for forest engineering majors only. (454) Transportation planning and development in relation to resource use. (455) Transportation methods and their application to resource uses. (456) prereq 455 or 453. Application of forest and engineering methods, time and cost studies.

479 TIMBER DESIGN 3 (1-4) prereq 357 and Math 151. The design of wood structural components; the use of timber connectors in structural design.

480 MECHANICAL PROPERTIES OF WOOD 3 (1-4) prereq 340. The characteristic of wood as they relate to mechanical properties; wood materials testing.
460 RANGE TECHNIQUES 4 (2-6) prereq 360 and c/i. Range survey, coordination and trend analysis, utilization analysis, damage appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 5 (3-4) prereq 360 and c/i. The elements of animal nutrition. The nutritional characteristics of various forage plants. The nutritional requirements of livestock and big game animals.

463 RANGE ECONOMICS 3 (3-0) prereq 360, Econ 201 and c/i. Range regions from an economic standpoint. Range value and income, tenure, taxation, fees and leases, economic utilization of forage, economies of range improvements, ranch organization.

464 RANGE ADMINISTRATION 2 (2-0) prereq 360 and c/i. Legislation and policies developed in the acquisition of federal, state and private range properties. Administration, organization and methods for regulation of grazing on public lands.

465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and c/i. Regional range management problems and situations. Work done on senior spring trip.

470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq 370, Zool 308, 309 or c/i. The application of knowledge of the biology of wild birds and mammals, and man's relations to wildlife, to the principles and practice of wildlife conservation.

471 BIG GAME CONSERVATION 3 (2-field trips) prereq 370 or c/i. The biology of big game mammals and its application to problems of conservation and administration. Includes field trips to major big game winter ranges.

472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/i. Principles and techniques of assessment of wildlife potential and response to ecological change. Relations of land-use patterns to wildlife ecology.

480 INTEGRATED FOREST RESOURCE MANAGEMENT 4 (3-2) prereq 342 and c/i. A study of techniques, principles, and practices of decision-making processes and use of the decision making process in the management of renewable resources; the physical, economic, social and political problems involved. An integrated administrative and technical study.

481 RESOURCE MANAGEMENT PLANNING 4 (4-0) prereq c/i. A detailed study of resource conservation in an analytical structure that defines the effects of various economic and institutional influences on the planning, management, and utilization of natural resources.

482 SOIL AND WATER CONSERVATION 4 (3-4) prereq c/i. Principles and methods of soil and water conservation related to soil type, condition, land use, and ownership. Analysis of field problems in land use planning and application for soil and water conservation.

484 HYDROLOGIC PRINCIPLES 4 (2-4) prereq c/i. The hydrologic principles that are associated with the behavior of water, its movement and ground water recharge, movement and discharge.

485 WATERSHED MANAGEMENT 3 (3-0) prereq 484. Methods and effectiveness of land management on water yield from natural watersheds.

486 HYDROLOGY SEMINAR 2 (2-0) prereq c/i. Regional, national, and international problems of water supply, transfer and quality.

487 WATER USE AND DEVELOPMENT 2 (2-0). History of water use and policy development.

490 FOREST METEOROLOGY 4 (4-0). The basic meteorological factors that influence forest fire behavior. The physical meteorological concepts that are associated with forestry problems.

491-492-493 SENIOR WILDLIFE SEMINAR 1 prereq senior standing and Wildlife Biology or Forestry. Field seminars and discussions for students, faculty, and guest speakers on current topics in Wildlife Biology. (Double-listed as Zoology 491-492-493.)

499 FORESTRY PROBLEMS V prereq completion of basic undergraduate work and c/i. Individual problem work offered. Offered by different instructors under various titles.

FOR GRADUATES

500 ADVANCED FOREST MANAGEMENT 3 prereq 401, 420 and 485. Analysis of forest management problems by regions and forest types.

502 ADVANCED MENSURATION 3. The use and analysis of new mensurational techniques and equipment. The application of special analytical techniques to forest research.

511 ADVANCED SILVICULTURE 3 (2-2) prereq 311 and c/i. Analysis of silvicultural problems in selected forest types.

530 ADMINISTRATIVE LEADERSHIP Extension course V prereq undergraduate degree from a college or university of recognized standing and consent of the Dean of the School of Forest Science based on applicants' experience and competence. Intensive instruction in the fundamentals of forestry, psychology, sociology, speech, government, administration, public relations and related fields. One month, 30 hours per week. Staff of university specialists in fields involved.

521-522-523 ADVANCED FOREST ECONOMICS, VALUATION AND FOREST POLICY 3 prereq for Forestry Economics 360. Economic basis for multi-product management of forest industries and forestland resources. (522) Valuation and financial management of forest industries and forestland resources. (523) Economic definition and historical analysis of forest industries and forest land resources.

524-525-526 RESOURCE POLICY SEMINAR 3 prereq c/i. A working seminar using the case method in resource problem analysis.

524-525-526 RESOURCE POLICY SEMINAR 3 prereq c/i. A working seminar using the case method in resource problem analysis.

530 FOREST FIRE BEHAVIOR 3 (3-0) prereq 330, 480. The forest fire as a three-dimensional, multi-variable and dynamic phenomenon. An approach to the science of forest fire behavior. Emphasis is placed on high intensity fires and fire control.

530 FOREST FIRE INFLUENCES 3 (3-0). The effects of wild and prescribed fire and its influence on plant succession, forest regeneration, and the microclimate of the forest.

543 WOOD RECONSTITUTED BOARDS 3 (1-8) prereq 342, 440. Different types of boards with properties and uses of each. Raw materials, additives, production variables and product testing. Laboratory practice in making and testing sample boards.

551 ADVANCED AIR PHOTO ANALYSIS 3 (1-3) prereq 451, c/i. Analysis of the problems involved in the use of remote sensing media. Evaluation of these media as sources of resource information.

560 ADVANCED RANGE MANAGEMENT 3 prereq 390 and 460. Analysis of range management problems by regions and forest types.

561 ECOLOGICAL ANALYSIS AND INVENTORY OF LAND RESOURCES 2 (4-0). Methods of collection and analysis of land resource data on an ecological basis. Emphasis will be on presentation of the inherent characteristics of climate, vegetation and soils. Variability, modifications and relationships may be considered. Existing systems of resource classification will be evaluated. A model system will be developed.

570 WILDLIFE SEMINAR 1 (1-4). Analysis of selected problems in wildlife biology and conservation.

588 ADVANCED FOREST RECREATION 3 (3-0) prereq 385. Forest recreational land inventory, analysis and design, methods and planning. Factorsinvolved in irregular sites, roadway planning, Theory, policy and problems in recreational land management. Individual research.

597 PARK MANAGEMENT 3 (3-0) prereq 383, 385 and c/i. Theoretical foundation and practical applications in park system development in the United States, state, national and local levels. Analysis of recreation land management problems in park and forest.

599-600 RESEARCH METHODS 3 prereq one course in statistics or statistical elements of forest measurement and c/i. Enter either quarter. (599) The nature of scientific research, planning research projects, obtaining research results. (600) Application of statistical methods to the design of forestry research, techniques of analysis of research data.

599 SEMINAR 1. Presentation by students and staff of papers in their field of specialization.

599 FORESTRY PROBLEMS V. Individual problem course offered by different instructors under various titles.

600 RESEARCH V. Independent research. The type of problem will be identified for forestry majors as follows: Management, Silviculture, Soils, Econ and Fire Control. Utilization, Engineering, Range Management, Wildlife Management, Recreation, Conservation and Protection or General.

699 THESIS V R.15.

GENERAL COURSES

are offered as surveys or introductions to broad fields of learning, but there is no "general course" in which a degree is offered. Any University student is compelled to study in many fields as a matter of general education; and specialization in one curriculum, although required for a degree is strictly limited (see Graduation Requirements). But it has been found advisable to provide certain degree-curricula which overlap two or more of the curricula described on other pages of the catalog and in which the student may be drawn from several fields. The curricula in Biology, Liberal Arts, Pre-Medical Science and Wildlife Biology are examples. It has also been found desirable to provide a particular degree-curriculum which overlap two or more fields; these are described below.

HUMANITIES

FOR UNDERGRADUATES

151-152-153 INTRODUCTION TO THE HUMANITIES 3. Enter any quarter. English majors who have completed 9 or more credits in English may not receive credit in this course. A general survey of the field of Humanities through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation.

160 (151) CLASSICAL MYTHOLOGY. (See Foreign Languages.)

220 (211) FOREIGN LITERATURES IN TRANSLATION. (See Foreign Languages.)
44—GEOGRAPHY

241 THE FILM 3. An historical survey of the film with appreciation of technicalities. Given under auspices of the School of Journalism and the department of English and Drama.)

251 STUDIES IN HUMANITIES 3 R-9 prereq Gen 151-152-153. Advanced studies in Humanities. Given by different instructors under various titles.

FOR UNDERGRADUATES AND GRADUATES

440 STUDIES IN COMPARATIVE LITERATURE 3. The origins and dissemination of important literary ideas, trends, and movements.

451 SEMINAR IN THE HUMANITIES 3 R-9 prereq Humanities 351 or c/i. Specialized topics or areas such as Chinese and Japanese literature. Taught by various instructors from departments in the Humanities Group. Topics announced in class schedules.

SCIENCE

FOR UNDERGRADUATES

100 DESCRIPTIVE ASTRONOMY 4. An introductory course: the earth and the sky, seasons, telescopes and their uses, planets and their satellites, stars, galaxies. (Applies toward Group II.)

125-126-127 SCIENCE FOR ELEMENTARY TEACHERS 4 (3-2). Open only to majors in Elementary Education. (125) A survey of the fundamental aspects of physical science, including force and motion, electricity, magnetism, wave motion, gravity, heat, states of matter, the universe, geological processes, atomic structure, and related topics. (126) An investigation of the interrelationships of physical and biological sciences: the elements, chemical reactions, basic organic chemistry, biochemistry, metabolism, cell structure, relationship of cell structure and function, cell division, basic genetics, origin of life, and related topics. (127) A survey of the animal and plant kingdoms, including taxonomy, morphology, physiology, life cycles, ecology, evolution, and related topics.

131 INTRODUCTION TO BIOLOGICAL SCIENCE 4 (3-2). An introduction to the basic principles of biology, including techniques of cytolgy, cellular metabolism, genetics, origin of life, mechanics of evolution and adaptation. Offered by the departments of Botany, Microbiology and Zoology. Primarily for students not majoring in Botany, Microbiology, or Zoology. Credit not allowed for this course and 132 or Zoology or 380.

132 EVOLUTION, GENETICS AND MAN 3 prereq Gen. 131 or 101. An introduction to the study of evolution, especially as related to man and including evidence, mechanisms, genetic nature of hereditary material and adaptation. Not counted toward a major in Botany, Microbiology or Zoology.

FOR UNDERGRADUATES AND GRADUATES

200 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 3 prereq c/i. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare, and the development of principles underlying improved management of the natural resources. A survey of human and cultural resources. The methods of social science in the identification of natural resources and the development of principles underlying improved management of the natural resources. A survey of the human and cultural resources. The methods of social science in the identification of natural resources and the development of principles underlying improved management of the natural resources.

222 METHODS OF TEACHING BIOLOGY * 3 (2-4) prereq senior or graduate standing. Designed to familiarize prospective high school biology teachers with texts, demonstrations and laboratory experiments used in contemporary approaches to teaching of biology.

GENERAL LITERATURE

FOR UNDERGRADUATES

101-102-103 INTRODUCTION TO THE READING OF LITERATURE 2. Enter any quarter. Training in the skill of reading literature, including the reading of, and the conditions producing, popular and inferior forms of literature. (101) Fiction. (102) Drama. (103) Poetry. (Not applicable to Group IV requirements.)

FOR UNDERGRADUATES AND GRADUATES

307-308-309 THE DRAMA. (See English.)

344 THEORIES OF DRAMA. (See English.)

350 INTRODUCTION TO LINGUISTICS 3. A survey of linguistic science. The nature of language and the techniques of the descriptive linguist. (See English.)

491-492 LITERARY CRITICISM. (See English.)

GEOGRAPHY

is concerned with the description and analysis of the earth's surface. Geographers study and describe the location and distribution of physical and human elements as well as the associations between these various elements. A crucial part of geography is the achievement of an understanding of the processes involved in, the reasons for, and the significance of distributions of physical and human phenomena. Geography, therefore, entails the study of such physical elements as terrain, climate, natural vegetation, soils and water, as well as the human elements which include population, settlements, cultural levels, economic activities and political groupings.

Geography provides the basis for a better understanding of the world in which we live and of the events which take place around us. Employment opportunities for those trained in geography exist in government, business and industry, and in the teaching profession at all levels.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Geography: a minimum of 60 credits in Geography including Geography 101, 102, 201, 211, 300, 360, 370, 380, 390, and one of four Geography courses 201-202-203; Geology 110; History 261-262 or Political Science 201-202; and Sociology 101 or Anthropology 152.

The following courses with the consent of the advisor may be counted toward a major in Geography: Botany 250 or 355. Business Administration 344, Economics 380, General 100, Geology 310, Sociology 304, and Forestry 380.

The foreign language requirement listed earlier in the catalog must be satisfied. French or German are strongly recommended unless the student intends to specialize in a part of the world where the use of some other language prevails.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 PHYSICAL ELEMENTS OF GEOGRAPHY 5. Content and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, vegetation, and landforms.

102 INTRODUCTORY HUMAN GEOGRAPHY 3. The study of man and his works through urban and cultural features of the world's landscapes in relation to human occupation of the earth.

103-104-105 WORLD GEOGRAPHY 2. Enter any quarter. The peoples and places of the world today. Place-to-place differences in the organization of human and natural landscapes. (103) Eastern North America; (104) Europe, U.S.S.R., and Africa; (105) Asia, Australia, and Oceania.

201 MAP INTERPRETATION 3 prereq 101 and c/i. Map and chart evaluation. The analysis of human and physical features on maps; progress, coverage, and quality of world mapping.

211 ECONOMIC GEOGRAPHY 5. Distribution of economic activities with emphasis on location factors.

300 CARTOGRAPHY 3 prereq c/i. The interpretation, construction, and use of important map projections. Cartographic techniques utilized in the presentation of data.

330 FIELD GEOGRAPHY 3 prereq c/i. Fundamental techniques of geographic field research, including observation and recording of environmental data, land-use mapping, urban classification, and interviewing and report writing.

FOR UNDERGRADUATES AND GRADUATES

350 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =. An analysis of the cultural areas of Canada and the United States with emphasis on differences in regional development.


303 GENERAL GEOGRAPHY 3. Description and analysis of basic relationships between physical and human elements in geography. Not for geography majors.

305 GEOGRAPHY OF EUROPE 3 prereq 101 or =. The distribution and analysis of geographic features. Contemporary problems and developments.

310 GEOGRAPHY OF SOUTH AMERICA 3 prereq 101 or =. The physical and cultural backgrounds to problems of the South American republics.
GEOL 101

The growth, structure, and relationships of the earth. Consideration of the earth as a dynamic system in terms of the processes of geologic change. Elementary concepts of stratigraphy, paleontology, and geologic maps, with emphasis on processes of morphologic change. Also required are Mathematics 110, 111, 112, 113 or 211-212-213; English 101, 102, 103; foreign language, 23 credits in one language, or 3 quarters in each of two languages, or a reading knowledge, is required. French, German, Russian, or Spanish is recommended.

Departmental requirements can be waived for students who at the end of any complete year have a B average in all college courses previously taken while pursuing a standard geology curriculum. A special geology curriculum may be devised for these students in consultation with their advisors. This will, for example, allow special curricula planned for special areas of interest as geochemistry or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.

The grade of "F" or "F" is given for all work in Geology 590, 595, 600, and 699.

FIELD TRIP EXPENSES. Students enrolled in courses which include field trips share equally the cost of transportation and insurance. Students should consult the University Business Office for a statement of expenses connected with Geology 429, Field Geology.

CURRICULUM IN GEOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 150</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 111-112-113</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 110, 120, 130</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Group III or IV courses</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>H&amp;PE 100</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 250</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116, 117, 119</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 200, 202, 203</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Zoo1 111, 112</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 549</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Group III or IV courses or electives</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H&amp;PE 100</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 350</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics 111-112-113 or 221-222-223</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 311-312, 315</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>For Lang 101-102-103</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Group III or IV courses or electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

GEOLOGY

Is the study of the earth, the processes by which it is changed, and the history of its development. Geology aids in the location and exploitation of minerals and fuels, soils, building material, water, and other natural resources.

The Bachelor of Arts degree, the Master of Arts (or Master of Science), and the Ph.D. degrees are offered (see Graduate School). Instruction involves the use of mineral, rock and fossil collections, geologic and topographic maps, aerial photographs, optical and chemical methods, X-ray methods, geophysical methods and many others. Nearly all courses include field work. Students are trained in mapping methods and general field investigation under actual working conditions. Such studies are accompanied by theoretical work as well as courses in other basic sciences.

Petroleum companies, governmental agencies such as federal and state geological surveys, and mining companies are the chief employers of geologists.

HIGH SCHOOL PREPARATION. In addition to the general requirements for University admission, the student needs algebra. It is also recommended that high school preparation include advanced algebra, physics, and chemistry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 130, 200, 202, 203, 310 or (Geography 370 with consent of advisor), 311-312, 315, 429, 3 credits of 325, 320-331. Also required are Mathematics 116, 117, 118, or Mathematics 121, 118; Chemistry 121-123-123, 245: Physics 111-112-113 or 221-222-223; English 450; Zoology 111, 112. A foreign language, 2 credits in one language, or 3 quarters in each of two languages, or a reading knowledge, is required. French, German, Russian or Spanish is recommended.

The grade of "F" or "F" is given for all work in Geology 590, 595, 600, and 699.

FIELD TRIP EXPENSES. Students enrolled in courses which include field trips share equally the cost of transportation and insurance. Students should consult the University Business Office for a statement of expenses connected with Geology 429, Field Geology.
46—GEOLOGY

Summer Session

Geol 429—3 credits—Summer Field Camp

Senior Year

Geol 330-331
Geol 335
Geol 385
For Eng 211-212
Engr 450
Electives

Graduate Work. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101 INTRODUCTION TO GEOLOGY 4 (2-4). Description and theory of the earth's structure and time; the evolution of the earth's crust and interior of the earth; description and origin of minerals and rocks. 101-102-103 not open to geology majors.

102 INTRODUCTION TO GEOLOGY 4 (2-4) prereq 101. Meteorology and the origin of mountains; paleomagnetism and continental drift; the major features of development and principles of the time scale; the ideas of evolution.

103 INTRODUCTION TO GEOLOGY 4 (2-4) prereq 102. Development of North America during the paleozoic, mesozoic and cenozoic Eras; erosional processes of the earth's surface, earthmoons, and meteoric resources; geology as a science.

110 PHYSICAL GEOLOGY 5 (3-4). Open to all students. Minerals, rocks, and structure of the earth's crust; the dynamic processes, volcanism, diastrophism, and gradation which shape the earth's landscape. Credit not allowed for 110 and 110-120-121.

120 INTRODUCTION TO GEOLOGIC MAPS AND AERIAL PHOTOS 4 (2-4) prereq 103 or 110. Interpretation of geologic maps. Geologic features in aerial photos. Aerial photography. Geologic illustration.

130 FIELD METHODS 3 (1-4) prereq 120. Field techniques including plane table mapping, use of Brunton compass, altimeter, Jacob staff, measurement and description of stratigraphic sections, and geologic mapping on aerial photos and topographic base maps. Some all-day field trips on Saturday.

200 GENERAL PALEONTOLOGY 4 (3-2) prereq 103 or 110. General principles of paleontology, evolution, and history of plants and animals.


310 GEOMORPHOLOGY 3 (2-2) prereq 120. Landforms in terms of the processes which create them. The basic processes of physical geology. Emphasis on modern concepts.

312-312 MINERALOGY 4 (2-4) prereq Chem 121 and Math 116. Elements of crystallography; origin, classification and determination of common minerals. Physical properties (including optical) and chemical methods; special emphasis on ore and rock forming minerals.

315 PETROLOGY 4 (2-4) prereq 312. Common rocks, their mineral composition and physical characteristics, classification, identification in the field, origin and structural features.

325 PROBLEMS V prereq 30 cr. in Geology or = and c/l. Supervised investigation in any phase of geologic study in which the student has sufficient background to contribute original thought.

330-331 STRUCTURAL GEOLOGY 3 (2-4) prereq 203, Math 118, Physics 113 or 223 or concurrent registration. Structural features of earth crust; their analysis by geometric and stereographic projections. Mechanical principles of deformation.

350 *INTRODUCTION TO ECONOMIC GEOLOGY 4 (4 + Field Trips) prereq 102 or 110. The geology of metallic, nonmetallic and solid and liquid fuel deposits of the world. Emphasis on descriptive, economic, geographic and utilization aspects of non-renewable resources.

429 FIELD GEOLOGY Su 8 prereq 130, 203, 315. Given by Indiana University Geology Department staff at their field station near Whiteshell, Montana. Geologic training applied to detailed and regional field geology. Includes measuring and describing sections, mapping on aerial photographs and topographic base maps, interpreting geologic data. Trips to Dillon region of Southwest Montana and to Glacier National Park. Registration must be completed by April 1.

FOR UNDERGRADUATES

200 GEOLOGY FOR NATURAL SCIENCE TEACHERS 4 (3-2) prereq c/l. Primarily for teachers of Natural Science. General physical geology including minerals, rocks, erosion by streams and glaciers, section of volcanic rocks, and origin of earthquakes. Includes field trips. Not allowed toward a degree in geology.

201 GEOLOGY AND MINERAL RESOURCES OF MONTANA 3 (2-2) prereq 300, 310, 315. Primarily for teachers of Natural Science. Broad discussion of the geology and evolution of Montana and adjacent areas through the last two billion years. Metallic and nonmetallic minerals; origin of water and near Montana. Frequent field trips. Not allowed toward a degree in geology.

302 FIELD GEOLOGY FOR NATURAL SCIENCE TEACHERS 3 (300, 301, recommended, c/l. Primarily for teachers of Natural Science. Field observation of rocks, geologic structures, landforms, and selected mineral deposits. Aerial photographs and topographic maps. Field trips. Credit not allowed for Montana geology majors.

GEOLOGY Su 3 prereq 302. Primarily for teachers of Natural Science. Geologic and hydrologic conditions controlling the development of North America from their beginnings to the present. Field study and interpretation of the distribution of igneous rocks. Solution chemistry as applied to sedimentary deposits with emphasis on chemical precipitates.

313 INTRODUCTION TO VEGETABLE PALEOONTOLOGY 4 (2-4) prereq 200 or c/l. Principles of vegetable paleontology and ecolégical significance of fossil plant remains. Interpretation of non-opaque mineral fragments and minerals in thin section.

325-326 PETROGRAPHY/PETROLOGY 4 (2-4) prereq 215, 420. Descriptive and interpretative study in thin section of igneous minerals and rocks. Similarly treats metamorphic rocks. Advanced petrologic considerations included in both quarters.

327-328 GEOCHEMISTRY 3 (3-2) prereq 315, Chem 123, (427) Origin of the elements and the distribution of elements in the cosmos, earth, and earth's crust. Principles of inorganic and crystal chemistry applied to silicate minerals. (436) Description and explanation of the distribution of elements in igneous and metamorphic rock units. Solution chemistry as applied to sedimentary deposits with emphasis on chemical precipitates.

330 SEDIMENTATION 4 (3-2) prereq 110, 315. Interpretation of depositional environments using both sedimentary structures and grain size and shape analysis; labs include statistical techniques and field trips.

400 INTRODUCTION TO GEOPHYSICS 3 (3-2) prereq Physics 113, or 223, Math 116 or concurrent registration, Geo! 311. Theory of commonly applied geophysical methods, including gravimetric, magnetic, and electrical methods, and their use in geological interpretation. Lab work in the interrelationships of geophysical anomalies and geologic structure. Geophysical case histories.

420 X-RAY ANALYSIS 3 (2-2) prereq Physics 223. Theory of x-rays; their use in the study of crystalline materials using powder camera and diffractometer methods.


430 GROUND WATER GEOLOGY 4 (3-2) prereq 203, 315, Physics 113 or 223. Geologic and hydrologic conditions controlling occurrence and development of ground water.

440 HISTORY OF GEOLOGY 2 (2-0) prereq junior standing with major in one of the physical sciences. Historical and philosophical analysis of the development of geology and related sciences from their beginnings to the 20th century.

FOR GRADUATES

500 *SEDIMENTARY PETROLOGY 3 (3-2) prereq 420, 540. Composition and classification of terrigenous sedimentary rocks and interpretation of their provenance, transport and tectonic setting from thin section examination.

505 ADVANCED GEOCHEMISTRY 3 (3-2) prereq 426. Application of physical chemistry to study of origin, internal structure and chemical composition of earth.

507 CARBONATE PETROLOGY 4 (2-4) prereq 420, 540. Description, classification, and environmental interpretation of carbonate rocks chiefly from this section examination.
HEALTH AND PHYSICAL EDUCATION—47

HEALTH AND PHYSICAL EDUCATION deals primarily with muscular activity and recreation to provide the individual with wholesome psycho-motor and organic development, with fitness for daily living, and with resources for use of leisure. The program provides (1) instruction in a wide variety of sports and recreation skills, (2) opportunity for student groups to organize teams and to participate in formal and informal competition, in such activities as archery, badminton, basketball, bowling, golf, horseshoes, swimming, tennis, touch football, softball, and volleyball; and (3) preparation for professional careers in the various fields related to physical education and recreation.

A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in this field. The Master of Arts and the Master of Science degrees are also offered.

Theory courses include structure and function of the human body, basic principles and teaching procedures, history and philosophy, and planning and administration of programs. Professional activity courses include training in teaching team games, individual and dual sports, gymnastics and dance, aquatics, sport motivation for all ages. Students interested in physical therapy and orthopedic rehabilitation may fulfill entrance requirements for approved schools of physical therapy. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation and practice in group leadership, training in crafts and social activity skills for leaders of youth groups, and background for careers in industrial and community recreation and in recreation therapy. All levels of American Red Cross certification are offered in conjunction with swimming and first aid courses.

Many graduates enter the teaching profession. Some choose to continue graduate studies with specialization in physical education, coaching, the dance, physical therapy, or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. Many elect careers in leadership positions in youth-serving organizations in playground and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION

Two degrees are offered in this Department: Bachelor of Arts, which requires that the foreign language requirement listed earlier in the catalog be satisfied, and Bachelor of Science, which requires no course in foreign language. Students electing the Bachelor of Science degree will fulfill the following core, Educ. 497.

General Education (99 hrs.): Group I Life Sciences (to include Zool 111 and 202, Mich 108); Group II Physical Sciences or Math (Pre-Physical Therapy to include Chem 101, Physics 111); Health to include Chem 101); Group III Social Sciences (to include Soc 101); Group IV Humanities; and in addition English, Home Ec 146, Psych 110 and 220, H&PE 110 (6 ers. fulfills H&PE requirement), and Speech 111.

Teacher certification (54 hrs.): Required only of students who desire teaching certificate; sequence of courses in Education plus teaching minor.


AREAS OF SPECIALIZATION (student selects one area for specialized study):

Physical Education, Men: Required (19 hrs.): H&PE 336, 358, 361, 373, 375, 396, 400; Electives (9 crs. required): H&PE 213, 393, 326, 356, 323, 356, 357, 386, 396, 398, one additional coaching course. EDUC 497.


Health: Required (25 crs.): H&PE 373, 375, 386, 480, Mich 100, 101, 110, plus 2 of following courses in Home Ed 366, 361, 395; Electives (12 crs. for males; H&PE 240, 261, 380, 388, 390, 490, 585; Math 112, SPA 330; plus 4-6 additional credits in Chemistry or Physics; Electives (44-45 crs.) to be selected with consent of advisor.

Pre-Physical Therapy: Required (32-33 crs.): H&PE 240, 386, 388, 390, 480, 486, 585; Math 112, SPA 330; plus 4-6 additional credits in Chemistry or Physics; Electives (44-45 crs.) to be selected with consent of advisor.

Recreational Leadership: Required (Women 29 crs., Men 30 crs.): H&PE 238, 236, 256, 261, 281, 290, 296, 386, 480, 490, 585; Math 112, SPA 330; plus 4-6 additional credits in Chemistry or Physics; Electives (44-45 crs.) to be selected with consent of advisor.

Program offerings are divided into 6 groups:

1. ORIENTATION: Introduction to the University Physical Education program, physical development activities, testing programs and counseling for future quarters. (P.E. 115, required of all H&PE majors and minors, will substitute for the orientation quarter.)
3. PHYSICAL FITNESS: Apparatus, gymnastics, physical conditioning, slim gym, tumbling, weight training.
4. DANCE: Folk, Latin American, modern, social, square.
5. INDIVIDUAL AND DUAL SPORTS: Archery, badminton, bowling, fencing, golf, handball, judo, competitive gymnastics, ruffey, skiing, tennis, track and field, wrestling.

Within the six quarters of P.E. 100, a student is required to complete the following unless exempted by the department.

1. Enroll in Orientation to P.E. as the first of the six quarter requirements.
2. Participate for at least 1 quarter in 2 of the 3 following areas:
   a. Dance
   b. Individual and dual sports
   c. Team sports
3. Electives to fulfill the 6 quarter requirement. Within the 6 credit requirement a maximum of 3 quarters may be taken in one activity.

115-120 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS
1. Six quarters required of all H&PE majors and minors in place of PE 100.


199 FIRST AID 2. Red Cross Standard and Advanced courses and Medical Self-Help. Certification may be secured upon completion of course.

200 (199, 190) HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION 3. Historical, philosophical and scientific background as related to physical education today.

208 ADVANCED COACHING TECHNIQUES 1. Intensive training in special techniques of coaching various sports.

210 COACHING OF FOOTBALL 3.

211 (211, 221) THEORY OF OFFICIATING FOOTBALL 1. Principles, rules and techniques. Includes practical experience.

213 COACHING GYMNASTICS AND TUMBLING 3 prereq c/i. History, values, facilities, equipment, principles, safety methods and devices, warm-up and conditioning, nomenclature, skills, judging, competitive gymnastics.

214 COACHING OF WRESTLING 3 prereq c/i. History, values, principles, warm-up and conditioning, weight divisions, terminology and rules, skills, judging.

215 ADVANCED PROFESSIONAL PREPARATION FOR MAJORS AND MINORS IN 1-6. Preparation in advanced techniques, theories and practices.


223 (200) COACHING OF BASEBALL 3.

222 OFFICIATING BASKETBALL (WOMEN) 2. Theory, principles, rules and techniques. Practical experience in officiating intramurals. Ratings given by Women's National Officials Rating Committee upon successful completion of re upon units.

224 HISTORY, THEORY AND PHILOSOPHY OF DANCE 5. A study of dance from its primitive beginning through modern expression. The creative process in dance. A philosophical foundation for dance as related to other arts in historical development and style.


238 WATER SAFETY INSTRUCTOR 2 prereq Red Cross Senior Life Saving Certificate. Instructor's course in life saving and water safety. Red Cross Instructor's Certificate awarded upon successful completion of requirements, providing student has reached his 18th birthday.


250 SKI INSTRUCTORS QUALIFICATION PROGRAM 3. Prereg take PS 107. Open to all students. Techniques of Teaching Skiing including finished technical forms, teaching methods, ski正宗 and ski mechanics. Prepares the potential ski instructor for certification by the Professional Ski Instructors of America.

251-302-303 METHODS OF TEACHING PHYSICAL EDUCATION ON THE SECONDARY LEVEL 2. Experience in teaching; class organization, analysis of techniques, development of units of instruction in seasonal sports.

253 COACHING OF BASKETBALL (MEN) 3.

253 (311, 312) THEORY OF OFFICIATING BASKETBALL (MEN) 1. Principles, rules, techniques and practical experience.

253 (311, 322) COACHING OF TRACK 3. Theory and practice in track and field events.


254 METHODS AND MATERIALS IN SOCIAL AND LATIN DANCE 2.

255 METHODS AND MATERIALS IN MODERN DANCE 2.

255 METHODS AND MATERIALS IN FOLK DANCING AND SQUARE DANCING 2.


258 AQUATIC PROGRAM MANAGEMENT 3 prereq Senior Life Saving or - Group methods of teaching swimming for various age groups. Organization and operation of programs in competitive swimming and SCUBA diving; swim camp, rehabilitation, handicapped, water show. Swimming pool and waterfront management.

259 TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS 3 prereq PE majors and minors: junior standing, PE 200 and credits in 115; elementary education majors: junior standing and Educ 202. Principles and foundations of elementary school physical education; theory and practice in selecting and teaching activities for children these six.

259 PLAYGROUNDS 2 prereq 339. Historical background, construction, equipment, management, problems, methods, practical experience. For undergraduates.


262 RECREATION LEADERSHIP (SOCIAL RECREATION) 3 prereq Soc 101. Principles and practice in group leadership, program staffin various age groups and for special groups and as such as the handicapped. Credit not allowed for this and Soc Wel 362.

262 RECREATION LEADERSHIP (CAMP LEADERSHIP) 3 prereq Soc 101. Principles and practice in group leadership of outing activities; skills and techniques used in organized camping. Credit not allowed for this and Soc Wel 363.

262 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION 3 prereq 260. Principles and policies for the organization and management of physical education departments. Management of the physical plant.
375 (373, 375) METHODS IN TEACHING HEALTH 3 prereq PE major or minor or Edue major. Foundation for teaching health; planning and conducting methods and techniques in differentiated and integrated instruction: material aids and their sources, evaluation of health instruction.


388 INTRODUCTION TO PHYSICAL THERAPY 3 prereq or coreq. Basic theoretical and technical aspects of common health problems; school and classroom aspects of healthful school living; school safety program.

389 CLINICAL TRAINING IN PHYSICAL THERAPY V 1-4 R-4 prereq 386 and c/i. Practical experience in local physical therapy centers.

391 FIRST AID 3. Red Cross Standard, Advanced and Instructor's Courses and Medical Self-Help. Certification at Instructor level may be secured from completion of course.

401 TEACHING OF COLLEGE PHYSICAL EDUCATION ACTIVITIES 2 R-4 prereq 385. Advanced teaching projects in college classes, under supervision.

FOR UNDERGRADUATES AND GRADUATES

329 ADVANCED TECHNIQUES IN MODERN DANCE 2 prereq c/i. Advanced study of modern dance techniques contributing to flexibility, strength, and control in dance expression.

358 THE HIGH SCHOOL INTRAMURAL PROGRAM 2. Problems in organizing and administering the intramural sports in the high school.

373 THE SCHOOL HEALTH PROGRAM 3. Required of Physical Education majors and minors. Function and scope of health service; appraisal, preventive and remedial aspects of common health problems; school and classroom aspects of healthful school living; school safety program.

385 KINESIOLOGY 2 prereq 380. Advanced study of muscle action and joint mechanics of the body.

386 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 3 prereq 386. Prevention and detection of common physical defects frequently encountered by the physical educator; follow-up programs possible under medical supervision.

401 DANCE COMPOSITION AND IMPROVISATION 3 prereq c/i. A study of composition and improvisation as dance forms and content. Improvisation as a source of composition. Experience in creative effort.

402 DANCE PRODUCTION 3 prereq 401. Choreography, staging, lighting, makeup, costuming and other problems of dance in public performance including concert dance and dance demonstrations. Performance in dance concert required.

406 SEMINAR V 1-3 R-12. Special problems connected with health, physical education and recreation; reviews of current literature, topical and discussion topics.

464 ORGANIZATION AND ADMINISTRATION OF RECREATION 3 prereq HPE (Soc W) 361 or c/i. Personnel, finance, facilities, programs and public relations. Coordination with youth-serving institutional and municipal agencies. (Credit not allowed for this and Soc Wel 464.)

465 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION 3. Orientation to testing and measuring; administrative use of tests, elementary statistical techniques and procedures.

466 (365) CURRICULUM CONSTRUCTION 3. Classification and analysis of physical education activities; criteria for selecting activities; construction of program for specific situations.

478 (378) PHYSIOLOGY OF EXERCISE 3 prereq Zool 202. The physiological effects of the different types of exercise on the functions of the human body.

486 ADVANCED CORRECTIVE PHYSICAL EDUCATION PROCEDURES 3 prereq 386. Survey of orthopedic conditions which fall in province of the corrective physical education and physical therapy specialties; recommendations for corrective physical education programs in schools and colleges.

491 PRACTICUM IN RECREATION V R-4 prereq 464 and c/i. Supervised field work. Experience in conducting recreation programs in community, social agency, and institution situations.

FOR GRADUATES

501 RESEARCH METHODS 3 prereq or coreq 503 or =. Research methods and techniques used in health, physical education and recreation. Investigation in developing individual studies in physical education and recreation.

503 STATISTICAL MEASUREMENTS IN PHYSICAL EDUCATION 4 prereq 469 or =. Specific tests for evaluation of organic, neuro-muscular, psychological and social outcomes. Practice in constructing and applying statistical techniques to results of research.

521-522-523 FOUNDATIONS FOR HEALTH, PHYSICAL EDUCATION AND RECREATION 3 prereq undergraduate major in PE or =. Enter any quarter. (521) Advanced Physiology of Exercise; (522) Psychological-Sociological bases; (523) Philosophical-Historical bases.

531 ADVANCED ADMINISTRATION OF PHYSICAL EDUCATION AND RECREATION 3 prereq 385 or =. Problems in the administration of high school and college physical education and athletic programs: finance, personnel, public relations.

532 (466) SUPERVISION IN PHYSICAL EDUCATION 3 prereq =. Roles and responsibilities of supervisors in exerting effective leadership.

575 SPORTS MEDICINE 2 (2-1) prereq 385, 478. The medical aspects of sports and physical training. The etiology and management of injuries, care of students with physical handicaps, problems of aging and other medical problems associated with participation in sports.

585 ADVANCED KINESIOLOGY 3 prereq 385. Analysis of complex movements, specialized skills, and motor coordination in terms of the mechanics of skeletal and muscular movement.

591 INDEPENDENT STUDY V R-5 prereq c/i. Investigation of problem areas in Physical Education and related fields (exclusive of thesis research).

699 THESIS V R-10.

HISTORY

is the study of man over the time span of the past, both as an individual and as a member of a group. For the student in search of a broad basis of education rather than in training for some particular occupation, the department offers a program of instruction designed to provide a knowledge and understanding of the background and ramifications of the present local, national, and world affairs. Many students combine the fields of History and Political Science.

The department helps to prepare men and women occupationally for either the domestic or the foreign service of the federal government and for positions in state and local government. It is also providing a general preparation for businessmen with a basis for the pursuit of their chosen profession, but also furnishes knowledge and perspective for intelligent leadership in community affairs.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in History. A minimum of 59 credits in History is required, with 30 credits from courses numbered over History 491 or 492. Only 2 credits in 491 or 492 will count in fulfilling the minimum of 30 upper division credits for history majors. A History major must elect a minimum of 15 credits in American and 15 credits in European History.

A student may offer a combined major in History and Political Science with 60 credits in each which must be selected from History and 29 credits in Political Science. A minimum of 30 credits must be selected from courses numbered over 360.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101-102-103 MODERN EUROPEAN CIVILIZATION 3. Enter any quarter. (101) Europe during the Renaissance, the Reformation, and the Age of Absolutism to 1700. (102) Europe during the Old Regime, the French Revolution, and the rise of nationalism to 1850. (103) Europe from 1850 through World War II. (201-202-203) SURVEY OF ANCIENT AND MEDIEVAL HISTORY 3. Enter any quarter. (201) Europe during the Middle Ages, 400-1400. (202) Prehistoric man, the ancient Near Eastern empires, the Hellenic Greeks. (203) Classical Greece, the Hellenistic era, the Romans. (204) Fall of Rome, the barbarian and feudal kingdoms, the Crusades, revival of towns, and trade.


251-252-253 UNITED STATES HISTORY 4. Enter either quarter. (251) The American nation from its colonial beginnings to the end of Reconstruction. (252) Continuation to the present.

285-286-287 HISPANIC-AMERICAN HISTORY 4. Enter any quarter. (285) The European background; the political and economic development of Spain and Portugal to the foundation of the Latin American colonies. (286) The Spanish and Portuguese colonies; the revolutionary period and the foundation of present day Latin American states. (287) The development of Latin American States in the 19th and 20th centuries.
50-HISTORY

FOR UNDERGRADUATES AND GRADUATES

301 ANCIENT NEAR EAST 3. Pre-Greek civilizations of Mesopotamia, Asia Minor and Egypt.

302 (303) ANCIENT GREECE 3 prereq 201 or 301. Greek culture during the period of the city-states and the Age of the Alexander the Great.

303 THE HellenISTIC AGE 3 prereq 302. The Ptolemaic, Seleucid and lesser states successor to the Alexandrian Empire, and their social, political and economic development to the time of their absorption by Rome.

304 (305) ANCIENT ROME 3 prereq 201 or 303. Early Etruscan civilization; Republic, Empire, civilization of the Eastern Roman Empire to 1453. Relations with Persian, Slavs and Turks; cultural and political influence upon the West.

305 BYZANTINE HISTORY 3 prereq 202 or 304. Origins and development of the civilization of the Eastern Roman Empire to 1453. Relations with Persian, Slavs and Turks; cultural and political influence upon the West.

306 THE EXPANSION OF EUROPE 3. Exploration and colonization of the non-European world in the sixteenth, seventeenth, and eighteenth centuries by the western European nations.

307-308 (207-208) MEDIEVAL EUROPE 3. Enter either quarter. (207) Europe from 1300 to 1500. (308) A continuation of 307 to the fourteenth century.

309-310 RENAISSANCE AND REFORMATION 3 prereq 101. (309) The political, social, economic, and religious development of Europe from 1300 to 1500. (310) Continuation to 1600.

311-312 ABSOLUTISM AND THE ENLIGHTENMENT 3-3. (311) The political, social, economic and religious development of Europe from the sixteenth century to the middle of the eighteenth. (312) Continuation to the outbreak of the French Revolution.

313-314 FRENCH REVOLUTION AND NAPOLEONIC ERA 3 prereq 311. (313) The political, social, economic and religious conflicts of France from 1789 to 1815. (314) The Directory, the rise of Napoleon, the First Empire, the Crisis of Napoleon and the Restoration.

315 THE EARLY TWENTIETH CENTURY (1900-1933) 3 prereq 103. Internal development of Great Britain and the continental powers, international rivalry prior to World War I. The War and its aftermath.

319 CONTEMPORARY EUROPEAN HISTORY 4 prereq 103. The internal affairs and the external relationships of the principal European states since 1933.

321-322 CENTRAL EUROPE 4 prereq 101. (321) The development of the states of Central Europe and the Balkans from early modern times to 1815. (322) Continuation to the present.

324-325-326 HISTORY OF RUSSIA 3, 325 prereq to 326. (324) The beginnings of Russia to 1800. (325) Nineteenth and twentieth century Russia from the fall of the tsardom to the twentieth century. (326) The Soviet Union since the Bolshevik Revolution.

328-329 MODERN FRANCE 3 prereq 101. (328) The development of France from 1560 to 1815. (329) Continuation to the present time.


334 MODERN WAR AND WESTERN SOCIETY 3 prereq a college course in modern European history. A history of warfare from the French Revolution. Emphasis is placed upon relationships of government and military command, upon problems of strategy, and upon theories of war.

335 THE BRITISH EMPIRE 4 prereq 101 or 242. English exploration and colonization. The First British Empire. Developments in the nineteenth and twentieth centuries. The Empire today.

339 HISTORY OF CANADA 4 prereq 101, 242 or 261. Canada to the present time, with emphasis upon Canadian-American diplomatic and economic relations; the growth of the Canadian West.

345-346 ENGLISH CONSTITUTIONAL HISTORY 3 prereq 241-242. (345) English constitutional development to the end of the Middle Ages. (346) Continuation to the present time.


351-352 (353) COLONIAL AMERICA 3 prereq 242 or 261. (351) The transfer of English civilization to America in the seventeenth century and attention to the qualities that supported the colonies and particular settlements. (352) American civilization from 1809 to 1865. The States before the Civil War; development of political, economic, and social thought and institutions that prepared the colonies for the revolutionary era.

357-358 HISTORY OF THE SOUTH 3 prereq 261. (357) The ante-bellum South, the South under the Confederacy, the War between the States; Reconstruction. (358) The New South in the late nineteenth and twentieth centuries.

359 RECENT AMERICAN HISTORY 3. The internal affairs and external relationships of the United States in the twentieth century.
HOME ECONOMICS curricula are designed to provide a well rounded educational program which will not only prepare the individual for a more effective living in the home and community but also for a professional career. The program assures each student an opportunity for a basic liberal education in addition to meeting professional requirements. Opportunities for graduates are many and varied. Home Economics at the University of Montana prepares students for positions in the areas of education, extension, dietetics and institution administration, research, business, government and community services, and industry.

There are three general plans available to the undergraduate major. Plan 1 prepares students for teaching. Plan 2 prepares students for work in Foods and Nutrition and for the Dietetic Internship. Plan 3 provides a program in general Home Economics. Here the student may emphasize Clothing and Textiles, Child Care, or Family Relations. The general major may be combined with other offerings on the campus such as Business, Radio and TV, Social Welfare and others.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 50 credits in Home Economics selected as follows:

Required for all majors: Home Economics 102, 155, 241, 246, 309, and 366.

The following additional courses are required according to the plan selected by the student:

1. Preparation for Teaching: Home Economics 157, 210, 258, 302, 303, 305, 310, 321, 330, 367, 368, 421, 490 (321 and 421 may be taken in either Education or Home Economics), Art 125, Education 200, 205, 305, 405, 407, Microbiology 100, 101, 306. These courses plus electives combined with a teaching minor will prepare for the certificate to teach Home Economics in secondary schools.


Clothing and Textiles emphasis: General Home Economics requirements plus Home Economics 264, 338, 339, 399, 360, Art 125, 200, 301, 302. Students should satisfy the foreign language requirement. The following additional courses should be taken: Sociology 100, 101, 160, 368, 361.


Suggested first-year curriculum:

<table>
<thead>
<tr>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 150, Art 125, H.Ec. 156</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Chem 101, 102, 180</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Soc 101, Anthro 132, Psych 110</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H.Ec. 102, 125, 157</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 160</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102 PERSONAL AND FAMILY LIVING 3 (2-0). Personal development and factors which affect family and social relationships. Open to both men and women.

105 GENERAL HOME ECONOMICS 1 (0-2). Selected subjects in Home Economics. Offered by various instructors under different titles.

141 ELEMENTARY FOODS 3 (2-0). The selection, storage, preparation and serving of food. Non-majors and non-minors only.

146 ELEMENTARY NUTRITION 4 (4-0). Fundamental principles of adequate human nutrition. Non-majors and non-minors only.

155 TEXTILE SELECTION 3 (2-2). Fabrics for family clothing and home furnishings. Analysis of fibers, yarns, weaves and finishes.
157 INTRODUCTORY CLOTHING PROBLEMS 3 (3-0). Aesthetic and economic factors in the selection of clothing. Principles of color, common materials, care, cleaning, and use of equipment. Designed for the student who is lacking in experience in clothing construction.

158 CLOTHING PROBLEMS LABORATORY 2 (0-4) prereq or coreq 157. Basic principles applied to planning and making garments. Designed for the student who is lacking in experience in clothing construction.

210 HOUSEHOLD EQUIPMENT 3 (3-0). Principles of operation, maintenance, selection and use of equipment. Experimental work in household equipment.

241 (141) PRINCIPLES OF FOOD PREPARATION 5 (3-4). The selection, storage, and preparation of food. Methods of food conservation. Majors and minors only. Credit not allowed for both 141 and 241.


258 CLOTHING FOR THE FAMILY 3 (1-4) prereq 157. Principles of advanced clothing construction, analysis of patterns and fitting techniques, care and storage of clothing, psychological and sociological factors in selection of clothing.

264 WEAVING 2 (1-3) prereq Art 125. Basic weaving techniques with emphasis on creativity.

302 HOME PLANNING 3 (2-2) prereq 210 and Art 125. Practical and aesthetic considerations in planning and selecting a home.

303 INTERIOR DESIGN AND FURNISHINGS 5 (4-2) prereq 302. Art principles applied to Interior Decoration to create attractive, efficient backgrounds for living. A study of outstanding period styles, contemporary design, and interior furnishings, plus qualities to consider in selecting home furnishings.

305 MEAL MANAGEMENT 3 (2-4) prereq 241, 246. Nutritional and social aspects of family meals, with emphasis on time, energy, money, and equipment management.

309 (306, 309) HOME MANAGEMENT AND FAMILY FINANCE 5 (3-0). Open to non-majors. Identifying resources used in daily living. Principles of resource use; management and applying resources to obtain satisfaction for individuals and families.


321 METHODS OF TEACHING HOME ECONOMICS 3 (3-0) prereq 102, 157, 241. The fundamental principles of organization, unit planning, and methods of presentation of material. To be taken by majors and minors before professional quarter. (Home Economics majors may take this course as Education 221.)

331 (431) QUANTITY FOOD PRODUCTION AND SERVICE 4 (3-4). Application of principles of food preparation and food management to institutional situations. Menu planning for institutions.

FOR UNDERGRADUATES AND GRADUATES

342 EXPERIMENTAL FOODS 3 (1-4) prereq 241. Foods from the experimental point of view. Special problems are assigned for individual investigation.

346 FAMILY NUTRITION 3 (3-0) prereq 146 or 246, non-majors only. The science of nutrition as it applies to the growth, development, and maintenance of health in all age groups.

352 HISTORY OF CLOTHING AND TEXTILES 3 (3-0). Historical costumes and textiles and their influences on modern dress and fabrics. Experimental work in the construction of tailored garments.

358 ADVANCED CLOTHING PROBLEMS 3 (1-4) prereq 258. Modern principles applied in the construction of tailored garments. Experimentation with a variety of techniques and fabrics.

359 CLOTHING DESIGN 3 (2-2) prereq Art 125. Art principles applied to designing clothing. Original designs created through flat pattern and draping methods.

360 RECENT DEVELOPMENTS IN TEXTILES 3 (2-2) prereq 155 and Chem 160 or c/o. Developments in fibers and finishes, legislation, and standardization. Comparison and evaluation of textiles.

366 CHILD DEVELOPMENT V 2-3 (3-0) prereq Psych 110. The infant, pre-school and school-age child. Observation in the nursery school required for majors, for non-majors observation optional.

367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 336. Participation in the laboratory.

368 HUMAN DEVELOPMENT AND FAMILY RELATIONSHIPS 3 (3-0) prereq Psych 110. The adolescent and young adult in home, school, and community. Problems of aging.

406 NUTRITION IN DISEASE 4 (4-0) prereq 246 or c/o. The symptoms of diseases, prophylaxis and feeding in disease.

421 ADVANCED PROBLEMS IN TEACHING HOME ECONOMICS 3 (3-0) prereq 321, Educ 405. Preparation for teaching of Home Economics in secondary schools. (Home Economics majors may take this course as Educ 421.)

422 LARGE QUANTITY BUYING 3 (3-0) prereq 331. Selection, purchase and storage of foods for institutions.

432 INSTITUTION ORGANIZATION AND MANAGEMENT 3 (3-0) prereq 432. Efficient organization and administration of food service units, employment procedures, personnel schedules, records, food cost, and maintenance.

446 NUTRITION SEMINAR 3 prereq Chem 491 or concurrent enrollment. Readings and discussion of nutritional research.

490 (501) SEMINAR IN HOME ECONOMICS V 1-3. Recent developments and research in Home Economics. Offered by various instructors under different titles.

FOR GRADUATES

699 THESIS V R-15.

JOURNALISM

is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media. It includes instruction in the skills necessary for professional careers in newspaper work, radio and television, magazines, and advertising agencies, public relations and promotion, free lance writing, and related fields. A student must complete the recommended core curriculum of 29 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 100, 270, 290, 360, 361, 371, 372, 380, 381, 491-492-493. A foreign language is required. (See FOREIGN LANGUAGE REQUIREMENT in General section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

Journ 100—Introduction to Journalism

Engl 150—Intermediate Composition

3

Engl 150—Intermediate Composition

3

H&PE 100 (3 quarters)—Health and Physical Education

3

Additional courses to meet University requirements

30-44

Sophomore Year

Journ 270—Reporting

3

Journ 290—History and Principles of Journalism

3

H&PE 100 (3 quarters)—Health and Physical Education

3

Additional courses to meet University requirements

30-44

48-56
JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 227, 290, 470, 495.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 346; Journalism 362, 363, 364.

MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 327, 332, 333, 334.

RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 341-342-343, 346, 348.

NOTE: Students wishing to major primarily in radio or television journalism may take the radio-television sequence in Journalism.

The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO JOURNALISM 3. Open to non-majors. Theories, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper.

128 TYPOGRAPHY 2 prereq c/i. Problems of typographical design and application. Elementary work in printing and the handling of type.


227 ELEMENTARY PHOTOGRAPHY 3 prereq c/i. Open to non-majors. Photography: equipment, materials, and facilities with practice in taking of pictures under varied conditions and processing of films and prints.

270 REPORTING 3. Open to non-majors. Groundwork in gathering, writing and evaluating news.

280 HISTORY AND PRINCIPLES OF JOURNALISM 3. Open to non-majors. American journalism from colonial times against a background of U. S. history with attention to the struggle for freedom in press and speech.

287 NEWS PHOTOGRAPHY 3 prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

332 MAGAZINE MAKEUP AND EDITING 3 prereq c/i. Open to non-majors. Theory and practice of magazine design, layout, and general circulation.

333 MAGAZINE ARTICLE WRITING 3 prereq c/i. Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.

334 TRADE AND TECHNICAL JOURNALISM 3 prereq c/i. Open to non-majors. The writing and editing of trade and business journals, technical and specialized publications.

335 PROMOTION AND PUBLIC RELATIONS 3 prereq c/i. Open to non-majors. The techniques and theories of promotion and public relations.

346 RADIO-TELEVISION PUBLIC AFFAIRS 3. Radio and television special events and information programs, commentary, interviews and interpretation.

350-351 COMMUNITY JOURNALISM 2 prereq 270. News, editorial, circulation, and advertising problems of weekly and small daily newspapers.

352 NEWSPAPER MANAGEMENT 3 prereq 360. Problems of operation of daily and weekly newspapers.

360 PRINCIPLES OF ADVERTISING 3. Open to non-majors. Theory and techniques with emphasis on the role of advertising as it applies to the producer, consumer, and distributor.

361 ADVERTISING SALES 2 prereq 380 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 3 prereq c/i. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.

363 ADVERTISING LAYOUT AND COPY 3 prereq 380. Open to non-majors. Application of typographical and advertising principles to preparation of layouts and copy.

364 RETAIL STORE ADVERTISING 3 prereq 360. Open to non-majors. Integration of retail store merchandising among advertising media. Technical aspects of advertising schedules for retail stores.

371 ADVANCED REPORTING 2 prereq 270. News coverage, reporting and publishing problems.

372 SPECIALIZED REPORTING 2 prereq 371. Specialization in fields of depth reporting.

380 NEWS EDITING 3 prereq 270. Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing.

381 ADVANCED NEWS EDITING 2 prereq 380. Editing and makeup problems.

FOR UNDERGRADUATES AND GRADUATES

316 SCHOOL PUBLICATIONS 3 e/y prereq c/i. Open to non-majors. For students who plan to teach journalism courses in high schools or act as advisers to school publications.

317 SCHOOL PUBLIC RELATIONS Su 3 prereq B.A. degree or teaching experience. The principles of developing better understanding among the school, the press, and the community. For school administrators and teachers.

390 PUBLIC OPINION 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and methods used in its measurement.

397 LAW OF JOURNALISM 3. Legal guarantees and limitations of the right to gather and publish news and to comment on it.

399 ADVANCED JOURNALISM PROBLEMS V prereq consent of the dean. Training and research in advanced journalism problems.

440 CINEMATOGRAPHY 3 prereq 227 or —, and 12 hours in radio-television courses. Motion picture news photography. Film for television.

470 REPORTING PUBLIC AFFAIRS 3. Laboratory work in coverage of political and governmental news at the city, county, state, and federal levels.

491-492-493 SENIOR SEMINAR 2 prereq senior standing in journalism. Investigative methods of editing, study of several aspects of American society which constitute the background for many news stories, and practice in research methods.

496 EDITORIAL WRITING 3. The editorial pages of leading newspapers; practice in research and the writing of editorials.

499 MASS MEDIA IN MODERN SOCIETY 3. Interrelationships between media of mass communication and diverse facets of modern society.

497 INTERNATIONAL COMMUNICATIONS 3. Media of information in other countries, with emphasis on newspapers.

FOR GRADUATES

598 THEORIES OF COMMUNICATION 3 prereq consent of the dean. Structure, processes and effects of communication.

599 METHODS OF JOURNALISM RESEARCH 3 prereq consent of the dean. Problems and techniques in study and analysis of communications.

601 RESEARCH IN JOURNALISM V prereq consent of the dean.

699 THESIS V R-15.

LAW

is the study of the official rules and regulations under which people live in organized American society; by which such rules are devised and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

LAW studies primarily involve preparation and class recitations and investigations on the basis of illustrative court opinions collected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and in legal writing. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana. The Supreme Court of Montana admits graduates to
practice without examination. Most graduates become prac-
ticing attorneys. Others enter government service, business,
or finance, with or without additional studies in these latter
fields. Some take advanced or masters specialized or tech-
nical courses. In addition to the foregoing, (a) a transcript of
graduates with the requisite scholarship standing are readily accepted by other
law schools specializing in more advanced legal education.
They are also to be found in the ranks of leading prac-
titioners in many large cities of the United States.

CALENDAR

FALL SEMESTER, 1967
September 19-19, Monday and Tuesday Orientation of new
law students
September 22, Tuesday Registration
September 22, Wednesday Classes begin at 9:00 a.m.
November 11, Saturday Veterans’ Day—no classes
November 22, Wednesday Thanksgiving vacation begins
after last class
November 27, Monday Classes resume at 9:00 a.m.
December 16, Saturday Christmas vacation begins
after last class
January 2, 1968, Tuesday Classes resume at 9:00 a.m.
January 22-27, Monday through Saturday......... Semester Examinations

SPRING SEMESTER, 1968
February 7, Wednesday Registration
February 8, Thursday Classes begin at 9:00 a.m.
March 16, Saturday Spring vacation begins after last class
March 25, Monday Classes resume at 9:00 a.m.
May 1, Monday through Saturday... Semester Examinations
June 9, Sunday Commencement

FALL SEMESTER, 1968
September 23-24, Monday and Tuesday Orientation of new
law students
September 24, Tuesday Registration
September 25, Wednesday Classes begin at 9:00 a.m.
November 11, Monday Veterans’ Day—no classes
November 28, Wednesday Thanksgiving vacation begins
after last class
December 2, Monday Classes begin at 9:00 a.m.
December 6, Saturday Christmas vacation begins after last class
January 6, 1969, Tuesday Classes resume at 9:00 a.m.
January 27-February 1, Monday through Saturday......... Semester Examinations

GENERAL STATEMENT: The Law School is accredited by the
American Bar Association and the American Association of Law
Schools. Organization of instruction is upon the semester basis, the
school year being divided into two semesters of approximately
eighteen weeks each, including vacation periods. For detailed infor-
mation concerning facilities, descriptions of courses, and miscel-
naneous administrative regulations the applicant should consult the
Law School Bulletin.

REQUIREMENTS FOR ADMISSION: The Law faculty passes on
all applications for admission to the Law School. Candidates must be
of good moral character and intellectual promise who have received a
baccalaureate degree or its equivalent from an approved college or
university prior to matriculation in the Law School. A candidate who
has completed in residence at an approved college or university
three-fourths of the work required for an undergraduate degree may
be considered for admission as an exceptional case upon submission
of a petition and evidence of high scholastic standing and outstand-
ing ability. The Board of Curators reserves the final decision for an
applicant qualify for an undergraduate degree prior to receiving a
law degree. Non-theory courses are not acceptable except under the
requirements for physical education to the extent of at least three
percent of the total credits offered for admission. No significant student who has demonstrated a lack of capacity for self expression as evidenced, for example, by failing to achieve at least average grades (C) in English Composition.
It is strongly recommended that all prospective applicants for the
Law School complete Latin 101, 102, 103 or the equivalent, and
Accounting 201, 202, 203 and 301 or the equivalent.

The Law School Admission Test is required of all applicants for
admission to the Law School. It should be taken during the year preceding the one in which admission is sought. Information concern-
ing the test and application forms may be obtained from the School of Law or from the Educational Testing Service, P. O. Box
562, Princeton, New Jersey.

Special students are not admitted to the Law School. Students
otherwise qualified for admission may register for selected courses
in law with the approval of the Dean of the Law School and the
instructor of the course.

All applications for admission to the Law School must be sub-
mitted before June 1 of the year in which entrance is contemplated.
In addition to the credentials required by the Registrar of the Univer-
sity, the applicant must submit to the Law School (a) an official
transcript of all college and law school work previously taken
(b) a verified questionnaire, on a form prescribed by the Law School,
dealing with the moral character and fitness of the applicant as a
prospective member of the legal profession; (c) a report of his grade
on the Law School Admission Test.

A fee of $22.50 must be paid at the time of making application.
No refunds will be made, but upon matriculation, if the student
enters the semester indicated on the application for admission this
fee will be credited as the registration fee as described under Finan-
cial Obligations earlier in the catalog.

ADMISSION TO ADVANCED STANDING: Applicants for ad-
mission to the Law School with advanced standing must satisfy the
requirements for admission to the Law School and show: (1) that
the law work previously undertaken has been in an approved law school;
(2) that the average in all law courses for which the student has regis-
tered and received a grade is equivalent to that required for gradu-
ating students at the Law School; and (3) that the applicant is in good
standing and eligible to continue in the law school previously at-
tended; and (4) that the applicant is eligible to continue in this Law School under the policies specified herein. An applicant is not likely
to be admitted unless he has a very high scholastic average in the
law work previously taken and is exceptionally qualified to pursue the
study of law.

BASIS FOR EXCLUSION: (1) Failures: A student who has failed in
more than 10 credits at the end of the first or second semester of law
school will be automatically dropped from the Law School. Any
student who has completed two semesters of law study but there-
after has failed courses any semester or who has failed a total of
more than ten semester credits during the period of law study, will
be automatically dropped from the Law School. (2) Weighted Average:
A student otherwise eligible to continue, who has obtained an
index of 1.5 or less at the end of his first two semesters of law study
in law courses for which he has registered and received a grade,
will be dropped. A student otherwise eligible to continue, who has
obtained an index between 1.5 and 2.0 at the end of his first two
semesters of law study in all law courses for which he has registered
and received a grade, will be placed on probation. A student on
probation who fails to secure an index of 2.0 in law courses not pre-
viously taken for which he has registered and received a grade in
any semester subsequent to being placed on probation, will be
dropped from the Law School. A student who fails to obtain an
index of 2.0 at the end of his fourth semester of law study in all law
courses for which he has registered and received a grade, or
fails to maintain such an index thereafter, will be dropped from the
Law School.

The faculty reserves the right to require a student to repeat any
course in which he has received a grade lower than C, but no course may be repeated without the approval of the faculty.

REQUIREMENTS FOR GRADUATION: Candidates for the degree of Juris Doctor (J.D.) must: (1) be an admitted college or
university; (2) complete six semesters in residence at an approved
law school; (3) complete ninety semester hours of law with an index of
2.0 in all law courses for which the student has registered and re-
cieved grades; and (4) complete the following required courses:
all courses taught in the first and second years except Law Review I
as specified in the program of instruction below, and the following
third year courses: Courtroom and Office Practice, Criminal Pro-
cedure, Federal Taxation and Legal Writing. The degree Bachelor of
Law (B.A.L.) is awarded to candidates for a law degree who have
completed all of these requirements but who were not graduates of an
approved college or university prior to matriculation in law school.

A candidate for the degree of Juris Doctor or Bachelor of Laws
who has fulfilled the requirements for graduation will not be recom-
ended for the degree if, in the opinion of the majority of the law
faculty, he is unqualified in accordance with generally accepted
standards for admission to the bar.

A student may not register nor receive credit for more than 16
hours of law in a semester.

<table>
<thead>
<tr>
<th>Semester</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>505</td>
<td>Civil Procedure I</td>
<td>3</td>
</tr>
<tr>
<td>511-512</td>
<td>Contracts I, II</td>
<td>3</td>
</tr>
<tr>
<td>515</td>
<td>Criminal Law</td>
<td>3</td>
</tr>
<tr>
<td>521-522</td>
<td>Introduction to Law I, II</td>
<td>3</td>
</tr>
<tr>
<td>530</td>
<td>Property I</td>
<td>2</td>
</tr>
<tr>
<td>540</td>
<td>Remedies</td>
<td>3</td>
</tr>
<tr>
<td>543-544</td>
<td>Torts I, II</td>
<td>3</td>
</tr>
<tr>
<td>553-554</td>
<td>Agency and Business Organizations I, II</td>
<td>3</td>
</tr>
<tr>
<td>557</td>
<td>Civil Procedure II</td>
<td>3</td>
</tr>
<tr>
<td>561-562</td>
<td>Commercial Transactions I, II</td>
<td>2</td>
</tr>
<tr>
<td>564</td>
<td>Constitutional Law</td>
<td>4</td>
</tr>
<tr>
<td>565</td>
<td>Estate Planning I, II</td>
<td>4</td>
</tr>
<tr>
<td>573</td>
<td>Evidence</td>
<td>3</td>
</tr>
<tr>
<td>576-577</td>
<td>Law Review</td>
<td>3</td>
</tr>
<tr>
<td>585-586</td>
<td>Legal Research, Writing I, II</td>
<td>2</td>
</tr>
<tr>
<td>590</td>
<td>Professional Responsibility</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>606</td>
<td>Administrative Law</td>
<td>3</td>
</tr>
<tr>
<td>610</td>
<td>Conflicts</td>
<td>3</td>
</tr>
<tr>
<td>615-616</td>
<td>Courtroom and Office Practice I, II</td>
<td>2</td>
</tr>
<tr>
<td>620</td>
<td>Creditors’ Rights</td>
<td>2</td>
</tr>
<tr>
<td>625</td>
<td>Criminal Procedure</td>
<td>3</td>
</tr>
<tr>
<td>631-632</td>
<td>Federal Taxation I, II</td>
<td>4</td>
</tr>
<tr>
<td>638</td>
<td>Jurisprudence</td>
<td>4</td>
</tr>
<tr>
<td>641</td>
<td>Labor Law</td>
<td>2</td>
</tr>
<tr>
<td>642</td>
<td>Law Review II</td>
<td>1</td>
</tr>
<tr>
<td>643</td>
<td>Law Review III</td>
<td>1</td>
</tr>
<tr>
<td>647</td>
<td>Legislation</td>
<td>2</td>
</tr>
<tr>
<td>650</td>
<td>Mining Law (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>652</td>
<td>Municipal Law (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>653</td>
<td>Municipal Law (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>656-657</td>
<td>Natural Gas</td>
<td>2</td>
</tr>
<tr>
<td>671</td>
<td>Secured Transactions</td>
<td>3</td>
</tr>
<tr>
<td>678</td>
<td>Social Legislation (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>680</td>
<td>Water Law</td>
<td>2</td>
</tr>
</tbody>
</table>

*Required courses.
COURSES

606 ADMINISTRATIVE LAW 2. The nature, the extent and the review by courts of proceedings by agencies, commissions and bureaus of government.

533-544 AGENCY AND BUSINESS ORGANIZATIONS I, II 3. Partnerships and private corporations and their role in the American free enterprise system.

505 CIVIL PROCEDURE I 3. Court systems, jurisdiction, remedies, and problems preliminary to trial.

587 CIVIL PROCEDURE II 3. The steps in a civil action from the pleadings to the trial.

561-562 COMMERCIAL TRANSACTIONS I, II A 2, S 3. Commercial practices in the marketing of goods and in the issuance and transfer of commercial paper including negotiable promissory notes, bills of exchange, checks and bank drafts.

610 CONFLICTS 4. The choice of laws problems, that is, which of several laws should be applied when the issues arise out of a transaction or a relationship which is affected by the laws of several different states.

564 CONSTITUTIONAL LAW 4. The place of written constitutions in our legal system and the judicial function of interpreting written constitutions.

511-512 CONTRACTS I, II 3. The formation and the performance of contracts and the elements of mutual assent, consideration, assignments and discharge.

615-616 COURTROOM AND OFFICE PRACTICE I, II 1. Established patterns in office procedure, in uncontested legal proceedings and in trial techniques.

620 CREDITORS’ RIGHTS 2. The procedures and methods whereby a creditor obtains recovery from a debtor, with emphasis upon bankruptcy.

515 CRIMINAL LAW 3. Crimes with emphasis upon the criminal act, the requirement and character of criminal intent and limitation upon criminal responsibility.

625 CRIMINAL PROCEDURE 2. Investigation and prosecution of alleged offenders with emphasis upon arrest, bail, indictments, trials and post conviction remedies.

569-570 ESTATE PLANNING I, II 3. The will and the trust and of future interests in property as devices in the transfer of property at death or prior to death.

573 EVIDENCE 4. The production and presentation of evidence in the course of a trial.

631 FEDERAL TAXATION I 4. The federal income tax relating to individual trusts, partnerships and corporations.

632 FEDERAL TAXATION II 2. The federal estate and gift tax laws.

531-532 INTRODUCTION TO LAW I, II A 1, S 2. Law books and their use and the preparation of legal memoranda and reports with emphasis upon legal writing.

638 JURISPRUDENCE 2. The nature and purposes of law and the nature of the judicial process.

641 LABOR LAW 2. The elements of collective bargaining and labor management relations.

572-643 LAW REVIEW I, II 1. Comprehensive research and writing in limited areas of law. Limited to members of the Law Review staff.

582-584 LEGAL WRITING I, II 1. The drafting of legal instruments, moot court briefs and legal memoranda.

646 LEGAL WRITING III 1. The preparation of a research paper under supervision of a member of the faculty.

647 LEGISLATION 2. The preparation, passage and interpretation of legislation.

650 MINING LAW 2. Location of mining claims, patent procedure and limitations upon extractions of precious minerals.

651-652 LEGAL AID I, II 1. Clinical experience under the supervision of a Montana attorney.

653 MUNICIPAL CORPORATIONS 2. The administration of government with emphasis upon local governing bodies and their relationships with their state and federal counterparts.

661 OIL AND GAS 3. The production, conservation and transportation of petroleum.

590 PROFESSIONAL RESPONSIBILITY 2. The lawyer as counsel, advocate, citizen and public servant with emphasis on the nature and extent of professional responsibility.

535 PROPERTY I 2. The law of personal property, possession, and the requisites for acquiring title to land.

536 PROPERTY II 4. The transfer of interests in real property.

540 REMEDIES 3. The judicial remedies available for injuries to persons and property, for breach of enforceable agreements, and for transactions induced by misrepresentation or mistake.

671 SECURED TRANSACTIONS 3. The use of real property security and the nature and foreclosure of mortgages.

676 SOCIAL LEGISLATION 2. Social security, worker’s compensation, unemployment compensation and wages and hours legislation.

543-544 TORTS I, II 3. Private civil wrongs other than breach of contract for which a court of law will award damages.

681 TRADE REGULATIONS 2. The regulation of private business with emphasis upon monopoly, anti-trust, trademarks and unfair competition.

683 WATER LAW 2. The appropriation and use of water and of the relative rights of federal and state governments in the use of this natural resource.

LIBERAL ARTS

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. The latter includes Anthropology, Economics, History, Political Science, Sociology and Geography.

This program permits the student to work in a combination of the above areas rather than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences. It also provides a broad background for students who decide to prepare for teaching. Those who elect to teach may qualify to do so by taking additional work in education.

Students must have completed, or be eligible for, English 150 in order to major in this program. Upperclassmen transferring into this program should have at least a C average in all credits attempted. The liberal arts curriculum is not designed for the student who is undecided as to his major.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

University requirements

| English 150, 250, 350 | 9 |
| Group I or II | 12 |
| Foreign Languages | 23-30 |
| Physical Education (6 quarters) | 6 |

Major Requirements (courses under 300)

| 1. Art 200-201-202 | 9 |
| 2. Humanities (General 151-152-153) | 9 |
| 3. Anthropology, Economics, Geography, Psychology, Sociology (any two) | 15 |
| 4. History or Political Science or both (History 101-102 or 103-104 or 201-202 recommended) | 15 |
| 5. Literature (English 211-212-213 and 231-232-233 recommended) | 12 |
| 6. Philosophy ( Philosophy 291, 299, 300 recommended) | 10 |

Major Requirements (courses 300 and above)

| 7. Anthropology, Economics, Geography, Psychology, Sociology (any two) | 24 |
| 8. History or Political Science or both | 24 |
| 9. Literature or Philosophy or both | 48 |
| Electives | 18-11-18-11 |

106

LIBRARY SERVICE. For information on courses, minimum requirements, preparation of school librarians, and the teaching minor in Library Service, check under the School of Education. See education courses 340, 341, 342, 343, 344, 345, 346, 441, 442, 443, and 444. No degree is offered at this time in this field.
LINGUISTICS is the science which investigates the structure of the languages and dialects which are in use, or have been in use, throughout the world. Its goal is to arrive at a body of knowledge about specific languages and about the nature of language, and ultimately to create theories of language. Linguistics has implications for many other disciplines and has various applications, particularly in teaching English and foreign languages. Although at present the University offers no degree in linguistics, a concentration in linguistics subjects would prepare a student to enter upon graduate work in linguistics and would provide him with a background to work in certain government and foundation supported language programs in the U.S. or abroad. The list of linguistics courses offered by departments in the university (each is applicable to a major in the department concerned):

Anthropology 390—Historical Linguistics
Anthropology 480—Linguistic Methods
English (also General) 360—Introduction to Linguistics
English 371—The Structure of Modern English
English 372—The History of the English Language
English 373—Old English
English 495—The Teaching of English as a Foreign Language
English 497—Problems in English Linguistics
German 301—Applied Linguistics
German 460—History of the German Language
French 350—Advanced Phonetics
Roman Philology 360—Introduction to Romance Philology
Spanish 301—Applied Linguistics
Spanish 460—History of the Spanish Language
Speech 119—Phonetics
Speech 232—Introduction to Phonology

MATHEMATICS is a discipline of intrinsic beauty when considered as an independent entity; it is also a discipline of tremendous utility in the study of the physical, biological, and social sciences, and other disciplines in general. The importance and the usefulness of mathematics have never been greater than at the present time, and, accordingly, the need for well-trained, competent mathematicians has never been greater than at the present time. This is indicated, in some measure, by the emphasis placed upon mathematics education and mathematics research by various agencies of the national government. The well-prepared graduate in mathematics will find excellent opportunities for a career involving teaching and research in an academic life at the high school or university level, or for a career in applied mathematics in business, industry, or government.

The Bachelor of Arts, Master of Arts and Master of Arts for Teachers, and Doctor of Philosophy degrees are offered.

HIGH SCHOOL PREPARATION. All mathematics courses for university credit require, as prerequisite, the equivalent of two years of high school algebra. Further, it is strongly recommended that the high school preparation include plane geometry, trigonometry, and analytic geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN MATHEMATICS. In addition to the general requirements for graduation listed earlier in the catalog, the following requirements must be completed for the Bachelor of Arts degree with a major in Mathematics. Math 151, 152, 153, 251, 252. A foreign language (German, French, Russian, or a combination of these) is required. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 250, 252, 253, 255, 350, 352, 353 and six credits in other approved Mathematics courses, including three credits in courses numbered above 300. The student selects two areas in sciences, such as Botany, Chemistry, Geology, Microbiology, Physics and Zoology, and must present 15 credits in science and credits in the humanities and social sciences. He substitutes French, German, or Russian for one of these sciences, provided that the language substituted is not one offered to satisfy the language requirement listed earlier in the catalog. An alternative to the requirement of the two sciences or the one science and a language is for the student to present a second major in one of the schools or departments within the University.

Option 2. Students preparing for secondary school teaching are required to take Mathematics 125, 301, 302, 303, and 3 credits in approved Mathematics courses numbered above 300. An alternative to the requirement of the two sciences or the one science and a language is for the student to present a second major in one of the schools or departments within the University.

GRADUATE WORK. See Graduate School Bulletin and Mathematics Department Bulletin for admission to graduate work in mathematics. Addi­
tional information may be obtained from the Chairman of the Mathematics Department.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

001 (100) INTERMEDIATE ALGEBRA 0. A remedial course, of which this content is second year high school algebra.

116 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination. The number system, algebraic operations, binomial theorem, inequalities, systems of linear equations, elementary theory of equations.

117 TRIGONOMETRY 5 prereq 116 or exemption by examination. Trigonometric functions and their graphs, Pythagorean identities, addition and subtraction formulas, polar coordinates, identities, exponential and logarithmic functions and their graphs, solution of triangles.

118 INTRODUCTION TO CALCULUS 5 prereq 116, 117, or exemption by examination. Limits, continuity, differentiation and integration of functions of one real variable, applications, the fundamental theorem of calculus.

121 ELEMENTARY FUNCTIONS 5 prereq 001 or exemption by examination. Probability models, statistical independence, sampling, tests of statistical hypotheses.

130 THEORY OF ARITHMETIC 5 prereq 001 or exemption by examination. The mathematical meaning and background of arithmetic.

151-152 (118-251) ANALYTIC GEOMETRY AND CALCULUS I-II 5 prereq 121 or 117 or exemption by examination. Limits, continuity, differentiation and integration of elementary functions, applications.

153 ANALYTIC GEOMETRY AND CALCULUS III 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore level.

200 INTUITIVE GEOMETRY 4 prereq 130 or exemption by examination. Space, plane, line and other geometric figures as sets of points, separation, separation versus inclusion, measures, coordinate geometry.

249 INTRODUCTION TO COMPUTER PROGRAMMING 1 prereq c/l. Computer programming in FORTRAN II. Designed primarily to acquaint the student with the uses and operation of the digital computer, and with writing and checking computer programs.

250 DIGITAL COMPUTERS AND CODING 3 (3-4) prereq 116, 249. High-speed digital computation, number systems, machine components, programs, programming operation. Laboratory work on high-speed electronic computer.

251 ANALYTIC GEOMETRY AND CALCULUS IV 5 prereq 153. Partial differentiation, infinite series.

252 ANALYTIC GEOMETRY AND CALCULUS V 5 prereq 251. Multiple integrals, line and surface integrals, infinite series, improper integrals.

253 ANALYTIC GEOMETRY AND CALCULUS VI 5 prereq 251. Solution of ordinary differential equations with emphasis on linear equations, Laplace transforms methods, series solutions.

FOR UNDERGRADUATES AND GRADUATES

301 THE REAL NUMBER SYSTEM 5 prereq or coreq 251. An axiomatic treatment of the construction of the real number system, beginning with the Peano postulates for the natural numbers.

302 (300) ALGEBRA FOR TEACHERS 5 prereq or coreq 251. 301 recommended. The processes of elementary algebra and arithmetic are considered from a mature point of view for the teacher of high school algebra.

303 (304) GEOMETRY FOR TEACHERS 5 prereq c/l. The subject matter of high school geometry compared with that of other geometries.
305 TOPICS IN MATHEMATICS V prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to acquaint high school teachers in the background in Mathematics. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)

306 HISTORY OF MATHEMATICS 4 prereq 15 credits in Mathematics. History 101-102 strongly recommended. An historical study of the development of mathematics from the Egyptian and Babylonian cultures to the nineteenth century.


327-328 (315-316) MODERN ALGEBRA 3 prereq 253 and c/i. Groups, rings, integral domains, fields, vector spaces, metric spaces, the algebra of events, expectations, the weak law of large numbers.

331-332-333 (302-303) STATISTICAL METHODS 3 prereq 253 and c/i. Development of necessary mathematical concepts, probability, random variables and distribution functions, sampling, testing hypothesis.

334-335-336 (302-303) STATISTICAL METHODS 3 prereq 253 and c/i. An introduction to the mathematical techniques of Probability theory as a model for random phenomena, the foundation of statistical inference, sampling, design and analysis of experiments.

347-348 (337-338) STATISTICAL METHODS 4 prereq 253 and c/i. Probability theory as a model of random phenomena, sample spaces, the algebra of events, expectations, the weak law of large numbers and the frequency interpretation of probability, the nature of statistical inference, primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.

351-352-353 (306-310-319) ADVANCED CALCULUS 3 prereq 252 and c/i. Topology of the real line, continuous functions, partial derivatives, Riemann-Stieljes integrals, sequences and series of functions, power series, Fourier series, and surface integrals.

357-358 (317-318) PRINCIPLES OF ANALYSIS 5 prereq 252 and c/i. Limits, continuity, differentiation, integration, series. Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.

370 COMPUTER METHODS 4 (3-2) prereq 252. Computer programming and survey of numerical methods. Problems of interest to secondary school teachers. Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.

374 APPLICATIONS OF DIGITAL COMPUTERS 4 (3-4) prereq 153, 246, and c/i. An introduction to the formulation and programming of problems occurring in the physical, life, and social sciences. Definite projects will be completed by the students. (Intended only for non-mathematics majors.)

381 (320) EUCLIDEAN GEOMETRY 3 prereq 153. Geometry from a rigorous, axiomatic viewpoint, Hilbert's Axioms, models of axiomatic systems, introduction to non-Euclidean geometries.


383 DIFFERENTIAL GEOMETRY 3 prereq 253. Curves and surfaces in three-space, Frenet formulas, curvature and torsion, second fundamental forms of a surface, Christoffel symbols and covariant differentiation on a surface, geodesics.

387-388 (327-328) FOUNDATIONS OF GEOMETRY 4 prereq 252 and c/i. Axiomatic systems for and selected theorems from Euclidean geometry, projective and other non-Euclidean geometries, finite geometries, introduction to topology. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

391-392 (324) ELEMENTARY NUMBER THEORY 5 prereq at least one year experience in Mathematics with a B average or better. Considerations, Diophantine equations, properties of primes, quadratic residues, continued fractions, algebraic numbers.

399 SEMINAR V R-15 prereq c/i. Guidance in special work for advanced students.


414-443-445 ADVANCED STATISTICS 3 prereq 321, 343, 352. Multivariate analysis, distributions, characteristic functions, limit theorems, stochastic processes, design of experiments, further topics to meet the needs of students.

451-452-453 REAL ANALYSIS 3 prereq 353. Lebesgue measure and integration, Lp spaces, elementary point set topology, metric spaces, compact sets, selected topics.

461-462-463 (409-411-412) COMPLEX ANALYSIS 3 prereq 353. Complex numbers and functions, analytic functions, Cauchy integral theorem and formula, conformal mapping, theory of residues, analytic continuation, and selected topics.

471-472-473 NUMERICAL ANALYSIS 4 (3-4) prereq 253 and 249 for 471, 472 recommended. c/i for 472 and 473. Error analysis; approximation and interpolation; numerical solution of linear and non-linear equations; numerical integration of ordinary and partial differential equations; numerical solution of integral equations, and selected topics. Assigned work on the digital computer.
technicians. Medical Technologists are in demand in hospital laboratories, in physicians' offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the first three years. It is possible then to take three courses of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of Microbiology. Option I consists of four years of academic studies at the University, leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student pursues a B.S. in Medical Technology after approximately 3 1/2 years of academic studies at the University and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparatory curriculum in Medical Technology and a more balanced liberal education.

SUGGESTED CURRICULUM

<table>
<thead>
<tr>
<th>Option I</th>
<th>Freshman Year</th>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A W S</td>
<td>Cr. Cr. Cr.</td>
<td>Cr. Cr. Cr.</td>
</tr>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 261-262—Organic Chemistry</td>
</tr>
<tr>
<td>Chem 245—Quantitative Analysis</td>
</tr>
<tr>
<td>Micro 200—General Microbiology</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
</tr>
<tr>
<td>Engl 250—Intermediate Composition</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 302—Medical Microbiology</td>
</tr>
<tr>
<td>Micro 306—Microbial Physiology</td>
</tr>
<tr>
<td>Micro 310—Immunology and Serology</td>
</tr>
<tr>
<td>Zool 304—Comparative Vertebrate Anatomy</td>
</tr>
<tr>
<td>Engl 350—Advanced Composition</td>
</tr>
<tr>
<td>Group Electives</td>
</tr>
<tr>
<td>Electives</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option II</th>
<th>Freshman Year</th>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A W S</td>
<td>Cr. Cr. Cr.</td>
<td>Cr. Cr. Cr.</td>
</tr>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 261-262—Organic Chemistry</td>
</tr>
<tr>
<td>Chem 345—Quantitative Analysis</td>
</tr>
<tr>
<td>Micro 300—General Microbiology</td>
</tr>
<tr>
<td>Engl 350—Intermediate Composition</td>
</tr>
<tr>
<td>Botany 112—General Botany</td>
</tr>
<tr>
<td>Foreign Language</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
</tr>
<tr>
<td>H&amp;PE 100—Physical Education</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

SUGGESTED CURRICULUM

<table>
<thead>
<tr>
<th>Option I</th>
<th>Freshman Year</th>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A W S</td>
<td>Cr. Cr. Cr.</td>
<td>Cr. Cr. Cr.</td>
</tr>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 261-262—Organic Chemistry</td>
</tr>
<tr>
<td>Chem 245—Quantitative Analysis</td>
</tr>
<tr>
<td>Micro 200—General Microbiology</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
</tr>
<tr>
<td>Engl 250—Intermediate Composition</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 302—Medical Microbiology</td>
</tr>
<tr>
<td>Micro 306—Microbial Physiology</td>
</tr>
<tr>
<td>Micro 310—Immunology and Serology</td>
</tr>
<tr>
<td>Zool 304—Comparative Vertebrate Anatomy</td>
</tr>
<tr>
<td>Engl 350—Advanced Composition</td>
</tr>
<tr>
<td>Group Electives</td>
</tr>
<tr>
<td>Electives</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option II</th>
<th>Freshman Year</th>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A W S</td>
<td>Cr. Cr. Cr.</td>
<td>Cr. Cr. Cr.</td>
</tr>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 150—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 261-262—Organic Chemistry</td>
</tr>
<tr>
<td>Chem 345—Quantitative Analysis</td>
</tr>
<tr>
<td>Micro 300—General Microbiology</td>
</tr>
<tr>
<td>Engl 350—Intermediate Composition</td>
</tr>
<tr>
<td>Botany 112—General Botany</td>
</tr>
<tr>
<td>Foreign Language</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
</tr>
<tr>
<td>H&amp;PE 100—Physical Education</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
MUSIC—59

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 ELEMENTARY MICROBIOLOGY 3 (3-0). The structure, function, and classification of bacteria, molds, yeasts, rickettsiae, and viruses, and their practical significance to agriculture, food, drug production and other industries. (Not allowed toward a major in microbiology.) (Students enrolling in Microb 100 are strongly urged to enroll concurrently in Microb 101—Elementary Microbiology Laboratory—which will strengthen their understanding of microbiological concepts.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 2 (0-4) prereq or coreq 100. Microbiological examination of foods, water, soil and air and experiments with microorganisms of medical importance. (Not allowed toward a major in microbiology.)

102 ELEMENTARY MEDICAL MICROBIOLOGY 3 (3-0). Infectious diseases, including concepts of virulence, resistance, prevention, and control of microbial diseases in the individual and in the community. (Not allowed toward a major in microbiology.)

200 GENERAL MICROBIOLOGY 5 (3-4) prereq Chem 123 or 160. Bacterial taxonomy, morphology and ecology; effect of environmental factors on bacteria; microbiology of soil, water, milk and meat; and industrial microbiology. (Credit not allowed for both 100 and 200.)

FOR UNDERGRADUATES AND GRADUATES

300 MICROBIOLOGY FOR TEACHERS 5 (3-4). Introduction to microbiology for high school science teachers. Not open to microbiology majors. (Credit not allowed for both 200 and 300.)

302 MEDICAL MICROBIOLOGY 5 (3-4) prereq 200 or —. The pathogenic bacteria, fungi, rickettsiae, and viruses, and the clinical, therapeutic and diagnostic aspects of the diseases they produce in man.

304 PHARMACEUTICAL MICROBIOLOGY 5 (3-4) prereq 200. Pathogenesis of bacteriology; microbiology and chemotherapy as they apply to the field of pharmacy. (Not open to microbiology majors.)

306 APPLIED MICROBIOLOGY 5 (3-4) prereq 200 or —. The fundamental principles of food, water, sewage, soil and industrial microbiology.

310 IMMUNOLOGY AND SEROLOGY 5 (3-4) prereq 302. General principles of immunity; laboratory work in serology, animal experimentation and clinical diagnosis.

350 MICROBIAL PHYSIOLOGY 5 (3-4) prereq 200. Physiology of bacteria and related microorganisms.

404 MICROBIAL GENETICS 5 (3-4) prereq senior standing in one of the biological sciences and C/1. Mutation, adaptation and genetic recombination in bacteria and other microbes.

405 SEMINAR 1 (1-0) R-4 prereq 200, 302. Recent literature in microbiology and related subjects.


411 EPIDEMIOLOGY 3 (3-0) prereq 302 or 304. Distribution and frequency of disease; factors affecting its spread and control.

415 MEDICAL MYCOLOGY 3 (3-2) prereq 200. Bot 112 recommended. Morphology, physiology, infectivity and immunogenicity of dermatophytes and system fungi pathogenic for man.

418 YEASTS 3 (3-0) prereq 200, Bot 112 recommended. The classification, cytology, composition, genetics, metabolism and growth and significance of the ascosporogenous and anascosporogenous hyaline and dematiaceous yeasts.

420 VIROLOGY 3 (3-0) prereq 200. Properties, characteristics and infectious nature of bacteriophages, animal viruses and rickettsiae.

430 SPECIAL PROBLEMS IN MICROBIOLOGY V 1-5 R-15 prereq 200, 302 and 3.0 average in biological sciences. Independent research.

FOR GRADUATES

500 ADVANCED TOPICS IN MICROBIOLOGY 2 (2-0) R-10.

501 SEMINAR 1 (1-0) R-9.

502 ADVANCED IMMUNOLOGY 3 (3-0) o/y prereq 310.

505 MICROBIOLOGY LITERATURE (1-0) R-9.

506 MEDICAL PARASITOLOGY 2 (3-0) prereq 302. Principles of parasitism. Parasitic diseases of humans, their epidemiology, control, and chemotherapy.

507 MICROBIAL CYTOLOGY 3 (3-0) o/y. Ultrastructure and function of microbial cells; methodology for study of the cytolgy of bacteria.

509 ADVANCED VIROLOGY V 2-5 (3-5) prereq 420 or Bot 327. Relationships of animal viruses to infectious diseases; tumor induction by viruses; molecular biology; replication; laboratory work will deal with tissue culture techniques.

500 RESEARCH V 4-7 prereq 1 quarter of residence and full graduate standing.

699 THESIS V R-15.

MUSIC

The Music Department offers to students who have demonstrated talent in music, the opportunity to continue further study of music either for a profession or an avocation, and to require at the same time a broad general education. Complete sequences of courses are given to prepare a student for (a) a career as teacher or supervisor of music in the public schools, or for (b) a career directed toward composition, private teaching, and concert work, or for (c) thorough training in music within the structure of a broad liberal arts curriculum.

The Music Department is a member of the National Association of Schools of Music.

The following undergraduate degrees in music are offered by the Music Department:

Bachelor of Music

with a major in Music Education

with a major in Applied Music

with a major in Theory or Composition

Bachelor of Arts

with a major in Music.

GRADUATE WORK. See Graduate School.

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the Music Department is by certificate from the high school from which the student graduates. The faculty of the Music Department is more concerned with evidence of talent, conspicuous achievement in music, promise of development, and in scholarship in general, than it is in the precise content of the program which the prospective music student has followed prior to admission to college. The Music Department welcomes the opportunity to advise with students and parents during the high school period by correspondence or by interviews on the campus.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN MUSIC. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed:

1. For the Bachelor of Music with a major in Music Education, the course requirements in Curriculum A must be completed.

2. For the Bachelor of Music with a major in Applied Music or in Theory or Composition, the course requirements in Curriculum B must be completed.

3. For the Bachelor of Arts degree with music as a major, the course requirements in Curriculum C must be completed.

4. All students majoring in music are required to attend recitals as specified by the department.

5. All music majors seeking a B.M. or B.A. degree are required to participate in Band, Orchestra or a Choral Group each quarter of residence of the regular school year. Students who are wind instrument majors in their applied field must register for band (or orches-
tra, if designated) every quarter, string majors must register for orchestra every quarter, voice majors must register for choir or course they choose in every quarter. Each student must take at least 6 credits (however, Music Department requires participation in an Orchestral Instrument) every quarter unless a jury examination demonstrates adequate proficiency.

6. All candidates for the Bachelor of Music degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217.

7. Outstanding seniors in curriculum A or C may give joint senior recitals. Details will be supplied by the department on request.

APPLIED MUSIC FEES

Non-Music Majors

One half-hour lesson per week ........................................ $12.00
Two half-hour lessons per week .................................... 24.00
Three half-hour lessons per week .................................. 36.00

Music Majors

One half-hour lesson per week ........................................ $12.00
Two or more half-hour lessons per week .......................... 20.00

For majors and non-majors who register for applied music for less than a full quarter or who withdraw before the end of the quarter, a charge of $1.75 per private lesson will be made. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Lessons in applied music missed by the instructor will be made up within the quarter. Lessons missed by students or lessons falling on a legal holiday will not be made up.

Music Practice Fee: students enrolled in music courses involving use of practice rooms, pianos, and other university instruments, pay a fee of $9.00 per quarter.

A. CURRICULUM FOR BACHELOR OF MUSIC DEGREE WITH A MAJOR IN MUSIC EDUCATION

For students who sincerely feel the challenge and vital service opportunity in the teaching profession, and whose high school background includes experience in musical organizations, the University of Montana offers the degree of Bachelor of Music with a major in Music Education, which meets the state requirements for certification for public school teaching (see Education).

Music course requirements for Curriculum A shall include a total of 120 credits as follows: 201, 4 er.; 204, 5 cr.; 106-110 or 140, 6 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Piano in Class II, 6 cr.; Voice II in Class, 6 cr.; Piano in Class, 6 cr.; Voice in Class, 3 cr.; Strings in Class, 3 cr.; 128, 130, 135, 4 cr.; 118, 119, 120, 121, 122, 4 cr.; Theory and Composition, 9 cr.; 325, 326, 327, 6 cr.; 331, 323, 324, 11 cr.; 329, 4 cr.; 406, 1 cr.; Upper division music electives, 6 cr.

Exceptions: Students taking piano as Secondary Applied Major will not take the 6 credits of Piano in Class and those with Voice as Secondary Applied Major will not take the 3 credits of Voice in Class, reducing the required Music credits accordingly. Students who complete an academic teaching minor need not complete the 6 credits in upper division music electives.

Non-music requirements in addition to general University requirements include a minimum of 77 credits including the following: English Composition, 9 cr.; Psychology, 5 cr.; English, 201, 205, 206, 207, 215, 24 cr.

Students taking piano as Secondary Applied Major must complete Music 520, 321, Piano Methods and Materials.

Double majors are possible in curriculum (A) Music Education and (B) Applied Music, Theory, or Composition, if all requirements are met in both curricula are completed.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Piano in Class, Strings in Class, Introduction to Music Literature; English 150; H&PE; academic electives, 16 cr.

B. CURRICULA FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION

The serious instrumentalist or vocalist may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music, Theory, or Composition, subject to the approval of the faculty. Enrollment may not be completed until the student has received the recommendation of a major professor or a committee of the music faculty.

MAJOR IN PIANO OR ORGAN

Students interested in piano pedagogy follow Curriculum B with the following exceptions: (1) at least six credits in Music 140 (Piano Ensembles) must be included; (2) a half recital, Music 440, 1 credit, will fulfill the senior recital requirement.

Music course requirements for Curriculum B with Major in Piano or Organ shall include a total of 121 credits as follows: 201, 24 cr.; 401, 24 cr.; 106-110 or 140, 12 cr.; Theory I, 6 cr.

Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; 135, 4 cr.; Music History, 9 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program:: Music 201, 106-110 or 140; Theory I, Aural Perception I, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN VOICE

Music course requirements for Curriculum B with Major in Voice shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 106-110 or 140, 12 cr.; Theory I, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; 135, 4 cr.; Music History, 9 cr.; Piano in Class, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, 106 or 107; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN ORCHESTRAL INSTRUMENT

Music course requirements for Curriculum B with a Major in an Orchestral Instrument shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 106 or 110, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; 135, 4 cr.; Music History, 9 cr.; Piano in Class, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory I, Aural Perception I, Piano and Orchestra, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 cr.

MAJOR IN COMPOSITION OR THEORY

Music course requirements for Curriculum B with Major in Composition or Theory shall include a total of 120 credits as follows: 201, 6 cr.; 401, 6 cr.; 100, 6 cr.; 106-110, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; 138, 4 cr.; Music History, 9 cr.; 159, 6 cr.; 359, 6 cr.; 459, 9 cr.; Piano in Class, 6 cr.; 328, 4 cr.; 379, 3 cr.; 380, 3 cr.; Upper division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 60 credits, including English Composition, 9 credits.

ADDITIONAL REQUIREMENTS: Students taking voice or instrument in the Music 201-401 series must take Music 100 (Piano) until a jury examination demonstrates adequate proficiency.

Theory Majors are not required to complete Music 359, and Music 425.

Composition Majors: A faculty jury examination of representative work in composition must be passed at close of sophomore year. Seniors will present a recital of original music (or equivalent) for solo or chamber vocal and instrumental groups including at least one composition for large ensemble.

Suggested Freshman Program: Music 201, 100, 106-110; Theory I, Aural Perception I, Composition, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 cr.

C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop substantial background in the Arts and Sciences. This degree does not qualify a student for public school teaching in Montana but does provide groundwork for graduate study in the fields of musical performance and scholarship in preparation for teaching careers in colleges or private schools.

Minimum credit requirements for this degree are: 180 total credits plus a minimum of 87 credits in Music and a minimum of 120 credits in non-music courses (excluding PE) of which 93 credits must be in the College of Arts and Sciences. Maximum Music credits applicable toward the above total are: Applied Music, 12 credits; Ensemble Music, 6 credits (however, Music Department requires participation in ensemble during all resident quarters). Students without a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop substantial background in the Arts and Sciences.

Course requirements for Curriculum C shall include: Music 201, 6 cr.; 401, 6 cr.; Music 106-110, 6 cr.; Music 111, 112-113, 6 cr.; 138-139, 4 cr.; 135, 4 cr.; 357-358-359, 6 cr.; 211-212-213, 6 cr.; Upper division music electives, 12 cr.; Music History, 9 cr.; Music 325-329, 6 cr.; H&PE; Foreign Language, 30 cr.; General, 151-152-153, 9 cr.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Introduction to Music Literature; English 150; H&PE; Academic Electives, 21 cr.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 100—Applied Minor 1-2 prereq c/i.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide for secondary study in applied music. Secondary study is designed to give the
beginning student certain proficiencies in order that he may use this application as a tool rather than as a medium for performance. A total of 12 credits is allowed in any one applied area.

MUSIC 201, 401 (6 quarters of each course).

Applied Major V I-4 R-24 prereq audition and c/l. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The student receives in Music 201 a major in the form of a personal music education background. A student entering in Music 201 should show evidence of the equivalent of two years' prior study. Students majoring in Applied Music (Curriculum B) must show talent for solo performance and evidence of the equivalent of four years' prior study. A recital final is given before graduation.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

105 SUMMER SESSION CHORUS V 1-2.

106 UNIVERSITY CHORI.

107 CHORAL UNION I.

108 ORCHESTRA I.

110 UNIVERSITY BAND I.

Courses 106 through 110 are major musical organizations. Prereq c/l. Music majors take a minimum of 12 credits; non-music majors take 8 credits.

111-112-113 THEORY I 2. 111 (Basic Theory) may be waived on basis of proficiency examination. The fundamentals and nomenclature of music and analysis are demonstrated through the study of meters, scales, keys, intervals, triads, structures, rhythm, and supplemental ear training. 112-113 prereq 111, 113 for 113. Analysis of music literature to develop principles of music construction with emphasis on counterpoint through melodic and contrapuntal writing and correlation with keyboard literature.

114-115-116 PIANO IN CLASS I. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Harmonization of simple tunes with I IV V7 chords. Materials such as Oxford and Breck Adult Beginners books. Transposition, memorization, and sight-reading.

117-118-119 VOICE IN CLASS I. Breathing, resonance, vocal formation, and posture as related to tone production. Simple vocalizations in relation to art songs, more advanced vocal studies, and keyboard compositions of the Nineteenth Century.

123-123 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS 3 prereq coreq 124. (123) A philosophy of teaching music in the elementary schools. The emphasis placed on learning by doing. Singing, listening, rhythm, instrumental, creative, and integration; twenty-five songs memorized; use of the pitch pipe, autoharp, and chording on piano; classroom conducting; basic rudiments of music and keyboard fundamentals. (123) Continuation of 123, dealing more specifically with topics presented generally during the first course. Offered in concert with Carle's music education methods and materials for teaching music in grades 1 through 6. (332) Applied music for children and children's classes.

125-126-127 STRING INSTRUMENTS I 1. Group instruction for beginning students on violin, viola, cello, and bass, with emphasis on the teaching of basic techniques.


134 INTRODUCTION TO CONCERT MUSIC 3. Music in our present-day culture; illustrated lectures for the layman on forms, styles and composers of concert music. Guided listening to recordings and concert attendance. For non-majors only.

135 INTRODUCTION TO MUSIC LITERATURE 4. The elements of musical understanding: the place of music in history with emphasis on its relation to social change and to the history of other arts. Comparative survey of masterpieces of music from the Renaissance through the Twentieth Century. Review of all periods of music history in terms of rhythm, meter, form, key, and texture. Concert attendance with music literature; accompanying. Students may register for more than one ensemble group in any one quarter.

159 (159-160-161) COMPOSITION 2 R-6 prereq c/l. An introduction to the basic art of music composition. (May be repeated for upper division electives for students not majoring in theory or composition.)


216-217-217 INTERMEDIATE PIANO IN CLASS I prereq 3 credits in either Piano I, Music 114-115-116, or placement test. All major and minor triads up to two octaves HT. Further development of harmonic construction, transposition, memorization, and sight-reading. Materials such as Oxford Progressing Studies and Bartok Mikrocosmos Books I and II.

234-236 HISTORY OF MUSIC 3 prereq 135. Enter any quarter. The history of music in Western Civilization from its origin to modern times and its relationship to general cultural development.

237-238-239 AURAL PERCEPTION II 2 prereq 113 and 120, coreq 211-212-213. A lab course in singing, dictation, and keyboard to supplement the academic training of Theory I and II.

247-248-249 KEYBOARD HARMONY I prereq coreq 213 and c/l. Practical application of theory principles to the keyboard. Exercises in modulation, transposition, and development of extemporary plagal music.

259 (259-260-261) COMPOSITION 2 R-6 prereq 6 credits of 159. Original work in composition. (May be substituted for upper division electives for students not majoring in theory or composition.)

211-212-213 THEORY III 3 prereq 213. Chordatic harmony; altered chords, modulations, and formal analysis.

219 PIANO FOR THE CLASSROOM TEACHER 2. Presenting simple material at a basic level of skill, toward a wider utilization of the piano in classroom and school situations.


339 ORCHESTRA 4 prereq 213. Orchestrating and transcribing for orchestra and band.

351-352-353 CONDUCTING METHODS AND MATERIALS A 3, B 4, and C 4 prereq 139 and 213; enrollment limited to students majoring in Theory. (351) Fundamentals of conducting. (352) Choral conducting; choral methods and procedures; general music classes in secondary schools. (353) Instrumental conducting; procedures and materials for instrumental instruction at all levels; theory classes in secondary schools.

359 (359-360-361) COMPOSITION 3 R-9 prereq 213 and 6 credits of 213. Creative writing of music.

379-380 SIXTEENTH CENTURY COUNTERPOINT 3 coreq 213. Writing and analysis of Renaissance vocal and instrumental style.


423 MUSIC OF THE ROMANTIC PERIOD 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal, and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal, and keyboard compositions of the Twentieth Century.

445 SENIOR RECITAL V 1-2 coreq 401.

459 (459-460-461) COMPOSITION 3 R-9 prereq 9 credits of 359. A continuation of composition with writing in the larger forms.

FOR UNDERGRADUATES AND GRADUATES

308 WORKSHOP IN MUSIC EDUCATION V 1-3 prereq junior standing in music or teaching experience. Special workshops and clinics for elementary, junior high school, and high school teachers.

441 READING IN MUSIC CRITICISM 3. Comparison of selected writings of 20th-century composers, including Stravinsky, Hindemith, Schoenberg, Sessions, and Copland. (For the layman as well as the music student.)

FOR GRADUATES

501 APPLIED TECHNIQUES V 1-4 R-12. Individual instruction in voice, piano, organ, string or wind instruments. Students desiring further study of minor applied fields may elect 2-2-1. (331) Advanced Conducting, 3 R-6 prereq 332 (Choral majors), 333 (others), and c/l. A continuation of 331-332-333. Class and/or individual study of the art of conducting with emphasis on applied work with university performing groups.

581 MUSIC EDUCATION IN AMERICA 3. The history and philosophy of music education in America and their relation to general educational thought.
PHARMACY

is the science which is concerned with the study of the physical, chemical, and biological characteristics of medicinal substances. It embraces a knowledge of medicines, the art of compounding and dispensing them, their identification, selection, combination, analysis, standardization, and mode of action.

The curriculum offered by the School of Pharmacy consists of a five-year program leading to the degree of Bachelor of Science in Pharmacy. The first two years, or pre-professional portion of the curriculum, are spent in studies of the basic physical and biological sciences, and in other courses of work necessary to satisfy the general university requirements. During the final three years of the curriculum, the student devotes his time to the study of the several pharmaceutical sciences. This program of study is designed to prepare him to serve the pharmaceutical needs of the public. Areas of additional special study include pharmaceutical chemistry, pharmacognosy, pharmacology, and pharmacy administration. A program of selected electives allows the student to place emphasis upon an area of specialization best suited to his future plans in pharmacy.

In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete one year of "practical experience" or internship in a pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. Many graduates practice pharmacy in neighborhood, or "downtown" stores. Others work in hospital pharmacies, a particularly attractive field for women. Additional opportunities exist as representatives for pharmaceutical manufacturers, in government service, in manufacturing pharmacy, and in pharmaceutical journalism. Those with advanced degrees are in demand in research positions and in pharmaceutical education.

The School of Pharmacy was established in 1897 at Montana State College and was transferred to the University campus in 1913.

The School of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.

A three-year professional program based on two years of general college work and leading to the degree of Bachelor of Science in Pharmacy is offered. The first two years are devoted to the pre-scribed pre-professional subjects listed below and may be taken in any accredited college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken in residence at the University of Montana, although students transferring from other accredited schools of pharmacy may be admitted to an advanced standing based on their credits, but must complete the work necessary to satisfy the requirements of the professional curriculum.

UPPER DEPARTMENT PROGRAM

PHARMACY 1. The general requirements for admission to the University of Montana as listed earlier in the catalog.

2. At least two years as prescribed in the pre-pharmacy curriculum (may be transferred from accredited colleges):

First year: Chemistry 121-122-123, English 150, Physical Education 100 (3 cr.), Math 116, 117, Botany 112, Zoology 111, 113, and electives.


Applicants presenting two years of satisfactory college work but with certain deficiencies in the work above list may be admitted, but such deficiencies must be removed.

Each applicant for admission to the professional curriculum must have a cumulative grade point index of 2.0 on all college work taken, and completed for credit at the five he makes application for admission to the first professional year. Application forms for admission to the professional curriculum may be obtained from the School
of Pharmacy and must be submitted for consideration by the faculty of the school prior to registration. Applicants then will be granted full or provisional admission, or may be denied admission.

The autumn quarter is the normal time of admission to the School of Pharmacy.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHARMACY: Any candidate for admission to the senior year in the professional curriculum must have a grade point deficiency score of more than 10. If he has a greater deficiency, he will not be granted senior standing. He will be required to take such courses, as the faculty may direct, in which he has received grades of "D" or "F" which have raised his deficiency to 10 or less. The student must fulfill all required courses for the first four years of study before he may enter the fifth year of the program. Then he may be admitted to senior standing and may become a candidate for a degree upon the satisfactory completion of the senior year.

Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.
2. Complete not less than five full academic years of training, including both pre-pharmacy instruction and a minimum of three years of professional instruction. In order to meet the accreditation requirement of a minimum of three full years of professional instruction for the Bachelor of Science degree, each candidate must complete a minimum of 135 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete an average of 45 credits per year.
3. Complete not less than 225 credits of course work, plus six credits in required Health and Physical Education and basic ROTC courses when these are taken.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for the professional curriculum in Pharmacy in Montana must pass an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States, of good moral character, at least twenty-one years of age, and shall be a graduate of an accredited school of pharmacy. However, such an applicant shall not receive a license until he has completed an internship of at least one year, following graduation, in an approved pharmacy.

GRADUATE WORK. See Graduate School.

PHARMACY CURRICULUM

First year: English 230; Microbiology 200, 304; Business Administration 201, 203; Chemistry 245; Pharmacy 206 or elective, 220 or elective, 324-325; Zoology 340-341; electives.

Second year: Microbiology 411; Biochemistry 481, 482; Pharmacy 414-416, 455, 461, 462, 463, and electives.


FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

206 ORIENTATION TO PHARMACY 3 (3-0). Career opportunities, literature, history and terminology, library orientation.

220 PHARMACEUTICAL CALCULATIONS 3 (2-2). Metrology, pharmaceutical mathematics, terminology and form of the prescription, practical laboratory work using apparatus for measuring and weighing.

324-325 PHARMACOCYNOLOGY 4 (3-2) prereq Bot 112 and Chem 262 or . The plant and animal products used in pharmacy and medicine.

414-415-416 ORGANIC MEDICINAL PRODUCTS 3 (3-0) prereq Chem 263. Organic substances used medicinally with emphasis on the correlation of chemical structure with therapeutic activity.

418 ORGANIC MEDICINAL PRODUCTS LABORATORY 2 (0-6) to 9) R-4 prereq 414. Synthesis, identity and purity tests of organic medicinals.

452 DRUG ANALYSIS 4 (2-6) prereq Chem 245. Special and instrumental methods used in the analysis of pharmaceutical preparations.

461-462-463 PHARMACY 5 (3-0) prereq 220 and Chem 262. A comprehensive study of the fundamental techniques of pharmacy and the various classes of pharmaceutical preparations. Throughout the course the underlying physical and chemical principles employed or responsible for any phenomena is emphasized.

466 MEDICINAL PLANTS AND PHARMACOCYNOLOGICAL TECHNIQUES 3-5 (0-9 to 15). The processes of collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.

468 DRUG MICROSCOPY 2 (0-4) prereq junior standing in pharmacy and c.i. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

503-504 BIOLOGICAL MEDICINAL PRODUCTS 3 (3-0) prereq Micro 264. Biologicals, antibiotics, vitamins, hormones, and other medicinal products of biological origin.

505-506 DISPENSING 4 (2-6) prereq 463. The fundamental principles of prescription compounding by means of a detailed study of the common dosage forms and special forms of medication.

516 PHARMACEUTICAL LAW 3 (3-0) prereq senior standing in pharmacy. State and federal laws pertaining to the practice of pharmacy.

517-518-519 PHARMACEUTICAL PRACTICE 1 (0-2) prereq senior standing in pharmacy. Students are assigned to the University of Montana Prescription Pharmacy in order to acquaint them with current practices.

540-541-542 PHARMACOLOGY 4 (3-2) prereq senior standing in pharmacy. The pharmacodynamics of drugs and its application to the therapeutics.

557-579 PHARMACY ADMINISTRATION AND FINANCIAL MANAGEMENT 3 (3-0) prereq senior standing in pharmacy. A detailed study of the administration of a pharmacy with emphasis on financial and personnel management.

FOR UNDERGRADUATES AND GRADUATES

555 ADVANCED PHARMACY V 3-5 (0-9 to 15) prereq 506 or 508. The more complex problems involved in formulation and preparation of pharmaceuticals.

570 COSMETICS 3 (1-6) prereq 463. The theory and technique of cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 3 (1-6) prereq 452. The more involved methods of analysis as applied to pharmaceuticals.

592-593 HOSPITAL PHARMACY I-3 (0-2) prereq 503. Introduction and participation in the routine of a hospital pharmacy.

598 SEMINAR 1 (1-0) R-4 prereq senior standing in pharmacy.

599 SPECIAL PROBLEMS IN PHARMACY V 2-5 (0-3/cr) R-10 prereq senior standing in pharmacy. Research studies by conference, library and laboratory research in pharmacy, pharmaceutical chemistry, pharmacognosy, or pharmacology.

FOR GRADUATES

599 ADVANCED PHARMACEUTICAL LAW 3 (3-0) prereq c.i. Federal laws affecting the pharmaceutical industry, with emphasis upon the Food, Drug and Cosmetic Law and the regulations and rulings of the Food and Drug Administration.

581 DRUG DEVELOPMENT AND MARKETING 3 (3-0) prereq c.i. Administrative activities and decisions involved in the development and distribution of new pharmaceutical products.

582 ADVANCED PHARMACY ADMINISTRATION 3 (3-0) prereq c/i. Analysis of the pharmaceutical industry, including economics, competitive practices, and the internal and external factors affecting the industry.

586 PARENTERAL PREPARATIONS 3 (2-3) a/y. The study and evaluation of the various methods currently used in the preparation of bulk and individual dosage unit sterilized products. Emphasis will also be stressed on drug stability when such preparations are subjected to various sterilization procedures.

587 CHROMATOGRAPHY 3 (2-4) a/y. An advanced course in the theory and application of the routine of a hospital pharmacy. All phases, column, paper, thin-film, gas and ion exchange, will be explored and evaluated.

589 ADVANCED PHARMACOLOGICAL TECHNIQUES 3 (0-9) prereq 468 and Bot 364 and 489. Techniques used in investigative pharmacognosy.

599-600-607 CHEMISTRY OF NATURAL PRODUCTS 3 (2-3) prereq 416, Chem 464. Enter any quarter. (606) Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis, with emphasis on the pharmaceutical compounds. (606) Volatile oils, terpenes and sterols, including their occurrence, methods of isolation and chemistry. (607) Glycosides and related compounds, including methods of isolation, proof of structure, synthesis and chemistry.

608-609-610 ADVANCED ORGANIC MEDICINAL PRODUCTS 3 (3-0) (a/y) prereq 416, Chem 464. The organic medicinals with emphasis on proof of structure, synthesis, structure-activity relationships and chemistry.

811 ADVANCED ORGANIC MEDICINAL PRODUCTS LABORATORY 3 (4-6-4) R-4. Preparation, isolation and purification of organic medicinals by advanced techniques.

819 ADVANCED PHARMACOLOGY V 3-5 (0-9 to 15) prereq 542 or . The more involved actions of drugs upon cells and organs.

999 THESIS V R-15.
PHILOSOPHY

is the search for wisdom by carefully reasoned reflection. Philosophical enquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge and what kinds of knowledge? Are values derived from personal feelings or from standards which may be impersonal, verifiable, unchanging? Are there significant relations among phases of experience reflected in science, art, religion, morality and politics?

Courses in philosophy acquaint the students with the views of great philosophical thinkers, past and present. Discussion and written work are largely concerned with evaluating the reasoning by which each thinker develops his point of view.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits including Philosophy 110, 210, 298, 299, 300, and three or more credits in courses numbered 400 or above. Normally students are expected to complete Philosophy 298, 299, 300 by the end of their sophomore year. The foreign language requirement listed earlier in the catalog must be satisfied.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO PHILOSOPHY 5. The main problems of philosophy, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

110 LOGIC 5. Deductive and inductive inference, kinds of definition, the detection of fallacies, and the methods of science.

120 ETHICS 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.

210 SYMBOLIC LOGIC 5. A systematic study of deductive logic using modern symbolic techniques.

298 (201) HISTORY OF ANCIENT PHILOSOPHY 5.

299 (203) HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 5 prereq 298.

FOR UNDERGRADUATES AND GRADUATES

300 (203) HISTORY OF MODERN PHILOSOPHY 5 prereq 299.

301-302-303 GREAT PHILOSOPHERS 1. (Given in the Summer for 3 cr. as 303). Enter any quarter. (301) Greek, Roman and early Christian thinkers. (302) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

310 (333) PHILOSOPHY OF SCIENCE 5 o/y prereq c/l. The metaphysical foundations of modern classical (Newtonian) science; contemporary views on the nature and limitations of scientific "explanations," theories, models and concepts.

311 (335) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/l. Structure and functions of natural and ideal languages; the relations of language to thought and to reality.

320 CONTEMPORARY ETHICAL THEORIES 5 prereq 120 and/or 300. Recent theories on the nature of moral concepts.

323 (369) POLITICAL PHILOSOPHY 3 o/y prereq 5 credits in philosophy. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to Democratic forms of government and to the balance of liberal and conservative elements in them.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.

331 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 5 o/y prereq 10 credits in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology.

340 AESTHETICS 3 prereq 3 credits in Philosophy. The nature of aesthetic experience, of the standards of art criticism, and of the kinds of knowledge communicated by art. Readings from philosophers, artists, and art critics.

341 PHILOSOPHY IN LITERATURE 3 prereq 10 credits in Philosophy or Literature or =. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature or =. Enter any quarter. (345) Music. (346) Visual arts. (347) Literature. (348) Film. Examination of philosophical problems related to the particular arts and discussion of the nature of the arts.

350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the source, nature, and extent of knowledge with special attention paid to the relation of perception to the physical world, and to the concept of mind.

351 METAPHYSICS 3 prereq 10 credits in Philosophy. What are the basic questions of Metaphysics? What questions does it attempt to answer? What questions is it fitted to answer? Traditional and contemporary pursuits of these questions.

354 PHILOSOPHY OF RELIGION 3 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 3 o/y prereq 5 credits in Philosophy and c/l. Philosophical themes in some Hindu, Buddhist and Taoist literature.

360 PLATO 5 e/y prereq 298 or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

361 ARISTOTLE 5 e/y prereq 298 or 10 credits and c/l. Reading and Interpretation of selected works.

365 DESCARTES, SPINOZA, LEIBNIZ 5 e/y prereq 300 or 10 credits in Philosophy and c/l. The development of Continental Rationalism.

366 LOCKE, BERKELEY, HUME 5 e/y prereq 300 or 10 credits in Philosophy, and c/l. The development of British Empiricism.

367 KANT 5 o/y prereq 300 or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

368 NINETEENTH CENTURY DIALECTICAL PHILOSOPHY 3 e/y prereq 300 or 10 credits in Philosophy and c/l. Selected reading and Interpretation of Hegel and other "dialectical" philosophers.

369 NON-DIALECTICAL PHILOSOPHY IN THE NINETEENTH CENTURY 5 o/y prereq 300 and 368 or 10 credits in Philosophy and c/l. Selected reading and interpretation of non-Hegelian philosophers in the 19th Century.

373 EXISTENTIALISM 5 prereq 10 credits in philosophy and c/l. Selected readings from the philosophical works of one or more existentialist thinkers.

390 PROBLEMS IN PHILOSOPHY V prereq c/l.

430 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/l.

453 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 310 and c/l.

460 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY V prereq c/l. Advanced research in problems of philosophy.

490 SEMINAR V prereq c/l.

FOR GRADUATES

500 RESEARCH V R-15. Work on selected problems under direction.

699 THESIS V R-15.

PHYSICAL THERAPY

is an associated medical profession which includes the use of heat, cold, light, sound, electricity, massage, exercise, and mechanical devices as aids in the diagnosis and treatment of patients.

During the first three years the student completes 135 credits plus six in required physical education. This work is to include the general requirements for graduation in the second and third years must be taken in residence at the University of Montana. The fourth or professional year of training, involving sixteen months of work, would be taken at any physical therapy school meeting established by the Council on Medical Education and Hospitals of the American Medical Association. (Not all therapy schools accept students with three years of background. Some schools, for example, require a college
degree for admission, while others accept only students who plan to obtain a degree from the school offering the therapy work.)

Course work taken at the therapy school will be evaluated by the University of Montana. This evaluation must result in an accumulation of the equivalent of forty-five quarter hours of credit and sufficient grade points to meet graduation requirements of the University of Montana. Also, the student must be eligible for a certificate in physical therapy from the therapy school. When the above requirements have been satisfied, the student is eligible to become a candidate for the degree of Bachelor of Science in Physical Therapy from the University of Montana (see course listings of the physical education department for information regarding a four-year pre-physical therapy program).

Many therapy schools specify that the applicant must not have reached his thirty-sixth birthday.

The demand for physical therapists far exceeds the supply. Therapists may be found working in general hospitals, rehabilitation centers, children's hospitals, public health centers, geriatric hospitals, private clinics, Veterans Administration hospitals, orthopedic clinics, athletic training rooms, physicians' offices and school systems.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra. It is also recommended that the high school preparation include college preparatory courses with emphasis on the biological and physical sciences.

Following are the requirements leading to the Bachelor of Science degree with a major in physical therapy:

University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition 150, 250, 350</td>
<td>9</td>
</tr>
<tr>
<td>Required Physical Education (6 quarters)</td>
<td>15</td>
</tr>
</tbody>
</table>

Major Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 101-102</td>
<td>8</td>
</tr>
<tr>
<td>Physics 111</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 111, 302</td>
<td>10</td>
</tr>
<tr>
<td>Sociology 101, 102</td>
<td>10</td>
</tr>
<tr>
<td>Psychology 110, 230</td>
<td>10</td>
</tr>
<tr>
<td>Speech 111</td>
<td>5</td>
</tr>
<tr>
<td>Speech Pathology and Audiology 330</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology 100-105</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics 113</td>
<td>4</td>
</tr>
<tr>
<td>Physical Education 240, 290, 280, 380, 385, 386, 388, 390, 460, 465, 476, 485, 555</td>
<td>41</td>
</tr>
<tr>
<td>General 151, 152, 153</td>
<td>9</td>
</tr>
<tr>
<td>Elect 3 credits other than Gen 151-152-153, from Group IV</td>
<td>3</td>
</tr>
<tr>
<td>Elect an additional course in Physical Science</td>
<td>5</td>
</tr>
<tr>
<td>Elect 2 credits, other than Soc 101, 102, from Group III</td>
<td>2</td>
</tr>
<tr>
<td>Home Economics 146</td>
<td>4</td>
</tr>
<tr>
<td>Elect 1 additional credit</td>
<td></td>
</tr>
</tbody>
</table>

School of Physical Therapy

Forty-five hours of credit

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
</tr>
<tr>
<td>45</td>
</tr>
<tr>
<td>186</td>
</tr>
</tbody>
</table>

PHYSICS

PHYSICS is the science that has as its objective the formulation and verification of laws or relationships among the different physical quantities. Some of the most important of these quantities are mass, time, length, force, energy, momentum, electric charge, electric field strength, entropy, wave length. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biophysics, meteorology and geophysics. In addition the subject of physics is profoundly influenced both by the methods and development of physics.

The Bachelor of Arts and Master of Arts degrees are offered.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry. It is also recommended that the high school preparation include advanced algebra, solid geometry, and trigonometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS. In addition to the general requirements for graduation listed earlier in the catalog, fifty-five credits in physics must be earned for the Bachelor of Arts degree with a major in physics. In preparation for advanced courses, a student should take Physics 221-222-223 in the sophomore year. Required courses offered in other departments: Mathematics 116, 113, 113, 211, 202, 235; Chemistry 121-122-123. The foreign language requirement listed earlier in the catalog must be satisfied.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

111-112-113 GENERAL PHYSICS 5 (5-3) prereq for 111: Math 117, 111 is prereq for 112 and 113, but 112 is not prereq to 113. (111) Mechanics and wave motion. (112) Heat, electricity and magnetism. (113) Sound, light and atomic physics. Credit not allowed for both 111-112-113 and 221-222-223.

221-222-223 GENERAL PHYSICS 5 (4-4) prereq for 221: Math 118 or 152, 221 is prereq for 222 and 223, but 222 is not prereq to 223. This course satisfies medical and technical school requirements in general physics. (221) Mechanics and wave motion. (222) Heat, electricity and magnetism. (223) Sound, light, and atomic physics.

251-252-253 LABORATORY ARTS 1 (0-3) prereq 223. Open to upper division science majors who have completed 223. Enter any quarter. Elements of glass blowing, machine shop practice, and electronic construction techniques.

FOR UNDERGRADUATES AND GRADUATES

301 (271) VECTOR ANALYSIS 3 (3-0) prereq 222 and Math 252.

314-315-316 ELECTRICITY AW 3 (3-0), S 4 (3-3) prereq 301.

322-333-334 LIGHT 2, A W (2-0), S (1-3) prereq 223 and Math 252.

328 METHODS OF TEACHING PHYSICS 3 (2-4) prereq 221, 222, 223. Texts, demonstrations and laboratory experiments used in contemporary approaches to teaching of high school physics. (Credit not allowed toward degree in physics.)

331 MECHANICS AND HEAT 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

332 ELECTRICITY RADIATION AND ATOMIC PHYSICS 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

346-347-348 HEAT, THERMODYNAMICS, STATISTICAL MECHANICS 3-3-3 prereq 222 and Math 253.

353-353 ATOMIC PHYSICS 3 (3-0) prereq 223 and Math 252.

354 NUCLEAR PHYSICS 3 (3-0) prereq 353.

431 SELECTED TOPICS V 1-5 R-10 prereq c/i and 15 credits in Physics.

441-442 ADVANCED LABORATORY 2 (1-2) prereq or coreq 223, 353, 314. Experiments in fields of current progress in physics, requiring individual student study and initiative.

471-472 MECHANICS 3 (3-0) prereq 301 and Math 253.

473 QUANTUM MECHANICS 3 (3-0) prereq 472.

480 PHYSICS SEMINAR 1 (1-0). A library and discussion course required of Physics majors.

FOR GRADUATES

501 RESEARCH V 2-10 R-15 prereq c/i.

552 RADIATION AND ATOMIC STRUCTURE 5 (5-0) prereq 353.

554-555 QUANTUM MECHANICS 5 (5-0) prereq 353 and 473.

699 THESIS V R-15.
POLITICAL SCIENCE

is the study of government and politics both in their domestic and international aspects. By meeting requirements outlined below, a student may earn a Bachelor's degree in Political Science, in Political Science and Economics, or in Political Science and History. A Master of Arts degree in Political Science is also offered.

Courses offered in the Political Science department are designed to aid students in attaining the following objectives:

1. To assist all students in securing a broad liberal education and to equip them with the foundations for effective discharge of the duties of American citizenship;
2. To provide undergraduate preparation for those students who propose to continue the study of Political Science at the graduate level with the ultimate goal college teaching and research;
3. To offer a broad program of training for those students who plan careers in government or politics, including training for both the foreign service and the domestic public service at the national, state and local levels;
4. To assist in preparing students for careers in teaching at both the elementary and secondary levels;
5. To provide a sound background for those students who intend to enroll in law and other professional schools.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree: With a major in Political Science, a minimum of 45 credits in Political Science is required with 20 credits from courses numbered over 300. A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 30 credits in History. A minimum of 30 credits must be selected from courses numbered over 300.

All students majoring in Political Science will complete the integrated introductory sequence 101, 201, and 202 before taking other courses in Political Science.

Upper division work in Political Science is offered in Comparative Government, International Relations, Politics, Public Administration, Public Law, Political Theory, and State and Local Government. Each student majoring in Political Science must present credits in at least four of these fields.

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines: at least 57 credits in Political Science and economics courses are: Political Science 101, 201, and 202; and Economics 201, 202, and 302. Each student must also select 12 additional credits which will be chosen from upper division economics courses and 15 additional credits from Political Science. Twelve hours of the Political Science work must be in upper division courses.

Either the completion of five quarters of a foreign language or the demonstration of a satisfactory reading knowledge of historical, legal or political science materials in such a language is required. With the consent of the Chairman of the Department the student may fulfill the language requirement by completing three quarters in each of two languages.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTION TO POLITICAL SCIENCE 3. Issues and problems confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 2 prereq or coreq 101. Law as a system of social control; evolution of legal systems and law-making institutions.

201 (202) AMERICAN GOVERNMENT 5. Constitutional principles of national government; major policy areas; major political parties; the structure of the national government; congress, the presidency, and the courts.

202 (203) AMERICAN GOVERNMENT 3 prereq 201. Functions of the national government, including finance, business, labor, agriculture, conservation, welfare, national defense, foreign policy, and selected problems of public policy.

203 GOVERNMENT IN MONTANA 2 prereq 201. A survey of state and local governmental institutions, and intergovernmental relations in Montana. May be taken concurrently with 202.

321 INTRODUCTION TO INTERNATIONAL RELATIONS 3 prereq 101 or 201. Introduction to the nation-state system; development and organization of nation-states, interstate systems, international organizations; factors affecting stability and change in the system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICS 5 prereq 101. Structure and politics of democratic forms of government other than the United States, with emphasis on the parliamentary and mixed parliamentary types of government in Great Britain and France.

322 COMPARATIVE GOVERNMENT AND POLITICS 3 prereq 201. Structure and politics of authoritarian and dictatorial forms of government with emphasis on the Soviet Union.

325 POLITICS OF THE DEVELOPING AREAS--EMPHASIS LATIN AMERICA 3 prereq 101. Structure of politics, government and authority in the developing area of Latin America.

325 POLITICS OF THE DEVELOPING AREAS--EMPHASIS AFRICA 3 prereq 101. Structure of politics, government and authority in the developing area of Africa.

327 POLITICS OF THE DEVELOPING AREAS--EMPHASIS ASIA 3 prereq 101. Structure of politics, government and authority in the developing area of Asia.

331 THEORIES OF INTERNATIONAL RELATIONS 3 prereq 201. Survey of basic concepts and theoretical approaches to international relations and emphasis problems of peace and war.

332 (331) INTERNATIONAL ORGANIZATIONS 3 prereq 231. The machinery of International cooperation with particular reference to the United Nations.

333 (332-333) INTERNATIONAL LAW 3 prereq 201. The law of nations in relation to war, peace, and security.

335 UNITED STATES FOREIGN POLICY FORMATION 3 prereq 202 and 231. Forces and institutions shaping United States foreign policy. Relationships between domestic and foreign policy. Structure and process of United States foreign policy decision making.

341 (341) POLITICAL PARTIES 3 prereq 201. Nature and organization of political parties; conduct of nominations and political campaigns; role of parties in various political systems, with special emphasis on the American system.

341 (341) POLITICAL INTEREST GROUPS 3 prereq 341 or c/i. Interest groups in the political system; interaction of interest groups with public opinion, political parties, legislative bodies, executives, administrators, and the courts.

343 VOTING BEHAVIOR 3 prereq 341. The electorate and the election process; attitudes and behavior of voters; the significance of election results for the political system.

351 CLASSICAL POLITICAL PHILOSOPHY 3 prereq 101. An exposition and critical analysis of the major political philosophers from Plato to Aquinas.

352 EARLY MODERN POLITICAL THEORY 3 prereq 101. An exposition and critical analysis of the major political philoso phers from Machiavelli through Burke.

353 AMERICAN POLITICAL THOUGHT 3 prereq 202. An exposition and critical analysis of selected ideas and political thinkers relevant to political thought in the United States.

356 LATE MODERN AND CONTEMPORARY POLITICAL THEORY 3 prereq 101. An exposition and critical analysis of the ideas of the major political philosophers since the present.

361-363 PUBLIC ADMINISTRATION 3 prereq 201. (361) Legal and institutional setting of the administrative system; dynamics of organization and processes of public management. (362) Problems and techniques of administration illustrated by case materials and field investigation.

363 PUBLIC PERSONNEL ADMINISTRATION 3 prereq 361. The recruitment, selection, promotion, training, classification, and rating of public employees; organization for personnel management in government.

365 GOVERNMENT AND THE ECONOMIC ORDER 3 prereq 201. Government as regulator, promoter, and participant in the economic order.

376 (375) ADMINISTRATIVE LAW 3 prereq 361 or 371. A survey of American administrative law, with references to other countries. The powers of administrative authorities and judicial restrictions of administrative action.

381 STATE GOVERNMENT 3 prereq 202. Structure, functions, and operations of state governments; relation of states to other units of government; state constitutional and administrative reforms. Special attention to Montana.

383 MUNICIPAL GOVERNMENT 3 prereq 202. Legal bases of municipal government; home rule; mayor-council, commission, and council-manager plans; municipal services; problems of modern cities and metropolitan areas.

The Pre-medical Sciences curriculum is designed to provide the basic training required of students who plan careers in Dentistry, Medicine, Veterinary Medicine, and medically related fields. It is a four year program leading to a Bachelor of Arts degree with a major in the Pre-medical Sciences. The Pre-medical Science student should normally, however, major in an ancillary field and simultaneously satisfy the major department requirements and the Pre-medical Sciences curriculum requirements. Requirements for admission to medical and dental schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their programs carefully for the two first years at the University of Montana and then to apply for admission to a School of Veterinary Medicine, or Optometry, for their junior year.

The successful pre-med student must do well in the basic sciences and other college work. He must master more than two years of college chemistry, and do well in college mathematics, physics, and zoology. To be considered by a School of Medicine the pre-med student must place high on the Medical College Aptitude Test which he ordinarily takes during his junior year. The same holds true for the pre-dent student who must do well in the American Dental Aptitude Test. Superior scholarship is of importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. High school students who are contemplating a career in the Pre-medical Sciences curriculum at the University should plan on a program of high school study which will include 3-4 years of mathematics, some Latin or several years of a modern foreign language, experience in Chemistry and Physics, and considerable background in literature and social science.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements in the Pre-medical Sciences. Demonstrates a high level of competency, and is relatively well balanced.

PRE-MEDICAL SCIENCES CURRICULUM (Dentistry, Medicine, Veterinary Medicine)
PRE-NURSING

The School of Nursing at Montana State University, Bozeman, accepts transfer students from the University of Montana who have completed one of two Pre-Nursing programs listed below. (The three-quarter sequence is intensive and is recommended for only the best students.) Students with sophomore standing who desire admission to the School of Nursing, Montana State University, Bozeman, must plan to enter during Summer Quarter after completion of their freshman year. Students with sophomore standing wishing admission to a school of nursing other than that of Montana State University should consult the catalog of the school of their choice for the selection of a freshman program.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in psychology: at least 45 credits in psychology, including Psychology 110, 220, 310, 311 and 411, with at least 25 credits in psychology courses numbered above 299, including at least 2 credits in Math 101 or the equivalent in the senior year. Mathematics 125, Zoology 111-112-113, or 111 and 202; and a reading knowledge of or five quarters (25 to 28 credits) in one modern language, preferably Russian, German, or French. Other courses recommended for psychology majors include Philosophy 110 and 210, Mathematics 116, 344 and 345, Speech 111, Sociology 101, and Anthropology 153. For majors preparing for graduate work in psychology, the following departmental courses are recommended: in addition to those which are required: Psychology 212, 230, 246, 312, 361. With appropriate background, such students may take a restricted number of graduate level courses in their senior year.

RECOMMENDED COURSE SEQUENCE

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (UCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 110</td>
<td>5</td>
</tr>
<tr>
<td>For Lang 101-102-103</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113</td>
<td>5</td>
</tr>
<tr>
<td>Soc 101</td>
<td>5</td>
</tr>
<tr>
<td>Engl 150</td>
<td>3</td>
</tr>
<tr>
<td>Psych 190 or electives</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE</td>
<td>1</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (UCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 220</td>
<td>5</td>
</tr>
<tr>
<td>Psych 206, 212, 210, 240 (take 2</td>
<td>5</td>
</tr>
<tr>
<td>For Lang 211-212</td>
<td>5</td>
</tr>
<tr>
<td>Speech 111</td>
<td>5</td>
</tr>
<tr>
<td>Philosophy 110</td>
<td>5</td>
</tr>
<tr>
<td>Engl 200</td>
<td>3</td>
</tr>
<tr>
<td>Anthro 153</td>
<td>3</td>
</tr>
<tr>
<td>Psych 361</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE</td>
<td>1</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (UCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 310, 311</td>
<td>5</td>
</tr>
<tr>
<td>Psychology electives (312, 361, 206, 212, 230, 240)</td>
<td>0-5</td>
</tr>
<tr>
<td>Math 116, 302, 303 (or electives)</td>
<td>5-5</td>
</tr>
<tr>
<td>Philosophy 210</td>
<td>5</td>
</tr>
<tr>
<td>Engl 350</td>
<td>3</td>
</tr>
</tbody>
</table>

Graduate Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (UCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 116, 302, 303</td>
<td>5</td>
</tr>
<tr>
<td>Philosophy 210</td>
<td>5</td>
</tr>
<tr>
<td>Engl 350</td>
<td>3</td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

110 INTRODUCTION TO PSYCHOLOGY 5 (5-0). Introduction to the scientific study of behavior in man and animals, with emphasis on psychological processes such as sensation, perception, learning, motivation, etc.

190 PSYCHOLOGICAL INVESTIGATION V 3-1-3 R-5 prereq 110 and c/l. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 110. The origins and significance of the behavior of present life forms.

212 (412) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 110. Survey of basic chemical and nervous regulatory mechanisms underlying behavior.

230 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 110 and Math 601. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 5 (5-0) prereq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 3 (4-2) prereq 110. Effects of social environment upon human behavior.

290 (490) PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/l.

FOR UNDERGRADUATES AND GRADUATES

310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 110. Concepts, principles and methods of sensory function and perceptual phenomenon.

311 LEARNING 5 (4-2) prereq 110. Principles involved in modifying behavior.

312 MOTIVATION 5 (4-2) prereq 110. Conditions which influence basic drives, incentives, and the development of complex motives.

342 PERSONNEL PSYCHOLOGY 3 (3-0) prereq 110. Selection, classification, and training: worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prereq 110. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (5-0) prereq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.
FOR GRADUATES

501-502-503 PROSEMINAR 8 prereq graduate standing in psychology. The basic science fields of psychology, designed as a 5. The course includes analysis for advanced training in specialized areas of general and applied psychology. Required of all graduate students in psychology. (501) Learning, motivation, and retention of new behaviors. (502) Perception, physiological psychology, comparative psychology. (503) Personality, psychopathology, social psychology. 

505 (505-506-507) PROFESSIONAL PROBLEMS IN PSYCHOLOGY 2 (2-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search: forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

510 (410) HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0) Development of concepts, systems, and theories in psychology.

512 THEORIES OF LEARNING 4 (4-0). Critical review of current learning theories based on analysis of fundamental concepts, experimental data, and theoretical implications.

513 ADVANCED LEARNING 4 (4-0). Principles and methods pertaining to the acquisition and retention of new behaviors.

514 (414) THOUGHT PROCESSES 4 (4-0) prereq 10 credits from 310, 311, 312 and 320. Experimental and theoretical analysis of problem solving, concept formation, and other complex symbolic behavior.

515 ADVANCED MOTIVATION 4 (4-0). Drive, incentive and other affect variables as they influence performance.

516 ADVANCED COMPARATIVE 4 (4-0) Directed towards a synthesis of existing data from various life forms into universal principles of behavior.

518 LABORATORY INSTRUMENTATION 4 (2-4). Discussion and experience in the design, construction, and use of instrumentation in psychology.

521-522 (511) ADVANCED PSYCHOLOGICAL STATISTICS 4 (4-0). Application of statistical procedures to the design of experiments; assumptions underlying techniques of sampling and measures of association and significance.

520 ADVANCED CHILD PSYCHOLOGY 4 (4-0). Selected topics in learning and motivation of children with emphasis on analysis of experiments and theoretical interpretations.

540 INTERVIEW AND CASE HISTORY TECHNIQUES 2 (1-2). Interpersonal dynamics in the gathering of personal data from individuals. Organization and presentation of case history reports in educational, industrial and clinical situations.

544 (444) ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.

551-552 (571-572, 576-577) PSYCHOLOGICAL EVALUATION 4 (3-2) prereq c/l. Administration, scoring, and interpretation of standard tests, with supervised practice. (551) Individual and group tests of aptitudes and intellectual abilities. (551) Objective measures of personality functioning; introduction to projective techniques, TAT and related tests. (552) Rorschach and other projective approaches.

560 (460) THEORIES OF PERSONALITY 4 (4-0). Current theories of personality and the experimental evidence on which they are based.

561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiological and diagnostic criteria and treatment of the major functional and organic disorders; research literature.

562 ADVANCED PERCEPTION 4 (4-0). Current literature and theoretical models of perception.

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior; electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field: cases handled by the clinician; techniques of interview and therapy; contributions in consultation and research.

586 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychopharmacology.

590 INDEPENDENT RESEARCH V R.

599 THESIS V R-10.

600 TOPICAL SEMINAR V 1-3 R. Advanced treatment of highly specialized topics of current interest.
RELIGION courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Religion, up to 15 credits in religion courses may be counted toward graduation. The instruction covers ancient and contemporary thought and scholarship of most of the major religions of the world, including the study of the Bible and the Church. No attempt is made to indoctrinate the student in beliefs or creeds.

In addition to a director (who is not sponsored by any one group), there are four Chairmen of Religion. The Judaica Lectureship, chaired on a part-time basis by a Jewish professor, is sponsored by the Jewish Chautauqua Society, the Jewish community of Montana and its neighboring states. The second Chair on a full-time basis is sponsored by the Helena Diocese of the Roman Catholic Church. The third Chair also on a full-time basis is sponsored by the National Lutheran Campus Ministry (supported by the American Lutheran Church in America). Financial support of the program is voluntary.

The Montana School of Religion was organized and incorporated as an independent organization in 1924 for the purpose of making courses in religion available to students, and of teaching religion as an academic discipline. It is affiliated with the University, under a director who is responsible to the University and to a Board of Trustees comprised of faculty members, laymen, and ministers, who represent the various supporting groups and the University.

RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both departments offer a two-year or a four-year program. The satisfactory completion of either program and being awarded a degree from the University results in a Reserve Commission in the Army or Air Force. Pursuance of either program is on an elective basis. Students interested in careers in the Air Force or Army should consult the Professor of Aerospace Studies or the Professor of Military Science.

AIR FORCE ROTC

The Department of Aerospace Studies offers a two-year or four-year program leading to a Reserve Commission in the U.S. Air Force. These programs are designed to provide education that will develop skills and attitudes vital to the career professional Air Force officer. Their purpose is to qualify for commissions those college men who desire to serve in the United States Air Force. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University.

The four-year program requires completion of aerospace studies, during four years of attendance at the University. Also a two-, three-year, or third year of AFROTC. The two-year program encompasses Aerospace Studies during the junior and senior or last two years at the University. In addition a six-week Field Training Course is required during the sophomore year to enrollment in the two-year program. Completion of the appropriate summer training is a prerequisite for receiving a Reserve Commission in the United States Air Force. A monthly retainer fee (currently $40) is paid to cadets formally enrolled in Aerospace Studies 200 and 400 series. A number of scholarships are available at colleges and universities within the United States for students enrolled in the four-year program. Further information may be obtained from the Professor of Aerospace Studies.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

118 INTRODUCTORY STUDY OF RELIGION 2. Comparative analysis of truths of various disciplines, expressions of religious truths, criteria of truth, and basic problems a student must face. (Open only to freshmen and sophomores.)
FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION PROGRAM

The academic requirements of the basic courses autumn and spring quarters of the freshman year and winter quarter sophomore year will meet the any requirement in group program course and university requirements for a baccalaureate degree.

101-102-103 DEFENSE OF THE UNITED STATES 101 and 103, 0: 100-100-100. (101) Military Training including exercises in drill ceremonies, and customs, with emphasis on proficiency and teamwork. Four class hours per week, required to begin training. Six-week summer camp upon completion of 102. Concurrent enrollment in a minimum of 2 credit course selected from appropriate Group requirements. (103) An introductory course on Astronautics and Space Operations and the future development of conflicts. Three class hours and one hour of Corps Training per week. (402) Leadership and management, with primary responsibility for the preparation and conduct of cadet Corps Training program. Three classroom hours and one hour of Corps Training per week.

201-202-203 WORLD MILITARY SYSTEMS 201 and 203, 2: 202, 0 prereq 101-102-103. (201) A comparative study of world military forces to include Free World Land, Naval Forces and Air Forces. Basic military training, with emphasis on functions, duties and responsibilities of cadet non-commissioned officers. Two class hours per week. (203) Concurrent enrollment in a minimum of 2 credit course selected from appropriate Group requirements. No AFROTC class hours this quarter, however, required to report to AFROTC office once per week. (202) Communist Military Systems and Trends in the development and employment of military personnel in the United States, United States, and with emphasis on proficiency and teamwork. Two hours of Leadership Laboratory per week. (201-202-203) ADVANCED COURSE: PROFESSIONAL OFFICER EDUCATION PROGRAM

In the four year program, completion of the Basic Course is a prerequisite for admission into the advanced course. In addition the cadet must enlist in the Air Force Reserve (this enlistment may be canceled if student withdraws from the University or for other specific reasons), pass a physical examination and the Air Force Physical Training and Individual Weapons. Practical work as junior officers in the Cadet Corps, including command positions, with primary responsibility for the preparation and conduct of the Cadet Corps Training program. Three class hours and one hour of Corps Training per week. (203) Advanced course is identical to the four year program. (202) Military administration and logistics. Leadership, drill and command. (201) Principles of tactics and operations of the United States Army with emphasis on small unit activities. Continued leadership, drill and command.

204 SUMMER TRAINING UNIT No Credit. Four weeks at an Air Force Base after completion of Aerospace studies 301-302-303. Organization and functions of an Air Force Base, air crew and aircraft engineering and maintenance, mission and military fundamentals, physical training, and individual weapons. The mission and organization of the United States Air Force and the beginning phases of military administration at an Air Force Base. Three class hours per week and one hour Corps Training. (204) Advanced course is identical to the four year program. (203) Principles of military weapons systems. Leadership, drill and command. Practical work in instructing and directing military drill of individuals and small units. (204) Principles of military weapons systems. Leadership, drill and command.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (301) The nature of war and the history of air power. Practical work as Junior Officers in the Cadet Corps, including command positions, with primary responsibility for the preparation and conduct of the Cadet Corps Training program. Three class hours and one hour of Corps Training per week. (302) Principles of tactics and operations of the United States Army with emphasis on duties and responsibilities of the junior leadership. (303) Principles of tactics and operations of the United States Army with emphasis on small unit activities. Leadership, drill and command.

304 SUMMER CAMP No credit. Six weeks at an Army Training Center taken after completion of 303. Practical military training to include practical exercises designed to develop the discipline and leadership. Student is reimbursed for travel performed at a rate of $6 per mile, and receives pay of $227.80.

401-402-403 THE PROFESSIONAL OFFICER 3. (401) Foundations and responsibilities of the military profession and the military justice system. Practical work as Cadet officers in staff and command positions, with primary responsibility for the preparation and conduct of the Cadet Corps Training program. Three classroom hours and one hour of Corps Training per week.

TWO YEAR PROGRAM

The two year program requires attendance at one summer training session and the two years of the advanced course, AFROTC. Admission into the Advanced Course after completion of this program does not require the two basic years of AFROTC as a prerequisite. In lieu of that, a six week summer training session at an Air Force Base is required during the summer immediately prior to entering the Advanced Course. Following that initial summer training period, the Advanced Course as given in the Advanced Course description. The initial summer training between Junior and Senior year is not required. Students interested in attending the two years of the Advanced Course and Reserve through the two year program should consult the Professor of Aerospace Studies not later than fall quarter of their sophomore year.

250 FIELD TRAINING COURSE No Credit. Prerequisite for entry into Advanced Course. Six weeks at an Air Force Base. Stressing drill, military fundamentals, physical training and Air Force organization.

250-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (Same as for the four year program.)

401-402-403 THE PROFESSIONAL OFFICER 3. (Same as for the four year program.)
SOCIAL WELFARE

explores the ways in which social problems affect people; the agencies which help people deal with these problems; and the methods used in such endeavor. Social Welfare courses involve case records and some field work or observation in addition to regular class work. Broad studies in other social sciences are required. Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is prerequisite. Social workers are employed in such positions as caseworkers, group workers, supervisors and administrators in public and private social agencies, courts, hospitals, mental-health clinics and youth serving organizations.

The undergraduate major in social welfare is available for those wishing a practical orientation toward social problems. Both theory and practice are emphasized to achieve the effectiveness needed on the job. Those wishing to enter graduate schools of social work will find the program designed for this purpose as well as for effective citizen participation. Courses are selected from the several social sciences to serve as a foundation for a limited number of courses which present social welfare content and method. Group methods are freely used.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in departmental courses are required for the Bachelor of Arts degree with a major in social welfare. The following courses must be taken: SW 101, 201, 205, 314, and at least eight credits in SW 483, Social Work Laboratory. In addition, Soc. 101, 201, 205, and 314 must be taken.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


201 (303) GROUP METHODS 4 prereq 181. Purposes, principles and methods of group functioning. The role of the group worker and the group member. The problem of leadership in the group, the agency and the community.

FOR UNDERGRADUATES AND GRADUATES

385 CHILD WELFARE 4 a/y prereq 181. Development, organization, and methods of public and voluntary programs designed to meet the special needs of children: foster care, institutional care, adoptions, school social services and youth services.

386 FAMILY WELFARE SERVICES 4 a/y prereq 181. Public and voluntary programs designed to meet the special needs of family assistance, rehabilitation, guidance and counseling.

387 SOCIAL WORK PRACTICE IN CORRECTIONS 4 a/y prereq 181. Juvenile delinquency and adult crime from the standpoint of treatment and prevention.

388 THE AGING 4 a/y prereq 181. Problems involved in caring for the aging: family responsibilities, agency and community services, and scope.

389 THE PHYSICALLY HANDICAPPED 4 a/y prereq 181. Voluntary and public services designed to meet the special needs of the physically handicapped.

482 COMMUNITY RELATIONS 4. Su 3 a/y prereq 10 credits in social welfare. The place of the professional person in community life, his responsibilities as a citizen, his philosophy and ethics, especially as they relate to the community, his contributions to community welfare and his concern for human needs and problems.

483 SOCIAL WORK LABORATORY V 2-4 R-12 prereq 181. A program of self-help project experiences in dealing with community needs and resources. Theoretical analysis of experienced situations. Learning by means of the laboratory method.

485 ADVANCED PROBLEMS V 1-2 R 6 prereq c/t.

486 COMMUNITY DEVELOPMENT 3 a/y prereq 181. Community and area self help as procedures in achieving a vital balance between community needs and services. Effective use of community resources.

487 INTERNATIONAL SOCIAL WORK 4 a/y prereq 181. Voluntary and public programs serving people in distressed and underdeveloped areas of the world.

488 THE HISTORY OF SOCIAL WELFARE 4 a/y prereq 181. The growth and development of social services in the United States with special attention given to policy questions: poverty, handicaps, sickness, emotional disorders, family breakdown, delinquency and crime, mental illness, wars, civil rights, and community development.

489 SEMINAR V R-8 a/y prereq 15 credits in social welfare.

FOR GRADUATE STUDENTS

FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and social welfare and consent of department chairman. Field work or internship, under supervision, in public and private agencies and institutions.

SOCIOLOGY

is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It is concerned primarily with contemporary civilization. The degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy are offered in sociology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in sociology courses are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) The 50 credits in sociology must include the following courses: Soc 101, 201, 205, 310, 314, and 401. In addition, the following courses in anthropology must be taken: Anth 183, 372, and 473. Students must take Math 101, or be exempt through examination.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTORY SOCIOLOGY 5. A general study of interhuman relations.

102 SOCIAL PROBLEMS 5 prereq 101. A general study of social and personal organization.

201 (303) SOCIAL SCIENCE METHODS 3 prereq 10 credits in social sciences. The methodology, techniques and instruments of measurement used in the social sciences.

202 COLLECTIVE BEHAVIOR 3 a/y prereq 101 or Psych 110. Theory relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

204 COURTSHIP AND MARRIAGE 2. A general consideration of factors in courtship and marriage.

205 ELEMENTARY SOCIAL STATISTICS 5 prereq Math 301 or exemption by examination. Simple statistics and graphic techniques commonly used in the social sciences.

206 URBAN SOCIOLOGY 4 a/y prereq 101. The rise and development of cities; social organization of the city; problems of urban communities.


FOR UNDERGRADUATES AND GRADUATES

301 SOCIOLOGY AND THE INDIVIDUAL 3 a/y prereq 101. Human development through interaction of social structure, heredity, and culture.

302 SOCIAL STRATIFICATION 3 a/y prereq 101. The class system in contemporary society in terms of social class theory, class behavior, and current research in social stratification in American society.

304 POPULATION 4 prereq 101 A quantitative and qualitative analysis of world population; vital statistics and population change; migration and immigration.

305 (402) THE FAMILY 5 prereq 101. Comparative, historical and analytical study of the family.

306 CRIMINOLOGY 5 prereq 101 or 102. The causes, prevention, detection, and correction of crimes.

307 SOCIAL CONTROL 3 a/y prereq 101. Institutional and non-institutional processes and methods by which persons and groups are controlled.
SPEECH-COMMUNICATION—73

306 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 308 and Anth 308.)

309 INDUSTRIAL SOCIOLOGY 4, Su 3, prereq 101 or Psych 110. Work plants such as factories, offices, and stores: work group process and applied problems; industrial relations in the community.

310 DEVELOPMENT OF SOCIAL THOUGHT 4 prereq 101. Social thought from earliest times to the present. The problems of organization and penal methods in correctional institutions. Probation and parole. Relationships of work groups.


312 RURAL SOCIOLOGY 4 Su 3 a/y prereq 101. Organization and social relationships of rural life; the rural community. The problems of rural life. Special emphasis on Montana and the Northwest.

314 FIELD OBSERVATION 3 prereq 101 and 201 or 205. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.

361, 362, 363 (see Health and Physical Education).

371 CULTURE AND PERSONALITY (See Anthropology).

400 PROBLEMS IN SOCIAL ORGANIZATION V R-10 prereq 12 credits in sociology. Topics of current interest in sociology.


403 ADVANCED PROBLEMS V 1-2 R-6 prereq c/l.

405 SOCIOLOGY OF WORK 3 prereq 101. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

407-408-409 SEMINAR V 2-5 R-10 prereq 10 credits in sociology. Enter any quarter.


499 FIELD WORK PRACTICUM (See Social Welfare)

FOR GRADUATES

501 GRADUATE RESEARCH V R-10.

502 ADVANCED METHODS 5 prereq 201 or . Required of all graduate students in sociology.

503 ADVANCED SOCIOLOGICAL STATISTICS 5 prereq Math 125 or Soc 205. Sampling: measures of association and significance; statistical methods in the design of experiments; sociometrics.

504 SOCIAL CHANGE V 2-5 prereq 101 and 10 upper division credits in sociology. Processes and consequences of social change in urban industrial society.

505 (411) ADVANCED GENERAL SOCIOLOGY 4 prereq 101, 10 upper division credits in sociology. Review and analysis of major sociological theory and research.


507-508-509 SEMINAR IN URBAN STUDIES 3. Selected topics in urban affairs. (Also listed as Pol. Sci. 587-588-589.)

509 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and consent of department chairman. Supervised internship.


699 THESIS V R-4.

SPEECH-COMMUNICATION represents a discipline directly concerned with the nature and practice of communication. Study in the field is directed toward achieving a deeper understanding of the way in which people communicate with one another, and the personal, social and cultural factors that influence the process.

Three related programs of study are offered cooperatively by the Department of Speech Communication and the Department of Speech Pathology and Audiology. The student must select a particular program or combination of programs which is most relevant to his educational interests and professional goals.

The program in Foundations of Communication treats theoretical conceptions of the communicative process and their basic determinants. Research methods and procedures are emphasized. The program in Systems of Communication provides opportunity for study with emphasis on socially significant communication systems. Study and practice in Rhetoric, Public Address, Debate and Discussion exemplify the programs offered in this area. The emphasis in the Speech-Communication program emphasizes the causes and remedial procedures relating particularly to disorders of speech, hearing, and language. Academic study is supplemented by extensive laboratory experience in the Speech Clinic. A more detailed description of each program, including vocational and professional opportunities will be found under each program heading below.

The Bachelor of Arts and the Master of Arts Degrees with a major in Speech Communication or in Speech Pathology and Audiology, and the Master of Speech Pathology and Audiology degree are offered. (See Graduate School.)

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES. In addition to the general requirements for graduation listed in the catalog and the credit requirement of 45 credits and not more than 70 credits in Speech-Communication. All students majoring in the Speech-Communication program are required to complete a core curriculum as follows: Speech-Communication 111, 232, 233, 234, and 233; Psychology 116; Sociology 151; Sociology 205 or Psychology 220; Anthropology 152; and Philosophy 100. The foreign language requirement listed earlier in the catalog may be satisfied. Additional requirements for the special programs in Speech-Communication are listed in the following sections.

FOUNDATIONS OF COMMUNICATION

This program is directed to the study of signs, symbols, and signals as the function of context of human interaction. Theory and data derived from a wide variety of scientific fields are integrated to form the basis of study in human communication. Students interested in communication theory and language development are required to supplement the core curriculum with the following programs: Speech-Communication 110, 230, and 9 additional credits from the Foundations curriculum.

This program is designed to contribute to the student's general education and to prepare him for graduate study in the field of communicative theory and research. The undergraduate program is not intended to prepare a student for employment in the communication field. Appropriate study qualifies the student for employment in education, business, industrial and governmental teaching, research, and other professional programs.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

119 PHONETICS 2. Transcription (International Phonetic Alphabet) and standards of pronunciation and dialect.


301 HISTORICAL DEVELOPMENT OF THE FIELD OF COMMUNICATION 3. The major lines of influence leading to present theories, concepts and methods in the field of oral communication.

351 DEVELOPMENTAL SEMIOLOGY 3 prereq 234 and Psych 230. Characteristics and determinants of the sign process associated with the main stages in human development through the life span.

353 GENERAL SEMANTICS 3. The influence of language and language habits on perception, evaluation and decision; particular attention to the concepts of structure and meaning.

FOR UNDERGRADUATES AND GRADUATES

451 PSYCHOLINGUISTICS 3 a/y prereq 234 and Gen 306. Recent theories and evidence concerned with the empirical analysis of linguistic behavior.

471 COMPARATIVE SEMIOLOGY 3 a/y prereq Zool 111-112-113. The sign process based on evidence and observation at selected levels of the phyletic scale.

490 PROBLEMS V R-6 prereq 25 credits in Speech-Communication and c/l.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 15 credits of junior and senior level Speech-Communication or c/l. The basic approaches to graduate and professional activities.

FOR GRADUATES

511 THEORIES OF COMMUNICATION 3 prereq c/l. A critical examination of recent theories and research data in the field of communication; emphasis is placed on the role of theory in the study of Speech-Communication.

513 PSYCHOACoustics 3 a/y prereq c/l. A critical evaluation of current research relating to the basic physical variables of speech and hearing and to the processes of speech analysis and synthesis.
515 SEMINAR: LABORATORY AND CLINICAL INSTRUMENTATION 3 prereq c/i.


521 THEORIES OF INFORMATION 3 a/y prereq c/l. Current theory and research dealing with the process by which information is transmitted. Examination of source, message, channel and receiver variables.

541 PERSUASION 3 prereq c/l. An examination of theories and research concerned with the processes by which behavioral and attitudinal change are produced by communication.

597 RESEARCH METHODS AND MATERIALS 5 prereq Soc 205 or Psych 230 or c/l. Principles and techniques of quantification and design in communication research. Practice in the techniques of professional writing.

599 TOPICAL SEMINAR V R-9 prereq c/l.

600 RESEARCH V R-10 prereq c/l.

699 THESIS V R-12.

SYSTEMS OF COMMUNICATION
(Public Address and Group Communication)

Few processes are more fundamental to an understanding of the dynamic patterns of human existence and social organizations than the systems by which men communicate. Students who are interested primarily in the processes of communication as critical factors in human relationships are required to supplement the core curriculum with the following upper division courses:

330, 335, 444, 445 or 446; and 11 approved electives in Speech-Communication. Students planning to teach in a speech program at the high school level are referred to the requirements listed under Education.

Study in this area provides an historical background, together with a knowledge of rhetorical and communication principles and practical experience which contributes to competence in professional speech teaching in secondary school. For professional study at the graduate level leads to a Master of Arts degree with specializations in speech education and forensics, public address and rhetoric, or group and organizational communication.

FOR UNDERGRADS

For Explanation see Course Descriptions (Index)

110 INTRODUCTION TO SYSTEMS OF COMMUNICATION 3.
Theory and evidence relevant to interpersonal and intrapersonal systems of communication. The role of language in human interaction.

111 PRINCIPLES OF PUBLIC SPEAKING 3. The theories and principles of public speaking. Practice speech composition, delivery and criticism.

112 ARGUMENTATION 5. The principles by which belief and conclusions are influenced through logical reasoning. Evidence, analysis, logic, fallacies, refutation, rebuttal and their application to current economic, social and political problems.

115 PRINCIPLES OF PERSUASION 4. Principles and practice of attitude and behavior modification primarily by oral communication.

118 PRACTICUM IN ORAL EXPRESSION 3 (2-3). Principles of vocal expression, articulation and diction, with practical application through reading and evaluation.

233 (123) PUBLIC SPEAKING PRACTICUM 3 (0-4) prereq 111. Practice in speech composition, delivery and criticism beyond that introduced in Speech-Communication 111.

341 RADIO AND TELEVISION PERFORMANCE 2 (0-4) prereq 118. The application of principles and techniques for radio and television performance.

265 FORENSICS 1 R-6. Preparation of debates, orations, extramural and impromptu speeches, and other types of public address.

313 (113) PARLIAMENTARY PROCEDURES 2. Theory and practice relating to the rules of parliamentary procedures.

314 (214) PRINCIPLES OF DISCUSSION 3. Study and practice in the processes involved in formal small-group interaction. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4. Emphasis on intra-organizational problems. Consideration of theory and research on functions of informational and directive communication as related to such factors as channels, structures, status, involvement, morale, etc.

335 SPEECH COMPOSITION 3 prereq 111. Factors related to materials, organization and support in the development of the speech.

355 SPEECH CRITICISM 2 prereq 355. The bases upon which the various forms of public speaking are evaluated.

381 (261) PERFORMANCE OF LITERATURE 3 (2-3) prereq 118. The analysis and oral presentation of literature.

371 PRINCIPLES OF SOCIODRAMA 3. Principles and practice of role-playing as a technique of communication; the development of the spontaneous-creative and the extemporaneous types of sociodrama.

374 HISTORICAL PAGEANT DRAMA 3 prereq 371. Communication techniques of organizing programs, in the schools and in the community, dramatizing sequences in the history of the community; writing and staging of a production based upon such data.

FOR GRADUATES

512 SEMINAR: GROUP COMMUNICATION 3 a/y prereq 314 or 316.

514 SEMINAR: DISCUSSION 3 a/y prereq 314.

545 SEMINAR: SPEECH CRITICISM 3 a/y prereq 356.

551 RECENT AND CONTEMPORARY PUBLIC ADDRESS 3 a/y prereq 444 or 445. Biographies and speeches of prominent speakers of the near past and present, and the issues with which they are identified.

571 SEMINAR: HISTORIC Rhetoric and Public Address 3 a/y prereq 444 or 445.

599 TOPICAL SEMINAR V R-9 prereq c/l.

600 RESEARCH V R-10 prereq c/l.

699 THESIS V R-12.

DISORDERS OF COMMUNICATION
(Speech Pathology and Audiology)

Individuals with speech and hearing disorders constitute our largest group of exceptional persons. Students interested in these problems, their causes and remedial procedures should supplement the core curriculum with the following courses: Speech-Communication 110, 119, 335, 336, 346, 469, 471, 481, 491 and 492; Psychology 230 and 420; and Zoology 202.

Although students take the Bachelor of Arts degree in Speech-Communication, with an emphasis in Disorders of Communication, this is a pre-professional degree and is not intended to prepare a student for employment in the field of Speech Pathology and Audiology. With appropriate graduate preparation, the student can meet the requirements for a Bachelor of Arts degree in Speech Pathology and Audiology and qualify for a Certificate of Clinical Competence which is granted by the American Speech-Language-Hearing Association. Persons thus certified are employed in a variety of settings, such as: clinical service centers, hospitals, public schools, health departments, colleges and universities, industries, programs, research centers and private practice.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

330 INTRODUCTION TO SPEECH PATHOLOGY 3. For non-majors: a survey of the nature and language problems commonly encountered in the classroom.

335 COMMUNICATION DISORDERS I 5 prereq 119, 232, 233, and 234. An introduction to communication disorders as an educational and clinical field. Theories, research and selected remedial procedures relating to disorders of articulation, voice and language reception.

336 COMMUNICATION DISORDERS II 5 prereq 335. Theories, research and selected remedial procedures relating to disorders of language production, rhythm and fluency.
WILDLIFE BIOLOGY—75

This university is particularly well suited for instruction in this area of learning because of the excellent opportunities for field instruction and research, and the presence of such facilities as the Biological Station, the Montana Forest and Conservation Experimental Station, and the Montana Cooperative Wildlife Research Unit.

HIGH SCHOOL PREPARATION. In addition to the general requirements for graduation listed earlier in the catalog the student must complete the requirements as listed for one of the three options indicated below. Note that a study of foreign language is required only in the Wildlife Science option.

CURRICULA IN WILDLIFE BIOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany-Zoology 111—General Biology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 112, 113—General Botany</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry 101, 102, 160—General, Survey, Organic</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 121, 122, 123—College Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>English 180—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
<td>5</td>
</tr>
<tr>
<td>Group Requirements</td>
<td>2-5</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>16-19</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 112, 115—General Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 225, 265—Plant Physiology, Systematic Botany</td>
<td>5</td>
</tr>
<tr>
<td>Math 125—Statistics</td>
<td>4</td>
</tr>
<tr>
<td>English 225—Intermediate Composition</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 225—Principles of Animal Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Forestry 210—Elementary Soils</td>
<td>4</td>
</tr>
<tr>
<td>Physics 111, 112 or 115—General Physics</td>
<td>0-5</td>
</tr>
<tr>
<td>Group requirements</td>
<td>0-3-8</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>17-18</td>
</tr>
</tbody>
</table>

Terrestrial Option

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 300, 308—Mammalogy, Ornithology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 340, 341—Mammalian Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 366—Agroecology</td>
<td>5</td>
</tr>
<tr>
<td>Forestry 360—General Range Management</td>
<td>4</td>
</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements and electives</td>
<td>3-4</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>18-19</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry 470, 471, 472—Advanced Wildlife Management, Big Game Management, Habitat Management</td>
<td>5</td>
</tr>
<tr>
<td>Forestry 460, 462—Range Techniques, Aerial Photography</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 410—Advanced Animal Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 409—Animal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Group requirements and electives</td>
<td>3-4</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
<td>15-18</td>
</tr>
</tbody>
</table>

Suggested electives: Any courses in Aquatic Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.

Aquatic Option

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 310, 206—Icthyology, Field Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 366—Entomology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Group requirements and electives</td>
<td>5-8</td>
</tr>
<tr>
<td>Zool—Botany—Forestry 491, 492, 493—Senior Wildlife Seminar</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 307, 413, 425—Aquatic Biology, Fisheries Science, Invertebrate Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Forestry 450—Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>Botany 411—Phycology</td>
<td>2</td>
</tr>
<tr>
<td>Zoology 455—Animal Behavior</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements or electives</td>
<td>5-3</td>
</tr>
<tr>
<td>Zool—Botany—Forestry 491, 492, 493—Senior Wildlife Seminar</td>
<td>16-19</td>
</tr>
</tbody>
</table>

For undergraduates and graduates

423 (333) CLINICAL PRACTICUM I-3 R-4 prereq 338 and 341. Thirty clock hours per credit of supervised clinical practice in the Speech and Hearing Clinic.

431 (331) STUTTERING 3 prereq 336. Stuttering as learned behavior; emphasis on prevention and habilitation.

432 (332) ORGANIC DISORDERS OF COMMUNICATION I 3 prereq 338 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical structure.

433 (333) ORGANIC DISORDERS OF COMMUNICATION II 3 prereq 338 and 341. Theories, research and therapeutic procedures for problems of communication associated with neurological disorders.

435 METHODS OF SPEECH AND HEARING THERAPY IN THE SCHOOL I 3 prereq 338. Methods and policies related to establishing and conducting a speech and hearing program in a school system with emphasis at the elementary level.

450 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

523 (433) ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS I V R-6 prereq 4 credits of 423.

536 (436) PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V R-9 prereq 435.

537 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/i.

538 SEMINAR: ANATOMIC DEFECTS OF SPEECH 3 prereq c/i.

539 SEMINAR: NEUROMUSCULAR DEFECTS OF SPEECH 3 prereq c/i.

540 SEMINAR: MEASUREMENT OF HEARING 3 prereq c/i.

542 SEMINAR: REHABILITATION OF THE ACoustically HANDICAPPED 3 prereq c/i.

544 SEMINAR: HEARING CONSERVATION PROGRAMS 3 prereq c/i.

547 SEMINAR: LANGUAGE DISORDERS 3 prereq c/i.

599 TOPICAL SEMINAR V R-9 prereq c/i.

600 RESEARCH V R-10 prereq c/i.

609 THESIS V R-12.

WILDLIFE BIOLOGY

is the study of wild vertebrate animals and their conservation. It is based on the natural sciences, with particular emphasis in the biological sciences. It constitutes a preparation for professional work in fish and game conservation.

Within the broad designation of Wildlife Biology, there are three optional curricula: Terrestrial Wildlife Biology, Aquatic Wildlife Biology, and Wildlife Science. As indicated below: each has the same schedule of courses for the first two years and a different curriculum for the last two years. Each leads to the Bachelor of Science in Wildlife Biology. Many graduates will continue their education through the Master's degree. The Wildlife Science curriculum is designed particularly for students with strong academic records who intend ultimately to work toward a doctorate.
One summer at the University of Montana Biological Station (or other Biological Station) enrolled in Zoology 461, Limnology, and one of the following three courses: Zoology 366, Aquatic Insects, Zoology 433, Problems in Vertebrate Ecology, or Botany 368, Aquatic Flowing Plants. This summer could be taken either after the junior year or the senior year. Suggested electives: Any course in terrestrial botany not required in any course from list of appropriate additional courses shown below.

**Wildlife Science Option**

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 483—Genetics</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 305—Advanced Composition</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Language 101, 102, 103—French, German, or Russian</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 125, 118—Statistics, Analytical Geometry and Calculus</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Advanced courses selected from the above listed courses for students interested in Aquatic Zoology: Zoology 306, 307, 310, 413 and for the students interested in Terrestrial Zoology: Zoology 308, 309, Forestry 470, 471, 472.

Appropriate additional courses for Wildlife students to select in any option aside from those shown above include: Chemistry 261, 262, Botany 333, 334, 335, 361, 370, 376, 365, Economics 201, 202, Forestry 311, 330, 361, 366, 461, 482, 484, Geography 470, Zoology 110, 130, 200, 451, Microbiology 260, Math 344, 450, Political Science 562, Speech 111, Zoology 303, 304, 404.

An approved series of courses from either option to be worked out with adviser. Minimum courses for students interested in Aquatic Zoology: Zoology 306, 307, 310, 413. For students interested in Terrestrial Zoology: Zoology 308, 309, Forestry 470, 471, 472.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


111 INTRODUCTION TO BIOLOGY 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanisms of evolution and adaptation. (Credit not allowed for both Bot 111 and Zool 111.)

112-113 GENERAL ZOOLOGY 5 (3-4) prereq 111 or Bot 111 or =. A comparison of structure, function, and life histories of selected invertebrates and vertebrates. (Generally taken as a sequence including 111, 112-113.)

202 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) prereq 113. Collection, identification, and preservation of animals. Field work.

250 (350) PRINCIPLES OF ANIMAL ECOLOGY 3 (3-5) prereq 113 or Bot 113. Introduction to ecological principles, including the ecosystem, nutrient and energy cycling, limiting factors, population and community organization, succession and climax.

FOR UNDERGRADUATES AND GRADUATES

301 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) a/y prereq 311-312. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

304 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 112. The comparative morphology of the vertebrates.

305 ANIMAL MICROTECHNIQUE 5 (2-6) prereq 113. Preparation of smears and squashes, clearing and staining whole mounts, paraffin sectioning, frozen sections with clinical microtome and cryostat microtome, polyester embedding and histochemical methods. A brief introduction to tissue types will be given at the start of the course. May be taken concurrently with 313.

306 HERPETOLOGY 3 (2-2) o/y prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 5 (3-7) prereq 206 or 365 and Bot 283. The biology of fresh water with emphasis on the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY 5 (2-6), Su 6 at Biological Station, prereq 113. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.
MAMMALOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. Saturday field trips.

ICTHYOLOGY 5 (3-4) prereq 113. The systematics and distribution of fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic animal cytology, tissue types and organology are studied. May be taken concurrently with 305.

PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoans.

LOWER METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the mollusks and annelids. Semi-independent work.

ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

CELLULAR PHYSIOLOGY 5 (3-4) o/y prereq two courses in Physics, Chem 262 or 160, the course in Botany, Microbiology or Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 336.

MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three courses of college chemistry and 2§ General physiological properties of protoplasm; blood, body fluids, and circulation; respiration; circulatory and respiratory systems; control of metabolism; conduction, contraction, responses, senses; endocrines and reproduction.

INVERTEBRATE OF THE INTERMOUNTAIN AREA 3 (5-12) prereq 113. Taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

ENTOMOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.

AQUATIC INSECTS 3 (3-12) prereq 113. The insect fauna, both immature and adult, in aquatic habitats of Western Montana.

BIOLOGICAL ILLUSTRATIONS 2 (6-0) prereq 1 year of biology and 1 year of English. The student will produce illustrative materials relevant to the biological sciences. (85 special supplies fee. Credit not allowed for this course and Bot 406.)

VERTEBRATE EMBRYOLOGY 5 (3-4) prereq 304. The early stages of development of the vertebrates including organogenesis, with emphasis on birds (chick) and mammals (pig).

ANIMAL BEHAVIOR 5 (3-4) prereq 25 credits in Zoology or c/i. Normal behavior of animals under natural conditions, description, adaptiveness, and evolution. Observation and recording of behavior is emphasized.

ADVANCED ANIMAL ECOLOGY 5 (3-4) prereq 125, and 4 courses in Zoology, including 250. The influence of physical and biotic factors on population structure, density, and production. Emphasis on community organization. Theoretical as well as practical aspects are considered. Weekend field trips.

FISHERY SCIENCE 3 (3-6) prereq 267, 310. The problems involved in the development of fisheries biology with an analysis of, and some actual field experience in, methods employed in attacking these problems. Field trips.

INVERTEBRATE ECOLOGY 5 (2-8) e/y prereq 206, Bot 360 or 311. The invertebrates and their environment with special emphasis on the invertebrates. Saturday field trips.

BIOLOGICAL LITERATURE 1 (2-0) prereq 20 credits in botany, zoology and fishery science. Introductions to the trends of investigation and experimentation in biological fields.

PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Sem-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Sem-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PRObleMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

BIOLOGY OF FOREST INSECTS 3 (3-4) prereq 113, 365. Insect biology, ecology, physiology, and genetics as they relate to forest insects and forest insect problems; the ecological position of insects in the forest ecosystem; Introduction to population dynamics. Jointly listed as Forestry 432.

FOREST INSECT ECOLOGY 3 (3-4) prereq 422. Focus on the distribution and abundance of insects; characteristics of outbreaks; the biometeorological and behavioral components of insect population changes; the rational basis of control. Jointly listed as Forestry 438.

MARINE INVERTEBRATES 3 (1-2) prereq 346, a problem in marine biology. The systematics and ecology of marine invertebrates, with particular reference to habitat niche of the animals of the Pacific coast. (A 3-day trip to coast of Oregon or Washington required.)

LIMNOLOGY 6 (5-25) prereq 113 and Chem 123. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biotic factors which determine their biological productivity.

GENETICS 5 (3-4) prereq 113 or Bot 225. The mechanism of heredity, including consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not given for both Zool 455 and Bot 455.

EVOLUTION. (See Botany.)

SEMINAR IN BIOLOGY 1 (2-6). Special problems in Biology. Credit not allowed for this course and Bot 490.

SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guests speakers on current topics in Wildlife Biology. (Double-listed as Forestry 491-492-493.)

FOR GRADUATES

SEMINAR 1 prereq graduate standing in a biological science.

AREAS AND CONCEPTS OF ZOOLOGY 1 prereq graduate standing in Zoology or in Wildlife Biology. An orientation course for new graduate students in biology. (Offered only during the summer.)

HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prereq graduate standing in a biological science. Credit not allowed for this course and Bot 562.

EXPERIMENTAL EMBRYOLOGY 5 (1-8) prereq Zoool 404 and c/i. Basic concepts of embryology elucidated by means of experiment of amphibian, chick, or other vertebrate embryos.

REPORT PREPARATION

ADVANCED ANIMAL BEHAVIOR 5 (2-6) prereq 495 or c/i. The causation and function of normal behavior with emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior.

ACAROLOGY 5 (3-4) o/y prereq 224 or 386 or c/i. Comparative adaptive morphology, biologies and current taxonomic concepts.

ZOOGEOGRAPHY 4 (3-1) prereq 2 courses in advanced vertebrate morphology. Emphasis on the role of geography and distribution of animals, with special emphasis on vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidences considered.

CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 3 (3-0) o/y prereq 25 hours in zoology including 250 and 485. Selected topics relating to evolution, specialization and the various philosphies influencing systematic zoology.

RADIATION BIOLOGY 4 (2-4) prereq Botany-(Zool) 330. The influence of ionizing and nonionizing radiation on biological systems. (Offered only during the summer.)

COMPARATIVE PHYSIOLOGY-INVERTEBRATE 5 (3-4) prereqPhysics 113 or 223, Chem 262 and one animal physiology course. Physiological process of the organ systems of the major invertebrate phyla with reference to the invertebrate course. Jointly listed as Bot 531.

COMPARATIVE PHYSIOLOGY-VERTEBRATE 5 (3-4) prereq Physics 113 or 223, Chem 262 and one animal physiology course. Physiological processes of the organ systems of the five vertebrate classes with special reference to vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidences considered.

THESIS V R-15.
"The secret of education lies in respecting the pupil."
RALPH WALDO EMERSON
INDEX

Abencements from Class 19
Acrituation of University 20
Activity 20
Additions, Leaves of Absence 19
Activities, Centers, Student 18
Advising, Faculty 21
Admission 10
Advanced Placement 11
Conditional 11
Early 11
Examination, by 11
General 10
High School Preparation 10
Law School 54
From Nordic Speaking Countries 11
Non-Resident 11
Registration Fee, Advance 11
Special Students 12
Transfer 11
Unclassified 11
Appeal, Right of 19
Arts and Sciences, College of 13
Business and Economic Research, Bureau of 9

Calendar, Law School 54
Calendar, University 2
Campus Facilities 9
Certificate to Teach 34
Change of Program of Studies 12
College of Arts and Sciences 13
College Scholarship Service 14
Composition Requirement, Freshman 14
Conditional Admission 11
Control and Administration 17
Counseling Center 17
Course Descriptions 20
Course Numbering System 20
Courses of Instruction: 70
Air Force ROTC 2
Anthropology 21
Art 21
Astronomy, Descriptive 44
Biochemistry 22
Botany 22
Business Administration 24
Chemistry 29
Drama 31
Economics 32
Education 36
English 36
Foreign Languages 39
Forestry 40
French 38
General Courses 43
General Literature 44
Geography 44
Geology 45
German 36
Greek 39
Health and Physical Education 41
History 49
Home Economics 51
Introductory Courses: 43
Biological Sciences 44
Humanities, General 44
Italian 39
Journalism 39
Latin 39
Law 53
Liberal Arts 35
Library Service 55
Linguistics 56
Mathematics 56
Medical Technology 57
Microbiology 59
Military Science 71
Music 38
Pharmacy 62
Philosophy 63
Physical Education (Health and P.E.) 47
Physical Therapy 64
Physics 65
Political Science 66
Pre-Medical Sciences 67
Pre-Nursing 68
Psychology 68
Radio-Television 68
Religion 70
ROTC 70
Romance Philology 39
Russian 39
Social Welfare 71
Sociology 72
Spanish 74
Speech Communication 73
Speech Pathology and Audiology 74

Wildlife Biology 75
Zoology 76
Credit by Examination 14
Credit Loan, Maximum 12
Credits, for Degree 12
For Major 13
Correspondence Study 14
Limitations 14
Dean of Students, Office 17
Degrees and Majors 13
Advanced Professional 13
Candidacy for 13
Credits required for 13
Directory, Official 2
Elementary Teaching Certificate 22
Examination, Admission by 10
Examination, Credit by 14
Elementary Education, for Honors 16
Executive Board, Local 12
Examination of Course Descriptions 20
Extension and Public Service 10

Faculty 2
Family Housing 18
Fees, Student 15
Blue Cross (optional) 17
Building 11
Change of Enrollment 16
Credit by Examination 16
Field 16
Graduate Students 16
Health Service 16
Incidental 16
Late Registration 15
Limited Registrants 16
Listeners 15
Music Applied 60
Non-resident 15
Payment of 17
Refunds 16
Registration 16
Refund of Incompletes 17
Special Examination 16
Special Languages 16
Student Activity 16
Identification Card 15
Student Union Building 15
Summary 15
Summer 15
 Transcript of Record 15
Unofficial Transfers 15
Financial Obligations 15
Of Organizations 19
Of Individual Students 19
Fine Arts, School of 13
Foreign Language Requirement 11
Forest and Conservation Experiment Station 11
Fraternity and Sorority Houses 13
Freedom of Expression 19
Functions and Goals, University 9

Grade Point Requirements (Quality of Work) 13
On Transfer Credits 13
Grade Points 13
Grading System 13
Graduate School 13
Graduation, Catalog Governing 13
Graduation, Requirements for 13
Graduation, With Honors or High Honors 13
Grants, Educational Opportunity 13
Group Requirements 14

Health Service, Student 17
Honors, Senior Examination for 15
Housing, Family 15
Housing, Student 16
Incomplete Grades, Fee for Removal 16
Incomplete Grades, Removal of 16
Independent Work 12
Instruction, Organization of 20

Leaves of Absence 19
Limited Registrants 16
Listeners 17
Loans, Educational 16

Major, Credits for 13
Marine University System 1
Motor Vehicles, Use of 1
Museum, University 9
Music Fees 60

Non-Resident Fees 15
Number of System Courses 20

Official Directory 2
Organization of Instruction 20
Orientation Week 11

Placement Center 17
Press and Broadcasting Research, Bureau of 16
Professional Schools 13, 20
Public Service, Division of 10

Quality of Work 13

Railway Fare Refund 17
Refunds, Fees 16
Registration 11
Registration Fee 11
Regulation and General Regulations 11
Removal of Incomplete, Time Limit 15
Removal of Incomplete Fee 16
Repetition of Course 14
Required Courses 14
Registered, Group 14
Requirements for Admission 10
Requirements for Graduation 13
Requirements of Particular Curricula 12
Residence Halls 11
Residence Requirements 13

Scholarship Service, College 18
Scholarships and Prizes 18
Scholarship Requirements, Minimum 12
School of Business Administration 20, 24
School of Education 20, 24
School of Fine Arts 13, 20
School of Forestry 20, 41
School of Journalism 20, 52
School of Law 20, 53
School of Pharmacy 20, 61
School of Religion, Affiliated 20, 70
Secondary Teaching Certificate 34
Senior Examinations for Honors 15
Special Examination Fee 16
Special Students, Admission of 11
Specialization 14
Specialists and Hearing Clinic 17
Standards of Student Conduct 18
Student Contracts and Obligations 18
Student Fees 15
Student Housing 18
Student Marriages 18
Student Organizations 19
Status of Student 19
Contractual Obligations 19
Student Services 17
Student Standards 18
Summer Session 15
Support and Endowment 9

Teaching Certificate 34
Teaching Majors and Minors 18
Transcripts, Fee for 16
Transfer Students, Admission of 11

Unclassified Students 11
University of Montana 2, 9

Veteran Registration 12
"A student's leisure should complement his education."

UM PRESIDENT ROBERT T. PANTZER