University of Montana
ScholarWorks at University of Montana

University of Montana Course Catalogs, 1895-2017

1-1-1970

1970-1971 Course Catalog

University of Montana–Missoula. Office of the Registrar

Follow this and additional works at: https://scholarworks.umt.edu/coursecatalogs_asc

Let us know how access to this document benefits you.

Recommended Citation
https://scholarworks.umt.edu/coursecatalogs_asc/6

This Catalog is brought to you for free and open access by the University of Montana Publications at ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana Course Catalogs, 1895-2017 by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
for further information  
write to:

admissions  
Director of Admissions  
Main Hall 207

financial aid  
Director of Financial Aid  
Main Hall 209

housing  
Director of Residence Halls  
Elrod Hall  
or  
Manager of Family Housing  
Elkhorn Court

summer session  
Director of Summer Session  
Field House 219

general information  
Information Services  
Main Hall 302

all addresses are followed by  
University of Montana  
Missoula, Montana 59801
montana state board of education...

local executive board...

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

administrative officers...

Robert T. Parker, LL.B. President
WILLIAM F. CHAP, Ed.D. Academic Vice President
Norman E. Taylor, Ph.D. Vice President for Research
George L. Mitchell, LL.B. Administrative Vice President
Calvin L. Murphy, B.A. Business Manager
W. A. Oakes, Ph.D. Dean, School of Business Administration
Warren J. Beene, 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
J. Francis Rummer, Ph.D. Dean, School of Education
Richard A. Solberg, Ph.D. Dean, College of Arts and Sciences
John M. Stewart, Ph.D. Dean, School of Law
Robert L. Van Orslo, Ph.D. Dean, School of Pharmacy
Earle C. Hoerl, Ph.D. Dean of Library Services
Walter C. Schwank, Ph.D. Director of Summer Session
Robert R. Feroe, Ph.D. Dean of Students
Maureen Clow, Ph.D. Associate Dean of Students
Robert B. Conant, M.D. Director of Health Service
Robert E. Gorman, Ed.D. Director of Counseling Center
Charles E. Hoog, M.A. Director of Placement
Wayne C. Woolson, M.A. Registrar
Jack L. Herrick, M.A. Director of Admissions
Robert E. Olsen, B.S. (revised 2-17-70) Director of Food Services
James A. Brown, M.S. Coordinator of Student Facilities
Keith T. Larson, B.A. Manager of Family Housing
Thomas J. Collins, B.S. Director of University of Montana Foundation: Director of Public Services
John L. Delano, B.A. Executive Director, Alumni Association
James F. Hall, Ed.D. Coordinator, Extension and Continuing Education
James A. Parkes, B.S. Director of Physical Plant
Lawrence D. Stuart, B.A. Director of Information Services
Jack Swarthout, B.A. Director of Athletics

table of contents...

About the University 2
Facilities 2
Admission 3
Degrees and Majors 3
Academic Requirements 6
Requirements for Graduation 8
Summer Session 8
The Graduate School 9
Financial Obligation 9
Student Organizations 10
Student Services 10
Standards of Student Conduct 12
Organization of Instruction 13
Course Numbering System 14
Course Directory 14
Courses of Instruction 14
Faculty Directory 14
Index 88

calendar 1970-1971...

1970

AUTUMN QUARTER
September 21, Monday Orientation
September 22-23, Tuesday and Wednesday Registration
September 24, Thursday Instruction begins
November 11, Wednesday Veterans' Day, a holiday
November 25-27, Monday through Friday Thanksgiving holiday
December 14-18, Monday through Friday Winter Quarter ends
December 18, 5:20 p.m. Christmas recess begins

1971

WINTER QUARTER
January 4, Monday Registration
January 5, Tuesday Instruction begins
February 12, Friday Lincoln's Birthday, a holiday
February 15, Monday Washington's Birthday, a holiday
February 17, Wednesday Charter Day
March 18-20, Tuesday through Saturday Examinations
March 20, 5:20 p.m. Winter Quarter ends Spring recess begins

SPRING QUARTER
March 29, Monday Registration
March 30, Tuesday Instruction begins
May 31, Monday Memorial Day, a holiday
June 8-12, Tuesday through Saturday Examinations
June 12, 5:20 p.m. Spring Quarter ends
June 13, Sunday Commencement

SUMMER SESSION
June 21, Monday (6 weeks and First Half-Session) Instruction begins
July 4, Sunday and Monday Independence Day holiday
July 21, Wednesday First Half-Session ends
July 22, Thursday Second Half-Session begins
August 20, Friday, 5:20 p.m. Summer Session ends

AUTUMN QUARTER
September 20, Monday Orientation
September 21-22, Tuesday and Wednesday Registration
September 23, Thursday Instruction begins
October 11, Monday Columbus Day, a holiday
October 25, Monday Veterans' Day, a holiday
November 22-26, Monday through Friday Thanksgiving holiday
December 13-17, Monday through Friday Examinations
December 17, 5:20 p.m. Autumn Quarter ends Christmas recess begins

1970-1971 Calendar

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>M</td>
<td>T</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>29</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>January 1971</th>
<th>February 1971</th>
<th>March 1971</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>M</td>
<td>T</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>April 1971</th>
<th>May 1971</th>
<th>June 1971</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>M</td>
<td>T</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>

UNIVERSITY OF MONTANA BULLETIN

Number 535 May 1970

Published four times yearly, February, March, April and May by the University of Montana, Missoula, Montana 59801. Second class postage paid at Missoula, Montana.
about the university . . .

FOUN丁DING AND NAME . . . The University of Montana at Missoula was chartered 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, 1985, it again became the University of Montana.

LOCATION . . . Missoula, a city of approximately 50,000 persons, is located at an elevation of 3,205 feet on the western slope of the Rocky Mountains at the confluence of five valleys: 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 organization: the American Association of Collegiate Schools of Business, the American Chemical Society, the National Council for 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 biennium 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 tax-exempt trust, separately chartered and managed to receive, manage and distribute private contributions for University purposes.

CONTROL AND ADMINISTRATION . . . Subject to the Montana 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.

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 and to impose or increase fees similarly is 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 already are enrolled in the University.

FUNCTIONS AND GOALS . . . The University of Montana is responsible for providing: (1) 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 maintaining (5) a vigorous program of service as part of its responsibility to the state and the nation.

The University's program of undergraduate education makes available to the student a fund of knowledge pertaining to the past 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. It fosters these goals 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 languages, (c) provides opportunity for development of professional and technical competence in some field of endeavor, (d) reveals man's great insights and discoveries of the past and stimulates the individual to seek new insights and discoveries, (e) encourages 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.

facilities . . .

PROPERTY . . . The main University campus spreads over 116 acres on the east side of Missoula. There are an additional 624 acres on Mt. Sentinel. A few blocks south of the main campus is a 154-acre site with 394 married student housing units and a nine-hole golf course. Approximately six miles southwest of the main campus in Missoula where the University owns a parcel of 295 acres. Two major UM facilities are located outside Missoula: 20,850 acres in Lubrecht Experimental Forest, 35 miles northeast of Missoula, and 167 acres on Flathead Lake including the Biological Station, 90 miles north of Missoula at Yellow Bay.

LIBRARIES . . . Campus libraries have over 500,000 volumes in their collections, including extensive holdings of periodicals, maps, microtext, government publications and a special Northwest History collection. The library is a regional depository for United States Government documents and for the Army Map Service.

THE UNIVERSITY BIOLOGICAL STATION is located at Yellow Bay on the east shore of Flathead Lake, 90 miles north of Missoula. The University controls 160 acres, including two islands, and has permission to carry on investigation on Wild Horse Island, 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 various maintenance buildings. These facilities and the new Morton J. Elrod Research Laboratory, dedicated in August 1967, enable a year-round program of research and teaching.

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, University of Montana, Missoula, Montana 59801.

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 related directly to the state.

Publications include the Montana Business Quarterly and various monographs. Contributors include members of the bureau staff, the faculty, and on occasion, students.

THE FOREST AND CONSERVATION EXPERIMENT STATION of the School of Forestry 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 purposes of the station are:
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, the Wildlife Management Institute of Washington, D.C., and the University of Montana.

The purpose of the Cooperative Wildlife Research Unit is 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 people of the State of Montana. At the same time, this research work carried 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 leads to a Master of Science in Wildlife Biology, which ordinarily requires two years of work beyond the bachelor's degree.

For application forms and information related to graduate work in wildlife, write to Graduate Studies in Wildlife Biology.

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.

EXTENSION, CONTINUING EDUCATION AND PUBLIC SERVICE. These agencies, working on or off campus with the faculty, administrative personnel of the University and community organizations, provide various programs, including surveys, institutes, forums, short courses, conferences, training programs and community programs.

THE DIVISION OF EDUCATIONAL RESEARCH AND SERVICES provides special services in educational planning to school districts requesting assistance. The planning center provides new ideas to school districts, helps school boards interpret long-range plans to the community, coordinates the efforts of specialists and the community, develops bond issue programs and renders any other assistance to the local school districts relevant to their school planning needs. By participating in these community services, graduate students gain training and experience in educational research.

THE STELLA DUNCAN MEMORIAL INSTITUTE, housed in the Health Science Building, is supported by the National Institutes of Health of the Public Health Service and the Stella Duncan Memorial Fund for research in respiratory diseases. The Institute has extensive research facilities—three fully equipped laboratories, hot room, cold room, two animal rooms and a well-equipped isolation room.

THE INSTITUTE FOR SOCIAL SCIENCE RESEARCH offers facilities and personnel for basic and applied research in all areas of human behavior, consultation and other professional services by qualified social scientists, availability to provide research and professional services anywhere and for any required duration, assistance in the preparation of all types of community surveys, evaluation or organizational programs and preparation of evaluation reports.

admission . . .

GENERAL REQUIREMENTS . . . 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." Race, color and creed are not relevant to admission.

FRESHMEN REQUIREMENTS . . .

RESIDENT: Graduates of any fully accredited high school who are legal residents of Montana are admitted to regular standing. The completion of a high school or preparatory course of four years is required for regular admission. The applicant must have completed at least three years of English and one year of American history and government to be eligible for consideration.

NONRESIDENT: Applicants must be in the upper 50 per cent of their high school graduating class to be eligible for consideration for admission. If the high school does not rank its students, the results of the American College Test will be used to establish the equivalent level of competency.

ADMISSION BY EXAMINATION: A person not a graduate of an accredited high school may be admitted by passing the General Educational Development Tests and the supplemental tests in American history and government. Information regarding requirements and test centers available in Montana may be obtained from the Office of the State Superintendent of Public Instruction in Helena.

EARLY ADMISSION: A limited number of high school students who have completed their junior year may be granted early admission for graduate study. For early admission an applicant must present a transcript of his high school record indicating superior achievement and a letter from the high school principal recommending early admission.
TRANSFER REQUIREMENTS ...

RESIDENT: A legal resident of Montana who wishes to transfer to the University of Montana must meet the general requirements, be eligible to return to the school from which he is transferring, and have a record which would assure his admission to or reinstatement at the University of Montana had he been one of its students.

NONRESIDENT: A nonresident applicant wishing to transfer to the University of Montana must meet the general admission requirements, be eligible to return to the school from which he is transferring, and present transcripts verifying a 2.0 (C) average for all college and university work attempted to be eligible for consideration for admission.

SPECIAL STUDENTS . . . An applicant 21 years or older who does not meet the minimum requirements for regular admission as a freshman or an applicant who does not wish to work toward a degree may apply for consideration for admission as a special student. Examples of applicants generally considered for admission as special students are: (1) students who have earned a bachelor's degree and wish to take refresher courses or courses for their personal benefit, and (2) mature students who have been granted permission to enroll for selected courses without reference to the requirements of any prescribed course of study.

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 completed.

APPLICATION FEE . . . A nonrefundable application fee of $10.00 (check or money order, NOT CASH) must be sent with the application for undergraduate or special admission. Applications with a banking statement as proof of ability to pay this fee. No action will be taken on an application until this fee has been received in the Office of Admissions.

HOW TO APPLY FOR ADMISSION . . .

FRESHMEN APPLICANTS:

1. Montana residents may obtain the application for admission from their high school principal or guidance counselor. Nonresidents applicants may obtain a copy of the application for admission by writing to the Director of Admissions, University of Montana, Missoula, Montana 59801.

2. The completed application, with the exception of the high school transcript and the Counseling Information and Personal Characteristics form, should be sent directly to the Director of Admissions. The transcript form and the Counseling Information and Personal Characteristics form should be given to your high school principal or guidance counselor for completion.

3. The $10.00 application fee should be attached to the application form sent by the student.

TRANSFER APPLICANTS:

1. A transfer applicant may obtain an application for admission by writing to the Director of Admissions, University of Montana, Missoula, Montana 59801.

2. The applicant should complete all of the application, with the exception of the high school transcript form and the Transfer Students Confidential Check Sheet. The completed application should be sent to the Director of Admissions.

3. The high school transcript form should be sent to the high school from which you graduated. This is required even though your high school graduation may be listed on your college transcript.

4. The Transfer Students Confidential Check Sheet should be sent to the Dean of Students at the last institution attended.

5. Request an official copy of your transcript from each college or university attended. Although an applicant's record from several institutions may be summarized on one transcript, an application will not be considered until an official transcript from each institution has been received. These are required even though no credit may have been earned.

6. The $10.00 application fee should be attached to the application form. Applicants who have earned a bachelor's degree are not required to submit this fee.

WHEN TO APPLY FOR ADMISSION . . .

FRESHMEN APPLICANTS: Freshmen applicants may apply for admission anytime if they have completed their junior year in high school. Resident applicants are not required to submit an official copy of their high school record until they have graduated. Nonresident applicants must submit an official copy of their high school record before a decision will be made regarding their admission.

TRANSFER APPLICANTS: Transfer applicants should apply for admission during the last term they plan to attend their present school, providing this date is within six months of the time they plan to enroll at the University of Montana.

APPLICATION DEADLINES: Complete credentials should be on file in the Office of Admissions by September 1 if the applicant wishes to be admitted for the Spring Quarter. Applicants for the Summer Quarter or Winter Quarter should have their credentials on file at least one month prior to registration for the appropriate quarter.

NOTIFICATION OF ADMISSION DECISION . . .

Freshmen applicants will be notified of their admission or refusal approximately two weeks after the completed credentials have been received by the Office of Admissions. Transfer applicants will also be notified of their admission or refusal approximately two weeks after their completed credentials have been received in the Office of Admissions. If there is some question regarding the acceptability of some credit this decision may be delayed.

TRANSFER OF CREDIT . . . In general, transfer of credits from other accredited collegiate institutions will be accepted insofar as they meet the degree, grade, and residence requirements of the student's chosen program of study at this institution. Credit is given for the courses in which a grade of A, B, C, or D has been earned. An evaluation of credits which are being accepted by the University of Montana is sent to the applicant shortly after the notification of acceptance.

ADVANCED PLACEMENT . . . Advanced placement with University credit may be allowed for college level high school courses, agreed upon in advance by the High School and the University. Validation for credit will be determined by the University from scores earned by the student on University-constructed examinations or on the advanced placement tests of the College Entrance Examination Board.

TESTING . . . All new freshmen, and transfer students with less than a year in college, are required to take the AMERICAN COLLEGE TESTING PROGRAM examination preferably in October or December of the year before entrance into the university. The test also is offered in February, April and July. Complete information and registration forms are sent to all high school counselors and principals well in advance of each test date. If information is not available, write to Director of Admissions, University of Montana, Missoula, Montana 59801.

Examination results are used for general advising purposes, to assist in identifying students with high college potential who may be seeking scholarships, for placement in English and as part of the information used to determine nonresident 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 an $8 registration fee and take it on campus before they register.

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:
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 59801.

HEALTH EXAMINATION . . . Every applicant who is admitted to the University of Montana is required to submit a Health Examination form before he will be permitted to register. This form is sent to the applicant along with the letter of acceptance and should be completed by the applicant's physician as soon as possible. The completed form should be mailed directly to the University Health Service.

registration . . .

Registrations are during Orientation Week, in advance of, and at the beginning of other quarters. A student's registration is subject to the approval of an appointed faculty adviser until choice of major field of study has been made. After the choice, the head (or his delegate) of the department or school in which the curriculum is offered becomes the adviser. Students may not register after one week of classes. Registration is not complete until all fee charges are paid and registration cards are checked in to the Registrar's Office.

ORIENTATION . . . Part of the first week of autumn quarter is set aside for orientation and registration. The program includes: (1) acquainting the student with the campus, the classroom buildings and residence halls; (2) explaining the University program—the types of instruction offered and the careers for which a student may prepare at the University; (3) placement tests; (4) social gatherings at which students become acquainted with fellow classmen, students of other classes and members of the faculty; and (5) official registration in the University, with the assistance of a member of the faculty in the selection of courses.

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.

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

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 adviser, 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 obtaining 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 adviser. An "F" will be assigned for a withdrawal after the third week unless a petition has been granted. All exceptional requests are reviewed by the faculty Graduation Committee. The committee's decision is final. Advisers 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. Withdrawals of students on probation must be approved by the academic standards committee before grades of W will be assigned. After the ninth week, the student who withdraws receives a grade: an incomplete, an "F" or a completed grade with credit.

UNIVERSITY EMPLOYEES' REGISTRATION . . . With approval of the school dean or department 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 of bachelor of arts and bachelor of science typically are 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 suitable emphasis on knowledge and skills appropriate to the profession concerned 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  Italian
Astronomy  Liberal Arts
Biology  Mathematics
Botany  Microbiology
Chemistry  Philosophy
Classics  Physics
Greek (No Major)  Political Science
Latin  Political Science-Economics
Economics  Political Science-History
Economics-Political Science  Pre-Medical Sciences
Economics-Sociology  Psychology
English  Recreation
French  Russian
Geography  Social Welfare
Geology  Sociology
German  Sociology-Economics
Health and Physical Education  Spanish
History  Speech Communication
History-Political Science  Speech Pathology and
Home Economics  Audiology

Bachelor of Science, with majors in Chemistry, Computer Science, Economics, Health and Physical Education, Recreation and Home Economics

Bachelor of Science in Dental Hygiene, Medical Technology, Physical Therapy and Wildlife Biology
PROFESSIONAL SCHOOLS
Bachelor of Arts in Business Administration
Bachelor of Science in Business Administration
Bachelor of Arts in Education
Bachelor of Arts, from the School of Fine Arts, with majors in Art, Drama or Music
Bachelor of Fine Arts with major in Art or Drama
Bachelor of Music, from the School of Fine Arts, with majors in Applied Music and Theory or Composition
Bachelor of Music Education, from the School of Fine Arts, with majors in Elementary Music, Choral Conducting, Instrumental Conducting, Choral and Instrumental Conducting and Music Administration
Bachelor of Science in Forestry
Bachelor of Science in Resource Conservation
Bachelor of Science in Journalism
Bachelor of Science in Pharmacy
Bachelor of Arts in Radio-Television

ADVANCED PROFESSIONAL DEGREES
Bachelor of Laws
Juris Doctor

academic requirements . . .

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.

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

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 physical education courses and courses which carry no credit, such as English 001 and Math 001. Courses which carry no credit 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 or placed on probation any quarter if his record is very unsatisfactory.

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.

<table>
<thead>
<tr>
<th>Number of Credits Attempted</th>
<th>Minimum Cumulative GPA Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-44</td>
<td>1.6</td>
</tr>
<tr>
<td>45-89</td>
<td>1.75</td>
</tr>
<tr>
<td>90-134</td>
<td>1.9</td>
</tr>
<tr>
<td>135 or more</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Students 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 on probation are urged to check in at the Counseling and Testing Center for possible assistance.

A student on scholastic probation will be dropped at the end of the probationary quarter if his cumulative GPA fails to meet minimum standards, except that an average of 2.0 or better for work taken during a probationary quarter will allow such student to continue on probation.

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.

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 canceled 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 fields of study before entering the junior year at the University except in their field of specialization.

A student who has a 2.0 grade average in all courses for which he has registered and an entering freshman must have a scholastic record equivalent to a 2.0 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 per credit hour is charged. Such examinations are available only to regularly enrolled students.

GRADES . . . The class work of the student will be rated as follows: A—work of the best grade; B—work better than average; C—work average; D—work below average, but barely passing; F—failure; X—not pass (no credit allowed, not counted in grade-point average); P—pass without defining the grade, credit applies toward graduation; I—incomplete, given if work in a course has not been completed and there is sufficient reason for this, will be changed to an F if the work is not completed during the student's next quarter of attendance; N—work on the course may be continued in subsequent quarters (when work is completed, a final grade is assigned which applies to all quarters of the course); W—withdrawal from course.

Three systems of grading are used: (1) A through F—traditional letter grades; (2) Pass/Fail—applies only to (a) non-credit courses and (b) certain seminars and other courses in the 500-600 series stressing independent work, which are designated by the department or school and announced in advance. The P grade may apply to all registrants in the course; (3) Pass/Not Pass—in order to encourage students to venture into courses where they might otherwise hesitate because of uncertainty regarding their aptitude or preparation they may enroll in certain courses on a Pass/Not Pass basis. Any student may enroll on a Pass/Not Pass basis in Health, Physical Education and Recreation 100 courses. A freshman or sophomore with a grade-point average of 2.0 or better may, in addition, take no more than one resident undergraduate course per quarter on a Pass/Not Pass basis. Juniors and seniors may take more than one Pass/Not Pass course per quarter. No more than sixty Pass/Not Pass credits can be counted toward graduation.
privilege does not extend to courses required for the student's major, except at the discretion of the department concerned or to courses excluded by the instructor or the department concerned. The grades of Pass or Not Pass are not formally defined in terms of their relationship to the traditional grades of A, B, C, D, or F; a "P" is given for work considered to be passing and therefore deserving credit, and an "X" for work not passed. All undergraduate courses offered on a Pass/Not Pass basis will also be offered on a letter-grade (A-F) basis. Courses taken on the Pass/Not Pass option will not be computed in a student's grade-point average, but credits earned in courses graded Pass constitute degree credit up to the sixty-credit maximum. All courses taken and the grades received under the Pass/Not Pass option will be recorded in the student’s permanent record. Election of the Pass/Not Pass option must be indicated at registration time on the official program request card. After registration, but prior to the end of the sixth week of instruction, an undergraduate student may, upon request to the Registrar, change a Pass/Not Pass enrollment to an enrollment under the A-F grade system, but he may not do the reverse. Courses offered for a letter grade (A-F) only will be indicated on the Schedule of Classes.

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; and 1 grade point for each credit of D.

The cumulative grade-point average is computed by dividing total grade points earned by the total number of hours undertaken, excluding non-credit courses, courses assigned W, P, X, I, or N and courses numbered under 100.

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.

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

(1) Physical education, 3 quarters (3 credits), required of all students unless excused for cause. Discharged veterans and students 27 or more years of age are excused from this requirement. These 3 credits must be completed during the first two years of attendance.

(2) English composition may be required by schools or departments for any or all of their majors. English 100 must be taken during the freshman year. English 300 and 450, if required, may be taken during the second and third years, but in no case will any student be allowed to take both English 300 and English 450 in the same year.

Placement in English is determined from the ACT examination. Those who fail to demonstrate an acceptable college reading examination will be given on the seventh Saturday of the fall term. The reading examination at the level of attainment expected of a student who has passed at least five quarters of a foreign language will be offered to meet foreign language requirements. If an ACT examination is not taken, or if the foreign language department does not accept the student's foreign language learning for credit, a reading examination may be administered by the Foreign Language Department.

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 249.

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

FOREIGN LANGUAGE REQUIREMENT . . . For the degree of bachelor of arts from the College of Arts and Sciences, bachelor of arts from 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. Particular languages (e.g. French, German) may be specified by certain departments or schools. Provided the languages involved are acceptable to the student's major department, this requirement may be met in any of the following ways: (1) by high school transcripts showing that the student has completed four years of study in one language or two years in each of two languages; (2) by taking, in the University, five quarters of one language or three quarters in each of two languages; (3) by a combination of high school and University foreign language study acceptable to the foreign language department as the equivalent of (2) above; and (4) in exceptional cases, by passing a reading examination at the level of attainment expected of a student who has passed at least five quarters of a foreign language at this University. Undergraduate reading examinations are given and certified by the foreign language department. Arrangements for such examinations must be made by the end of the fourth week of any quarter. The examination will be given on the seventh Saturday of the quarter.

PLACEMENT IN 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.

RESIDENCE REQUIREMENTS . . . Students who transfer credits earned elsewhere and seek a degree from the University must, in addition to meeting other requirements, earn at least 24 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 residence at the University. Extension credits earned on campus count toward residence requirements for undergraduate degrees, but correspondence credits do not.
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 the catalog in effect at the time of readmission. 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 home department chairman, graduate under a later catalog than that under which he entered.

CANDIDACY FOR A DEGREE... Students at 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 paragraphs. Students who are candidates for degrees or certificates must file formal applications with the registrar on the date specified on Official University Notices. Applications must be filed at least one quarter preceding the quarter in which requirements are to be completed.

CREDITS REQUIRED FOR A DEGREE... Normally credits assigned to a course are equated in the following way: one credit for each 50 minutes of lecture with two hours of preparation for the lecture expected of the student. Credit granted for laboratory work is normally one credit hour per two or three hours laboratory session. A total of 195 credits, including 3 credits of required physical education and excluding all other credits in basic physical education, basic ROTC, Mathematics 001 and English 001 is necessary in all courses for graduation with a bachelor's degree except that more are required in art, law and pharmacy. 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 to the law school is made on the basis of grades earned at the University of Montana as well as on his entire record. Only students majoring in business administration or those taking courses in business administration are allowed to present more than 15 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 toward graduation.

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 additional oral or written examinations may be given. Examinations are given the last quarter of senior residence and are arranged by 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 senior year of 3.00 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 3.25 or higher, and in addition, must pass an honors examination (written or oral) administered by the department or school. 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 4 1/2 week half-sessions and a concurrent nine-week session. Students may attend either half-session or the full nine-week session. The 1971 summer session will open June 21 and close August 20; the first half-session, June 21 to July 21; the second half-session, July 22 to August 20.

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 course, 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, journalism, pharmacy and fine arts. Both graduate and undergraduate work are 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 the Campus.

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

Detailed information on requirements for particular degrees, a copy of the Graduate School Catalog, and application forms for admission to graduate work may be secured by writing to the dean of the school or the department chairman involved. Send complete return address, including zip code number.

financial obligations . . .

PAYMENT OF FEES by check in exact amount of bill is preferable. Personal checks are not cashed except in payment of University bills. Foreign checks in U.S. Funds are subject to bank clearing charges. Currency or checks that are not in U.S. funds should be exchanged at a local bank before payment is made to the University.

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 $66 to $114 a month depending on the size and type of apartment.

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

<table>
<thead>
<tr>
<th>Montana Resident</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees*</td>
<td>$138.00</td>
<td>$138.00</td>
<td>$138.00</td>
<td>$414.00</td>
</tr>
<tr>
<td>Res. Halls Board</td>
<td>218.00</td>
<td>194.00</td>
<td>194.00</td>
<td>600.00</td>
</tr>
<tr>
<td>Room (Double)</td>
<td>98.00</td>
<td>98.00</td>
<td>98.00</td>
<td>294.00</td>
</tr>
<tr>
<td>Books, Supplies, Est.</td>
<td>50.00</td>
<td>50.00</td>
<td>50.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Total Mont. Res.</td>
<td>504.00</td>
<td>490.00</td>
<td>480.00</td>
<td>1,484.00</td>
</tr>
</tbody>
</table>

Students not residents of Montana add:

<table>
<thead>
<tr>
<th>Students not residents</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>of Montana add:</td>
<td>222.50</td>
<td>222.50</td>
<td>222.50</td>
<td>667.50</td>
</tr>
<tr>
<td>Total non-res.</td>
<td>726.50</td>
<td>702.50</td>
<td>702.50</td>
<td>2,131.50</td>
</tr>
</tbody>
</table>

*Non-refundable admissions application fee not included (see admissions).

NON-RESIDENT STUDENTS are those minors whose parents are non-residents and others who, though legally entitled to establish their own residence, have not complied with Montana law to do so. For more information, prospective students write to the director of admissions and others to the registrar.

STUDENT FEES . . . The following is a detailed schedule of quarterly fees authorized for the University year 1970-71 in all schools and departments except where otherwise specified. For the law school, which is on a semester plan, the semester fees will be 50% above the quarterly fees. Fees are subject to modification by action of the State Board of Regents.

Registration is not complete until all fee charges are paid and registration cards turned in at the Registrars Office.

The University offers no deferred payment plans. Students are expected to make financial arrangements prior to registration. The Financial Aid Office will try to help you solve your financial problems. Students should be financially able to attend at least one quarter without assistance. New students with cash scholarships, grants and merit of awards must notify the Scholarship Officer of the University well in advance of registration week if they wish to use these funds during the Autumn quarter.

ALL STUDENTS REGISTERED FOR SEVEN OR MORE CREDITS

<table>
<thead>
<tr>
<th>Registration</th>
<th>$ 15.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Many honor scholarships entitle the holder to a waiver of the registration and incidental fees)</td>
<td></td>
</tr>
<tr>
<td>Incidental (for laboratory supplies in all courses, diploma, etc.)</td>
<td>60.00</td>
</tr>
<tr>
<td>Building</td>
<td>20.00</td>
</tr>
<tr>
<td>Student Union</td>
<td>10.00</td>
</tr>
<tr>
<td>University Center Operating</td>
<td>5.00</td>
</tr>
<tr>
<td>Student Activity</td>
<td>15.00</td>
</tr>
</tbody>
</table>

For support of activities sponsored by the Associated Students of the University of Montana.

<table>
<thead>
<tr>
<th>Health Service</th>
<th>$13.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Required of all students enrolled for class work)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ORGANIZATION—9</th>
</tr>
</thead>
<tbody>
<tr>
<td>$138.00</td>
</tr>
</tbody>
</table>

| oMotor Vehicle Registration Fee (drivers only) | 9.00 |
| Total fall quarter | 147.00 |

A motor vehicle registration fee of $3 per quarter is paid in full each year for the quarters remaining when the student first enrolls during the school year (fall, $9; winter, $6; spring, $3). Refunds are made for quarters paid for, but not attended.

Non-residents (out-of-state) pay, in addition to the fees listed above, per quarter ($200.00 plus $22.50 building fee) $222.50.

If registered for less than 7 credits, the non-resident fee is based on a charge of $100.00 plus an $11.25 non-resident building fee.

Refer to the forestry and music sections for information on additional forestry and music fees.

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.

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.

LIMITED REGISTRANTS (students registered for less than seven credits): registration fee $15; incidental fee $30; building fee $10; Student Union $5; University Center Operating $2.50; Health Service $13; student activity $15 (optional). Non-residents pay (in addition to other fees stated here) $100, plus $11.25 additional non-resident building fee. Students who are enrolled as regular students who wish to drop to limited registrants should 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 per quarter. The student activity fee is optional to students who have a B.S. or B.A. degree.

TERMINAL GRADUATE STUDENT FEE . . . A $25 per quarter fee is charged graduate students, both resident and non-resident, who are not enrolled in courses but whose activities involve the use of University resources.
### FEES FOR SPECIAL PURPOSES...

**LATE REGISTRATION:** The charges are $10 for the first day late, $2 for each day of instruction thereafter, to a maximum of $24, 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. These fees are payable by students who register during the prescribed registration period except for payment of fees.

**DISHONORED CHECKS:** "A service charge of $2.50 will be assessed each time a check is returned; this amount will be charged to the individual's account, and he will be so notified. If it is not cleared within five days, a second notice will be sent and appropriate administrative action will be taken."

"Any check tendered in payment of registration fees and returned by the bank may result in postponement of the student's registration, and the student will then be subject to the late registration fee."

**CHANGE OF ENROLLMENT:** Effective the fourth day of classes, $2.

**SPECIAL EXAMINATION:** For each special examination, $2; maximum, $5 for any one quarter.

**REMOVAL OF INCOMPLETE:** $2 per course.

**TRANSCRIPT OF RECORD:** $1 each after the first which is free of charge.

**CREDIT BY EXAMINATION:** A fee of $3 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 registration fee and the $10 admission application 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.

The Remedial English, Remedial Math, Forestry Fee and Music Building Fee are refunded at 50% during the first week of instruction. No refunds are given thereafter.

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.

<table>
<thead>
<tr>
<th><strong>REGULAR STUDENTS</strong></th>
<th><strong>Week of Instruction</strong></th>
<th><strong>First</strong></th>
<th><strong>Second</strong></th>
<th><strong>Third</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Incidental</td>
<td></td>
<td>75%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Building</td>
<td></td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Student Union</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>University Center Operating</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Student Activity</td>
<td></td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Health Service</td>
<td></td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

**Non-Resident Tuition**

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

80% 60% 40%

After 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.

<table>
<thead>
<tr>
<th><strong>REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS</strong></th>
<th><strong>Week of Instruction</strong></th>
<th><strong>First</strong></th>
<th><strong>Second</strong></th>
<th><strong>Third</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Incidental</td>
<td></td>
<td>40%</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>Building</td>
<td></td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Student Union</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>University Center Operating</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Student Activity</td>
<td></td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Health Service</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Non-Resident Tuition**

40% 30% 20%

### student services...

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 extracurricular 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.

### 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, an organization is not entitled to the use of space in campus buildings or the use of the name of the University.

The University of Montana is dedicated to the principle that its students have the right to choose members for their various groups without regard to race, creed, color or national origin, even though such selections may be in variance with the policies of national organizations with which the groups may be affiliated. The University, therefore, will stand firmly behind any group whose right to adhere to this principle is questioned.

### OBLIGATIONS OF STUDENT ORGANIZATIONS...

The State Board of Education has made the following rule:

"No contract shall be entered into and no financial obligations assumed by any student organization without the approval of the President or some member of the faculty designated by him."

### 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 student. 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.

### UNIVERSITY CENTER...

The University Center (Student Union), houses a significantly expanding extracurricular-activities program for University students and faculty. The building includes student legislative chambers, offices, lounges, work areas, music listening rooms, hobbies and craft areas, art gallery, conference areas, ballroom, coffee shops, bowling lanes, billiard and ping pong areas and food services. In addition, students have access to a nine-hole University golf course and a large modern swimming pool.

### student organizations...

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

The Counseling and Testing Center has a further responsibility to: (1) administer, report and aid in the interpretation of freshman placement 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 functions; and (4) assist advisers, on request, in working with students.

Services of the Counseling and Testing 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 examination, preventive medicine and medical treatment of acute diseases.

The services provided are comprehensive and include medical attendance 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 or between quarters. Therefore, it is strongly suggested that students enroll in 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 diseases. 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 a.m. to noon and 1:30 to 5 p.m.

A medical examination, tuberculin skin test (or chest X-ray) and immunizations are required of all entering students. These and the unforeseen costs arising from activities contrary to University regulations or due to use of alcohol or drugs 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 per day, and $100 may be applied to extras (medicine, X-ray and laboratory work). The Health Service Building also houses the State Mental Hygiene Clinic.

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 $3.50 per quarter for the autumn, winter and spring quarters and $5.00 for the summer, the student may live in residence halls only as space is, or becomes, available. Women between these ages who are living in residence halls will be held to the academic year contract if (1) they are required to live in residence during a quarter in which they became 21; (2) failed to exercise their option to move out at the beginning of the quarter during which they became 21; (3) failed to exercise their option to move out at the end of the quarter during which they became 21.

With the above exceptions, all students who contract to live in the residence halls (men's or women's) do so for the entire academic year or that portion of it for which they are enrolled.

RESIDENCE HALLS AND FOOD SERVICE... 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 canceled, notice in writing must be received by the manager of residence halls on or before September 22 for fall quarter, January 2 for winter quarter, and March 24 for spring quarter. Students who live in the residence halls are required to board at the Food Service. 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 Financial Aid Office.

Social life in the halls is encouraged through residence hall clubs and numerous activities. Adult and upper class 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.

Board is provided by the Food Service 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 must go up unless the services themselves are to be reduced to suffer in quality or quantity. New or additional services, when demanded, also require additional charges. Such charges are fixed from time to time, effective on the dates similarly specified.

FAMILY HOUSING... Married students may apply to the Family Housing Office for accommodations in modern, moderately priced apartment-type units located within walking distance of the main campus. Studio apartments, with one, two, three and four bedrooms 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 of the 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 membership is based on satisfactory scholarship accomplished in high school or the college previously attended. Eligibility for initiation 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.

FINANCIAL AID . . . The University participates in the College Scholarship Service (CSS) and the ACT Student Need Analysis Program, which assists in determining the student’s need for financial assistance. Undergraduate and graduate students are eligible for many kinds of financial aid, including (1) National and State—Educational Opportunity Grants, Guaranteed Loan Program, Fee Waivers, Law Enforcement Educational Program, National Defense Student Loans, College Work-Study Programs and Veterans Benefits; (2) General University—Scholarships, Loans, Awards and Prizes; (3) Specific University—programs under various schools and departments. Application deadlines for many of the programs are in March and April.

For more information or for copies of the complete listing of University Financial Aid, write to: FINANCIAL AID OFFICE, University of Montana, Missoula, Montana 59801. High school counselors have financial aid applications and detailed information.

standards of student conduct . . .

Misconduct for which students are subject to probation or suspension from the University falls in the following categories:

(1) Dishonesty, such as cheating, plagiarism, or knowingly furnishing false information to the University.

(2) Forgery, alteration, or misuse of University documents, records or identification.

(3) Obstruction or disruption of teaching, research, administration, disciplinary procedures, or other University activities or of other authorized activities on University premises. Such obstruction or disruption, whether involving individual or group conduct, and whether taking the form of force, trespass, seizure, occupation or obstruction of buildings, facilities or property, or of other conduct having such obstructive or disruptive effects, or the inciting of others to any conduct having such effects, is directly opposed to the maintenance of academic freedom and to the accomplishment of the mission of the University.

(4) Physical abuse of any person on University-owned or controlled property, or on the property of fraternities, sororities, or cooperative houses or at University sponsored or supervised functions, or conduct which threatens or endangers the health or safety of any such person.

(5) Theft of or damage to property of the University or to a member of the University community or campus visitor.

(6) Unauthorized entry or use or occupancy of University facilities.

(7) Violation of University policies, rules or regulations concerning student organizations, the use of University facilities, or the time, place and manner of meetings or demonstrations on University-owned or controlled property.

(8) Use, possession or distribution of dangerous drugs except as expressly permitted by law.

(a) Liquor: the use or possession of intoxicating liquor (including beer) in the buildings and on the grounds of the University or in residence halls and quarters of other University-approved living groups or at functions of University students or University organizations (including athletic events) is forbidden. Furthermore, University students are expected to abide by state and federal laws in the use or possession of intoxicating liquor or drugs.

(b) Drugs: use, sale or possession of various drugs including opium, heroin, cannabis, marijuana, Indian hemp, peyote, mescaline, LSD, stimulants and depressants are made illegal under both federal and state laws. The punishment for violating these laws is very severe with conviction often resulting in long-term imprisonment. This is the law. Every student should be fully aware of the risks involved in violating the drug laws.

(9) Violation of University regulations governing students who live in University-owned or controlled property, or in fraternities, sororities, and cooperative houses.

(10) Disorderly conduct or lewd, indecent, or obscene conduct or expression on University-owned or controlled property, or on the property of fraternities, sororities, and cooperative houses, or at University sponsored or supervised functions.

(11) Failure to comply with directions of University officials acting in the performance of their duties.

(12) 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 assemblage and demonstration which does not interfere with the normal operation of the University.” Demonstrations which do not involve conduct beyond the scope of constitutionally-protected rights of free speech and assembly are permissible. However, conduct which is otherwise improper cannot be justified merely because it occurs in the context of a demonstration. Demonstrations which involve disorderly conduct, physical abuse of any person, conduct which obstructs or disrupts authorized activities of others upon the campus, conduct which involves use of University facilities, or failure to comply with directions of University officials, or conduct which otherwise goes beyond constitutionally-protected rights and is a violation of any law, ordinance, or University rule, regulation or policy, will not be permitted. Students will be charged with misconduct for any individual misconduct committed by them in the course of a demonstration.

(13) Unpaid bills: individual students who owe bills to the University for fees, fines, board and room in the residence halls and other charges are not permitted to register for the succeeding quarter, secure transcript of record or obtain diploma 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.

(14) 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. (See Student Fees)

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, all students would be adequately covered by insurance (liability, property damage, medical payments, etc.)

(15) 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 times of application and issuance of the marriage license; and (c) a blood test for both parties.

Persons residing in 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.

(16) Right of appeal: students who for disciplinary reasons have been suspended 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 dean of students for advice.

(Note: A new judicial system is under consideration by faculty, students and administration and may go into effect during the 1970-71 academic year.)

ABSENCE 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 students' instructors for their signatures 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 this is given, the staff member 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 compelled 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.

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

Anthropology Biology Botany Chemistry Computer Science Dental Hygiene Economics English
Foreign Languages Classics Greek (no major) Latin French German Italian Portuguese (no major) Russian Spanish Geography Geology Health, Physical Education and Recreation History

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

Accounting Business Education Finance General Business

SCHOOL OF EDUCATION

Administration and Supervision Elementary Education Guidance and Counseling Library Service Secondary Education

THE SCHOOL OF FINE ARTS

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

SCHOOL OF FORESTRY

Forest Science Forest Business Forest Resources Management Watershed Timber Wildlife

SCHOOL OF JOURNALISM

Advertising Magazines

SCHOOL OF LAW

SCHOOL OF PHARMACY

RELIGIOUS STUDIES (no major)
### 14—ANTHROPOLOGY

#### Course numbering system...

- **001-099** Courses below college level. Credit not allowed toward graduation.
- **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.

#### 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.

**Number Changes:** 150 (101) illustrates a course for which the number has been changed from 101 to 150. Numbers formerly used are shown in parenthesis.

**Quarters:** A, Autumn; W, Winter; S, Spring; Su, Summer.

**Credits:** The number following the course title indicates the number of credits for which the course is offered. In two or three quarter sequences, the credits may vary from quarter to quarter in which case the quarter will be indicated along with the credit. (A 5, W 4, S 3, Su 2, etc.)

**Variable Credit Courses:** A V indicates variation or a specific variation such as V 1-3. Such numbers may be followed by R or an R followed by a number which would indicate that the course might be repeated for credit and the total credits allowed for the course (R-10, etc.).

**Lecture and Laboratory:** (3-4) illustrates a class with 3 hours of lecture and discussion per week and 4 hours of laboratory. (0-3/cr.) illustrates a laboratory course in which the student has 3 hours of laboratory per week for each credit.

**Alternate Years:** Courses not offered every year may be designated by a/y, e/y or o/y (alternate, even, or odd years) following credits (4 e/y).

**Prerequisites:** As indicated above, some courses require other courses as a prerequisite. In these cases, pre-req. followed by numbers, indicates the courses necessary before taking this course. Unless otherwise stated, the numbers are courses in the same department as the course listed.

**Corequisite:** Abbreviated coreq, indicates the courses that must be taken concurrently.

**Consent of Instructor:** If required, is shown by c/i.

**Equal or Equivalent Course:** Shown by an equal sign (=).

The quarter during which courses will be offered will be indicated in a separate schedule of classes.

#### Courses of Instruction...

**Anthropology** is the study of man. As a social science it is concerned with people, cultures, and societies on a world-wide scale throughout time. It studies institutional arrangements under which people live, their psychological adjustments to different cultures, and their languages. Emphasis is on primitive or preliterate societies, but the field also includes human evolution, archaeology, and the application of anthropological principles to an understanding of complex civilizations. 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 or approved cognate courses listed below are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) Credits taken in anthropology must include the following groups in addition to the 15 credits: Anth 153, 358, 371, 372, 383. In addition, one course in ethnology and one course in archaeology must be taken. Not more than 25 total credits in the following variable credit courses may be counted toward the degree: Anth 333, 366, 451, 530, and 551. The following sociology courses may be completed: Soci 101, 301, and 305. English 360, German 333, and Religion 304 may be counted toward a major in anthropology. A minimum of 35 of the 50 credits required must be in anthropology courses. English 190 and 360 must be completed.

**Graduate Work.** See Graduate School Bulletin

**For Undergraduates**

*Course offered every other year*

- 119 **Phonetics** see Speech Communication 119.
- 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 group and institutional processes—economic, political, and education, and arts and cultures.
- 154 **Race and Minorities 3.** Problems of assimilation of racial and cultural minorities.
- 251 **PrimitiVe Technology 3 prereq 152 or 153.** Technological processes used by people in preliterate societies and early civilizations.
- 285 **Introduction to Far Eastern Culture 4 prereq 153 or =.** The society, religion, and other aspects of life in the Far East.

**For Undergraduates and Graduates**

*Course offered every other year*

- 308 *Race and Ethnic Relations 3 prereq 154 and Soc 101.** Racial and ethnic differentiation and its social consequences. (Credit not allowed for this course, 306.)*
- 325 **Educational Anthropology 3 prereq 152 or =.** Major anthropological concepts of history, prehistory, culture and society. (For educators and social workers or others dealing with American Indians and other minority groups.)*
- 340 **Primitive Religion 3 prereq 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 prereq 152 or 153 or =.** Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.
- 352 *Archaeology of Montana 3 prereq 152 or 153 or =. and c/i.** The origins and distribution of primitive 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 3-9 R-12 prereq 152 or 153 or = and c/i. A field course in Montana archaeology.
- 354 *Old World Archaeology 4 Su 3 prereq 152 or 153 or =.** The development of civilization from the Neolithic Age to the dawn of written history.
- 355 *Archaeology of North America 4 prereq 152 or 153 or =.** The origins, backgrounds and development of pre-Columbian North American peoples and cultures.
- 356 **Historical Archaeology 3 prereq 152 or 153 or =.** The location and evaluation of historical sites in Montana and the Northwest. Techniques utilized in excavating historical sites and systems for the classification of historical site artifacts.
ART

The Art Department functions as an instructional unit, a center for research and development in the visual arts. It is a focal point for exhibitions, lectures, discussions, and other means of presenting the work of the visual artist to the university and the community. Its essential intention is the integration of tradition in the visual media with the present complex of interrelationships among the artistic disciplines which we experience in contemporary society.

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: 55 or more credits (up to a maximum of 70) including Drawing 12 cr., Design 6 cr., Painting 6 cr., Sculpture 9 cr., Ceramics 2 cr., Printmaking 2 cr., Lettering 2 cr., Photography 2 cr., and electives as desired or needed. One quarter of English composition must be completed.

The Foreign Language requirement listed earlier in the catalog must be satisfied.

The Bachelor of Fine Arts is a professional degree requiring 110 credits in art, distributed as follows: Drawing 12 cr., Painting and Watercolor 15, Design 6, Ceramics 6, Printmaking 6, Photography 6, Lettering 2, Art History 15, Sculpture 12 and art electives 35 credits. Ninety credits are required outside of the department. All general university requirements except foreign language must be completed. Fourteen quarters are usually required to complete this degree.

A student may apply at the beginning of the Sophomore year or later and must have a 3.0 index in Art and a 2.5 in academic work. A portfolio, slides or an exhibition (or both) must be presented.

Course requirements for a degree in education with a teaching major or minor in art are listed under Education.

Suggested first year program:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 123</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Art 128-129-127</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art 129</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 100</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective from Groups or Lang.</td>
<td>9</td>
<td>9</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H &amp; PE 100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School Bulletin

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

123 DRAWING 3 R-9. Variable credit by extension.
125-126-127 DESIGN 2.
129 CERAMICS 2 R-4. Clay projects, building, throwing, glazing, and firing. Offered for one credit by extension.
160 LAYOUT AND LETTERING 2 R-6.
200 SURVEY OF WESTERN ART: THE ANCIENT WORLD 3.
201 SURVEY OF WESTERN ART: EARLY CHRISTIAN TO MANNERISM 3 prereq 200.
202 SURVEY OF WESTERN ART: MANNERISM TO PRESENT 3 prereq 201.
210 STUDIO HUMANITIES 3. Studio experience for non-art majors.
215 PHOTOGRAPHY 3 R-4 prereq 127.
229 INTERMEDIATE CERAMICS 2 prereq 4 credits of 129.
233 (133) PRINTMAKING 2 R-6 prereq 9 credits of 123. Methods and techniques.
235 (135) SCULPTURE 3 R-9 prereq 9 credits of 123.
239 (139) WATERCOLOR 3 R-6 prereq 9 credits of 123. Offered by extension for 1 credit.
240 (146) PAINTING 3 R-9 prereq 9 credits of 123, Su c/i. Variable credit by extension. Techniques of oils and related media.
ASTRONOMY

16—ASTRONOMY

FOR UNDERGRADUATES AND GRADUATES

300 INTRODUCTION TO ART EDUCATION 2.


Directed experiences with children.

307 METHODS OF TEACHING SECONDARY ART 3.

315 PHOTOGRAPHY V 2-6 R-6 prereq 127.

323 (151) ADVANCED DRAWING 2 R-6 prereq 9 credits of 123. Figure drawing and special problems.

325 ADVANCED DESIGN V 2-6 R-6 prereq 127. Individual special problems.

327 JEWELRY 2 R-6 prereq 127.

329 (330) ADVANCED CERAMICS V 2-6 R-6 prereq 6 credits of ceramics. (For art majors only.)

333 (334) ADVANCED PRINTMAKING V 2-6 R-6 prereq 6 credits of 333.

335 ADVANCED SCULPTURE V 2-6 R-6 prereq 9 credits of 235.

340 EARLY RENAISSANCE 3 prereq c/l.

383 HIGHER RENAISSANCE 3 prereq c/l.

384 BAROQUE AND ROCOCO ART 3 prereq c/l.

385 EUROPEAN ART 1750-1900 3 prereq c/l.

386 MODERN ART 1900-present 3 prereq c/l.

388 AMERICAN ART 3 prereq c/l.

395 SURVEY OF EASTERN ART: Japan 3 prereq c/l.

396 SURVEY OF EASTERN ART: China 3 prereq c/l.

397 SURVEY OF EASTERN ART: India 3 prereq c/l.

414 ART IN SPECIAL EDUCATION 2.

415 INDEPENDENT WORK IN PHOTOGRAPHY V 2-6 R-6 prereq 6 credits of 213.

423 INDEPENDENT WORK IN DRAWING 2 R-6 prereq 4 credits of 223.

425 INDEPENDENT WORK IN DESIGN V 2-6 R-15 prereq 6 credits of 225.

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 and c/l.

FOR GRADUATES

523 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in drawing.

525 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in design.

529 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in ceramics.

533 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in printmaking.

535 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in sculpture.

540 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Advanced work in painting.

550 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Research in art history or art theories.

699 THESIS AND TERMINAL PROJECT V 15.

ASTRONOMY

the oldest of the physical sciences, takes as its subject matter the structure of the universe, ranging from the relatively nearby objects of the solar system to the remote galaxies of outer space. Astronomy is developing rapidly due to renewed interest generated by the advent of the Space Age. Many areas of current astronomical research, such as pulsars, were not even known as little as ten years ago.

Requirements for a major in astronomy are arranged to provide the student with a good background in the related fields of mathematics and physics and to include the fundamentals of astronomy and astrophysics. This course of study is intended to prepare the student for either graduate work in astronomy or astronomy-related employment in a research facility or laboratory.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and trigonometry. It is also recommended that the high school preparation include advanced algebra and solid geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements listed earlier in the catalog, astronomy majors are to take the same mathematics and physics courses during their first two years as physics majors. Fifty-five credits in physics and astronomy courses are required for the Bachelor of Arts degree with a major in astronomy, including Astronomy 131-132, Math 300-301, 302, 303-304-305, and additional astronomy courses of the student's choice (excluding Astronomy 450, Special Problems of Astronomy), and Physics 221-222-223 plus one of the following courses: Physics 314-315-316, 322-323-324, 371-372-373, 446-447-448, or 483-484-485.

Students intending to go on to graduate study in astronomy are strongly encouraged to take as many of the following courses as possible: Physics 314-315-316, 322-323-324, 371-372-373, 446-447-448, 452-453-454, and 475; Astronomy 464, 465.

Required courses offered by other departments are: Computer Science 201, Mathematics 116-117, 251-252-253. The foreign language requirement listed earlier in the catalog must be satisfied. Required courses in English are Composition 100, 200 and 450 except that students scoring less than the 31st percentile on the English section of the ACT test are required to take English 001 and students receiving 94th percentile or higher are exempt from English 100 and 300.

FOR UNDERGRADUATES

131-132 ELEMENTARY ASTRONOMY 2 (2-2) prereq high school algebra and trigonometry. The solar system, normal and variable stars, star clusters, nebulae, and galaxies.

351-363 SOLAR SYSTEM ASTRONOMY AND ASTROPHYSICS 3 (3-0) Astronomy 131-132, Physics 221-222-223, Molecules, shapes, albedos, surface temperatures, composition, atmosphere, and interiors of the planets and satellites. Properties of asteroids, comets, and meteoroids.

360-361 CELESTIAL MECHANICS AND DETERMINATION OF ORBITS 3 (3-0) prereq Astronomy 131-132, Math 251-252-253, Physics 221-222-223 and 301. Celestial mechanics; calculation of the orbits of planets, comets, and asteroids; applications to earth satellites and interplanetary space missions.

362 OBSERVATIONAL ASTRONOMY 3 (3-2) prereq Astronomy 131-132, Physics 221-222-223. Telescopes and instrumentation for the determination of the positions, brightness, colors, and other properties of stars; particular attention to photoelectric photometry. Includes observational and computational problems.


450 SPECIAL PROBLEMS IN ASTRONOMY V 1-5 R-10 prereq 15 credits of astronomy and c/l. Research or directed reading in selected areas of astronomy or astrophysics.


BIOLOGY

deals with living things. This program provides basic education in the biological sciences. It is intended for students who wish to work in the broad area of biology, rather than in one of the specific fields. Two options are provided in this program; Option A for students interested in concentration in the cellular and physiological aspects of biology; and Option B, where environmental biology is emphasized. Both options are designed for those who plan to do further work at the graduate level or in one of the medical sciences. The biology program is also well suited for those who plan to teach biology at the secondary level.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs chemistry, 3½ years of mathematics. It is also recommended that the high school preparation include a modern foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BIOLOGY

Option A (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-Zoology 111 (Introduction to Biology); Botany 114, 115 (General Botany); Microbiology 200 (General Microbiology); Zoology 112, 113 (General Zoology-Botany-Botany 330 (Cellular Physiology); Zoology-Botany 485 (Genetics) and 10 additional credits in 300 and 400 level courses in biological sciences (Recommended: Botany 325, 437; Microbiology 494; Zoology 331). Chemistry 370, 481 also recommended.

The following courses in allied sciences must be completed by students electing option A: Chemistry, 101, 102, 121, 122 (College and General); Chemistry 261, 262 (Organic 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).

Option B (Environmental 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 (Environmental Option): 65 or more credits in Biology including Botany-Zoology 111 (Introduction to Biology); Botany 114, 115 (General Botany); Zoology 112, 113 (General Zoology); Botany-Zoology 250, 251 (Concepts of Ecology); Zoology 410 (Advanced Animal Ecology), or Zoology 428 (Invertebrate Ecology); Botany 355 (Plant Ecology); Zoology-Botany 495 (Genetics), and 10 additional credits in 300 and 400 level courses in biological sciences (Recommended: Zoology 207 (Aquatic Biology); Zoology 465 (Animal Behavior); Zoology 410 (Advanced Animal Ecology), or Zoology 428 (Invertebrate Ecology); Zoology 461 (Limnology); Microbiology 200 (General Microbiology); Botany 265 (Local Flora); Botany 355 (Systematic Botany); Botany 370 (Forest Pathology); Botany 325 (Plant Physiology); Botany 441 (Physiology).

The following courses in allied sciences must be completed by students selecting the Environmental Biology option: Chemistry 101, 102, 121, 122, 123; Physics 111 and 112 or 113; Math 116, 117, 118 and 125. Recommended courses in other disciplines: Geology 101 (Physical Geography); Geography 390 (Climatology); Geography 413 (Population and Resource Geography); Zoology-Botany 400 (Animal Ecology); Zoology-Botany 428 (Invertebrate Zoology); Zoology-Botany 461 (Limnology); Microbiology 200 (General Microbiology); Botany 265 (Local Flora); Botany 355 (Systematic Botany); Botany 370 (Forest Pathology); Botany 325 (Plant Physiology); Botany 441 (Physiology).

The foreign language requirement listed earlier in the catalog must be satisfied by those in both biology options. English 100 and 300 are also required.

Suggested first year program for Options A and B:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>114, 115</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>101, 102, 160</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives or Group Requirements</td>
<td>0-2</td>
<td>0-2</td>
<td>0-2</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

FOR explanation see Course Descriptions (Index)

100 FIELD BOTANY 3 (0-6)  The collection, preservation and identification of plants and consideration of where they grow. Credit not allowed toward degree in Botany.

111 INTRODUCTION TO BIOLOGY 3 (3-4)  The basic principles of biology, including aspects of cellular biology, genetics, origin of life, and mechanics of evolution and adaptation. Credit not allowed for this course and Zoology 111.

114 (115) GENERAL BOTANY 5 (3-4)  prerequisite 111 or = The morphology, reproduction and evolutionary relationships of the various plant groups.

115 (112) GENERAL BOTANY 5 (3-4)  prerequisite 114 or = The anatomy, physiology and ecology of higher plants.

170 SURVEY OF WILDLIFE CAREERS 1 (0-9)  Also listed as Forestry 170 and Zoology 190.
18-BOTANY

325 (325) PLANT PHYSIOLOGY 5 (3-4) prereq 115 and Chem 160 or 123. The chemical and physical basis of metabolism, photosynthesis, nutrition, water relationships and growth of plants.

330 CELLULAR PHYSIOLOGY (see Zoology)

334 MICROTECHNIQUE 3 (-1-4) prereq 15 cr. in Botany. Techniques for preparing cells, tissues, and microscopic sections of soft and hard plant materials, especially of the northern Rocky Mountains (given for 6 cr at the Biological Station).

355 PRINCIPLES OF PLANT ECOLOGY 5 (1-8) prereq 250, 251 and 255. Field and laboratory analysis of methods used in the description and interpretation of plant and environmental interrelationships.

365 SYSTEMATIC BOTANY 5 (2-8) prereq 115 or =. Identification of plants, their geographical distribution, evolution, and classification. (Credit not allowed for this course and Zool 403.)

369 AGROLOGY 5 (2-4) prereq 265 or =. Identification, classification, and ecological relationships of grasses, sedges, and rushes. (Given for 3 cr at the Biological Station.)

370 AQUATIC FLOWERING PLANTS 3 (0-7) prereq 265 or =. Identification, classification and ecological distribution of the higher aquatic plants.

370 FOREST PATHOLOGY 4 (2-4) prereq 250 or 355, and For 290-291. The agencies of disease and decay of trees and structural timbers.

390 CHEMISTRY OF PLANT CONSTITUENTS (See Chem 390 and For. 390).

403 BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and c/l. Basic principles and skills of producing illustrative material in the biological sciences. ($25 for supplies fee. Credit not allowed for this course and Zool 403.)

421 MINERAL NUTRITION 5 (3-4) e/y prereq 325. The absorption, translocation and utilization of minerals by plants: mineral requirements of plant cells, the role of mineral nutrition in producing high plant yields, and the role of minerals in photosynthesis and the culture of plants under controlled nutrient regimes.

425 (325) RESPIRATORY METABOLISM IN PLANTS 5 (3-4) e/y prereq 235, 363 and Phya 115 or =. The respiratory mechanism in plants, relationships of respiration to other processes in the plant, photosynthesis, nitrogen metabolism.

427 PLANT VIRUSES 4 (2-4) prereq 115 or =. Micro 240, Plant 337 and the diseases which they cause. The isolation, purification, identification, and host range of selected plant viruses.

428 ALGAL PHYSIOLOGY 5 (3-4) prereq 235, 441 or c/l. Comparative study of the photobiological basis of algae with special emphasis on the algae and their relationships to both the bacteria and higher plants.

429 (329) PROBLEMS IN PLANT PHYSIOLOGY V 1-6 (0-3/cr) R-6 prereq 325 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

432 (322) MORPHOGENESIS 5 (4-5) e/y prereq 325 or =. The effect of internal and external factors on the growth and form of organisms.

434 ADVANCED MICROTECHNIQUE 4 (1-6) prereq 20 cr in Botany. Techniques in preparing microscopic sections, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

435 (335) PLANT ANATOMY 5 (2-6) e/y prereq 115 and Chem 160 or =. The finer structures of the plant cell in relation to its functions.

437 CYTOLOGY 5 (3-4) e/y prereq 115 and Chem 160 or =. The finer structures of the plant cell in relation to its functions.

439 (339) PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1-6 (0-3/cr) R-6 prereq 435, 438 or 337 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant anatomy and cytology not taken up in regular courses.

441 (361) PHYCOLOGY 5 (3-6) e/y prereq 115 or =. Morphology, anatomy and ecology of the algae, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

442 (355) BRYOLOGY 5 (2-6) e/y prereq 115 or =. The morphology, anatomy, and ecology of the bryophytes, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

445 PTERIDOLOGY 5 (2-6) e/y prereq 115 or =. The morphology, ecology and physiology of the pteridophytes, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

445 (345) SPERMATOPHYTES 5 (2-6) e/y prereq 115 or =. The morphology and life histories of the gymnosperms and angiosperms.

449 (349) PROBLEMS IN PLANT MORPHOLOGY V 1-6 (0-3/cr) R-6 prereq 441, 442, or 445 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

451 ECOLOGICAL SYSTEMS ANALYSIS 4 (3-2) prereq Math 118, 125, Computer Science 201, Botany 365 or =. Mathematical analysis of ecological systems, mathematical models, computer simulation, optimization, and system dynamics.

459 (359) PROBLEMS IN PLANT ECOLOGY V 1-6 (0-3/cr) R-6 prereq 250 or 355 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant ecology not taken up in regular courses.

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

469 (369) PROBLEMS IN PLANT TAXONOMY V 1-6 (0-3/cr) R-6 prereq 265 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant taxonomy not taken up in regular courses.

475 (375) MYCOLOGY 5 (3-4) e/y prereq 115 or =. The morphology, taxonomy and ecology of the fungi, especially of the northern Rocky Mountains (given for 6 cr at the Biological Station).

479 (379) PROBLEMS IN MYCOLOGY AND FOREST PATHOLOGY V 1-6 (0-3/cr) R-6 prereq 265 or 355 and c/l. 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.

483 PALEOBOTANY 5 (2-4) e/y prereq 115 or =. An introduction to the study of fossil plants.

484 PALYNOLGY 3 (2-2) e/y prereq senior standing in a natural science and c/l. Fossil and recent pollen and spores—methods of collection, identification, and the application of palynological data in botanical and non-botanical disciplines.

485 (385) GENETICS. (See Zoology.)

490 (386) 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.)

497 CYTOGENETICS 4 (3-2) prereq 485 or =. The structure and distribution of chromosomes from bacteria to higher organisms. Chromosome behavior and changes, their role in development and evolution. (Credit not allowed for this course and Zoology 497.)

499 PROBLEMS IN PALEOBOTANY V 1-6 (0-3 per credit) R-6 prereq 483 and c/l.

490 SEMINAR IN BIOLOGY 1 (2-0) R-4. (Credit not allowed for this course and Zool 490).

491-492-493 SENIOR WILDLIFE SEMINAR (See Forestry)

495 BOTANICAL LITERATURE 1 (2-0) R-2 prereq 20 credits in botany. Student reports on current botanical literature.

FOR GRADUATES

505 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prerequisites biology and c/l. Science 201, 202, 301. Concepts including succession, stratification, periodicity and energy relations of biological systems and the use of radio-isotopes in biology. (Credit not allowed for this course and Zool 502.)

523 BCSCS 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 ecological biology 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.

523 PHOTOBIOLOGY 4 (2-4) prereq 330. The interaction between ionizing radiation and biological systems including photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light on plants, animals, and microorganisms. (Credit not allowed for this course and Zool 523.)

524 RADIOBIOLOGY 4 (2-4) prereq 330. The influence of ionizing radiation (x-rays gamma rays, and accelerated particles) on biological systems and the use of radio-isotopes in biology. (Credit not allowed for this course and Zoology 524.)

551 GENERAL ECOLOGY 6 (6-15) prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Community concepts including succession, stratification, periodicity and energy relations; introduction to population problems. Offered at the Biological Station. (Credit not allowed for this course and Zool 551.)

562-563 TAXONOMY OF VASCULAR PLANTS 5 (3-4) e/y prereq c/l. Classification, distribution and evolutionary relationships of the vascular plants.

564 EXPERIMENTAL TAXONOMY 4 (2-4) e/y prereq 437, 486, 583. Modern concepts in taxonomy with emphasis on cytological, morphological, and ecological approaches to the classification of flowering plants. (Credit not allowed for this course and Zoology 564.)

565 PHYTOGEOGRAPHY 4 (4-0) e/y prereq 353, 486, 562, 563, Geol 101-102 or 110. Vegetation types of the world and their history in North America.
BUSINESS ADMINISTRATION—19

BUSINESS ADMINISTRATION

The School of Business Administration, founded in 1918, is the largest professional school of the University of Montana. It is accredited by the American Association of Collegiate Schools of Business; its curriculum, therefore, is similar to those of other recognized schools of business.

The aim of the School of Business Administration is to provide a broad foundation in the fundamentals of organizational administration and management as well as exposure to the basic principles of the specialized disciplines within the field of business administration. The complexity and scope of our contemporary society have brought about an ever increasing need for responsible leadership in the business community. A professional business education combined with a solid grounding in the liberal arts and sciences prepares young men and women to meet the challenges of an age of organizational revolution and actively to participate in the molding of the future of that age.

The curriculum of the School of Business Administration provides particular preparation in a variety of fields in addition to the basic courses. The areas of concentration in which the student may specialize are: accounting, finance, business education, marketing, office administration, personnel or production management.

The student may elect to pursue a program of studies leading to the degree of Bachelor of Science in Business Administration or to the degree of Bachelor of Arts in Business Administration. These programs are described below.

Opportunity for further study at the graduate level is offered through two programs leading to the degrees of Master of Business Administration or Master of Science in Business Administration (with concentrations in accounting, business education, computer systems, finance, management, or marketing). The MBA program is particularly suited to those students who have completed undergraduate degree work 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 prerequisites course work for courses to be taken subsequently in the School of Business Administration. Students who plan to major in Accounting are advised to take Business Administration 201, 202, and 203 in their freshman year.

The general university and pre-business administration requirements include: Health, Physical Education and Recreation 106 (3 quarters, 3 credits), English 100 and 300 (except that students receiving an "A" or "B" grade in English 100 may substitute for English 300 any literature course other than English 101), requirements from Group I; requirements from Group II including Mathematics 116; requirements from Group III including Economics 201-202; requirements from Group IV, Speech Communication 111 or 112; Business Administration 201-202 and 250. Pre-business requirements are prerequisites for all business administration courses numbered 300 and above except that Accounting Majors may take Business Administration 306, 307, and 308 in their sophomore year.

ADMISSION AND GRADE POINT REQUIREMENTS

Admission to the School of Business Administration requires junior standing, completion of the pre-business requirements, and a minimum of a "C" average on all credits attempted. To continue work after this junior year 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:

a. Complete the general university and pre-business administration requirements.

b. Complete core courses: Economics 301, Bus Ad 322, 340, 342, 350, 367-385, 360, 370, and 446. Core courses may not be taken for graduate credit by Bus. Ad. majors. Non-business majors may arrange to earn graduate credit for core courses.

c. Select before the beginning of the third quarter of the junior year an area of concentration from the following: Accounting, Business Education, Finance—Option A, B or C, General Business, Management—Option A or Option B, Marketing—Option A.

This selection of an area of concentration is to be indicated by completing a prescribed form available in the office of the Dean of School of Business Administration and by filing the completed form in that office.

d. Complete the course work required in the selected area of concentration as indicated by the appropriate curriculum of the area of concentration below.

e. Offer not less than a total of 75 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credit requirement are: all courses offered by the Department of Economics; English 450, History 379, 381, 382, 383.

f. 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.

g. Offer at least 195 credits including 3 credits in Health and Physical Education.

h. 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

ACCOUNTING

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 203—Accounting Principles III</td>
<td>3 cr.</td>
</tr>
<tr>
<td>Bus. Ad. 396—Special Problems in Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 401—405—Income Tax I and II</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 412—Accounting Theory</td>
<td>3</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</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 305—Governmental Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 404—405—Auditing I and II</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 410—Consolidated Statements</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 418—C.P.A. Review</td>
<td>5</td>
</tr>
</tbody>
</table>

BUSINESS EDUCATION

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 183—Production Typewriting</td>
<td>cr.</td>
</tr>
<tr>
<td>Bus. Ad. 184—188—189—Stenography</td>
<td>15</td>
</tr>
<tr>
<td>Bus. Ad. 195—Beginning—Secretarial Practice</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 194—Regional Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 203—Accounting Principles</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 205—Office Machines Practice</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 380—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 391—Methods of Teaching Bookkeeping and Basic Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 385—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 389—Methods of Teaching shorthand and Transcription</td>
<td>2</td>
</tr>
</tbody>
</table>
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)

201 ACCOUNTING PRINCIPLES I 3.


FOR UNDERGRADUATES AND GRADUATES

Bus. Ad. 201, 303, 306, and 401 are available for graduate credit to non-accounting majors only.

301 ADMINISTRATIVE ACCOUNTING 4 prereq 202. Open only to non-accounting majors. Emphasis on usefulness of accounting information for management. (Credit not allowed for both Bus Ad 301 and 303-304.)

303 COST ACCOUNTING I 3 prereq 203. Development and application of cost systems. Analysis of cost behavior and use of cost information by management. (Credit not allowed for both Bus Ad 301 and 303-304.)

305 GOVERNMENTAL ACCOUNTING 2 prereq 203. Accounting principles and problems as applied to governmental units and non-profit institutions.

306 INTERMEDIATE ACCOUNTING I 4 prereq 203. The fundamentals of valuations applied to the balance sheet, and income determination as related to the operating statement.

307 INTERMEDIATE ACCOUNTING II 4 prereq 306.

308 SPECIAL PROBLEMS IN ACCOUNTING 3 prereq 307. 401 INCOME TAX I 3 prereq 202. The application of the federal income tax law as applied to individuals.

402 INCOME TAX II 3 prereq 401. Continuation of 401 applied to corporate and partnership tax problems. Special problems of federal estate and gift taxes.

403 AUDITING I 3 prereq 307. Scope and professional responsibilities of the independent public accountant as related to the examination of financial statements.

404 AUDITING II 3 prereq 403.

410 CONSOLIDATED STATEMENTS 3 prereq 307.

412 ACCOUNTING THEORY 3 prereq 307. A critical analysis of the concepts underlying the development and application of generally accepted accounting principles.

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, 308, 404, 410, and 412 and c/l. Comprehensive review of accounting theory, practice, and auditing. Primarily for students preparing to take the uniform CPA examination.

499 SEMINAR V R-4.
FOR GRADUATES


504 THEORY OF INCOME DETERMINATION 3 prereq 412. The theories underlying the accounting calculation and disclosure of periodic net income, economic, legal and tax concepts of income.

505 MANAGERIAL ACCOUNTING 3. Principles of financial accounting as a basis for understanding of management's need for financial statements.

506 MANAGERIAL ACCOUNTING 3 prereq 505 or =. The use of accounting data as a tool for management decision-making purposes.

599 RESEARCH V R-6. Special research problems.

605 ADMINISTRATIVE ACCOUNTING CONTROLS 3 prereq 506 or =. The functions and responsibilities of the controller in providing an effective information system for overall financial planning and control.

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 V R-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 AND GRADUATES

320 PRINCIPLES OF INSURANCE AND RISK MANAGEMENT 3 prereq Econ 203. The functions of risk management coupled with the rudiments of the primary kinds of insurance.


322 COMMERCIAL BANKING 3. Policies and practice in commercial bank management.

324 REAL ESTATE LAW 3. Interests in real property, forms of ownership, conveyancing, recording and evidence of title, contracts, mortgages, personal property and fixtures, liens, landlord and tenant, restrictions and zoning, eminent domain, brokerage relationships.

325 MANAGEMENT OF FINANCIAL INSTITUTIONS 3 prereq 322 and 323. Analysis of individual and group life, health, and accident contracts, pensions, and annuity programs.

327 PROPERTY AND CASUALTY INSURANCE 3 prereq 320. The management of risk originating from ownership, maintenance, and use of property.

329 THEORY OF BUSINESS FINANCE 3 prereq 322. Theory relating to the optimal use of leverage, dividend policy, and capital investments.

420 INVESTMENTS 3 prereq 322 and Econ 301. Principles of security analysis and portfolio management.

421 (522) SECURITY ANALYSIS 3 prereq 420. Advanced techniques in security valuation and portfolio management.

422 (421) PROBLEMS IN FINANCE 3 prereq 322. Analysis of case problems in financial management.

425 ADVANCED PROBLEMS IN FINANCE 3 prereq 422. Comprehensive analysis of problems in corporate financial management.

426 MONEY AND CAPITAL MARKETS 3 prereq 322 and Econ 301. Institutional and theoretical analysis of domestic and international money and capital markets.

428 REAL ESTATE FINANCE 3 prereq 322 and 324. Sources and uses of funds related to financing the industrial, commercial, and residential segments of the real estate market.

429 (Ec 387) PROPERTY VALUATION THEORY 3 prereq Econ 385. Analysis and comparison of the various theoretical bases for the determination of real estate values.

477 PROPERTY MANAGEMENT 3 prereq 324. The elements of management applied to acquisition, preservation, development, and maintenance of common kinds of real property.

480 SOCIAL INSURANCE 3 prereq 320. An examination of the ways in which individual security is enhanced by insurance programs in the private and public sectors.

499 SEMINAR V R-4.

FOR GRADUATES

523 FINANCIAL MANAGEMENT 3. Techniques of corporate financial management.

599 RESEARCH V R-6. Special research problems.

611 PROBLEMS IN FINANCIAL MANAGEMENT 3 prereq 322 and 385. Advanced theory and analysis in corporate financial management.

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 V R-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. Ratios, frequency distributions, averages, variability, sampling error, and measures of association.

341 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 4 prereq 340, 360. Current practice and problems in the industrial production areas of: materials procurement, inventory control, warehousing, materials handling.

337 LEGAL ENVIRONMENT OF BUSINESS 3 prereq all pre-business requirements. Foundations and theory of law as related to business environment. What law is, sources and classifications of law, judicial system and legal procedures for resolving conflicts, principles of tort and criminal law, trends in law and business.

338 LEGAL ENVIRONMENT OF BUSINESS 3 prereq 327. Legal principles relating to business transactions: contracts, agency, business organizations, negotiable instruments, real and personal property and security devices.

359 C.P.A. LAW REVIEW 3 prereq 338. The legal theory and principles relating to bankruptcy, unfair competition, suretyship, secured transactions, creditor's right, trusts and estates, wills and intestacy. (Primarily for accounting majors intending to take the C.P.A. examinations, but open to all students.)

371 INTRODUCTION TO COBOL PROGRAMMING 2 prereq Math 100 or =. Primarily for students in Business or Economics. Computer programs will be developed and written by students. (Credit not allowed for both Bus Ad 371 and CS 212.)

FOR UNDERGRADUATES AND GRADUATES

340 PRODUCTION MANAGEMENT 3 prereq all pre-business requirements. Management process applied to design and operation of manufacturing systems producing a commodity or service rather than as a strictly manufacturing activity; and research and development, the role of standards, physical facilities, materials management, process design, production planning and control.

342 ORGANIZATIONAL HUMAN RELATIONS 3 prereq all pre-business requirements. Selected general behavioral models, with emphasis on perception, motivation, and attitude change processes. Application of psychological and social psychological concepts to management of people in the firm, situational analysis, organizational analysis, problems of delegation of authority and acceptance of responsibility.

344 AMERICAN INDUSTRIES 4 prereq 340, 360. Economic problems and technological processes of selected manufacturing and communications industries. Location factors, company structures, mergers and competition and national policy relating to oligopoly.

390 QUANTITATIVE MODELS FOR GUIDING BUSINESS DECISIONS 3 prereq all pre-business requirements. Formulation and analysis of quantitative models for guiding business decisions. Certain statistical and uncertainty problems, graphical and statistical inference, regression, correlation, and linear programming.

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

397 ELECTRONIC INFORMATION PROCESSING 3 prereq all pre-business requirements. Modern business data processing techniques, new developments and tools for management information, computer equipment and logic, programming, and information flow analysis.


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

444 REGULATION OF INDUSTRY 4 prereq 340, 360, and Econ 301. Economic concentration and maintaining competition. Changing relationships between government and industry emphasizing regulatory legislation, administrative agencies, national policies and social control.
ADMINISTRATION AND BUSINESS POLICIES 4 prereq 340, 380, and Econ 301. (May be taken as one of last two quarters before graduation.) Top-management oriented to develop an integrated view of the organization. Practice of analytical techniques involved in problem solving and in coordination.

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.

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

QUANTITATIVE PROBLEMS ANALYSIS V R-4 prereq 350 or c/c. Practice in the application of selected quantitative techniques to business problems. Topics and projects selected in consultation with the instructor.

ANALYSIS AND DESIGN OF BUSINESS SYSTEMS 3 prereq 250, 370, and CS 301 or =. Techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, tables, data matrices, theoretical and practical problems encountered in defining business systems and judging the feasibility of computer processing.

COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prereq 250 or = and CS 301 or =. Modeling business information and control systems for simulation on electronic computers. Application to inventory control, planning, forecasting and budgeting.

SEMINAR V R-4.

FOR GRADUATES

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.

RESEARCH METHODS 3. Sources of data, governmental and non-governmental; quality of data, problems of use and interpretation problem formulation, research organization and planning; case studies and evaluation of selected research reports.

MANAGEMENT OF ENTERPRISE 3. Management as an art and science. Descriptive and analytical explanations of management principles and processes and emphasis on subjective roles of management.

ANALYSIS and DESIGN OF BUSINESS SYSTEMS 3 prereq 350, 301, and Econ 301. Techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, tables, data matrices, theoretical and practical problems encountered in defining business systems and judging the feasibility of computer processing.

COMPUTER SIMULATION of BUSINESS SYSTEMS 3 prereq 250 or = and CS 301 or =. Modeling business information and control systems for simulation on electronic computers. Application to inventory control, planning, forecasting and budgeting.

SEMINAR V R-4.

FOR GRADUATES

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.

RESEARCH METHODS 3. Sources of data, governmental and non-governmental; quality of data, problems of use and interpretation problem formulation, research organization and planning; case studies and evaluation of selected research reports.

MANAGEMENT OF ENTERPRISE 3. Management as an art and science. Descriptive and analytical explanations of management principles and processes and emphasis on subjective roles of management.

ANALYSIS and DESIGN of BUSINESS SYSTEMS 3 prereq 350, 301, and Econ 301. Techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, tables, data matrices, theoretical and practical problems encountered in defining business systems and judging the feasibility of computer processing.

COMPUTER SIMULATION of BUSINESS SYSTEMS 3 prereq 250 or = and CS 301 or =. Modeling business information and control systems for simulation on electronic computers. Application to inventory control, planning, forecasting and budgeting.

SEMINAR V R-4.

FOR GRADUATES

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.

RESEARCH METHODS 3. Sources of data, governmental and non-governmental; quality of data, problems of use and interpretation problem formulation, research organization and planning; case studies and evaluation of selected research reports.

MANAGEMENT OF ENTERPRISE 3. Management as an art and science. Descriptive and analytical explanations of management principles and processes and emphasis on subjective roles of management.

ANALYSIS and DESIGN of BUSINESS SYSTEMS 3 prereq 350, 301, and Econ 301. Techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, tables, data matrices, theoretical and practical problems encountered in defining business systems and judging the feasibility of computer processing.

COMPUTER SIMULATION of BUSINESS SYSTEMS 3 prereq 250 or = and CS 301 or =. Modeling business information and control systems for simulation on electronic computers. Application to inventory control, planning, forecasting and budgeting.

SEMINAR V R-4.
CHEMISTRY—23

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. Chemistry majors will generally choose the B.S. degree; the B.A. in Chemistry is designed to allow latitude for an interdisciplinary program. The M.S. S. for Teachers of Chemistry, and Ph.D. degrees are also offered (see Graduate School Bulletin).

For Bachelor degree programs in the teaching of chemistry see catalog under Education.

A departmental honors program has been established for chemistry majors who attain a high scholastic record. This program is based upon independent study and research under the direction of individual faculty members. Students may apply for this program in early spring of their freshman year. 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, it is desirable that the student have taken two years of algebra, geometry, trigonometry, science courses and a foreign language.

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 150 credits including the requirement, 70 Chemistry credits including Chem 121-122-123, 245, 250-256-257, 261-272-273, 295-296-297, 341-342-343, 446, 452, 453, 474, and 4 credits selected from Chem 450, 453, 464, 466, 490, or with the consent of the department, from graduate courses in Chemistry. Geol 427, Geol 428, Geo 445, Geo 529, and advanced courses in Mathematics or Physics. Two or three of these credits must be chosen from Chem 436, 464 and 490; the rest of the six must be selected from the other courses listed. 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, unless he is in the Pre-Med Option, 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 474, 6 credits of advanced Chemistry, Chem 453 and Mathematics 252 or 253. For the B.A. degree, advanced mathematics and/or advanced physics courses may be substituted for Chem 431, 452 and 446 with the consent of the department. See also the curriculum with the following Pre-Meds options: Engineering, English 100 and 300 are required. Students competent in composition may be exempt from English 100.

CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121-122-123</td>
<td>5</td>
</tr>
<tr>
<td>Math. 121-151-152</td>
<td>5</td>
</tr>
<tr>
<td>English 100</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-3</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16-17</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 265-266-267</td>
<td>5</td>
</tr>
<tr>
<td>Math. 153, 251</td>
<td>5</td>
</tr>
<tr>
<td>Physics 211-222-223</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 245</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>0-3</td>
</tr>
<tr>
<td>Total</td>
<td>15-18</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 253 (or 253)</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 371-372-373</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 266</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 431-432-433</td>
<td>1</td>
</tr>
<tr>
<td>Electives (to include Eng. 300)</td>
<td>2-4</td>
</tr>
</tbody>
</table>

(Can defer Physics 223 to spring quarter Junior year and replace by 5 cr. elective.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 253</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 371-372-373</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-4</td>
</tr>
</tbody>
</table>

(15-18-15-18)
### Chemistry Curriculum for the B.A. Degree (Pre-Medical Option)

#### Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121-122-123</td>
<td>General Chemistry 1</td>
<td>5</td>
</tr>
<tr>
<td>Math. 121, 121, 155</td>
<td>Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>English 100</td>
<td>Composition</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>2-3</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 261-262-263 (or 265-266-267)</td>
<td>General Chemistry 2</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 111-112, 204</td>
<td>General Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 243</td>
<td>Physical Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>Psychology 110</td>
<td>Psychology of Behavior</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>2-3</td>
</tr>
</tbody>
</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 221-222-223</td>
<td>Physics for Science Majors</td>
<td>5</td>
</tr>
<tr>
<td>For. Lang. 101, 102, 103</td>
<td>Language</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 494</td>
<td>Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Electives (to include Eng. 300)</td>
<td></td>
<td>5-8</td>
</tr>
<tr>
<td>Chem. 370</td>
<td>Chemistry Laboratory</td>
<td>5</td>
</tr>
</tbody>
</table>

#### Senior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For. Lang. 211, 212</td>
<td>Language</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 446</td>
<td>Chemistry Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 481, 482</td>
<td>Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Electives (e.g., Zool. 485)</td>
<td></td>
<td>0-5</td>
</tr>
</tbody>
</table>

### For Undergraduates

For explanation see Course Descriptions (Index)

101-102 GENERAL CHEMISTRY 4 (5-2). The basic laws, properties, 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 relations of elements and inorganic compounds, including qualitative analysis. Students, who have completed Chem. 101-102 may not receive credit for 121 and/or 123.

160 SURVEY OF ORGANIC CHEMISTRY 5 (5-4). Normally to follow Chemistry 101-102 as the third quarter of chemistry for students in the chemistry major. 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.

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

261-262-263 ORGANIC CHEMISTRY 5 (4-4) prereq 102 or 122. Credit not allowed for both Chem 160 and 261.

265-266-267 ORGANIC CHEMISTRY 5 (4-5) prereq 123. Designed for chemistry majors.

### For Undergraduates and Graduates

329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY 3 (2-4) prereq 123 or 265. 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.

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


375-376-377 PHYSICAL CHEMISTRY LABORATORY 1 (0-0-4) prereq 248, and 375-376, 374 or concurrent enrollment.

381 (384) PHYSIOLOGICAL CHEMISTRY 3 (3-0) prereq 160, 262 or 266. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

385 CLINICAL CHEMISTRY LABORATORY 2 (1-3) prereq or coreq 261 or 265. Analysis of biological fluids and tissues. Factors involved in the evaluation of the clinical status of the patient. Recommended for students in pharmacy, medical technology and dietetics.

390 (361) CHEMISTRY OF PLANT CONSTITUENTS V 3 or 4 (3-0 or 4) prereq 160 or C. Chemistry and analysis of plant compounds, including lipids, carbohydrates, pigments, and other chemical constituents of plants. (Same as Bot. 390 and For. 390).

391 (362) CHEMISTRY OF WOOD PRODUCTS 3 (3-0) prereq 261. The chemistry of pulp, paper, cellulose derivatives, naval stores, industrial polymers, flammable resins, modified woods, and other wood products. (Same as For. 391).

431-432-433 SEMINAR 1 (0-2) R-6 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.

448 ADVANCED INSTRUMENTAL METHODS AND PHYSICAL MEASUREMENTS 2 (0-6) prereq 371, 372 and 446.

452 PHYSICAL INORGANIC CHEMISTRY 3 (3-0) prereq 123, 263 or 267, 371 or 370.

453 CHEMISTRY OF THE REPRESENTATIVE ELEMENTS 3 (3-0) prereq 452.

459 INORGANIC CHEMISTRY LABORATORY 2 (0-6) prereq 123, 263 or 267 and C. or U.

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

463-464 THEORETICAL ORGANIC CHEMISTRY 3 (4-0) prereq 263.

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

474 INTRODUCTION TO MOLECULAR STRUCTURE 3 (3-0) prereq Math 252 or 253 and Physics 222. Quantum mechanical description of atoms and molecules. Statistical mechanics.

479 RADIOCHEMISTRY 3 (2-4) prereq 102 or 122. The principles of nuclear reactions, interactions of high energy photons and particles with matter and the instruments used in observing them; the chemical effects of radiation and the application of nuclear reactions to chemical problems.

481-482 ELEMENTARY BIOCHEMISTRY 3 (3-0) prereq 262 or 266. Primarily for science majors.

485-486 BIOCHEMISTRY LABORATORY 2 (1-3) prereq or coreq 481-482. Primarily for science majors planning to do laboratory research.

490 PROBLEMS AND RESEARCH V R-10 prereq C/.
653 METABOLIC REGULATION 3 (3-0) prereq 482. Control and regulatory mechanisms of metabolism with particular emphasis on factors that modulate the activity of enzymes, such as feedback inhibition and genetic expression. Interplay and control of metabolic pathways.

650 SEMINAR 1 R.

655 INORGANIC CHEMISTRY SEMINAR 1 R (1-0) prereq graduate standing in Chemistry.

651 SPECIAL TOPICS IN INORGANIC CHEMISTRY 3 (3-0) prereq 373 and 482. Topic specified in class schedule.

652 CHEMISTRY OF THE TRANSITION ELEMENTS 3 (3-0) prereq 452.

655-656 PHYSICAL INORGANIC CHEMISTRY 3 (3-0) prereq 452.

660 ORGANIC CHEMISTRY SEMINAR 1 R (1-0) prereq graduate standing in Chemistry.

661 ADVANCED ORGANIC CHEMISTRY 3 (3-0) prereq 263 or 267.

662-663 MECHANISMS AND STRUCTURE 3 (3-0) prereq 661.

664-665 PHYSICAL ORGANIC CHEMISTRY 3 (3-0) prereq 373, and 464 or 462.

STEREOCHEMISTRY 3 (3-0) prereq 663.

668 SPECIAL TOPICS IN ORGANIC CHEMISTRY 3 (3-0) R prereq 661. Topic specified in class schedule.

670 PHYSICAL CHEMISTRY SEMINAR 1 R (1-0) prereq graduate standing in Chemistry.

671 KINETICS 3 (3-0) prereq 373.

672 QUANTUM CHEMISTRY I 3 (3-0) prereq 373.

673 THERMODYNAMICS 3 (3-0) prereq 373.

674 QUANTUM CHEMISTRY II 3 (3-0) prereq 672.

675 STATISTICAL THERMODYNAMICS 3 (3-0) prereq c/i.

676 MOLECULAR STRUCTURE 3 (3-0) prereq c/i.

677 SPECIAL TOPICS IN PHYSICAL CHEMISTRY 3 (3-0) R prereq 673. Topic specified in class schedule.

685-697 ADVANCED MOLECULAR BIOLOGY LABORATORY V 1-3 (0-8 to 9) prereq c/i. Modern research techniques employed in the life sciences. (Cross-listed with Bot, Mich, Pharm, Zool.)

690 RESEARCH V.

699 THESIS V R-15.

COMPUTER SCIENCE

The growing utility of computers in research and education as well as the increased impact of computers on our modern society strongly implies that a knowledge of computers and their capabilities should be a part of the basic education of all students. The courses listed below are designed to give the student this knowledge as well as to prepare him for a career in a field in which there is an acute shortage of trained personnel.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, two years of mathematics (algebra and geometry) are required. It is strongly recommended that high school preparation include four years of mathematics, one year of physics, and one year of chemistry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN COMPUTER SCIENCE (subject to approval of the Board of Regents of the Montana University System). In addition to the general requirements for graduation listed earlier in the catalog, the following courses are required for the Bachelor of Science Degree in Computer Science: Computer Science 101, 201, 312, 320, 301, 302, 303, 312, 320, 461, 402, 403, 471, 472, 473, Mathematics 125, 151-152-153, 121-122-123, 221, 251-252. Computer Science 476, 477, 478 and Mathematics 311, 312, 313, 221 are strongly recommended.

FOR UNDERGRADUATES

100 COMPUTERS AND SOCIETY 1. Computer applications for liberal arts students. The social implications of computers.

101 INTRODUCTION TO COMPUTING 3. Digital computer organization, program flow charts, computer operations, current computer applications.

201 FORTRAN PROGRAMMING 2 prereq Math 201, CS 101 or concurrent registration or c/i. The FORTRAN programming language. Basic coding techniques, formulation of problems. Computer programs will be developed by students in simulated applications.

212 COBOL PROGRAMMING AND DATA PROCESSING 2 prereq Math 201 or Math 202 or equivalent and CS 101 or concurrent registration or c/i. Data processing. Computer programs will be developed using the COBOL language. (Credit not allowed for both CS 212 and BA 371.)

220 INTRODUCTION TO DISCRETE STRUCTURES 3 prereq Math 201 or CS 101 or concurrent registration or c/i. Discrete structures, sets, logic, relations, functions, graphs, trees, and networks. (271) Linear equations and inequalities, linear programming. (273) Logic and probability theory. (Credit not allowed for this course and Math 271-272-276.)

299 SEMINAR V R-6 c/i.

FOR UNDERGRADUATES AND GRADUATES

301-302-303 INTERMEDIATE PROGRAMMING 3 (2-2) prereq Math 116, 117 and CS 201 or c/i. Structure and use of a formal procedure language, algorithms for the solution of logical and numerical problems. Computer structure, the logic of computer arithmetic and the machine representation of information. Machine and assembly languages.

312 SYSTEMS ANALYSIS 3 prereq CS 212 and Math 125. Principles of systems analysis and methods of implementing the techniques of systems analysis on a computer. Forms design and information flow.

320 SWITCHING THEORY 3 prereq CS 220 or c/i. Review of Boolean algebra, switching algebra, gate network analysis and synthesis, combinatorial circuit minimization, elementary number systems and codes.

370 COMPUTER METHODS 4 (3-4) prereq Math 202 or c/i. Computer programming and elementary numerical methods. Problems of interest to secondary school teachers. (Intended primarily for those enrolled in NSF Summer Institute. Others may enroll by special permission. Credit not allowed for this course and Math 370.)

374 APPLICATION OF DIGITAL COMPUTERS V R-4 prereq Math 116, CS 201 and c/i. Formulation and programming of problems occurring in the physical sciences, life sciences and social sciences. Definite projects will be completed by the students. (Intended only for non-mathematics majors.)

401-402-403 ADVANCED PROGRAMMING 3 (3-4) prereq CS 303. Formal languages, language parsing, translation techniques, and compiler construction. Function and design of operating systems. List processing.

452 COMPUTER APPLICATION IN EDUCATION V R-6 c/i. The applications of computers in education, e.g., computer assisted instruction, computer assisted learning, the construction of computer programs for learning.

453 COMPUTER APPLICATIONS IN THE HUMANITIES V R-6 c/i. The applications of digital computers in Art, History, Political Science, Music, etc.

471-472-473 NUMERICAL ANALYSIS 4 (3-4) prereq Math 253 and CS 101 or equivalent. Error analysis, approximation and interpolation, numerical solution of linear and nonlinear equations, numerical solution of ordinary and partial differential equations, numerical solution of integral equations and selected topics. Assigned work on digital computer. (Credit not allowed for this course and Math 471-472-473.)

475 COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prereq BA 350 or equivalent and CS 301 or equivalent. Modeling business information and control systems for simulation on electronic computers. Applications in inventory control, planning, forecasting and budgeting. (Credit not allowed for this course and BA 475.)

476-477-478 COMPUTER METHODS OF SOLUTION OF LINEAR SYSTEMS 3 (2-2) prereq Math 253 and CS 201 and c/i. Necessary material from linear algebra and matrix theory. Error analysis of algorithms currently used in the solution of linear simultaneous equations and in obtaining eigenvalues. Each student will complete at least one computer program. Applications to linear programming.

499 SEMINAR V R-6 Guidance in special work.

FOR GRADUATES

554 ARTIFICIAL INTELLIGENCE V R-4 prereq CS 473 or Math 472. Theories of knowledge representation, models of rational and irrational behavior, and reasoning, expert systems, heuristics and algorithms and their implementation by computers.
DENTAL HYGIENE

The Department of Dental Hygiene offers a curriculum leading to the degree of Bachelor of Science in Dental Hygiene. The curriculum consists of two years of pre-dental hygiene courses and two years of professional work. Pre-dental hygiene courses give the student a background in biological and physical sciences in preparation for the professional training.

Under direction of the dentist and within the limits of the dental practice act under which the dental hygienist is licensed, this auxiliary provides clinical, educational and community services in dental offices, public health, schools, hospitals, industry, research, and the Armed Forces. Clinical duties of the dental hygienist include removing stains and deposits from the teeth, applying preventive agents to oral structures, exposing and processing dental x-rays, obtaining and preparing diagnostic information for interpretation by the dentist, and assisting the dentist at the chair.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DENTAL HYGIENE: In addition to the general requirements for graduation listed earlier in the catalog (except the foreign language requirement), the following courses are required for the Bachelor of Science degree in Dental Hygiene: English 100; Mathematics 116, 125; Chemistry 101, 102, 180; Health, Physical Education and Recreation 199, 290; Microbiology 100-101 or 200, 307; Home Economics 146 or 246, 366; Psychology 110, 230; Speech Communication 111; Pharmacy 240, 301, 302, 304, 306, 308, 309, 310, 311, 312, 400, 401, 402, 403, 404, 410, 411, 412.

The Dental Hygiene Aptitude test must be taken during the spring quarter, Sophomore year. The National Board Dental Hygiene Test must be taken during the spring quarter, Senior year. A total of 195 credits including 3 credits of required Health, Physical Education and Recreation 100 course is required.

The Dental Hygiene licensure examination will be given once each year by the Montana State Board of Dental Examiners.

DENTAL HYGIENE CURRICULUM FOR THE B.S. DEGREE

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division Composition (Engl 100)</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>College Algebra (Math 119)</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elementary Statistics (Math 125)</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Biology (Zool 111)</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Psychology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Zoology (Zool 113)</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Public Speaking (Sp C 111)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health, Physical Education and Recreation (HPER 100)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Group Requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Sophomore Year

| Human Physiology (Zool 202) | 5      |        |        |
| General Chemistry (Chem 101-102) | 4      | 4      | 5      |
| Survey of Clinic Dentistry (Chem 180) | 5      |        |        |
| Elementary Microbiology (Micro 100-101) | 5      |        |        |
| General Microbiology (Micro 200) |        |        |        |
| Human Anatomy (HPER 290) | 5      |        |        |
| Elementary Medical Microbiology (Micro 102) | 3      |        | 2      |
| First Aid (HPER 199) |        |        |        |
| Elementary Nutrition (Home Ec 246 or 146) | 4      |        |        |
| Child and Adolescent Psychology (Psych 230) | 5      |        |        |
| Group Requirements and Electives | 2      | 5      |        |
|                |        |        |        |
|                | 16     | 16     | 17     |

Junior Year (scheduled for fall 1971)

| Seminar in Dental Hygiene | 1      |        |        |
| Human Development (Home Ec 366) | 3      |        | 3      |
| Oral Histology (Dent 305) | 3      |        | 3      |
| Dental Materials (Dent 206) | 3      |        |        |
| Techniques of Oral Prophylaxis (Dent 310) | 3      |        |        |
| Dental Anatomy (Dent 303) | 3      |        |        |
| General and Oral Pathology (Dent 302) | 3      |        | 3      |
| Oral Microbiology (Micro 307) | 2      |        |        |
| Periodontics (Dent 304) | 3      |        |        |
| Drugs and Dental Therapeutics (Pharm 341) | 3      | 7      | 7      |
| Group Requirements and Electives | 3      | 7      | 7      |
|                | 17     | 16     | 16     |

Senior Year

| Dental Ethics and Jurisprudence (Dent 312) | 1      |        |        |
| Roentgenology (Dent 400) | 3      |        | 3      |
| Preventive Dentistry (Dent 306) | 3      |        | 3      |
| Clinical Practice (Dent 311) | 3      | 3      | 3      |
| Clinical Oral Prophylaxis (Dent 402) | 3      |        | 3      |
| General Dental Hygiene (Dent 401) | 3      |        | 3      |
| Community Dental Hygiene (Dent 403) | 3      |        |        |
| Field Practice (Dent 341) | 2      | 2      |        |
| Problems in Dental Hygiene (Dent 411) |        |        |        |
| Seminar in Dental Hygiene | 1      |        |        |
| Dental Literature | 1      |        |        |
| Electives and Group Requirements | 6      | 3      | 4      |
|                | 15     | 17     | 17     |

300 DENTAL ANATOMY 3 (3-0) prereq HPER 290. The growth and development of the teeth; morphology of permanent and primary teeth and the supporting tissues; drawing and carving of emulsions.

301 ORAL HISTOLOGY 3 (3-0) prereq Dental Hygiene 300. Development and microscopic anatomy of structures in the oral cavity, with particular reference to the teeth.

302 GENERAL AND ORAL PATHOLOGY 3 (3-0) prereq Microbiology 100-101 or 200, 307; Home Economics 146 or 246, 366; Psychology 110, 230; Speech Communication 111; Preventive Dentistry 3 (3-0). Etiology and control of dental caries. Physiology and composition of saliva, ecology of the mouth, chemical composition of the teeth, degradation of carbohydrates, systemic factors in the caries process, enzyme inhibitors, fluorides, etc., and caries susceptibility tests.

310 TECHNIQUES OF ORAL PROPHYLAXIS 3 (2-4). Techniques of oral prophylaxis, topical application, oral inspection, and dental health instruction, some clinical experience.

311 PRINCIPLES OF DENTAL HYGIENE PRACTICE 3 (3-0). The causes, manifestations, and effects of stains and hard deposits on teeth. Principles and methods for removal of these deposits; laboratory techniques and instrumentation on manikins. Techniques and principles of patient dental health education. Orientation to clinical procedures and patient management.

312 DENTAL HYGIENE ETHICS AND JURISPRUDENCE 2 (2-0). Fundamental ethics and professional application with reference to dental hygiene. Working arrangements and attitudes toward service to individual patients and community. Professional loyalty. Legal status of dental hygiene. The diseases and abnormalities of the hard and soft tissues of the oral cavity.

313 SEMINAR IN DENTAL HYGIENE 1 (1-0).

400 ORAL ROENTGENOLOGY 3 (2-4). Radiographic techniques exposure chemistry and processing of films, record keeping and mounting of films; direct application of dental hygiene. Laboratory procedures involving experience of technique, processing, mounting, etc.


402 CLINICAL ORAL PROPHYLAXIS 3 (2-12). Clinical experience in the performance of oral prophylaxis, topical application, dental health instruction to patients. Close supervision.

403 COMMUNITY DENTAL HEALTH EDUCATION 3 (3-0). (Recommended Education 494 Seminar: Dental Health and Public School Organization as a prerequisite). Application of educational principles to dental health teaching; instruction in planning for community dental health programs including actual dental survey experience; evaluation of dental health teaching materials. Study of established dental health education programs.

404 SEMINAR IN DENTAL HYGIENE 1 (1-0). Professional education, accreditation, legislation, organization, and literature. Responsibilities of the dental hygienist to the community.

410 FIELD PRACTICE 3 (2-12). Observation and participation in dental hygiene program of local schools. Inspections and classroom talks. Research surveys, recording and compiling data. Some advanced dental hygiene practice in the University Clinic under supervision.

411 PROBLEMS IN DENTAL HYGIENE 2 (2-0). Field of practice problems, background, objectives, program and evaluation.

412 DENTAL LITERATURE 1 (1-0). Dental research and its application to dental health education.
DRAMA

study is designed to train the student in acting, directing, 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, Bachelor of Fine Arts, Master of Arts and Master of Fine Arts degrees in drama.

The B.A. and M.A. programs are oriented more towards a liberal arts concept, the B.F.A. and M.F.A. programs toward pre-professional and professional training in the theater arts.

University of Montana graduates in theater and drama are presently teaching in high school theater, teaching in college and university 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 fulfilled for the Bachelor of Arts degree with a major in drama: Drama 101, 121-122-123, 131-132-133, 201-202-203, 244, 251, 301-302-303, 311, 499 (4 cr.), plus a minimum of 6 additional elective credits in Drama. All drama majors are required to enroll in Drama 260 or 360, Drama Workshop, for three years.

The following courses outside the drama department are required:
- English 100, 300, 450 and 343.
- HPER 3, credits in ballet, modern dance or fencing.
- Group requirements I, II, III. (Drama requirements meet Group IV.)

The foreign language requirement listed earlier in the catalog must be satisfied for the Bachelor of Arts degree.

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.

Candidates for the Bachelor of Fine Arts degree will meet the same requirements as for the Bachelor of Arts degree except that the aggregate number of credits in the Department of Drama must be a minimum of 90 hours. The specific additional courses will depend upon the student’s area of emphasis. A foreign language is not required for this degree.

DRA MA MAJORS PLANNING TO TEACH in Montana secondary schools must take, in addition to their Drama major, a teaching Minor. Ordinarily English should be the teaching minor chosen. Course requirements in Education to meet teacher certification with a teaching major or minor in Drama are listed under Education.

Drama majors electing the teaching major are exempted from Drama 201 and 202. Due to credit limitations, the B.A. degree is suggested.

PROGRAM FOR THE B.A. AND B.F.A. DEGREES

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 101</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drama 121-122-123</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Drama 131-132-133</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Drama 200</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drama 251</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 100</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPER 100 (Ballet, Modern Dance or Fencing)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 200</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Drama 200, 201, 202, 203</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Drama 244</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 300</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group electives or language</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>3-5</td>
<td>2-4</td>
<td>5-7</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
<td>15-17</td>
<td>15-17</td>
</tr>
</tbody>
</table>

For B.F.A. degree with Acting emphasis take Music 100—Voice (3 cr.) or Music 117-118-119, Drama 221-222-223, and HPER 100—Fencing, if not previously taken.

Junior Year

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 300</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Drama 300, 302, 303</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Drama 311</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 499</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 343</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-9</td>
<td>8-10</td>
<td>9-10</td>
</tr>
<tr>
<td></td>
<td>16-18</td>
<td>16-18</td>
<td>16-18</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 499</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

* B.A. degree candidates are not required to enroll in these courses for credit.

1. B.F.A. candidates check current departmental requirements for electives in area of emphasis.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

101 (112) INTRODUCTION TO THE THEATER 3. The elements which make up the art of play production. The principles underlying all the arts.

121-122-123 (121) ELEMENTARY ACTING 3. Pantomime, movement, stage voice.

131-132-133 (131) STAGECRAFT 4 (3-3). Enter any quarter. The physical theater, scenery, construction, painting, rigging, stage properties and fundamentals of lighting and costuming.

200 BEGINNING THEATER WORKSHOP V 6-4 R-12. Laboratory production in all the arts of the theater.

201-202-203 (261-262-263) DRAMATIC LITERATURE 3. Enter any quarter. Emphasis upon the performed play, from the Greeks through contemporary theater.

221-222-223 INTERMEDIATE ACTING 3 prereq 121-122-123, 251 or c/. Characterization and scene work. Additional work in voice and pantomime.

254 (251) STAGE MAKE-UP 2. Principles of and practice in theatrical make-up. Students will work on make-up for major productions.


FOR UNDERGRADUATES AND GRADUATES

300 (304) WORKSHOP IN THEATER V 2-10 R-20 prereq previous work in theater or drama courses. Advanced laboratory production in all the arts of the theater.


306 PLAYWRITING 2 R-6 prereq c/. Techniques and practice in writing short and full length plays.

307-308-309 THE DRAMA (see English)

311-312-313 (223, 422) DIRECTING 4 prereq 8 credits in drama. Directing the play. (311) Basic techniques. (312-313) Styles and staging in production. Assignments in conjunction with the Theater and Opera Workshops.

321-322-323 (351) ADVANCED ACTING 3 prereq 221-222-223 or c/. Advanced scene work. Historic and contemporary styles of acting.

329 (342) ACTING FOR TELEVISION 3 prereq 121. Theory and practice of acting before the television camera.

331 (332) ADVANCED STAGECRAFT 3. Advanced studies and practice in scenery construction and painting, properties, sound, lighting, costuming and related areas.

332-334 SCENIC DRAFTING 2. Drafting techniques for the scene designer and technical director.

335-336 (343) STAGE LIGHTING 3 prereq 123. Theatrical lighting theory, instruments and practice. Students will work on lighting for major productions.


371 (321) THEATER PRODUCTION IN THE HIGH SCHOOL 3. Problems of high school theater including play selection, staging, acting, promotion, organization. (Not for drama majors.)

374 CHILDREN’S THEATER 3 prereq c/. History and objectives of the theater for the child audience. Techniques of acting, directing, and producing plays for children.

377 (364) CREATIVE DRAMATICS 3 prereq c/. Creative play, improvisation, and children’s literature in dramatic form as a teaching method for non-theater subjects at the elementary school level.

381 ART HISTORY OF THE THEATER 2. Visual arts of the theater as an important aspect of the aesthetic theories developed in selected periods of history.

400 TOURING 2-10 R-20 prereq consent of department chairman. Laboratory experience in total play production through participation in state, regional, national and international touring production programs.
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 the following: (1) To present to students the basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them in their professional work. (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 and comparative economic systems.

Students may major in economics leading to a Bachelor of Arts or Bachelor of Science degree or a combination of economics and political science. 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, 30 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. The student must also pass the 300 level English composition course with a "C" or above or pass a departmental examination before he has completed 150 credits. Five quarters of one foreign language or three quarters in each of two languages.

The requirements for the Bachelor of Science degree with a major in Economics are the same as for the Bachelor of Arts degree with a major in Economics, except that the foreign language requirement does not apply. Mathematics 153 and General 151-152-153 (Humanities) are required.

Unless circumstances peculiar to the student's best interest indicate otherwise, the student shall complete his sophomore or junior year, Economics 201-202-203; Mathematics 116 (or equivalent), 125, Computer Science 101; Political Science 201; History 201-202; Anthropology 132; Sociology 110; in the junior or senior year, Economics 301 and 311. It is strongly recommended that all students take Business Administration 401 and Economics 405 as directed by the chairman of the department. It is also suggested that the student take Business Administration 201-202.

The following may be counted as part of the 50 credits required for a minor in Economics: Geography 201; History 347-348-349, 373-374-375, 472-474-476; Political Science 365; Mathematics 118 or 153, 344-346; Business Administration 360. It is recommended that the student take Business Administration 201-202.

Economics-Mathematics concentration. In addition to the diversification requirements listed above the student may elect a concentration in Economics and Mathematics. This concentration shall include: Economics 201-202-203, 301, 311-312-313, 350-351, and 451-452; and Mathematics 341-342-343 or 344-345-346 and one year of calculus. (This program is not a joint major but represents instead concentrated undergraduate preparation for graduate study in theoretical economics.)

COMBINED MAJORS. Minimum of 60 credits. Combined majors in economics and political science 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 one division; for division III students 18 credits of which 12 must be in upper division courses.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101 CULTURAL FOUNDATIONS I; 102 CULTURAL FOUNDATIONS II; 103 INSTITUTIONS AND DEVELOPMENT OF ECONOMIC SOCIETY; NATURE, ORIGINS AND PROBLEMS OF MODERN CAPITALISM. (Not open to students who have had Economics 201, 202 and 203.)


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.


205 STATE AND LOCAL TAXATION 3 prereq 304. Revenues and expenditures on state and local levels.


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.


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

331-332 INTRODUCTION TO INTERNATIONAL ECONOMICS 4, S 2, prereq 203. (331) Theoretical analysis; (332) Problems of policy-making.


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

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

370 ECONOMICS OF TRANSPORTATION 3 prereq 203. Economic significance, systems, freight rates and their relations to location of industries and market centers, regulation.

374 COMPARATIVE ECONOMIC SYSTEMS 4, Su 3, 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.
ADMISSION TO TEACHER EDUCATION. 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. All students admitted to teacher education must complete the following courses with a grade of C or better: (a) have a cumulative GPA of 2.3 or better; (b) meet the requirements for admission to education by the time they enroll for Education 200; and (c) be admitted to teacher education by the Director of Teacher Education. Special requirements for the undergraduate degree in Education. To be admitted to teacher education, a student must (1) be certified to teach, (2) have a minimum of 45 or more credits in a major teaching field (and minor, if any), (3) have the consent of the Director of Teacher Education, and (4) have a cumulative GPA of 2.3 or better.

ADMISSION TO STUDENT TEACHING. Students preparing to teach particular subjects, either in junior or senior high schools, major in the principal subject to be taught or in Education. All students preparing to teach must apply for admission to student teaching at the time they enroll for Education 200. To be admitted to student teaching, a student must have a grade point average of 2.0 or better.

SPECIAL REQUIREMENTS FOR UNDERGRADUATE DEGREE IN EDUCATION. In addition to the general requirements for graduation, students majoring in Elementary Education must have at least 10 credits in English composition; students majoring in Secondary Education must have at least 10 credits in English composition; and students majoring in Special Education must have at least 10 credits in English composition. All candidates for the degree of Bachelor of Arts in Education must meet the following requirements:

Preparation for Teaching in the Secondary Grades: Candidates majoring in secondary education must complete the following courses with a grade of C or better: (a) advanced work at the graduate level which will prepare them for specialized positions such as school administrator, counselor, coordinator, research director; or build up their backgrounds in the field or fields in which the student expects to teach. After they have been granted a bachelor's degree and have completed at least 12 credits in methods of elementary teaching, they are eligible for admission to the Graduate School of Education during the freshman and sophomore years.

Preparation for Teaching in the Elementary Grades: Candidates majoring in elementary education must complete the following courses with a grade of C or better: (a) have a cumulative GPA of 2.3 or better; (b) have no grade below C in Education courses; (c) have the consent of the Director of Student Teaching; and (d) have a cumulative GPA of 2.3 or better in the major teaching field (and minor, if any), (4) have the consent of the Director of Student Teaching.

SUGGESTED CURRICULUM IN SECONDARY EDUCATION

Freshman Year

Eng. 100, Lower Division Composition 3
Group Requirements: Life Sciences 6
Group Requirements: Mathematics 3
Group Requirements: Humanities 9
Electives in Courses in Major and/or Minor Teaching Fields 9-14
HPER 100 or 115-120, Physical Education or Prof. Activities 3

Sophomore Year

Eng. 300, Upper Division Composition 3
Group Requirements: Physical Sciences and/or Math 3
Group Requirements: Humanities 9
Educ. 200, Orientation to Education 2
Educ. 205, Educational Administration 3
Electives or Courses in Major and/or Minor Teaching Fields 30-36

Junior and Senior Years

Eng. An Advanced Course in Composition 3
Educ. 452, Educational Measurement 4
Educ. Required Courses from Options Allowed 12
Educ. 305, Secondary School Teaching Procedures 5
Educ. 405, Student Teaching: Secondary 10
Educ. 406, Problems in Teacher Education 3
Electives or Courses in Major and/or Minor Teaching Fields 52-64

Preparation for Teaching in the Elementary Grades: Candidates majoring in elementary education must complete the following courses with a grade of C or better: (a) have a cumulative GPA of 2.3 or better; (b) have no grade below C in Education courses; (c) have the consent of the Director of Student Teaching; and (d) have a cumulative GPA of 2.3 or better in the major teaching field (and minor, if any), (4) have the consent of the Director of Student Teaching.

SUGGESTED CURRICULUM IN SECONDARY EDUCATION
**Language, Health, Physical Education and Recreation, Library Science, Special Education.** Approved minor patterns are available at the Student Services 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:**

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eng. 100, Lower Division Composition</strong></td>
</tr>
<tr>
<td><strong>Gen. 125-126, Science for Elementary Teachers</strong></td>
</tr>
<tr>
<td><strong>Soc. Sci. 101, Practical Teaching in Elementary School</strong></td>
</tr>
<tr>
<td><strong>Gen. 151-152-153, Introduction to the Humanities</strong></td>
</tr>
<tr>
<td><strong>Mus. 123-124, Music Education in the Elementary Schools</strong></td>
</tr>
<tr>
<td>HPER 100 or 115-120, Physical Education or Prof. Activities</td>
</tr>
<tr>
<td><strong>Elective(s)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eng. 300, Upper Division Composition</strong></td>
</tr>
<tr>
<td><strong>HPER 190, First Aid</strong></td>
</tr>
<tr>
<td><strong>Hist. 202, United States History</strong></td>
</tr>
<tr>
<td><strong>Math 100, Theory of Arithmetic</strong></td>
</tr>
<tr>
<td><strong>Pol. Sci. 101, American Government</strong></td>
</tr>
<tr>
<td><strong>Soc. Sci., Elective Courses</strong></td>
</tr>
<tr>
<td><strong>Math, Elective Course</strong></td>
</tr>
<tr>
<td><strong>Elective(s)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

**Junior and Senior Years**

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eng. 340, Survey of Children's Literature</strong></td>
</tr>
<tr>
<td><strong>Educ. 395, Elementary School Reading</strong></td>
</tr>
<tr>
<td><strong>Educ. 499, Teaching Elementary School Mathematics</strong></td>
</tr>
<tr>
<td><strong>Educ. 310, Teaching Elementary School Social Studies</strong></td>
</tr>
<tr>
<td><strong>Educ. 311, Teaching Elementary School Science</strong></td>
</tr>
<tr>
<td><strong>Educ. 312, Teaching Elementary School Language Arts</strong></td>
</tr>
<tr>
<td><strong>Eng. 402, Advanced Course in Composition</strong></td>
</tr>
<tr>
<td><strong>Art 303-304, Elementary School Art</strong></td>
</tr>
<tr>
<td><strong>Gen. 390, Conservation of Natural and Human Resources</strong></td>
</tr>
<tr>
<td><strong>HPER 301, Teaching Physical Education in Elementary School</strong></td>
</tr>
<tr>
<td><strong>HPER 373, The School Health Program</strong></td>
</tr>
<tr>
<td><strong>Soc. Sci., Elective Courses</strong></td>
</tr>
<tr>
<td><strong>Educ. 404, Student Teaching: Elementary</strong></td>
</tr>
<tr>
<td><strong>Educ. 407, Problems in Teaching</strong></td>
</tr>
<tr>
<td><strong>Elective(s)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

**RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATES.** The University of Montana recommends its graduates who meet state certification requirements to the State Department of Public Instruction. All such recommendations must be approved by the Department 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 recommendation for certification to teach in 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 below).
3. Preparation in one or more special subject areas commonly taught in the secondary schools to indicated under COURSE REQUIREMENTS IN MAJOR AND MINOR TEACHING FIELDS, listed later.

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

1. Bachelor's degree from the University of Montana or other approved institution of higher education showing that 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.
3. Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarters 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 will similarly submit a statement setting forth their proposed programs. Each candidate for a certificate who has not already received credit in Student Teaching (Educ 404 or 455) shall be assigned definite quarters in which he must register for that course.

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

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 upon the Bachelor's Degree in Elementary Education, see the preceding section on preparation for teaching in the elementary grades for requirements.

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 beyond the bachelor's 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 344, 346, 351, 352, and 353. The student planning a more extended program should consult the library service program advisor for additional courses.

**GRADUATE WORK.** See Graduate School Bulletin.

**FOR UNDERGRADUATES**

**For Explanation see Course Descriptions (Index)**

**100 STUDENT TEACHING: ELEMENTARY V R-15**

**101 THE ELEMENTARY SCHOOL CHILD 5 prereq 200, coreq 201.** Principles of growth and development and the psychology of learning as applied to the elementary school child. A minimum of 200 hours per week will be spent in observation of children in the school environment.

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

**105-106-107 METHODS OF TEACHING PHYSICAL EDUCATION ON THE SECONDARY LEVEL.** (See Health, Physical Education and Recreation.)

**107 SECONDARY SCHOOL TEACHING PROCEDURES 5 prereq 200 and 205.**

**108 TEACHING ELEMENTARY SCHOOL READING 3 prereq 202.**

**109 TEACHING ELEMENTARY SCHOOL MATHEMATICS 3 prereq 202 and an introductory course in modern mathematics or c/f.**

**110 TEACHING ELEMENTARY SCHOOL SOCIAL STUDIES 3 prereq 202.**

**111 TEACHING ELEMENTARY SCHOOL SCIENCE 3 prereq 202.**

**112 TEACHING ELEMENTARY SCHOOL LANGUAGE ARTS 3 prereq 202.**

**202-203-204 SCHOOL MUSIC. (See Music.)**

**205 METHODS IN TEACHING HEALTH.** (See Health, Physical Education and Recreation.)

**206 METHODS OF TEACHING EARTH SCIENCE.** (See Geology.)

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

**208 SCHOOL PUBLICATIONS AND TEACHING METHODS.** (See Journalism.)

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

**210 TEACHING OF ENVIRONMENTAL EDUCATION 3 prereq Gen 300 and c/f.**
327 PROBLEMS IN ENVIRONMENTAL EDUCATION 3 prereq c/l. Designing, selection, and evaluation of materials for the teaching of Environmental Education.

328 METHODS OF TEACHING PHYSICS. (See Physics.)

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

331 EARLY CHILDHOOD EDUCATION 3 prereq c/l. Theory and techniques of teaching in pre-school and primary levels of education. Observation and participation in pre-school programs. Required teaching experience and c/l. Diagnosis and treatment of reading difficulties at elementary, secondary and college levels. Methods of mathematics for special primary, classroom teachers, and administrators who wish to initiate remedial programs.

340 SURVEY OF CHILDREN'S LITERATURE 3.

341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 4 prereq c/l. Objectives of library service, library routines in a school, public or college library under the librarian's place in governmental organization, library extension work.

342 INTEGRATING MULTI-MEDIA MATERIALS IN INSTRUCTION 3.

343 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 3.

344 CATALOGING AND CLASSIFICATION 4, Su 3 prereq c/l.

345 MATERIALS SELECTION AND BIBLIOGRAPHY 4, Su 3 prereq c/l.

346 LIBRARY REFERENCE MATERIALS 4, Su 3 prereq c/l.

347 AUDIOVISUAL COMMUNICATION 3. Utilization of sound and visual teaching aids. Intensive laboratory work in basic instructional materials and operation of AV equipment.

349 EDUCATIONAL SOCIOLGY 3. Education in modern social, economic, and political life: the school as a social institution; the class problems of American life which affect and are affected by the work of the public schools.

370 THE TEACHER AND SCHOOL ORGANIZATION 3. The teacher's relationship to the organization, management, and financing of American public education with special emphasis on personnel problems, community relations, and organizational structure of schools.

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

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

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

382 METHODS OF TEACHING ENGLISH. (See English.)

385 PHILOSOPHY OF VOCATIONAL BUSINESS EDUCATION (See Business Administration.)

386 PRACTICES IN VOCATIONAL BUSINESS EDUCATION. (See Business Administration.)

387 COOPERATIVE VOCATIONAL BUSINESS EDUCATION PROGRAMS. (See Business Administration.)

390 METHODS OF TEACHING FOREIGN LANGUAGES. (See Foreign Languages.)

395 METHODS OF TEACHING FOREIGN LANGUAGES IN ELEMENTARY SCHOOLS. (See Foreign Languages.)

411 SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 3 prereq teaching experience and c/l. An analysis of current methods of teaching of language arts in the elementary school.

412 SUPERVISION AND TEACHING OF READING 3 prereq teaching experience and c/l. Characteristics of good reading programs and their development in accordance with present day understandings of children and youth.

414 SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 3 prereq teaching experience and c/l. Current trends. Instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.

417 SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience and c/l. 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 Gen. 128-128-128 or = teaching experience and c/l. Curriculum planning, development and use of instructional materials, teaching procedures.

420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq 205, a science minor and c/l. Problems involved in development of an adequate high school science program; curriculum methods, instructional materials.

421 METHODS OF TEACHING HOME ECONOMICS. (See Home Economics.)

422 TEACHING SPEECH IN THE SECONDARY SCHOOL. (See Speech Communication.)

423 PRINCIPLES AND PRACTICES IN TEACHING OF SECONDARY MATHEMATICS 3 prereq completion of at least 3/2 of the major or minor teaching field in mathematics.


426 ADVANCED TRAFFIC SAFETY EDUCATION 3 prereq a basic course in driver training or experience in teaching driver training. For students who have had experience in this field. General traffic education.

427 READING IN JUNIOR AND SENIOR HIGH SCHOOL 3 prereq 203 or =. Programs, materials, testing, reading in the content fields, research, and development.

428 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 203 or teaching experience. Problems involved in the teaching of social studies in junior and senior high schools. The use of instructional materials and development of units of instruction, selection and use of 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, traits, identification, curriculum, teaching methods, and research.

435 REMEDIAL READING LABORATORY 3 R-9 prereq or coreq and c/l. Supervised practice in diagnosis and remedial instruction.

438 ADMINISTRATION OF THE INTERMEDIATE SCHOOL 3 prereq c/l. Teaching or teaching experience. Objectives, organization, class scheduling, and co-curricular activities in middle schools or junior high schools.

440 LIBRARY PROGRAMS IN ELEMENTARY SCHOOLS 3 prereq completion in children's literature and knowledge and use of classroom collections and centralized libraries for curriculum enrichment programs, reading, guidance, and library skills. Responsibilities of classroom teachers, elementary librarians, library supervisors, elementary principals and administrators.

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 prereq c/l. and a course in children's literature. Work with children in public libraries, including story telling and organization of the children's department in the public library.

443 LIBRARY WORKSHOP 3 R-9 prereq c/l. Problems of library service. General sessions and committee work; individual work on problems of special interest within the workshop topic.

444 LIBRARY SEMINAR V R-10 prereq 12 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.

445 LIBRARY PRACTICE 5 prereq c/l. The student performs library routines in a school, public or college library under the supervision of a trained professional librarian.

447 PREPARATION OF INEXPENSIVE INSTRUCTIONAL MATERIALS 3 prereq 347. Graphic techniques in the areas of lettering, coloring, enlarging, mounting, and production in the preparation of media for projected and non-projected use.

448 UTILIZATION OF AUDIOVISUAL MEDIA 3 prereq 347. Selection and utilization of major types of audiovisual materials for an instructional communication system.

449 ADMINISTRATION OF AUDIOVISUAL COMMUNICATION PROGRAMS 3 prereq basic courses in field or c/l. Management and administration of audiovisual communications media for elementary or secondary school programs.

450 SECONDARY SCHOOL GUIDANCE 4 prereq 205 or teaching experience. Orientation to the need, organization, and methodology of guidance services in secondary schools.

451 GUIDANCE IN THE ELEMENTARY SCHOOL 4 prereq 306, 309, 310, 311, 312 or teaching experience. Orientation to the need, organization, and methodology of guidance services in the elementary schools.

452 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. Enter either quarter. (461) to 1650; (462) 1650 to present.

490 INDEPENDENT STUDY V R-10 prereq c/l. Selected topics under the guidance of a staff member. Term papers may be required.
32—EDUCATION

494 SEMINAR V R prereq c/i. Group analysis of problems in specific areas of education.

FOR GRADUATES

505 INTERNSHIP V R prereq c/i. Supervised field experiences in administration, counseling, special education or curriculum. (Admission by application only.)

530 CURRICULUM FOUNDATIONS 4 prereq c/i. An analysis of the curriculum in the light of historical perspective, value systems, current curriculum patterns, educational objectives, and research in growth and development.

531 ELEMENTARY CURRICULUM 4 prereq 530 or c/i. Major trends in course content, grade placement, organization of materials, and evaluation of outcomes.

532 HIGH SCHOOL CURRICULUM 4 prereq 530 or c/i. Sociological, psychological, and philosophical foundations of the high school curriculum. Trends in the separate subjects and organizing for curriculum development.

533 INTERMEDIATE SCHOOL CURRICULUM 4 prereq 530 or c/i. The writing of educational thinkers, ancient and modern, junior high schools and middle schools. Curriculum trends in the separate subject areas, organization and administration for the implementation of curriculum.

535 CURRICULUM WORKSHOP V R-10 prereq teaching experience and c/i.


551 ADVANCED CHILD DEVELOPMENT 3 prereq c/i. Physical, intellectual, and social growth of the child, with special reference to the writings of Piaget, Gesell, and others.

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 5 R-10 prereq 450 or 451 and a course in abnormal psychology or personality dynamics. Group processes, interaction and practical experience.

554 OCCUPATIONAL INFORMATION 3 prereq 450 or c/i. Sources, including job analysis and surveys; occupational trends, classification, preparation, filing system, evaluation, selection, and use of occupational information.

555 THEORIES OF COUNSELING 5 prereq 450 or 451 and a course in abnormal psychology or personality dynamics.

556 INDIVIDUAL COUNSELING PRACTICUM 5 R-10 prereq c/i.

557 ORGANIZATION AND ADMINISTRATION OF PERSONNEL SERVICES 3 prereq c/i. The development and organization of guidance services in the school with emphasis on philosophy, organization, and administrative procedures.

558 SEMINAR IN COUNSELING AND GUIDANCE 3 prereq c/i. Current literature and research in the counseling and guidance field.

561 COMPARATIVE EDUCATION 3. A comparison of the education systems of United Kingdom, France, Germany, Italy, the Soviet Union, and Japan in the United States.

564 PHILOSOPHY OF EDUCATION 3. Leading philosophical points of view in education; concepts of the individual, society, the educative process, and the role of education.

565 THE GREAT EDUCATIONAL DOCUMENTS 3 prereq c/i. The writings of educational thinkers, ancient and modern, including Plato, Aristotle, Quintillian, Bacon, Pestalozzi, Herbert, Spencer, and John Dewey.

568 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq c/i. The background of education in its broadest sense as found in the religion, the economic system, the family, the state, and the community.

569 SCHOOL AND COMMUNITY 3 prereq c/i. Community resources which may be utilized for the enrichment of the educational program.

570 EDUCATIONAL ADMINISTRATION 4 prereq teaching experience. Administrative relationships at federal, state, and local levels; responsibilities of county and district school superintendents.

572 ELEMENTARY SCHOOL ADMINISTRATION 3 prereq teaching experience.

573 SECONDARY SCHOOL ADMINISTRATION 3 prereq teaching experience.

574 SCHOOL SURVEYS AND STUDIES 3 prereq 570. Techniques in the organization of future needs and direction of education in the local school district.

575 SCHOOL SUPERVISION 4 prereq teaching experience. Roles and responsibilities of assigned leaders for improving instruction and promoting student achievement.

576 SCHOOL FINANCE 4 prereq teaching experience. Sources of school revenues; related costs, inequities, legal limitations, and proper expenditures; relationship of foundation programs and district reorganization.

577 SCHOOL FACILITIES PLANNING V 2-4 prereq 570 or c/i. Procedures in determining school facility needs and preparation of educational specifications.

578 LEGAL BASIS OF PUBLIC EDUCATION 3 prereq 570 or c/i. Legal concepts of education in the United States; legal impediments to the conduct of education as a state function. Legal problems affecting pupils, parents, teachers, administrators, and school board members in relation to the school.

579 PERSONNEL ADMINISTRATION 3 prereq 570 and c/i. Problems of certified and non-certified personnel (not student); selection, in-service training, assignment, supervision, and welfare.

581 COLLEGE TEACHING 3 prereq 30 credits of graduate work. The type of teaching applicable to the college level.

582 PROBLEMS IN TEACHING BOOKKEEPING. (See Business Administration.)

583 PROBLEMS IN TEACHING SHORTHAND AND TRANSCRIPTION. (See Business Administration.)

584 PROBLEMS IN TEACHING TYPEWRITING. (See Business Administration.)

585 UNIT COURSES IN BUSINESS EDUCATION. (See Business Administration.)

590 VOCATIONAL DEVELOPMENT THEORY 3 prereq 554 or c/i. A comparison of current theories of vocational development.

590 INDEPENDENT STUDY V R-10 prereq consent of adviser and instructor. Selected topics under the guidance of a staff member.

593 SUPERVISION OF STUDENT TEACHING 3 prereq c/i. Philosophy, procedures, and problems in supervision of student teachers. For elementary and secondary teachers who work (or intend to work) with student teachers.

594 SEMINAR V R prereq c/i. Group analysis of problems in specific areas of education.

595 METHODS OF EDUCATIONAL RESEARCH. Research problems; their statement, organization, techniques, tabulation of materials, statistical concepts necessary for interpretation of research data. (An introductory course in statistics is highly desirable.)

597 EDUCATIONAL STATISTICS 4 prereq an introductory course in statistics and c/i.

599 RESEARCH V R-15 prereq c/i.

633 CURRICULUM TRENDS IN HIGHER EDUCATION 3 prereq c/i.

638 THE AMERICAN COMMUNITY/JUNIOR COLLEGE 3 prereq c/i.

570 ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION 3 prereq c/i.

599 THESIS OR PROFESSIONAL WRITING V R-30.

COURSE REQUIREMENTS

IN MAJOR AND MINOR TEACHING FIELDS

Students who wish to qualify for the Montana secondary teaching certificate must meet the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete requirements for a major teaching field (43 or more credits, depending on the field) and a minor teaching (39 or more credits, depending on the field) in areas commonly taught in high schools. (See Course and Credit Requirements in Major and Minor Teaching Fields below.) Single endorsements on certificates will be allowed if the student presents 60 or more credits in the major teaching field in courses approved by both the department or school involved and the School of Education.

In case the patterns of major and minor teaching fields are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements for graduation.

Major teaching field requirements are not necessarily the same as major department requirements for graduation. The student might satisfy requirements for the major teaching field, but still not meet major requirements for graduation as a major in the University department.

ART

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 123—Drawing</td>
<td>9</td>
</tr>
<tr>
<td>Art 125—6—Design</td>
<td>6</td>
</tr>
<tr>
<td>Art 129—Ceramics</td>
<td>1</td>
</tr>
<tr>
<td>Art 160—Layout and Lettering</td>
<td>2</td>
</tr>
<tr>
<td>Art 204—1-2—Survey of Western Art</td>
<td>9</td>
</tr>
<tr>
<td>Art 233—Printmaking</td>
<td>2</td>
</tr>
<tr>
<td>Art 235—Sculpture</td>
<td>6</td>
</tr>
<tr>
<td>Art 236—Water Color</td>
<td>3</td>
</tr>
<tr>
<td>Art 240—Painting</td>
<td>6</td>
</tr>
<tr>
<td>Art 343—Elementary School Art</td>
<td>6</td>
</tr>
<tr>
<td>Art-Edu. 327—Methods of Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Secondary Art</td>
<td>3</td>
</tr>
<tr>
<td>Art 323—Advanced Design (Photography)</td>
<td>3</td>
</tr>
<tr>
<td>Art 325—Advanced Design (Crafts)</td>
<td>3</td>
</tr>
</tbody>
</table>

*Qualifies for K-12 certification endorsement.*
**EDUCATION—33**

## BIOLOGICAL SCIENCE

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (87-93 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Micro 201—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot-Zool 111—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 114-5—General Botany</td>
<td>10</td>
</tr>
<tr>
<td>Zool 112-3—General Zoology</td>
<td>10</td>
</tr>
<tr>
<td>Bot-Zool 250—Basic Concepts of Ecology (or Bot 335)</td>
<td>3-5</td>
</tr>
<tr>
<td>Bot-Zool 455—Genetics</td>
<td>-</td>
</tr>
<tr>
<td>Gen 200—Conserv. of Nat. &amp; Hum. Resources</td>
<td>5</td>
</tr>
<tr>
<td>Geog 101-2-3—Intro. to Environmental Science (or Phys 111-2-3)</td>
<td>12-15</td>
</tr>
<tr>
<td>Math 116—College Algebra</td>
<td>-</td>
</tr>
<tr>
<td>Electives—Vocational Division Courses</td>
<td>5-7</td>
</tr>
<tr>
<td><em>Students presenting a minor field in Chemistry should substitute Chem 121-2-3.</em></td>
<td></td>
</tr>
<tr>
<td>*<em>Minors may substitute Bot 265 or Gen. 300 for Bot-Zool 250.</em></td>
<td></td>
</tr>
</tbody>
</table>

## BUSINESS ADMINISTRATION (SECRETARIAL)

<table>
<thead>
<tr>
<th>*Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (54-60 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Bus Ad 180 or = Beginning Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 181 or Intermediate Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 182 or Advanced Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 183—Production Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 184-5—Stenography Training</td>
<td>15</td>
</tr>
<tr>
<td>Bus Ad 183—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 194—Records Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 201-2-3—Accounting Principles</td>
<td>9</td>
</tr>
<tr>
<td>Bus Ad 202—Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 205—Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 370—Electronic Information Processing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad-Educ 383—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 384—Methods of Teaching shorthand &amp; Transcription</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 385—Philosophy of Vocational Business Education</td>
<td>3</td>
</tr>
<tr>
<td>Econ 201—Principles of Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note: Montana Vocational Certification requirement may be completed by taking Bus Ad 386 and 387 in addition to the above courses.*

## BUSINESS ADMINISTRATION (NON-SECRETARIAL)

<table>
<thead>
<tr>
<th>*Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (54-60 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Bus Ad 180 or = Beginning Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 181 or Intermediate Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 182 or Advanced Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 183—Production Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 185—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 194—Records Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 201-2-3—Accounting Principles</td>
<td>9</td>
</tr>
<tr>
<td>Bus Ad 202—Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 205—Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 370—Electronic Information Processing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 385—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 388—Philosophy of Vocational Business Education</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 401—Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Econ 201—Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 301—Money and Banking</td>
<td>4</td>
</tr>
</tbody>
</table>

## CHEMISTRY

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (47 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Chem 112-1—Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Chem 245—Quantitative Analysis</td>
<td>5</td>
</tr>
<tr>
<td>Chem 261-2—Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>Chem-Educ 239—Methods of Teaching High School Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>*Chem 370—Survey of Physical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Chem 452—Physical Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem 481—Elementary Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>Electives—Upper Division Chemistry Courses</td>
<td>3</td>
</tr>
<tr>
<td>*Prereq = Phys 111-2-3 (18 cr.); Math 115-7 (10 cr.)</td>
<td></td>
</tr>
</tbody>
</table>

## COMPUTER SCIENCE

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (45-60 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>CS 101—Introduction to Computing</td>
<td>-</td>
</tr>
<tr>
<td>CS 201—Fortran Programming</td>
<td>2</td>
</tr>
<tr>
<td>CS 210—Cobol</td>
<td>2</td>
</tr>
<tr>
<td>CS 271-2-3—Computing and Mathematics</td>
<td>9</td>
</tr>
<tr>
<td>CS 303-3—Intermediate Programming</td>
<td>9</td>
</tr>
<tr>
<td>CS 312—Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CS 320—Switching Theory</td>
<td>3</td>
</tr>
<tr>
<td>CS 577—Application of Digital Computers</td>
<td>4</td>
</tr>
<tr>
<td>CS 401-2-3—Advanced Programming</td>
<td>9</td>
</tr>
<tr>
<td>CS 480—Computer Applications in Education</td>
<td>1</td>
</tr>
<tr>
<td>*Prereq = Math 001 (6 cr.)</td>
<td></td>
</tr>
<tr>
<td>*Prereq = Math 120 (6 cr.)</td>
<td></td>
</tr>
<tr>
<td>*Prereq = Math 116 (6 cr.)</td>
<td></td>
</tr>
</tbody>
</table>

## DRAMA

<table>
<thead>
<tr>
<th>*Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (90 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Dr 101—Introduction to the Theater</td>
<td>3</td>
</tr>
<tr>
<td>Dr 121—3—Elementary Acting</td>
<td>3</td>
</tr>
<tr>
<td>Dr 121-2-3—Stagecraft</td>
<td>12</td>
</tr>
<tr>
<td>Dr 200—Beginning Theater Workshop</td>
<td>6</td>
</tr>
<tr>
<td>Dr 201—Dramatic Literature</td>
<td>9</td>
</tr>
<tr>
<td>Dr 244—Stage Makeup-Up</td>
<td>2</td>
</tr>
<tr>
<td>Dr 231—Stage Speech</td>
<td>2</td>
</tr>
<tr>
<td>Dr 302—History of the Theater</td>
<td>3</td>
</tr>
<tr>
<td>Dr 311—Directing</td>
<td>4</td>
</tr>
<tr>
<td>Dr 495—Seminar</td>
<td>4</td>
</tr>
<tr>
<td>Electives—Any Course(s) in Drama</td>
<td>5</td>
</tr>
</tbody>
</table>

## EARTH SCIENCE

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (37 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Geol 101—Physical Elements of Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geol 201—Math Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Geol 360—Climatology</td>
<td>8</td>
</tr>
<tr>
<td>Geol 101-2—Introduction to Geology</td>
<td>8</td>
</tr>
<tr>
<td>Geol 130—Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>Geol 200—General Paleontology</td>
<td>4</td>
</tr>
<tr>
<td>Geol 202—Principles of Stratigraphy</td>
<td>5</td>
</tr>
<tr>
<td>Geol 203—Regional Historical Geology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 210—Introduction to Rocks and Minerals</td>
<td>4</td>
</tr>
<tr>
<td>Geol-Educ 306—Methods of Teaching Earth Science</td>
<td>3</td>
</tr>
<tr>
<td>Geol-Educ—Geomorphology (or Geol 370)</td>
<td>3</td>
</tr>
<tr>
<td>*For 210—Forest Soils</td>
<td>4</td>
</tr>
<tr>
<td>Gen 300—Conservation of Natural and Human Resources</td>
<td>4</td>
</tr>
<tr>
<td>Astronomy 131—Elementary Astronomy</td>
<td>3</td>
</tr>
</tbody>
</table>

## ELECTIVES—From Courses Listed Below

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 103—Environmental Geology</td>
<td>4</td>
</tr>
<tr>
<td>*Phys 115—General Physics</td>
<td>3</td>
</tr>
<tr>
<td>*Bot-Zool 250—Basic Concepts Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 302—Physiol. of No. Amer.—6 cr.</td>
<td>6</td>
</tr>
<tr>
<td>Geol 302—Field Geol. Nat. Sc. Tchr.—3 cr.</td>
<td>3</td>
</tr>
<tr>
<td>Geol 330—Structural Geology</td>
<td>4</td>
</tr>
<tr>
<td>Geol 408—Intro. Verteb. Paleo.—4 cr.</td>
<td>4</td>
</tr>
<tr>
<td>Geol 440—Intro. Geomorph.</td>
<td>3</td>
</tr>
<tr>
<td>*Prereq = Chem 101-2 (8 cr.)</td>
<td></td>
</tr>
<tr>
<td>*Prereq = Phys 111 (5 cr.); Math 116-7 (10 cr.)</td>
<td></td>
</tr>
<tr>
<td>*Prereq = Math 300 (4 cr.)</td>
<td></td>
</tr>
<tr>
<td>*Prereq = Math 116-7 (15 cr.); Phys 111 and 113 (10 cr.)</td>
<td></td>
</tr>
</tbody>
</table>

## COMMUNICATION SKILLS

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Field (62 credits)</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>SpCo 110—Introduction to Systems of Communication</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 112—Argumentation</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 113—Introduction to Communication: Process</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 114—Discussion and Small Groups</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 350—General Semantics</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 355—Message Composition</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 360—Speech Criticism</td>
<td>2</td>
</tr>
<tr>
<td>SpCo 361—Oral Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Sp-Co-Educ 424—Methods of Teaching Communication Skills</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 443—Advanced Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 444—Rhetorical Theory</td>
<td>3</td>
</tr>
<tr>
<td>Eng 100—Lower Division Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 302—Introduction to Creative Writing</td>
<td>3</td>
</tr>
<tr>
<td>Eng 300—Upper Division Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 450—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 371—Structure of Modern English</td>
<td>3</td>
</tr>
<tr>
<td>Jour 270—Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Jour-Educ 316—School Publications and Teaching Methods</td>
<td>3</td>
</tr>
<tr>
<td>Jour—Magazine Article Writing</td>
<td>3</td>
</tr>
<tr>
<td><em>Minors may substitute SpCo 112 for SpCo 110.</em></td>
<td>3</td>
</tr>
</tbody>
</table>
**Electives-Courses in English**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(63 credits)</td>
<td>(39 credits)</td>
</tr>
</tbody>
</table>

**ECONOMICS**

| Econ 201-2-3—Principles of Economics | 9 |
| Econ 301—Money and Banking | 4 |
| Econ 304—Public Finance | 4 |
| Econ 311-2-3—Intermediate Economic Analysis | 12 |
| Econ 350—Labor Economics | 3 |
| Econ 351—Introduction to International Economics | 4 |
| Educ 428—Methods of Teaching Social Studies in Secondary Schools | 3 |
| Electives—Any Courses in Economics | 14 |

*Placement in student teaching may not be possible; in this case provisional certification only will be available unless the student presents another teaching area in which student teaching can be accomplished.*

**ENGLISH**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(60 credits)</td>
<td>(30 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—BROAD FIELDS**

*Does not qualify for teaching Drama, Journalism, or Speech*

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(75 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—World Literature**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Applied Literary Criticism**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Introduction to Major British Writers**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(30 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Introduction to Major American Writers**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6 or 3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Shakespeare (or 343)**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—The Structure of Modern English**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Methods of Teaching English**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Advanced Composition**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Literature for the High School Teacher**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Introduction to Public Speaking**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—World Literature**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Intermediate to Major American Writers**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6 or 3 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Elementary German**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15 credits)</td>
</tr>
</tbody>
</table>

**GERMAN**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(67 credits)</td>
<td>(37 credits)</td>
</tr>
</tbody>
</table>

**Phys 111-2-3—General Physics**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15 credits)</td>
</tr>
</tbody>
</table>

**ECONOMICS**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(75 credits)</td>
</tr>
</tbody>
</table>

**HEALTH, PHYSICAL EDUCATION AND RECREATION**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(62 credits)</td>
<td>(40 credits)</td>
</tr>
</tbody>
</table>

**ENGLISH—Broad Fields**

*Does not qualify for teaching Drama, Journalism, or Speech*

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(75 credits)</td>
</tr>
</tbody>
</table>

**PHYSICAL EDUCATION**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 or 3 credits)</td>
</tr>
</tbody>
</table>

**HPER 290—Human Anatomy**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(40 credits)</td>
</tr>
</tbody>
</table>

**HPER 358—The High School Intramural Program**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 credits)</td>
</tr>
</tbody>
</table>

**HPER 465—Measurement and Evaluation in Physical Education**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**HPER 478—Physiology of Exercise**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**GENERAL SCIENCE**

*Does not qualify for teaching Chemistry or Physics*

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(75 credits)</td>
</tr>
</tbody>
</table>

**Micro 100—Elementary Microbiology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**Bot-Zool 111—Introduction to Biology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5 credits)</td>
</tr>
</tbody>
</table>

**Bot 114—General Botany**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4 credits)</td>
</tr>
</tbody>
</table>

**Bot 265—Local Flora**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8 credits)</td>
</tr>
</tbody>
</table>

**Chem 101-2-3—General Chemistry**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5 credits)</td>
</tr>
</tbody>
</table>

**Chem 160—Survey of Organic Chemistry**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5 credits)</td>
</tr>
</tbody>
</table>

**Gen 300—Conservation of Natural and Human Resources**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**Geo 101—Introduction to Geology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8 credits)</td>
</tr>
</tbody>
</table>

**Phys 111-2-3—General Physics**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15 credits)</td>
</tr>
</tbody>
</table>

**Astron 131—Elementary Astronomy**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**Zool 112—General Zoology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10 credits)</td>
</tr>
</tbody>
</table>

**Zool 206—Field Zoology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**Edu 420—Methods of Teaching Secondary Science**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**Electives—Courses from Geology, Botany, Chemistry, Physics, Zoology**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4 credits)</td>
</tr>
</tbody>
</table>

**PREREQ = Math 116-7 (10 cr.)**

**GEORGIA**

**Major Field |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(4 credits)</td>
</tr>
</tbody>
</table>

**ECONOMICS**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(67 credits)</td>
</tr>
</tbody>
</table>

**PHYSICAL EDUCATION**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4 credits)</td>
</tr>
</tbody>
</table>

**HPER 105—Concepts in Physical Education**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 or 3 credits)</td>
</tr>
</tbody>
</table>

**HPER 399—First Aid (or 399)**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**HPER 400—Methods of Teaching Physical Education**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 credits)</td>
</tr>
</tbody>
</table>

**HPER 405—Senior Seminar**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1 credit)</td>
</tr>
</tbody>
</table>

**HPER 405—Senior Seminar**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1 credit)</td>
</tr>
</tbody>
</table>

**HPER 465—Measurement and Evaluation in Physical Education**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>

**HPER 478—Physiology of Exercise**

<table>
<thead>
<tr>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 credits)</td>
</tr>
</tbody>
</table>
HEALTH, PHYSICAL EDUCATION AND RECREATION (Continued)

**Major**

Field

(62 credits)  
(40 credits)

For Women:

HPER 223—Officiating Basketball
2  
2

HPER 205—Methods of Teaching P.E.
2  
2

Secondary Level (or 205)
2  
2

**Minor**

Field

For Men:

HPER 324—Dance Methods
4  
6

Electives—Any Courses in HPER
6  
6

**Qualifies for K-12 certification endorsement.**

**Prerequisites to courses must be approved by the Department.**

**Note:** HPER 115-120 must be completed. These courses satisfy the University requirement, but these nor HPER 115 will be counted in credits applying toward the major or minor teaching field.

HISTORY-POLITICAL SCIENCE

<table>
<thead>
<tr>
<th>Major Field (33 credits)</th>
<th>Minor Field (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist 104-5-6—European Civilization</td>
<td>12</td>
</tr>
<tr>
<td>Hist 651-2—United States History</td>
<td>8</td>
</tr>
<tr>
<td>Pol Sci 201—American Government</td>
<td>10</td>
</tr>
<tr>
<td>Pol Sci 291—Introduction to International Relations</td>
<td>5</td>
</tr>
<tr>
<td>Educ 439—Methods of Teaching Social Studies in Secondary Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

*Electives—Courses in History

Must include at least 12 credits of upper division courses.

HOME ECONOMICS

<table>
<thead>
<tr>
<th>Major Field (64 credits)</th>
<th>Minor Field (40 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Ec 102—Personal and Family Living</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 108—Home Management in Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 155—Textile Selection</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 156—Introduction to Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 158—Clothing Problems Laboratory (or 158)</td>
<td>2-3</td>
</tr>
<tr>
<td>H Ec 210—Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 241—Principles of Food Preparation</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 242—Food Preparation Laboratory (or 242)</td>
<td>2-3</td>
</tr>
<tr>
<td>H Ec 246—Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 305—Child Development I</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 302—Home Planning</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 303—Interior Design and Furnishings</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 305—Meal Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 308—Family Finance</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 310—Home Living Center</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 346—Family Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 358—Advanced Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 397—Problems in Child Development</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 399—241—Teaching Home Economics</td>
<td>5</td>
</tr>
<tr>
<td>H Ec 490—Seminar in Family Relationships</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 491—Research Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

*Prerequisite = Chem 101 (4 cr.)

**Prerequisite = Psych 110 (5 cr.)

**Prerequisite = Art 125 (2 cr.)

**ITALIAN**

<table>
<thead>
<tr>
<th>Major Field (60 credits)</th>
<th>Minor Field (45 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ital 101-2-3—Elementary Italian</td>
<td>15</td>
</tr>
<tr>
<td>Ital 201-2-3—Intermediate Italian</td>
<td>15</td>
</tr>
<tr>
<td>Ital 301-2—Oral and Written Expression</td>
<td>8</td>
</tr>
<tr>
<td>Ital 305—Italian Civilization and Culture</td>
<td>6</td>
</tr>
<tr>
<td>Ital 311-2—Survey of Italian Literature</td>
<td>6</td>
</tr>
<tr>
<td>Ital 401—Applied Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Ital 492—Advanced Composition</td>
<td>3</td>
</tr>
</tbody>
</table>

**FL: Educ 205—Methods of Teaching Foreign Languages**

Electives—Any Upper Division Italian Courses

*Foreign Language Department recommendation re student's proficiency is prerequisite to student teaching.

**Placement in student teaching may not be possible: in this case provisional certification only will be available unless the student presents another teaching area in which student teaching can be accomplished.

*Credits will be allowed for exempted courses.

*Minor may substitute in other fields.

*Must be taken in the junior year.

JOURNALISM (Continued)

<table>
<thead>
<tr>
<th>Major Field (48 credits)</th>
<th>Minor Field (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jour 100—Social Role of Mass Media</td>
<td>1</td>
</tr>
<tr>
<td>Jour 106—Current Affairs</td>
<td>1</td>
</tr>
<tr>
<td>Jour 120—Elementary Photography</td>
<td>3</td>
</tr>
<tr>
<td>Jour 270—Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Jour 290—History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Jour—Educ 316—School Publications and Teaching Methods</td>
<td>3</td>
</tr>
<tr>
<td>Jour 360—Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Jour 361—Advertising Sales</td>
<td>2</td>
</tr>
</tbody>
</table>

**MUSIC**

<table>
<thead>
<tr>
<th>Major Field (60 credits)</th>
<th>Minor Field (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus 100—Performance Minor</td>
<td>6</td>
</tr>
<tr>
<td>Mus 111-2-3—Theory I</td>
<td>6</td>
</tr>
<tr>
<td>Mus 135—Introduction to Music Literature</td>
<td>6</td>
</tr>
<tr>
<td>Mus 138-9—Aural Perception I</td>
<td>1</td>
</tr>
<tr>
<td>Mus 201, 401—Performance Major</td>
<td>3</td>
</tr>
<tr>
<td>Mus 211-2-3—Theory II</td>
<td>6</td>
</tr>
<tr>
<td>Mus 237-8-9—Aural Perception II</td>
<td>3</td>
</tr>
</tbody>
</table>

**The required credits in Music 100 should all be on one instrument or all in voice.

*Qualifies for K-12 certification endorsement.**
**PHYSICS**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 221-2-3—General Physics</td>
<td>15 15</td>
</tr>
<tr>
<td>Phys 201—Vector Analysis</td>
<td>3 3</td>
</tr>
<tr>
<td>Phys 314—Electricity</td>
<td>3 3</td>
</tr>
<tr>
<td>Phys 225-4—Light</td>
<td>4 4</td>
</tr>
<tr>
<td>Phys-Educ 329—Methods of Teaching Physics</td>
<td>3 3</td>
</tr>
<tr>
<td>Phys 341—Fundamentals of Modern Physics</td>
<td>5 5</td>
</tr>
<tr>
<td>Phys 371—Mechanics</td>
<td>6 6</td>
</tr>
<tr>
<td>Phys 441—Advanced Laboratory</td>
<td>2 2</td>
</tr>
<tr>
<td>Phys 480—Physics Seminar I</td>
<td>3 3</td>
</tr>
<tr>
<td>Electives—Any Courses in Physics and Astronomy</td>
<td>6 6</td>
</tr>
</tbody>
</table>

*Prerequisites: Approximately 45 credits in Mathematics courses

**RUSSIAN**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russ 101-2-3—Elementary Russian</td>
<td>15 15</td>
</tr>
<tr>
<td>Russ 201-2-3—Intermediate Russian</td>
<td>15 15</td>
</tr>
<tr>
<td>Russ 201—Applied Linguistics</td>
<td>3 3</td>
</tr>
<tr>
<td>Russ 301—Russian Composition and Conversation</td>
<td>3 3</td>
</tr>
<tr>
<td>Russ 311—Survey of Russian Literature</td>
<td>9 9</td>
</tr>
<tr>
<td>FL-Educ 390—Methods of Teaching Foreign Languages</td>
<td>3 3</td>
</tr>
<tr>
<td>Electives—Any Upper Division Russian Courses</td>
<td>15 15</td>
</tr>
</tbody>
</table>

*Foreign Language Department recommendation re student's proficiency is prerequisite to student teaching.
**Credits will be allowed for exempted courses.
*Must be taken in the junior year.
(Minors may substitute Span 402.

**SOCIAL SCIENCES—BROAD FIELDS**

(Major Only)

<table>
<thead>
<tr>
<th>Does not qualify for teaching Economics, Geography, or Sociology</th>
<th>Major Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 201-2-3—Principles of Economics</td>
<td>9 9</td>
</tr>
<tr>
<td>Geog 331—Political Geography</td>
<td>3 3</td>
</tr>
<tr>
<td>Geog 328—Cultural Geography</td>
<td>3 3</td>
</tr>
<tr>
<td>Hist 101-102—European Civilization</td>
<td>12 12</td>
</tr>
<tr>
<td>Hist 201—United States History</td>
<td>8 8</td>
</tr>
<tr>
<td>Pol Sci 201—American Government</td>
<td>10 10</td>
</tr>
<tr>
<td>Soc 101—Introductory Sociology</td>
<td>5 5</td>
</tr>
<tr>
<td>Edu 428—Methods of Teaching Social Studies in Secondary Schools</td>
<td>5 5</td>
</tr>
<tr>
<td>*Electives—Upper Division Courses in Anthropology, Economics, Geography, History, Political Science, Sociology</td>
<td>22 22</td>
</tr>
</tbody>
</table>

*Must include at least two courses in history, one in economics, one in geography, and one in sociology.

**SOCIOLOGY**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 105—Man and His Culture (or 153)</td>
<td>5 5</td>
</tr>
<tr>
<td>Soc 101—Introductory Sociology</td>
<td>5 5</td>
</tr>
<tr>
<td>Soc 201—Social Science Methods</td>
<td>5 5</td>
</tr>
<tr>
<td>Soc 207—Introduction to Social Change</td>
<td>5 5</td>
</tr>
<tr>
<td>Soc 206—Individual and Society</td>
<td>3 3</td>
</tr>
<tr>
<td>Soc 307—Socialization</td>
<td>3 3</td>
</tr>
<tr>
<td>Soc 204—Introduction to Complex Organizations</td>
<td>4 4</td>
</tr>
<tr>
<td>Soc 311—Development of Social Thought</td>
<td>4 4</td>
</tr>
<tr>
<td>Edu 428—Methods of Teaching Social Studies in Secondary Schools</td>
<td>3 3</td>
</tr>
<tr>
<td>*Electives—Upper Division Sociology Courses</td>
<td>3 3</td>
</tr>
</tbody>
</table>

*Placement in student teaching may not be possible; in this case provisional certification only will be available unless the student presents another teaching field in which student teaching can be accomplished.

**SPANISH**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spanish 101-2-3—Elementary Spanish</strong></td>
<td>15 15</td>
</tr>
<tr>
<td><strong>Spanish 201-2-3—Intermediate Spanish</strong></td>
<td>15 15</td>
</tr>
<tr>
<td><strong>Spanish 301-2—Oral and Written Expression</strong></td>
<td>6 6</td>
</tr>
<tr>
<td><strong>Spanish 362—Contemp. Hispanic Civilization and Culture</strong></td>
<td>3 3</td>
</tr>
<tr>
<td><strong>Spanish 311-2-3—Survey of Spanish Literature</strong></td>
<td>3 3</td>
</tr>
<tr>
<td><strong>Spanish 401—Applied Linguistics</strong></td>
<td>3 3</td>
</tr>
<tr>
<td><strong>Spanish 402—Advanced Composition</strong></td>
<td>3 3</td>
</tr>
</tbody>
</table>

*Foreign Language Department recommendation re student’s proficiency is prerequisite to student teaching.

**SPEECH**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>SpCo 110—Introduction to Systems of Communication</td>
<td>5 5</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 212—Introduction to Communication: Phonology (or 119-8)</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 234—Introduction to Communication: Process</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 314—Discussion and Small Groups (or 371)</td>
<td>3 3</td>
</tr>
<tr>
<td>SPA 330—Introduction to Speech Pathology</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 353—General Semantics</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 355—Message Composition</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 361—Oral Interpretation</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo-Educ 425—Teaching Speech in the Secondary School</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 430—Business and Professional Interviewing</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 441—Rhetorical Theory</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 445—History of American Public Address (or 446)</td>
<td>3 3</td>
</tr>
<tr>
<td>SpCo 462—Directing the Forensic Program</td>
<td>3 3</td>
</tr>
</tbody>
</table>

**ENGLISH**

Students study English for a variety of reasons. Some have practical purposes: they realize the need for greater clarity, 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 a major usually fall into one of three groups:

**SCHEDULE A:** Potential critics, scholars, and college teachers, who can increase their critical insight by study of 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**

English majors must complete a minimum of 50 credits in the major but not more than 66 credits in the department. English 100 and 300 do not count toward the English major. The required courses are listed in the schedules given below. By the beginning of his junior year the student should have definite 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. Schedules A, B, and C presume such a core curriculum and build from that.

CORE CURRICULUM

I. English majors must satisfy the departmental composition requirement. All prospective English majors are expected to take, in the freshman year, English 161, 162, 163—World Literature.

II. All students are expected to take, in addition English 200 in the sophomore year; two quarters in one sequence and one in the other from English 211-212-213, and 231-232-233; English 342 or 343; 3 credits from English 360 or 371 or 372.

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 graduate study in English should supplement the above courses with the following required minimum.

English 485 (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 60 credits may include 401-402-403; 440, and 441.

SCHEDULE B. CREATIVE WRITING

Students whose major interest is the writing of fiction and poetry should supplement 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.

The maximum of courses up to 66 credits from General Literature; English and American literature and writing numbered above 300.

SCHEDULE C. TEACHING

(For teacher certification requirements, see Education)

Students planning to teach English in high school should supplement the core courses with one of the following options:

Option 1

English 371, 382, 482; Speech 111.

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 British Literature. Additional electives in Drama, Speech, and Journalism are strongly recommended.

For certification, a teaching minor in another field is required.

Option 2

(Broad Fields)

English 371, 382, 482; Speech 111.

English electives: 18 credits (must include at least one advanced course in British Literature, one advanced course in American Literature, and may include courses in General Literature, and English 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.

Option 3

(Extended major for single endorsement)

English 371, 382, 482; Speech 111. Sixty credits in English are required. The program qualifies the student for Montana state teaching certification in English only. A teaching minor is not required.

GRADUATE WORK. See Graduate School Bulletin.

COMPOSITION

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

English composition may be required selectively by schools or departments for any or all of their majors.

Students who do not achieve acceptable scores on the English section of the ACT examination must take English 001, Preparatory Composition, and receive a “pass” grade before they may enter English 100. 300 or 450. The English Department reserves the right to ask a student to take a less advanced course if it is apparent that he cannot write at the level of a more advanced course.

Courses 300 and 450 are open to students with adequate ability in composition, regardless of their class level.

001 PREPARATORY COMPOSITION. A remedial course with emphasis on principles of modern linguistics to the problems of teaching English as a foreign language. Will include a contrastive study of English and a foreign language. (Credit not allowed toward a degree.)

100 LOWER DIVISION COMPOSITION. A course designed to help students learn to write accurately and logically about the subject they already understand.

300 UPPER DIVISION COMPOSITION. For the generally competent student writer already pursuing an academic major in the University. Emphasis upon those kinds of writing—such as reports, reviews, criticisms, informal essays and examinations—which are normal in academic competition among upper division students. (Junior standing not required to enter this course if the student is properly prepared.)

450 ADVANCED COMPOSITION. Concentration upon complex subjects and ideas, especially within a student’s own professional area. (Senior standing is not required to enter this course if the student’s ability in composition is adequate.)

CREATIVE WRITING

FOR UNDERGRADUATES

202 INTRODUCTION TO CREATIVE WRITING. Practice in creative writing at the introductory level.

301-302-303 CREATIVE WRITING: FICTION 3 prereq 202 or c/i. Enter any quarter.

306 THE WRITING OF DRAMA. (See Drama.)

312-314-315 CREATIVE WRITING: POETRY 3 prereq 202 or c/i. Enter any quarter.

FOR GRADUATES AND UNDERGRADUATES

401-402-403 ADVANCED CREATIVE WRITING: FICTION 3 prereq 301-302-303 and c/i. Enter any quarter.

412-414-415 ADVANCED CREATIVE WRITING: POETRY 3 prereq 312-314-315 and c/i. Enter any quarter.

440 TECHNIQUES OF MODERN FICTION 3. Intensive reading of several contemporary prose writers. Primarily for advanced students in creative writing but open to all English majors.

444 TECHNIQUES OF MODERN POETRY 3. Intensive reading of several contemporary poets. Primarily for advanced students in creative writing, but open to all English majors.

442 TECHNIQUES OF MODERN DRAMA. (See Drama 491.)

495 INDEPENDENT STUDIES 3 R-9. Special projects in particular areas of literature and creative writing.

FOR GRADUATES

510 FICTION WORKSHOP V R-15 c/i

511 POETRY WORKSHOP V R-15 c/i

512 DRAMA WORKSHOP. (See Drama 541.)

699 THESIS V R-6 to 9.

LINGUISTICS

FOR UNDERGRADUATES AND GRADUATES

380 INTRODUCTION TO LINGUISTICS 3. An introduction to the science of modern linguistics and to the nature of language.

371 THE STRUCTURE OF MODERN ENGLISH 3. Phonological and grammatical structure from a modern linguistic point of view.

372 THE HISTORY OF THE ENGLISH LANGUAGE 3. The development of English phonology, grammar, and vocabulary from the Old English period to the present.

373 OLD ENGLISH 3. An introduction to the Old English language and literature.


496 THE TEACHING OF ENGLISH AS A FOREIGN LANGUAGE 3 prereq English 360 or 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.

497 SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 3 R prereq English 360 or 371 or c/i. Subjects vary: applications of linguistics, dialectology, stylistics, phonemics and morphemics, theories or grammar.
TEACHER TRAINING
FOR UNDERGRADUATES

482 LITERATURE FOR THE HIGH SCHOOL TEACHER 3. Open to seniors only. The literature usually taught in grades 7 through 12 with individual selections.

FOR UNDERGRADUATES AND GRADUATES

322 METHODS OF TEACHING ENGLISH 3. Offered only during Spring Quarter. Juniors are expected to take it before practice teaching. Objectives, materials and organization of the curriculum from grammar to 12; observation of expert teachers; some practice in teaching and correcting of student themes. Does not count in scheduled A and B. Credit is not allowed for this course and the identical course Educ 382.

FOR GRADUATES

506 TEACHER TRAINING WORKSHOP V R-10 prereq teaching experience and c/l.

LITERATURE
FOR UNDERGRADUATES

101 INTRODUCTION TO THE READINGS OF LITERATURE 3. Learning to read various types of literature for understanding and pleasure. (Not allowed toward a degree in English.)


200 APPLIED LITERARY CRITICISM 3. Limited to English majors. The application of literary methods and methods of literary criticisms to selected examples of poetry, drama, and fiction.

211-212-213 INTRODUCTION TO MAJOR BRITISH WRITERS 3. Enter any quarter. A student with 9 credits of British Literature cannot take this course. (211) Chaucer through Milton. (212) Dryden through Keats. (213) Tennyson to the present.


FOR UNDERGRADUATES AND GRADUATES


334 THE SHORT STORY 3.

341 TUDOR AND JACOBEAN DRAMA 3 prereq 9 credits of Literature. Representative plays from Everyman through Ford and Shakespeare, plus a few early plays of Shakespeare.

342-343 SHAKESPEARE 3 prereq 9 credits of Literature. Enter any quarter. (342) Intensive reading of three of Shakespeare's plays, one of which will be Hamlet. (343) Extensive reading of Shakespeare's plays.

344 THEORIES OF DRAMA 3 prereq 1 quarter of 307-308-309. The critical literature from Aristotle to contemporary critics and the reading of representative plays from Aeschylus to the modern dramatists.

373 OLD ENGLISH 3. Phonological and grammatical structure, simple readings in the literature of the period. (See listing under Linguistics.)

396 BRITISH LITERATURE: SIXTEENTH CENTURY 3 prereq 9 credits of Literature. May include both prose and poetry, but emphasis will be on the "new" poetry of Spenser, Sidney, Marlowe, and the non-dramatic poetry of Shakespeare.

398 BRITISH LITERATURE: SEVENTEENTH CENTURY. PROSE TO 1660 3 prereq 9 credits of literature. Restricted to metapysical poetry beginning with Donne, and classical poetry beginning with Jonson, and their interrelationship as seen in poets like Carew and Marvell.

399 BRITISH LITERATURE: RESTORATION 3 prereq 9 credits of literature. The major writers from 1660 to 1720 with emphasis upon Dryden.

400 BRITISH LITERATURE: EARLY EIGHTEENTH CENTURY 3 prereq 9 credits of literature. The major Neo-Augustan poets and prose writers, with emphasis upon Defoe, Swift and Pope.

401 BRITISH LITERATURE: LATE EIGHTEENTH CENTURY 3 prereq 9 credits of literature. The pre-Romantic poets and prose writers, with emphasis upon Gray, Johnson, and Fielding.

402 BRITISH LITERATURE: EARLY NINETEENTH CENTURY 3 prereq 9 credits of literature. Principal focus on the major Romantic poets: Blake, Wordsworth, Coleridge, Shelley, Byron, Keats.

403 BRITISH LITERATURE: MIDDLE AND LATE NINETEENTH CENTURY 3 prereq 6 credits of literature. Major figures of the Victorian period: novelists (Dickens through Conrad), poets (Tennyson, Browning, Arnold, Hopkins), and essayists (Carlyle, Mill, Newman, Ruskin.)

405-406 BRITISH LITERATURE: TWENTIETH CENTURY 3 prereq 12 credits of literature. Enter either quarter. Major figures in prose and verse.

408 CONTEMPORARY LITERATURE 3 prereq 12 credits of literature. Representative British, American and continental writers.

409 ADVANCED LITERARY STUDIES 3 R-9 prereq 12 credits in Literature and c/l. Content varies.

411 MAJOR WRITERS 3 R prereq 12 credits of Literature. Study in depth of one of the world's major writers.

422-424-425 POETRY 3 prereq 9 credits of Literature. A chronological survey, with emphasis on close reading of representative works by major writers.

431 PROBLEMS IN AMERICAN LITERATURE 3 prereq 12 credits in Literature. Special genres, figures, and intellectual currents studied in depth.

435 BRITISH LITERATURE: MIDDLE ENGLISH (See listing under Linguistics.)

454 BRITISH LITERATURE: MEDIEVAL 3 prereq 12 credits of literature. Readings in the literature of the Middle Ages.

455 CHAUCER 3 prereq 12 credits of literature. The intensive study of Chaucer's major poetry in original Middle English.

466 MILTON 3 prereq 12 credits in literature. Study of Milton's poetry with some attention to significant prose pieces.


495 INDEPENDENT STUDIES 3 R-9. Special projects in particular areas of literature and creative writing.

FOR GRADUATES

500-501-502 SEMINAR: BRITISH LITERATURE 3 R-18. Enter any quarter. Studies in British literature offered from various points of view; a period, a person, a genre.

504-505-506 SEMINAR: AMERICAN LITERATURE 3 R-12 prereq graduate standing. Enter either quarter. Studies in American Literature offered from various point of view: a period, a person, a genre.

509 SEMINAR: PROBLEMS IN RESEARCH 3. Guidance in graduate subject and research.

599 THESIS V R-6 to 9.

FOREIGN LANGUAGES

offers instruction in French, German, Greek, Italian, Latin, Romance Philology, Russian, and Spanish. The undergraduate courses have been planned to meet the needs of those who have begun the study of the language in high school as well as those who undertake such study for the first time in the university.

The courses in this department are intended to serve several purposes: (1) to contribute to the general education of students by giving them an opportunity to gain insight into patterns of living and thinking which are different from their own; (2) to enable students to gain proficiency in the language; (3) to prepare candidates for academic careers in research and college teaching by providing a solid basis for graduate studies in the various languages; (4) to prepare future teachers of foreign languages on the secondary level; (5) to give language training requisite to careers in government, foreign commerce, and library work; and (6) to enable students to read foreign publications and to meet graduate foreign language requirements in their field.

Two language laboratories with facilities for listening, oral practice, and recording are intended to serve several purposes: (1) to contribute to the general education of students by giving them an opportunity to gain insight into patterns of living and thinking which are different from their own; (2) to enable students to gain proficiency in the language; (3) to prepare candidates for academic careers in research and college teaching by providing a solid basis for graduate studies in the various languages; (4) to prepare future teachers of foreign languages on the secondary level; (5) to give language training requisite to careers in government, foreign commerce, and library work; and (6) to enable students to read foreign publications and to meet graduate foreign language requirements in their field.

The Department of Foreign Languages offers undergraduate majors in Classics, French, German, Italian, Latin,
Russian and Spanish. The Master of Arts degree is offered in French, German and Spanish.

HIGH SCHOOL PREPARATION. A student who has received credit for a 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, 102, or if some time has intervened, 101.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. 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. Requirements for the departmental (academic) majors are set forth below under the various languages. Requirements for the teaching majors and minors are listed separately under Education.

ENGLISH 100 must be completed during the freshman year. It is strongly recommended, but not required, that English 300 also be completed.

RECOMMENDED BACKGROUND COURSES FOR FOREIGN LANGUAGE MAJORS. The Department of Foreign Languages strongly may be substituted for an four-quarter language majors take, as early as possible in their college career, the course entitled Introduction to the Humanities (Humanities 151-152-153) and Classical Mythology (Humanities 160).

GRADUATE WORK. See Graduate School Bulletin.

CLASSICS

MAJOR REQUIREMENTS: Candidates for the Bachelor of Arts with a major in Classics must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Latin 101-213 inclusive or =. Greek 101-213 inclusive or =.
2. At least 9 credits of Latin 300 (490) and 9 credits of Greek 300.
3. Also recommended for majors are: History 302, 303 and 304, or 201 and 202; General 151, 152, 153; Humanities 160; Philosophy 256.

GREEK

No major is given in Greek.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY GREEK 5.
211-212-213 GREEK READINGS 3 prereq 103.

FOR UNDERGRADUATES AND GRADUATES

300 MAJOR GREEK WRITERS V 2-3 R-18 prereq 213.

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 101-213 inclusive or =.
2. At least 22 credits of Latin 300 (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 LATIN READINGS 4 prereq 103 or =.
213 LATIN READINGS 3 prereq 212 or =.

FOR UNDERGRADUATES AND GRADUATES

300 (490) MAJOR LATIN WRITERS V 2-3 R-30 prereq 213.

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 27 credits of upper division work in French, which should include any four of the six period courses (321 to 333).
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 311, 312, 313, 314, 315, 327, 328, 329. French 303 may be substituted for one quarter of history, but if so, it may not also be counted as a French course.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY FRENCH 5.
201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in German, or those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 (213-215) FRENCH 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.

FOR UNDERGRADUATES AND GRADUATES

301 PHONETICS 3 prereq 203.
302 ORAL AND WRITTEN EXPRESSION 3 prereq 301 or c/i.
303 FRENCH CIVILIZATION AND CULTURE 3 prereq 302 or c/i.
312 (421) MEDIEVAL FRENCH LITERATURE 3 prereq 203.
322 (422) FRENCH RENAISSANCE 3 prereq 203.
323 (423) 17TH CENTURY FRENCH LITERATURE 3 prereq 203.
331 (431) 18TH CENTURY FRENCH LITERATURE 3 prereq 203.
332 (432) 19TH CENTURY FRENCH LITERATURE 3 prereq 203.
333 (433) CONTEMPORARY FRENCH LITERATURE 3 prereq 203.
400 GENRE STUDIES IN MEDIEVAL FRENCH LITERATURE 3 prereq 303.
401 APPLIED LINGUISTICS 3 prereq 302 or c/i. Specific problems in contrastive phonology, morphology, and syntax.
402 ADVANCED COMPOSITION 3 prereq 302 or c/i. Intensive practice in writing on different levels of usage and style.
410 THE SHORT STORY IN FRENCH LITERATURE 3 prereq 303.
410 THE TRENDS AND CURRENTS IN 17TH CENTURY FRENCH LITERATURE 3 prereq 303.
430 THE 18TH CENTURY FRENCH "PHILOSOPHES" 3 prereq 303.
440 THE 19TH CENTURY FRENCH NOVEL 3 prereq 303.
450 CONTEMPORARY FRENCH POETRY 3 prereq 303.
460 HISTORY OF THE FRENCH LANGUAGE 3 prereq 303.
490 (491) SEMINAR 3 R-18 prereq 203. Studies in major authors, periods, or genres.

FOR GRADUATES

111-112 FRENCH FOR GRADUATE STUDENTS 4. Intensive reading course to prepare students to pass the reading examination required for advanced degrees. Does not carry graduate credit.
500 DIRECTED READINGS V 1-3 R-9. Prereq undergraduate major in French.
590 GRADUATE SEMINAR 3 R-9.

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 27 credits of upper division work in German, which must include 311-312-313.
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 311, 312, 313, 314, 315, 327, 328, 329. German 303 may be substituted for one quarter of history, but if so, it may not also be counted as a German course.

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 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.

FOREIGN LANGUAGES

FOR UNDERGRADUATES

101-102-103 ELEMENTARY FRENCH 5.
201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in French, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 (213-215) FRENCH 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.
FOR UNDERGRADUATES AND GRADUATES

301 ORAL AND WRITTEN EXPRESSION I 3 prereq 203. Emphasis on pronunciation and phonetics.

302 (300) ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c.i. Emphasis on active use of German.

303 GERMAN CIVILIZATION AND CULTURE 3 prereq 302 or c.i.

311-312-313 (301-302-303) SURVEY OF GERMAN LITERATURE 2 prereq 203. Enter any quarter.

401 APPLIED LINGUISTICS 3 prereq 302 or c/i. Specific problems in contrastive phonology, morphology, and syntax.

402 ADVANCED COMPOSITION 3 prereq 302 or c/i. Intensive practice in writing on different levels of usage and style.

421-422 DANTE'S DIVINA COMEDIA 3 prereq 311-312-313, or coreq and c/i.

431-432 ITALIAN RENAISSANCE 3 prereq 311-312-313, or coreq and c/i.

433 17TH AND 18TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

441 19TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

442 20TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

460 HISTORY OF THE ITALIAN LANGUAGE 3 prereq 311-312-313, or coreq and c/i.

490 SEMINAR 3 R-18 prereq 311-312-313. Major authors, periods, or genres.

PORTUGUESE

FOR UNDERGRADUATES

101-102-103 ELEMENTARY PORTUGUESE 5.

211-212 PORTUGUESE READINGS 4 prereq 103 or =.

FOR GRADUATES

111-112 GERMAN FOR GRADUATE STUDENTS 4. Intensive reading course to prepare graduate students to pass the reading examination required for advanced degrees. Does not carry graduate credit.

500 DIRECTED READINGS 1-3 R-9 prereq undergraduate major in German.

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.

210 (221) FOREIGN LITERATURES IN TRANSLATION 2. Periods and literatures vary from quarter to quarter. No knowledge of foreign language necessary.

ITALIAN

MAJOR REQUIREMENTS: Candidates for the degree of Bachelor or Arts with a major in Italian must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Italian 101 to 203 inclusive, or equivalent.

2. At least 27 credits of upper division work in Italian, which must include 311-312-313. (Teaching majors may substitute the Teaching of Foreign Languages 260 for 3 credits of upper division Italian.)

3. Five quarters, or equivalent, of another foreign language.

4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310. Italian 303 may be substituted for one quarter of history, but if so may not also be counted as an Italian course.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY ITALIAN 5.

201-202-203 INTERMEDIATE ITALIAN 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in Italian, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

211-212 ITALIAN 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.

301 ORAL AND WRITTEN EXPRESSION I 3 prereq 203. Emphasis on pronunciation and phonetics.

302 ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c/i. Emphasis on active use of Italian.

303 ITALIAN CIVILIZATION AND CULTURE 3 prereq 302 or c/i.

311-312-313 SURVEY OF ITALIAN LITERATURE 2 prereq 203. Enter any quarter.

FOR GRADUATES

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.

211-212 RUSSIAN 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.

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 301.

303 RUSSIAN CIVILIZATION AND CULTURE 3 prereq 302 or c/i.

311-312-313 SURVEY OF RUSSIAN LITERATURE 3 prereq 203. Enter any quarter.

421-422 19TH CENTURY RUSSIAN PROSE 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.

424 SOVET RUSSIAN LITERATURE 3 prereq 311, 312, 313 or c/i.

431 17TH AND 18TH CENTURY RUSSIAN LITERATURE 3 prereq 460 or c/i.

432 16TH CENTURY RUSSIAN LITERATURE 3 prereq 460 or c/i.

433 PUSHKIN 3 prereq 311, 312, 313 or c/i.

441 RUSSIAN DRAMA 3 prereq 311, 312, 313 or c/i.

442 GOLDEN AGE OF RUSSIAN POETRY 3 prereq 311, 312, 313 or c/i.
SPANISH

MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in Spanish must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Spanish 101 to 205 inclusive, or equivalent.
2. At least 33 credits of upper division work in Spanish, which must include 311-312-313 and 321-322-323.
3. Five quarters, or equivalent, of another foreign language.
4. Spanish majors are advised to take at least one quarter of Hispanic American History (History 285-286-287) when this course is offered.

FOR UNDERGRADUATES

1. The following courses are offered in all quarters of the academic year.

- 101-102-103 ELEMENTARY SPANISH 5.

2. 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.

3. 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.

FOR UNDERGRADUATES AND GRADUATES

1. 301 ORAL AND WRITTEN EXPRESSION I 3 prereq 203. Emphasis on pronunciation and phonetics.

2. 302 ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c/. Emphasis on active use of Spanish.

3. 303 CONTEMPORARY HISPANIC CIVILIZATION AND CULTURE 3 prereq 205 or c/. Specific problems in contrastive phonology, morphology, and syntax.


6. 401 APPLIED LINGUISTICS 3 prereq 202 or c/. Specific problems in contrastive phonology, morphology, and syntax.

7. 402 ADVANCED COMPOSITION 3 prereq 202 or c/. Intensive practice in writing on different levels of usage and style.

8. 405 ADVANCED CONVERSATION 3 prereq 203 or c/. Intensive practice in writing on different levels of usage and style.

9. 421 (335) SPANISH NOVEL TO 1800 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

10. 422 (351) 19TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

11. 423 (363) 20TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

12. 431 (333) SPANISH DRAMA TO 1800 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

13. 432 (353) 19TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

14. 433 (363) 20TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

15. 441 (381) SPANISH POETRY OF THE GOLDEN AGE 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

16. 442 NINETEENTH CENTURY SPANISH POETRY 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

17. 443 TWENTIETH CENTURY SPANISH POETRY 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

18. 450 SPANISH AMERICAN DRAMA 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

19. 451 SPANISH AMERICAN ESSAY 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

20. 452 SPANISH AMERICAN NOVEL 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

21. 453 SPANISH AMERICAN POETRY 3 prereq 311, 312, 313 or coreq and c/. Specific problems in contrastive phonology, morphology, and syntax.

22. 460 HISTORY OF THE SPANISH LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/. Specific problems in contrastive phonology, morphology, and syntax.

23. 460 (491) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FORESTY

FORESTY 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 curricula leads to the degrees of Bachelor of Science in Forestry or Bachelor of Science in Resource Conservation. Masters degrees offered as: Master of Forestry, Master of Science in Forestry, Master of Science in Resource Conservation, Master of Science in Wildlife Biology and Master of Resource Administration. The Doctor of Philosophy degree is offered in Forestry and Plant Science. (See Graduate School).

Forestry education includes laboratory and field study, affording opportunities to apply the theoretical knowledge gained in the classroom. A summer camp is not required; however, each undergraduate student must spend two summers of three months each in successful employment, gaining practical experience in work pertinent to his curriculum.

Employment opportunities for forestry graduates are substantial. The increase of intensive forestry and other resource use throughout the world is extending areas of employment for professional foresters and conservationists. At the same time, the diversity of forest conditions and users in Western Montana leads to excellent local opportunities.

Foresters are employed by government agencies, private companies, research organizations, consulting firms, and educational institutions. The curricula of the School of Forestry also prepare the students to meet Federal and State civil service requirements.

Degree candidates must complete a curriculum in forestry satisfactory to the staff of the School.
### Core Curriculum

(Courses required of all majors in Forest Resources Management)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 111-114-115—General Botany</td>
<td>A W S</td>
</tr>
<tr>
<td>Chem 101-102-106—General and Organic Chemistry</td>
<td>4 4 5</td>
</tr>
<tr>
<td>(or Chem 121-122-123—College Chemistry)</td>
<td>(5) (5) (5)</td>
</tr>
<tr>
<td>For 250—Survey Systems</td>
<td>4</td>
</tr>
<tr>
<td>Math 116-117—College Algebra, Trigonometry</td>
<td>5 5</td>
</tr>
<tr>
<td>Math 118 (or 151)—Introduction to Calclus</td>
<td>1 1 1</td>
</tr>
<tr>
<td>H &amp; PE 100</td>
<td></td>
</tr>
</tbody>
</table>

(Second Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 250—Basic Concepts of Ecology</td>
<td>4</td>
</tr>
<tr>
<td>Bot 251—Botany Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>Bot 325 (1)—Plant Physiology</td>
<td>(5)</td>
</tr>
<tr>
<td>Econ 201-202—Principles of Economics</td>
<td>3 3</td>
</tr>
<tr>
<td>Phys 111—General Physics</td>
<td>5</td>
</tr>
<tr>
<td>For 210—Forest Soils</td>
<td>4</td>
</tr>
<tr>
<td>For 250—Forest Instruments</td>
<td>4</td>
</tr>
<tr>
<td>For 252—Land Survey Systems and Graphics</td>
<td>4</td>
</tr>
<tr>
<td>For 290-291—Dendrology</td>
<td>4 3</td>
</tr>
<tr>
<td>Electives (2)</td>
<td></td>
</tr>
</tbody>
</table>

(Third Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 300—Forest Measurements</td>
<td>4</td>
</tr>
<tr>
<td>For 301—Forest Biometry</td>
<td>3</td>
</tr>
<tr>
<td>For 351—Aerial Photogrammetry</td>
<td>3</td>
</tr>
<tr>
<td>For 310—Foundations of Silviculture</td>
<td>3</td>
</tr>
<tr>
<td>For 350—Range Management</td>
<td>3</td>
</tr>
<tr>
<td>Forest Protection (3)</td>
<td>(3-4)</td>
</tr>
<tr>
<td>For 325—Wildlife and recreation Management</td>
<td>3</td>
</tr>
<tr>
<td>For 326—Wildland Recreation Management</td>
<td>3</td>
</tr>
<tr>
<td>Forest Products (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>For 322-323—Natural Resources Policy &amp; Administration</td>
<td>3 3</td>
</tr>
<tr>
<td>For 322—Introduction to Hydrologic Principles</td>
<td>3</td>
</tr>
<tr>
<td>For 364—Transportation Systems</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
</tbody>
</table>

(Fourth Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 420-421—Forest Economics</td>
<td>3 3</td>
</tr>
<tr>
<td>For 451-1—Integrated Forest Resources Management</td>
<td>3 3</td>
</tr>
<tr>
<td>For 435—Senior Thesis</td>
<td>4</td>
</tr>
<tr>
<td>For 401—Timber Management</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
</tbody>
</table>

(1) Life or Physical Science Course may be substituted
(2) Social Science or Humanities or both
(3) Two courses in protection required, selected from fire, pathology, entomology
(4) One course required, selected from wood anatomy, wood chemistry, or forest industries.

### Major in Forestry Resources Management

This major is for students who are preparing for work in resource management, administration, and staff specialization. Every student with a major in forestry resources management receives a broad basic education in Forestry, and in addition can select courses beyond the core curriculum to provide depth in one or more resource fields. The student will select his courses in consultation with his advisors and other faculty.

### Major in Forestry 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 grade-point average of 2.7 or above.

The curriculum is designed to meet the needs of the individual student and consists of courses chosen by the student with the counsel of his advisor and approval of the Forestry faculty.

### Major in Forest Business

This major is for students who are preparing for work in forest industries such as manufacturing, product development, marketing, sales, and other fields not primarily forest resource oriented.

The curriculum is designed to meet the needs of the individual student and consists of courses chosen by the student with the counsel of his advisor and approval of the faculty of the School of Forestry.

### Bachelor of Science in Resource Conservation

This degree meets professional requirements in selected natural resource fields allied to forestry. Major programs are offered in range, recreation, soil, water, and wildlife. There is no fixed core curriculum for the BSRC degree, although the first two years of study are almost identical in course content to those required for the BSF. 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 Bulletin.
322 FOREST ENTOMOLOGY 3 (2-3) prereq Bot 250, 251 or c/i.
340 WOOD ANATOMY AND FUNDAMENTAL PROPERTIES 4 (3-5) prereq 250. Wood identification and anatomy; relationships of the physical, chemical and mechanical properties to specific uses.
341 CHEMICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq Chem 251 or equivalent and For 340.
342 WOOD ADHESIVES TECHNOLOGY 3 (3-0) prereq 340 and junior standing in the School of Forestry.
343 FOREST PRODUCTS AND INDUSTRIES 4 (3-4) prereq junior standing in the School of Forestry.
350 ADVANCED SURVEYING 4 (2-4) prereq 252 and c/i.
351 AERIAL PHOTOGRAMMETRY 3 (2-3).
354 TRANSPORTATION SYSTEMS 4 (4-0) prereq 232. Transportation planning and development in relation to resource use, with emphasis on conflicts of interest.
360 RANGE MANAGEMENT 4 (3-3)
361 RANGE FORAGE PLANTS 4 (6-6) prereq 360, Bot 366 and c/i.
365 RANGE ECOLOGY 3 (2-3) prereq Bot 250, 251.
370 WILDLIFE CONSERVATION 3 (3-0) prereq 360 and c/i.
380 ENVIRONMENTAL CONSERVATION 3 (3-0) prereq c/i.
383 WILDLAND RECREATION MANAGEMENT 3 (3-0).
384 RECREATION AREA PLANNING AND DESIGN 4 (3-4) prereq 383.
385 HYDROLOGIC PRINCIPLES 3 (2-4) prereq c/i.
389 CHEMISTRY OF PLANT CONSTITUENTS. (See Chem 380 and Bot 380.)
391 CHEMISTRY OF WOOD PRODUCTS. (See Chem 391.)
400 FOREST RESOURCE INVENTORY 4 (0-8) prereq 300, 301.
401 TIMBER MANAGEMENT 4 (4-0) prereq 311, 420, senior standing in Forestry.
410 FOREST RESOURCES FIELD TRIP 1-3 prereq upper division student and c/i. A joint faculty and student field trip for study and discussion of resource management and use.
411 SOIL CHEMISTRY 2 (2-0) prereq 210.
412 SOIL PHYSICS 2 (2-0) prereq 210.
413 FOREST REGIONS OF NORTH AMERICA 3 (3-0) prereq 310-311 or c/i. The ecological development of forest regions; current silvicultural problems and practices.
420-421 FOREST ECONOMICS 3 (3-0) (420) prereq Econ 202 or c/i.
422 ECONOMICS OF WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq Econ 202 and c/i.
424 FOREST TAXATION SYSTEMS 3 (3-0) prereq 420, 421, or c/i.
425 INDUSTRIAL FORESTRY 3 (3-2 labs by arrangement) prereq 421 and 490 or c/i.
430 FOREST METEOROLOGY 4 (4-0).
432 BIOLOGY OF FOREST INSECTS 3 (3-0) prereq Zool 113. (See Zool 442.)
433 FOREST INSECT ECOLOGY 3 (2-3) prereq 432.
440 MECHANICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq junior standing in the School of Forestry.
441 SAWMILLING AND LUMBERING 3 (2-4) prereq junior standing in the School of Forestry.
442 WOOD SEASONING AND PRESERVATION 3 (3-0) prereq 340, 341, junior standing in the School of Forestry.
443 WOOD UTILIZATION FIELD TRIPS 3 prereq junior standing in the School of Forestry.
450 ADVANCED AERIAL PHOTOGRAMMETRY 3 (2-2) prereq 351 and c/i.
451 AERIAL REMOTE SENSING 3 (3-0) prereq 351 and c/i.
452 TIMBER HARVESTING 3 (3-0) prereq Econ 202.
454-455-456 FOREST ENGINEERING 3 (3-0) prereq 354, 454. Route planning, surveys, and design; physical and economic alternatives of route selection. (455) Contemporary problems of forest road development and use. (456) Specific problems in the transportation development of forest land areas.
458 MECHANICAL PROPERTIES OF WOOD 3 (1-4) prereq 340, 357.
460 RANGE ANALYSIS AND SURVEY TECHNIQUES 4 (2-6) prereq 360 and c/i.
461 RANGE LIVESTOCK NUTRITION 3 (2-2) prereq 360 and c/i.
463 RANGE ECONOMICS 3 (3-0) prereq Econ 201 and c/i.
464 RANGE ADMINISTRATION 2 (2-0) prereq 360 and c/i.
465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and c/i.
470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq Zool 368, 369 or c/i.
471 BIG GAME CONSERVATION 3 (2-field trips) prereq 360 or c/i.
472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/i.
480-481-482 INTEGRATED FOREST RESOURCE MANAGEMENT 3 (3-0). (481) prereq 480 or c/i / (482) prereq 481 or c/i.
483 PARK MANAGEMENT 3 (3-0) prereq 383, 385 and c/i.
485 WATERSHED MANAGEMENT 3 (2-4) prereq 385.
486 HYDROLOGY SEMINAR 2 (2-0) o/y prereq c/i. Regional, national, and international problems of water supply, transfer and quality.
487 WATER USE AND DEVELOPMENT 2 (2-0) o/y. History of water use and policy development.
489 SOIL AND WATER CONSERVATION 4 (3-1) prereq c/i.
491-492-493 SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. See Zoology 491-492-493.
495 FOREST ECOLOGY OF THE NON-TEMPERATE ZONES 2 (3-0).
496 FORESTRY AND ECONOMIC DEVELOPMENT 2 (2-0) prereq c/i.
497 WORLD RESOURCE PROBLEMS 2 (2-0) prereq c/i.
499 SENIOR THESIS 3 prereq senior standing. Preparation of a major paper based on research in a field selected according to the needs and objectives of the student.
500 FOREST PROBLEMS V prereq completion of basic undergraduate work and c/i. Individual problem course. Offered by different instructors under various titles.

FOR GRADUATES
500 ADVANCED FOREST MANAGEMENT 3 prereq 401, 420, 421 and 480.
502 ADVANCED FOREST MEASUREMENTS 3.
511 ADVANCED SILVICULTURE 3 (2-2) prereq 311 and c/i.
520 ADMINISTRATIVE LEADERSHIP Extension course V prereq undergraduate degree from a college or university of recognized standing. Intensive instruction in the fundamentals of sociology, personnel, speech, writing, business administration, public relations, and related fields. One month, 30 hours per week. Staff of university specialists in fields involved.
521 ADVANCED FOREST ECONOMICS 3 (3-0) prereq 441.
522 FOREST VALUATION 3 (3-0) prereq 421.
523 FOREST LAND RESOURCE ECONOMICS 3 (3-0) prereq 421.
524-525-526 RESOURCE POLICY AND ADMINISTRATION SEMINAR 3 prereq c/i. Guided individual study; preparation and presentation of seminar papers. (524) Scarcity vs. growth at the resource base. (525) Comprehensive and incremental decision making in resource administration. (526) Professional bureaucracies in natural resource administration.
530 FOREST FIRE BEHAVIOR 3 (3-0) prereq 330, 430. The forest fire as a three dimensional problem involving fuels, topography, weather and the influence of these on behavior of wild and prescribed fire. Emphasis is placed on high intensity fires and erratic fire behavior.
531 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.
542 WOOD RESIDUE UTILIZATION 4 (2-6) Prereq 341, 440, 441. Techniques for volumetric survey, Classification and product uses for various types with detailed emphasis on the type most pertinent to interests of student concerned.
543 WOOD PARTICLE BOARD—TECHNOLOGY AND PRACTICE 3 (1-8) prereq 342, 440, 441, 455.
551 ADVANCED AIR PHOTO ANALYSIS 3 (3-0) prereq 451, c/i.
560 ADVANCED RANGE MANAGEMENT 3 prereq 360 and 460.
44—GENERAL COURSES

561 ECOLOGICAL ANALYSIS AND INVENTORY OF LAND RESOURCES 2 (3-0). Methods of collection and analysis of land resource data on an ecological basis. Inherent characteristics of climate, vegetation and soils. Variability, modification and limitations of resource elements. Existing systems of resource classification will be evaluated. A model system will be developed.

570 WILDLIFE SEMINAR 1 (1-0). Presentation by students, staff, and guest speaker. Current policy and research issues.

580 WILDLAND RECREATION SEMINAR 1 (1-0). Presentation by students, staff, and guest speaker. Current policy and research issues.

584 ADVANCED WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq 583 and c/l.

591-592 RESEARCH METHODS 3 prereq one course in statistics and three courses in the natural sciences, and c/l. Enters either quarter. (591) The nature of scientific research, planning research projects, organization and presentation of research results. (592) Application of statistical methods to the design of forestry research, techniques of analysis of research data.

595 SEMINAR V 1-3. 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, Economics, 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 in other pages of the catalog and in which the specialized instruction is drawn from several fields. The curricula in Biology, Liberal Arts, Pre-Medical Science and Wildlife Biology are examples. It also has been found desirable to provide particular courses 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 literature 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 (161) CLASSICAL MYTHOLOGY. (See Foreign Languages.)

220 (221) FOREIGN LITERATURES IN TRANSLATION. (See Foreign Languages.)

265 A SEARCH FOR IDENTITY 3. Revisionism as manifested in the African past and in the conflicts faced by the American Negro from 1819 through the Civil War.

266 A SEARCH FOR IDENTITY 3. The American Negro from Reconstruction to the present day with specific emphasis on the development of the Black Power movement.

267 SOUL COMMUNITY 3. A critique and analysis of the Black writers, artists, and musicians in relation to the Black man's search for identity.

341 THE FILM 3. An historical survey of the film with appreciation of techniques. (Given under auspices of the School of Journalism and the departments of English and Drama.)

351 STUDIES IN HUMANITIES 3 R-9 prereq Gen 151-152-153. Advanced studies in Humanities. Given by different instructors under various titles.

355 THE ANATOMY OF PERSONAL RELATIONSHIPS 3 prereq any two of the 200 level courses. A critical analysis of the role of the races in light of their personal relationships with each other.

365 THE BLACK RENAISSANCE 3 prereq any two of the 200 level courses. A study of the artistic renaissance in Harlem during the 1920's and early 1930's; its contributions, why it failed, and why today the Black Renaissance is in fact emerging.

367 URBAN AFFAIRS 3 prereq any two of the 200 level courses. A study of the urban setting with particular emphasis on the nature and purpose of community organization and the political, economic, educational, religious and cultural phenomena of the urban setting which reveal the racist character of our society.

388 THE ROLE AND DEVELOPMENT OF HISTORICAL BLACK PERSONALITIES 3 R-9 prereq any two of General 265, 266, 287. Individual personalities and their effect upon the civil rights movement in America. (Frederick Douglass, W. E. B. Du Bois, Booker T. Washington, Malcolm X, Venus Garvey, Martin Luther King, Jr., and Toussaint L'Ouverture.)

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/l. 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

110 THE USE AND ABUSE OF DRUGS 3. The nature of drugs: their history, development and normal use in the treatment of disease. Drug dependence and abuse and the special classes and types of drugs involved. (Not open to pharmacy majors.)

125-128-127 SCIENCE FOR ELEMENTARY TEACHERS 5 (4-2). 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, relationships 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). The basic principles of biology, including aspects of cytology, cellular metabolism and genetics. Primarily for students not majoring in Botany, Microbiology or Zoology. Credit not allowed for this course and Botany or Zoology 111.

132 EVOLUTION, GENETICS AND MAN 3 prereq Gen 131 or =. Evolution, especially as related to man and including evidence, mechanisms, genetics, nature of hereditary material and adaptation. Not counted toward a major in Botany, Microbiology or Zoology.

FOR UNDERGRADUATES AND GRADUATES

300 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 3 prereq c/l. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare. Includes development of principles underlying integrated management of the natural resources. A study of economic, educational, religious and cultural phenomena of Montana in the group requirements in science.

322 METHODS OF TEACHING BIOLOGY 3 (2-4) prereq senior or graduate standing. Designed to familiarize prospective high school biology teachers with text, demonstrations and laboratory experiments used in contemporary approaches to teaching of biology.

GENERAL LITERATURE

FOR UNDERGRADUATES AND GRADUATES

307-308-309 THE DRAMA. (See English.)

344 THEORIES OF DRAMA. (See English.)

491-492-493 LITERARY CRITICISM. (See English.)
GEOGRAPHY

is concerned with understanding the earth and man. An
interest in the place-to-place variations of both men and
their terrestrial environments is basic, but the overriding
objective of the study of Geography
is an understanding of the physical
and social processes that influence
cultural occupation of the world.

Geographers investigate the pro-
cesses of human use and change of the
earth. Such research requires knowl-
edge of climates, vegetative cover,
soils, landforms as a fundamental
background, which, combined with
studies in the disciplines of the Social
Sciences, may be used to understand
comparative cultural histories, econo-
mic changes, resource use patterns, or
other areal differentiations of earth-
using systems. Such studies fall under the broad category of
human geography. Interests in the more strictly environ-
mental aspects of the surface processes operating on the
earth, such as in geomorphology, meteorology, climatology,
and biogeography, are considered physical geography.

The undergraduate major in Geography offers the stu-
dent an opportunity to receive a broad liberal education de-
signed to develop a spatial perspective of the human occu-
pation of the earth and an awareness of the diversity of man
and environment in an evolving world. Although under-
graduate training in Geography does not provide a set of
standardized, highly marketable skills, challenging oppor-
tunities for employment exist in industry, government, and
the teaching professions at all levels.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DE-
GREE IN GEOGRAPHY. In addition to the general requirements
for graduation listed earlier in the catalog, a 2.5 average on 75
credits in the geography major is required. These 75 credits
are distributed as follows: (1) 45 credits in geography, including geography 101
and 102, two courses in physical geography, two courses in cultural geo-
raphy, a regional course and one technique course: (2) 27 credits
in science and social science, including 9 and 18 or 16 and 9 credits re-
spectively selected from a department in these two major areas:
anthropology, economics, history, political science or sociology
(social sciences) and biological sciences, chemistry, geology, mathemat-
ics or physics and astronomy (science). Course sequences in
other areas might be arranged between the student and the geo-
graphy department: (3) Economics 385, Forestry 390, Geology
or Geophysics 390, 3 credits. Students with obvious deficiency in composition, apparent from written work
handed in, will be required to pass English 390 or its equivalent.

Up to 6 credits from the following courses may be accepted
against the major with departmental consent: Botany 335, Business
Administration 344, Computer Science 201, Economics 388, Forestry
380, Geology 310, Humanities 307, Mathematics 125 and/or 180, Sociology
394, 395, Physics 131-132, other relevant courses if arranged with the
department.

Unless the student intends to specialize in a part of the world
where the use of some other language prevails, French or German is
strongly recommended for the foreign language requirement.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 PHYSICAL ELEMENTS OF GEOGRAPHY 5. The earth and
planetary relations, maps, climate, vegetation, and landforms.

102 INTRODUCTORY HUMAN GEOGRAPHY 5. Cultural fea-
tures of the world’s landscapes in relation to human occupation of
the earth.

103-104-105 WORLD GEOGRAPHY 2. Enter any quarter. Place-
to-place differences in agriculture and in physical and cultural
landscape (103) The Americas; (104) Europe, U.S.S.R., and Africa; (105) Asia,
Australia, and Oceania. Credit is not applicable to the major.

201 MAP INTERPRETATION 3 prereq 101 and c/i. Map, chart
and aerial photo evaluation. Distributions of human and physical
features. Coverage and quality of world mapping.

211 ECONOMIC GEOGRAPHY 5. Distribution of economic ac-
tivities with emphasis on location factors.

380 CARTOGRAPHY 3 prereq c/i. The interpretation, con-
bstruction, and use of important map projections. Cartographic
techniques utilized in the presentation of data.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =.
Cultural areas of Canada and the United States with emphasis on
differences in regional development.

301-302 PHYSIOGRAPHY OF NORTH AMERICA 3 prereq 101
or =. Enter either quarter. The geomorphic regions of the con-

303 GENERAL GEOGRAPHY 3. Basic relationships between
physical and human elements in geography. Not for geography
majors.

305 EUROPE 3 prereq 101 or =.

310 SOUTH AMERICA 3 prereq 101 or =.

311 CENTRAL AMERICA, MEXICO AND THE CARIBBEAN 3
prereq 101 or =.

312 AFRICA 3 prereq 101 or =.

315 THE FAR EAST 3 prereq 101 or =.

318 THE U.S.S.R. 3 prereq 101 or =.

319 MONTANA 3.

320 THE PACIFIC NORTHWEST 3 prereq 101 or =.

331 POLITICAL GEOGRAPHY 3. Cultural, physical and distri-
butional aspects of politically organized units. The traditions of geo-
graphic thought that condition political decisions in local, national,
and international affairs.

335 CULTURAL GEOGRAPHY 3. The cultural approach to an
understanding of the differing patterns of human use of the earth.

345 URBAN GEOGRAPHY 5 prereq 101 or =. The growth,
morphology, and functions of towns and cities. Examination of the
contemporary urban scene.

350 INTRODUCTORY METEOROLOGY 3 prereq c/i. Dynamics
of atmospheric circulation, energy balances, world weather systems.

360 CLIMATOLOGY 5 prereq 101 or =. Elements and controls
of climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 3 prereq 101 or =. Topographic
elements of the earth’s surface with emphasis on processes of mor-
phologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 3 prereq
101, Geol 110 or =. Landform development in the desert environ-
ment.

390 FIELD GEOGRAPHY 3 prereq c/i. Techniques of geo-
graphic field research, including observation and recording of envi-
ronmental data, land use mapping, urban classification, and inter-
viewing and report writing.

401 ADVANCED PHYSICAL GEOGRAPHY 3 prereq c/i. Special-
ized aspects of Physical Geography.

405 THE HISTORY OF GEOGRAPHY 3 prereq 12 credits in
Geography or =. Herodotus to the nineteenth century.

410 PROBLEMS IN GEOGRAPHY V 1-2 R-6 prereq 12 credits in
Geography.

413 POPULATION AND RESOURCE GEOGRAPHY 5 prereq
c/i. Geographic aspects of problems arising from the relationships
between human populations and their resource use.

415 ADVANCED REGIONAL GEOGRAPHY 3 prereq c/i. Topics
vary.

420 ADVANCED CULTURAL GEOGRAPHY 3 prereq c/i. Topics
vary.

450 SEMINAR IN GEOGRAPHY V R-6 prereq 16 credits in
Geography including 101, or =. Topics vary.

499 THESIS V R-15.

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 3. Geographical con-
cepts, approaches, and techniques developed in the twentieth cen-
tury.

530 SEMINAR IN CULTURAL GEOGRAPHY 3 R-6 prereq c/i.
Concepts, methodology, and research in cultural aspects of Geog-
raphy. Topics vary.

570 SEMINAR IN PHYSICAL GEOGRAPHY 3 R-6 prereq c/i.
Concepts, methodology, and research in physical aspects of Geog-
raphy. Topics vary.

580 RESEARCH METHODS AND MATERIALS 3. Collection
and preparation of materials in geographic research, including inter-
viewing, library sources, and the cartographic presentation of data.
GEOLOGY

GEOLOGY

Geologists study the earth, interpreting the processes and events which have made it what it is. They apply the results of all other scientific disciplines. Insights gained have brought geology to a state of scientific revolution fully comparable to that brought to physics years ago by the discovery of radioactivity. Geologists concern themselves with problems as diverse as origin of ocean basins, movement of continents, structure of the earth's crust, earthquakes, composition of the moon, crystal structure of minerals, behaviour of streams, evolution of life, finding petroleum and metal deposits, and quality of the environment. The variety of geological techniques includes X-ray spectrographic analysis, petrographic microscopy, aerial photography, geologic mapping, and seismographic work as well as the classic hammer and coffeepot. Geologists find employment in a wide variety of occupations including university teaching, laboratory research, oceanographic exploration, federal and state geologic surveys, water and other environmental resource problems, and petroleum and mining exploration and development.

The Department of Geology offers bachelors, masters and doctoral degrees as well as a bachelors degree in education with a major in earth science. All degree programs in the department involve some field work and a combination of applied and theoretical approaches. Requirements are comparatively strict, general background in other sciences. The department strongly recommends that persons wishing to enter professional employment in geology plan to get a graduate degree.

HIGH SCHOOL PREPARATION. In addition to the general requirements for University admission, it is recommended that high school preparation include as much mathematics and science as possible.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the department requires the following:

2. Geology course requirements 50
3. Other departmental requirements (Math 15 crs.; Chem. 20 crs.; Physics 15 crs.; Biol. 10 crs.; Engl. 9 crs.) and one course in Computer Sci. 1 cr.) 70
4. Health, Physical Education and Recreation 3
5. Electives (preferably outside of Geology) 25

Total 195

Graduate.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101-102 INTRODUCTION TO GEOLOGY 4 (3-3). Geologic activity of rain, streams, waves, wind and glacial ice; formation of sediments and sedimentary rocks; stratigraphic time and the measurement of geologic time; origin and evolution of life; growth, movement and floating of continents; volcanoes; formation of igneous and metamorphic rocks; diastrophism, and gradation which shape the earth landscape. Credit not allowed for 101-102 and 110. 101 prereq to 102.

103 ENVIRONMENTAL GEOLOGY 4 (3-3) prereq 102 or 110. Geology as related to the quality of man's environment.

110 PHYSICAL GEOLOGY Su 5 (3-4). Minerals, rocks, and structures of the earth's crust; the dynamic processes, volcanoes, and the earth's landscape. Credit not allowed for 110 and 101-102.

120 FIELD METHODS 2 (+ all day Saturday field trips.) prereq 102 or 110. Problems covering wide range of geologic topics; introduction to basic geological mapping techniques.

200 GENERAL PALEONTOLOGY 4 (3-2) primarily for science majors, nonmajors. General principles of paleontology, evolution, and history of plants and animals.

202 PRINCIPLES OF STRATIGRAPHY 5 (3-4) prereq or coreq 102. Processes of sedimentation and methods of analyzing stratigraphic records, including correlation, sedimentary rock description and classification.

203 REGIONAL HISTORICAL GEOLOGY 3 (2-2) prereq 202. Regional fossil studies and interpretation of geologic history from the Individual analysis of problems in historical geology.

210 INTRODUCTION TO ROCKS AND MINERALS 1 (2-4) prereq 101-102. Common rock-forming minerals. Various rock types, their texture, mineralogy, origin, occurrence, and chemical methods of identification. Laboratory mainly hand specimen study. Credit not allowed toward a Geology degree.

250 (350) INTRODUCTION TO ECONOMIC GEOLOGY 4 (1-1) (Field Trips) prereq 102 or 110. The geology of metallic, nonmetallic and fuel deposits. Emphasis on descriptive, economic, geographic and utilization aspects of nonrenewable resources.

310 GEOMORPHOLOGY 3 (2-2) prereq 102 or 110. Landforms in terms of processes which create them. Basic processes of physical geography. Emphasis on modern concepts.

311 CRYSTALLOGRAPHY AND MINERALOGY 3 (2-2) prereq Chem 101 or 121 or concurrent registration. Elements of crystallography and mineralogy. Classification and determination of important nonmetallic minerals.

312 MINERALOGY 1 (2-2) prereq 311. Origin, classification and determination of rock-forming silicate minerals. Use of physical and chemical methods of identification.

315 PETROLOGY 5 (3-4) prereq 312. Identification, description, and origin of igneous and metamorphic rocks.

325 PROBLEMS V prereq 20 cr. in Geology or = and c/1. Supervised investigation in any phase of geologic study in which the student has sufficient background to contribute original thought.


429 FIELD GEOLOGY Su V 9-10 prereq 102 and c/1. Given by Indiana University Geology Department at its field station near Whitewater, Montana. Detailed and regional geologic studies in the field. Includes mapping on aerial photographs and topographic base maps, interpreting geologic data. Trips from Blacks Hills to Yellowstone National Park, and from Whitewater to Glacier Park. Registration must be completed by April 1.

FOR UNDERGRADUATES AND GRADUATES

608 INTRODUCTION TO VERTEBRATE PALEONTOLOGY 4 (3-4) prereq 200 or =. Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals and birds.

410-411 *INVERTEBRATE PALEONTOLOGY 4 (3-4) prereq 102 or 200 or Zool 112 or concurrent registration. (410) Principles of biostatigraphic correlation, with examples taken chiefly from the mollusks and echinoderms. Labs include paleontologic techniques.

412 *MICROPALEONTOLOGY 3 (2-2) prereq 200 or Zool 111, 112. Morphology, classification and biostatigraphic associations of major animal and plant microfossil groups.

450 OPTICAL MINERALOGY 4 (3-6) prereq 315. Theory and use of polarizing microscope in identification of non-opaque mineral fragments and minerals in thin section.
425-426 PETROGRAPHY/PETROLOGY 5 (2-6) prereq 315, 420.
(425) Descriptive and interpretative study in thin section of igneous minerals and rocks. (426) Similarly treats metamorphic and sedimentary rocks. Advanced petrologic considerations included in both quarters.


432 SEDIMENTATION 4 (3-2) prereq 102 or 110, 315. Interpretation of depositional environments using both sedimentary structures and grain size and shape analysis; labs include statistical techniques and field trips.

440 INTRODUCTION TO GEOPHYSICS 3 (3-0) prereq Physics 115 or 223, Math 118 or concurrent registration, Geol 331. Theory of commonly applied geophysical methods. Induced magnetism, seismic, electric and radiometric; emphasis on the interrelationships of geophysical anomalies and geologic structure. Geophysical case histories.

440 X-RAY DIFFRACTION AND SPECTROGRAPHIC ANALYSIS 4 (2-4) prereq 312. Theory of x-rays, their use in identification of poly crystalline materials; qualitative and quantitative chemical analysis by x-ray techniques; petrologic application.


546-566 *VERTEBRATE PALEONTOLOGY 4 (2-4) prereq 408 or Zoog 304 or = (466) Taxonomy, morphology and physiology of mammals. (566) Cenozoic history and paleoentology and physiology of mammals.

470 (510) ADVANCED GEOFECTONICS 3 (3-0) prereq 323. Analysis, synthesis of regional structural features including geosynclines, volcanic arcs, compressional mountain systems, structure of plateau and broad warps. Conditions within earth; possible causes of deformation.

476 GLACIAL AND PLEISTOCENE GEOLOGY 3 (3-0) prereq 300, 102. Glacial problems, glacial history and glacial deposits, last three million years. Paleoclimatic interpretation of Quaternary glacial, glacialfluvial, and lacustrine deposits and features.

480 HYDROGEOLOGY 3 (3-0) prereq 310. Occurrence and distribution of surface and ground waters on earth's crust. Actions of flowing water, and development and evolution of watersheds.

490 SENIOR SEMINAR V prereq upper class standing in geology or comparable background in related areas and c/i.

TEACHER EDUCATION COURSES

300 GEOLOGY FOR NATURAL SCIENCE TEACHERS Su 4 (3-2) prereq 500 and 315. In-depth study of the rock types and their classification, the processes of sedimentation and changes in the earth's crust. Field trips.

301 GEOLOGY AND MINERAL RESOURCES OF MONTANA Su 3 (2-3) prereq 500 and c/i. Geology and evolution of Montana and adjoining areas through two billion years. Metamorphic and non-metamorphic deposits in and near Montana. Field trips. Not allowed toward a degree in geology.

302 FIELD GEOLOGY FOR NATURAL SCIENCE TEACHERS Su 3 (2-3) prereq 400 and c/i. In-depth study of the rock types and their classification, the processes of sedimentation and changes in the earth's crust. Field trips.

306 METHODS OF TEACHING EARTH SCIENCE 3 (2-4) prereq 203 or 210. Study of major content, teaching techniques, laboratory techniques, and field procedures needed in developing an earth science curriculum. (Not allowed toward a degree in geology. Course does not satisfy group requirements. Taught by School of Education.)

FOR GRADUATES

501 *CARBONATE PETROLOGY 4 (2-4) prereq 420. Description, classification and environmental interpretation of carbonate rocks, chiefly limestone and dolomite, and their sedimentary, structural and genetic implications.

511-512 *METALLIC MINERAL DEPOSITS 4 (2-2) prereq 203, 315, 331. Theoretical and descriptive aspects of nature, origin, classification and geologic environments of metallic mineral deposits; field trips.

513 *NON-METALLIC MINERAL DEPOSITS AND COAL 4 (2-2) prereq 203, 315, 331. Descriptive and theoretical aspects of origin, distribution and exploration for nonmetallic mineral deposits and coal; field trips.

520 *PETROGENESIS 3 (3-0) prereq 426 and 428. Advanced discussion of modern theories of origin of igneous and metamorphic rocks.

529 STRUCTURAL ANALYSIS 3 (2-2) prereq 315, 331. Study and interpretation of the fabric of naturally deformed rocks. Analysis of tectonites on all scales, including geologic map, hand specimen and thin section.

533 *PHYSICAL PROPERTIES OF MINERALS 3 (3-0) prereq 315, math 311, physics 223. Physical and chemical properties of minerals and their genetic implications.

540 *ADVANCED STRATIGRAPHY 3 (3-2) prereq 130, 331, 410-411. Advanced discussion of modern concepts concerning stratified rocks.

550 *PRINCIPLES OF SEISMOLOGY 3 (3-2) prereq 440, Math 311, Physics 472. Elementary elastic wave theory; Analysis of stress and strain, equations of motion, surface and body waves, reflection and refraction; interpretation of earth's gravity, magnetic flow. Applications to geophysical problems. Field problems near Missoula.

590 SEMINAR V prereq graduate standing in geology or comparable background in related areas and c/i. Geology and evolution of Montana and surrounding area and c/i. Geology and evolution of Montana and surrounding area as an area of emphasis for professional careers in the various fields related to physical education and recreation.

The department offers Bachelor of Science and Bachelor of Arts degrees with a major in Health, Physical Education or Recreation, Master of Arts and Master of Science degrees in Physical Education or Recreation, and Bachelor of Arts and Master of Science for Teachers of Physical Education.

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 tumbling, aquatics, and forms of the dance. Students interested in physical therapy and orthopedic rehabilitation may fulfill entrance requirements for approved schools of physical therapy. Also available is an area of emphasis for athletic trainers. 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 sports, athletic 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 and coaching profession in education. Some choose to continue graduate studies with specialization in physical education, administration of physical education and athletics, 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, work for athletic leaders on community teams and in recreation and 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 in the catalog be satisfied, and Bachelor of Science, which requires no course in foreign language. Students electing either degree will satisfy the requirements listed below. Upper division students are expected to maintain a cumulative grade-point average of at least 2.0 in order to continue as majors in the department.

To remain enrolled in Professional Activities 110-120 and 215-220, students must meet the minimum departmental proficiency level in both skill and knowledge of the activity. Participation in activity courses may be allowed for a demonstrated high level of proficiency.

English 100 and 300 are required. Students scoring below the 17th percentile on the ACT English examination, must first successfully complete English 101. Those above the 90th percentile will be exempt from either English 100 or 300.

General Education (67 crs.): Group I to include Zool 111 and 202, Mich 102; Group II to include Chem 101, 102, Math 116, 117, Physics 111; Group III to include Soc 101, 102; Group IV Electives. In addition English 100, 300, Home Ec 146, Psych 110 and 220, Speech Comm 111, and HPER 115-120 (3 crs. fulfills the HPER requirements). Pre-physical therapy students see area of specialization below.

Teacher certification: Course requirements in Education to meet teacher certifications are listed under Education in this catalog. Certification is approved for K-12 grades.

Professional Physical Education: Required of all students in any of the five areas of specialization listed below. Dance 210, 240, 311, 321, 380, plus 2 coaching courses; Elect HPER 6 crs. 'Personality of techniques, development of units of instruction in seasonal sports. ski school progression, and ski mechanics. Preparing the potential ski instructor for certification by the Professional Ski Instructors of America.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN RECREATION. Two degrees are offered: Bachelor of Arts with major in Recreation which requires the foreign language requirement listed in the catalog to be satisfied, and Bachelor of Science which requires no course in foreign language. Students electing either degree will satisfy the requirements listed below. Upper division students are expected to maintain a cumulative grade-point average of at least 2.0 in order to continue as majors in the department.

General Education (65 crs.): Group I to include Zool 111, 112, 202, Mich 102; Group II to include Chem 101, 102, Math 116, 117, Physics 111; Group III to include Soc 101, 102, Group IV Electives. In addition English 100, 300, Home Ec 146, Psych 110 and 220, Comm 111, Speech Path 390 and HPER 115-120 (3 crs. fulfills degree requirements). Pre-physical therapy students see area of specialization below.

Teacher certification: Course requirements in Education to meet teacher certifications are listed under Education in this catalog. Certification is approved for K-12 grades.

Professional Physical Education: Required of all students in any of the five areas of specialization listed below. Dance 210, 240, 311, 321, 380, plus 2 coaching courses; Elect HPER 6 crs. 'Personality of techniques, development of units of instruction in seasonal sports. ski school progression, and ski mechanics. Preparing the potential ski instructor for certification by the Professional Ski Instructors of America.

ATHLETIC TRAINING-ADAPTIVE PHYSICAL EDUCATION

General Education (78 crs.): Group I to include Zool 111, 202, Mich 102; Group II to include Chem 101, 102, 106; Group III to include Soc 101; Group IV Electives. In addition English 100, 300, Home Ec 146, Psych 110 and 220, Comm 111, Pharm 110, HPER 115-120 (6 crs. fulfills HPER requirement).

Teacher Certification: Course requirements in Education to meet teacher certification are listed under Education in this catalog. Certification is approved for K-12 grades.


Area of Specialization (28 crs.): HPER 240, 246, 386, 387, 388, 399, 390 (2 quarters), 460, 486, 575.

ATHLETIC TRAINING-ADAPTIVE PHYSICAL EDUCATION

General Education (78 crs.): Group I to include Zool 111, 202, Mich 102; Group II to include Chem 101, 102, 106; Group III to include Soc 101; Group IV Electives. In addition English 100, 300, Home Ec 146, Psych 110 and 220, Comm 111, Pharm 110, HPER 115-120 (6 crs. fulfills HPER requirement).

Teacher Certification: Course requirements in Education to meet teacher certification are listed under Education in this catalog. Certification is approved for K-12 grades.


Area of Specialization (41 crs.): HPER 210, 240, 310, 321, 386, 397, 388, 410, 411 (9 crs.), 486, 575, 3 crs. in additional coaching courses.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN RECREATION. Two degrees are offered: Bachelor of Arts with major in Recreation which requires the foreign language requirement listed in the catalog to be satisfied, and Bachelor of Science which requires no course in foreign language. Students electing either degree will satisfy the requirements listed below. Upper division students are expected to maintain a cumulative grade-point average of at least 2.0 in order to continue as majors in the department.

General Education (65 crs.): Group I to include Zool 111, 202, Mich 102; Group II Electives; Group III to include Soc 101, 102, 200; Group IV Electives. English 100, 300, Psych 110, 220, SpCo 111, 314.

General Professional Preparation (17 crs.): HPER 115-120 (3 crs. fulfills HPER requirement) and HPER 199, 240, 301, 303, 339, 465, 460.


Requirements from other Departments (30 crs.): Educ 347; For 382, 386; Jour 270; SW 181; Art (4 crs. required) 123, 125, 128, 127, 129, 120; Drama (4 crs. required) 121, 374, 377, Music 134.

Electives: 35 crs. of which no more than 20 crs. may be from HPER.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

238 AQUATIC PROGRAM MANAGEMENT 3 prereq Senior Life Saving or =. Methods of teaching swimming for various age groups. Swimming pool and waterfront management.

239 TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS 3 prereq PE majors and minors, junior standing, PE 200 and 6 credits in 115-120; 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 in grades one through six.

240 PROGRAMMING IN RECREATION 3. Principles of program planning for organized offerings in recreation. Selection, adaptation and evaluation of activities.

241 CAMP COUNSELOR 3. Qualifications and professional preparation for camp counselors.

242 COMMUNITY CENTERS AND PLAYGROUND MANAGEMENT 3 prereq 335. Historical background, construction, equipment, management, problems, methods. Practical experience.

243 RECREATION LEADERSHIP (SOCIAL RECREATION) 3 prereq Soc 101. Principles and practice in group leadership, program skills for various age groups and for special groups, such as the handicapped.

244 RECREATION LEADERSHIP (CAMP LEADERSHIP) 3 prereq Soc 101. Principles and practice in group leadership of outdoor activities; skills and understandings essential to organized camping.

245 FIELD WORK IN RECREATION 2, Su V R-8. Supervisory and leadership experiences, methods and techniques to be used in conducting recreation programs in outdoor recreation, community social agency and institutional situations. Laboratory given in various agencies. Activities are coordinated to outdoor activities of the season and group activities available for leadership training.

246 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION 3 prereq 200.

247 (373, 375) METHODS IN TEACHING HEALTH 3

248 INTRODUCTION TO PHYSICAL THERAPY 3 prereq or coreq 386. Theory and practice of massage. The treatment of defects which arise within the field of physical education.

249 CLINICAL TRAINING IN PHYSICAL THERAPY V I-4 R-4 prereq 386 and c/l. Practical experience in local physical therapy centers.

250 FIRST AID 3. Red Cross Standard, Advanced and Instructor's Courses and Medical Self-Help. Certification at Instructor level upon completion of course.

401 DANCE COMPOSITION AND IMPROVISATION 3 prereq Modern Dance I, II.

402 DANCE PRODUCTION 3 prereq 401. Choreography, staging, lighting, makeup, costume and other problems of dance in public performance including concert dance and dance demonstrations. Performance in dance concert required. 

410 ADVANCED TECHNIQUES IN ATHLETIC TRAINING 3 prereq HPER 240, 384, Zool 202, Chem 160.

411 PRACTICUM IN ATHLETIC TRAINING 3 R-9 prereq HPER 410 or concurrent registration.

420 RECREATIONAL AREAS AND FACILITIES 3. The planning, construction and maintenance of urban oriented recreation areas and facilities as they relate to organized activities in public and private parks, playgrounds, play areas, all-purpose and specific use camps and day camps. Methods and techniques for financing, tax programs and possibilities.

460 SEMINAR V 1-3 R-12.
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 not only prepares teachers, but also furnishes a broad cultural background 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 60 credits in History is required with 40 credits from courses numbered over 300 and including History 291, 292, 293, 294. History 291, 292, 293, 294 requires the minimum of 40 upper division credits for the B.A. History majors must elect a minimum of 20 credits in American and 20 credits in European History plus 5 credits in another area (Asia, Canada, Latin America, Africa). The departmental English composition requirement must be completed. A student may offer a combined major in History and Political Science with 60 credits, of which at least 20 credits must be in History and 20 credits in Political Science. The remaining 20 credits must be selected from courses numbered over 300. The departmental English composition requirement must be completed.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


215-216 EUROPE IN THE 19TH CENTURY 3 enter either quarter. (215) The internal political, economic and social development of the European states from 1815-1870, (216) continuation after 1870 to 215.


261-262 (251-252-252) UNITED STATES HISTORY 4. Enter either quarter. (261) The American nation from its colonial beginnings to the end of the Civil War. (262) Continuation to the present.


FOR UNDERGRADUATES AND GRADUATES

301 ANCIENT NEAR EAST 3. Pre-Greek civilizations of Mesopotamia, Asia Minor and Egypt.

302 (303) ANCIENT GREECE 3. Greek culture during the period of the city-states and the Age of Alexander the Great.

303 THE HELLENISTIC AGE 3. The Ptolemaic, Antigonid, 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. Early Etruscan civilization; Rome as part of Hellenistic culture. The Empire, the Principate and the Empire.

305 BYZANTINE HISTORY 3. Origins and development of the civilization of the Eastern Roman Empire to 1453. Relations with Persians, Arabs, Slavs and Turks; cultural and political influence upon the West.


307 THE RENAISSANCE 3. The idea of the Renaissance applied to economic, political and cultural developments in Western Europe from 1300 to 1500; the impact of this idea on later historiography.

310 THE REFORMATION 3. The impact of the Reformation on European society, politics, economic theory and religious thought from 1500 to 1600.

311-312-313 EARLY MODERN EUROPE 3 Enter any quarter. (311) The political, economic, intellectual, and social development of Europe from 1450 to 1600. (312) 1600 to 1688. (313) 1688 to 1789.

314-315 FRENCH REVOLUTION AND NAPOLEONIC ERA 3 prereq 101 or 312. Enter any quarter. (314) The French Revolution to 1795. (315) The Directory, the rise of Napoleon, the First Empire, the fall of Napoleon.


319 CONTEMPORARY EUROPEAN HISTORY 4 prereq 102. The external affairs of the principal European states since 1919.

320 MEDIEVAL GERMANY 911-1250 3. The Frankish experiment. Emergence and development of Germany under the Saxon, Hohenstaufen, and Hapsburg dynasties with special emphasis on constitutional growth.

321-322 CENTRAL EUROPE 4 prereq 101. (321) The development of the states of Central Europe from early modern times to 1815. (322) Continuation to the present.

323-324-325 HISTORY OF RUSSIA 3. (324) The beginnings of Russia to 1613. (325) Russia from 1613 to 1825. (326) Russia in revolution: 1825 to present.

327-328-329 MODERN FRANCE 3 enter any quarter. (327) The political, economic, and social development of France from 1815 to 1914. (328) From 1914 to 1945. (329) From 1945 to 1955.


340 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 governments and military command, upon problems of strategy, and upon theories of war.


356-357-358 THE MEDIEVAL WORLD 3 enter any quarter. (356) Political, religious and social development of the European nations and their economic changes and growth. The impact of the Crusades in Europe from the reign of Diocletian to the disintegration of the Carolingian Empire. (357) The European states from the 10th through the 12th centuries, with the impact of Islam and Byzantium on Western Europe. (358) Continuation from the 13th to the 15th centuries; the new scientific movement; the decline of the unity of the Middle Ages.

359 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.

359-360 ENGLISH CONSTITUTIONAL HISTORY 3 prereq 241, 242, 245. English constitutional development to 1800 and the end of the Middle Ages. (360) Continuation to the present time.

375-376-377 HISTORY OF THE SOUTHERN STATES 3 enter any quarter. (375) The South, a regional history prior to the Civil War. (376) The Civil War and former Confederacy; sectional and cultural currents; the growth of sectional identification. (377) The New South; a regional history since the Civil War and Reconstruction, "The New South," and the South in the 20th century.

378-379-380-381-382 UNITED STATES, 1862 TO PRESENT 3. The Great Depression and New Deal; World War II; the Cold War and after.


HOME ECONOMICS

Curricula are designed to provide a well rounded educational program which will not only prepare the individual for 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 4 general plans available to the undergraduate major. Plan 1 provides a secondary school teaching certification including the Montana Vocational Education requirements. Plan 2 prepares one for work in the area of Foods & Nutrition, including institutional management and meets the American Dietetic Association's requirements for Dietetic Internship. Plan 3 prepares one for Nursery School teaching. Plan 4 is a program in general Home Economics and the student may opt to emphasize either Clothing & Textiles or Family Relations. The general major may be combined with other offerings on the campus such as Business, Radio and TV, Psychology, Social Welfare and others. A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in Home Economics.

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 109, 155, 241, 246, 265, 309; one course in English composition and one in speech communication.

The following additional courses are required according to the plan selected by the student.

1. Preparation for Teaching: Home Economics 102, 157, 158 (or 258), 210, 241 (or 245), 255, 265, 266, 310, 355, 367, 421, 490 (421 may be taken in either Education or Home Economics); Art 125; Chemistry 101: Microbiology 100, 101, 106; requirements in education to meet certification with a teaching major or minor in home economics are listed under education.

2. Foods and Nutrition and Dietetic Internship: Home Economics 210, 255, 321, 342, 346, 490, 492, 493, Chemistry 101, 102, 265, 266, 481; Microbiology 200, 306; Zoology 202; Education 205. For further requirements consult advisor.


4. General Home Economics: Home Economics 102, 157, 210, 258, 266, 292, 303, 304, 305, 490. Students select option (a) or (b) according to interests.

(a) Clothing and Textiles emphasis: Home Economics 284, 352, 359, 360, 368, Art 125, 200, 201, 202; Chemistry 101. Students should satisfy the foreign language requirement. Those planning a career in teaching should take Economics 201, 202, 203; Business Administration 360, 362.

(b) Family Relations emphasis: General Home Economics requirements plus Home Economics 310, 346, 367, 490; Anthropology 153; Chemistry 101; Sociology 200, 204, 305; 6 credits of Social Welfare; Psychology 230, 240.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102 PERSONAL AND FAMILY LIVING 3 (3-0). Personal development and factors which affect family and social relationships.

105 GENERAL HOME ECONOMICS 1 (0-2). Selected subjects in Home Economics. Offered by various instructors under different titles.

109 HOME MANAGEMENT IN THEORY AND PRACTICE 2 (2-0). Resources used in daily living; principles of resource use; managing in planning and selecting resources to obtain satisfaction for individuals and families.

141 ELEMENTARY FOODS 3 (2-2). The selection, storage, preparation and serving of food. Non-majors and non-minors only.

146 ELEMENTARY NUTRITION 3 (3-0). 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 clothing construction.

158 CLOTHING PROBLEMS LABORATORY 2 (0-4) prereq or coreq 157. Basic principles applied to planning and making garments. (For the student who is lacking in experience in clothing construction.)

210 HOUSEHOLD EQUIPMENT 3 (3-0) prereq 109. Principles of operation, materials specifications, selection, care and use of equipment.

241 (141) PRINCIPLES OF FOOD PREPARATION 3 (3-0). The selection, storage, and preparation of food. Methods of food conservation. Non-majors and minors only. Credit not allowed for both 141 and 241.

242 FOOD PREPARATION LAB 2 (0-4) prereq or coreq 241. Basic principles applied to food preparation. (For the student who is lacking in experience in food preparation.)

246 NUTRITION 3 (3-0) prereq Chem 101. Nutrition given in the light of the chemistry and physiology of digestion.

258 EXPERIMENTAL CLOTHING 2 (0-4) prereq 157. Working with new fabrics using a variety of construction and fitting techniques.

264 WEAVING 2 (0-4) prereq Art 125. Basic weaving techniques with emphasis on creativity.

265 CHILD DEVELOPMENT 1 3 (3-0) prereq Psych 110. Prenatal through age 6.

266 CHILD DEVELOPMENT II 3 (3-0) prereq Psych 110. The child from 6-14 years.

302 HOME PLANNING 3 (2-2) prereq 210 and Art 125. Physical 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 environments for living. A study of outstanding period styles, contemporary designs and designers, plus qualities to consider in selecting home furnishings.

304 FAMILY HOUSING 3 (3-0) open to non-majors. Housing in relation to needs of various types of families and to the family life cycle.

305 MEAL MANAGEMENT 3 (3-4) prereq 109, 210, 241, 246. Nutritional and social aspects of family meals, with emphasis on time, energy, money, and equipment management.

309 FAMILY FINANCE 5 (5-0) open to non-majors. Individual and family finance with emphasis upon financial planning, savings, insurance, investments, and use of credit.

310 HOME LIVING CENTER 3 prereq 109, 210, 241, 246, 305, 309. Residence in the home living center for unmarried students; special problems of managing the home for married students.

331 (431) QUANTITY FOOD PRODUCTION V 2-4 (1-4) prereq 210, 241. Application of principles of food preparation and food management to institutional situations. Menus planning for institutions.
JOURNALISM

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 246 or c/i, non-majors c/i. 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). Historic costumes and textiles and their influences on modern dress and fabrics.

356 ADVANCED CLOTHING PROBLEMS 3 (1-4) prereq 157 or c/i. Modern principles used in the construction of tailored garments. Experimentation with a variety of techniques and fabrics.

359 CLOTHING DESIGN 3 (2-2) prereq 157 and 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. Developments in fibers and finishes, legislation, and standardization. Comparison and evaluation of textiles.

367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 265. Participation in the laboratory.

370 TEACHING IN THE NURSERY SCHOOL 5 (0-10) prereq 265, 266. (For nursery school teaching majors only.)

385 NUTRITION IN DISEASE 3 (3-0) prereq 246. The symptoms of diseases, prophylaxis and feeding in disease.

411 TEACHING HOME ECONOMICS 8 (4-2). Preparation for teaching Home Economics in secondary schools. (Home Economics majors may take this course as Educ 346.)

423 LARGE QUANTITY BUYING 3 (3-0) prereq 331. Selection, purchase and storage of foods for institutions.

433 INSTITUTION ORGANIZATION AND MANAGEMENT 3 (3-0) prereq 422. Efficient organization and administration of food service units, employment procedures, personnel schedules, records, food cost, and maintenance.

446 ADVANCED NUTRITION 3 prereq Chem 481 or concurrent enrollment. Readings and discussion of nutritional research.

458 READINGS IN CLOTHING 3 (3-0). The social and psychological aspects of clothing.

490 (501) SEMINAR IN HOME ECONOMICS V 1-3 R-12.

499 PROBLEMS IN HOME ECONOMICS V R-12. Qualified students may select for study special problems in any of the major fields in Home Economics. Offered by various instructors under different titles.

FOR GRADUATES

699 THESIS V R-15.

JOURNALISM

Course requirements in Education to meet teacher certification with a teaching major or minor in Journalism are listed under Education in this catalog.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, study of a foreign language and typing is recommended.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. In addition to the general requirements the candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 32 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 48 hours in Journalism. The core curriculum in Journalism, required of all majors, consists of Journalism 100, 150, 190, 191, 192, 311, 351, 353, 355, 401-402-493. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

Journ 100—Social Role of the Mass Media Cr. 3
Journ 150—Elements of Writing 3
HPER 100 (3 quarters)—Health, Physical Education and Recreation 3
Additional courses to meet University requirements 39-46

Sophomore Year

Journ 270—Reporting 3
Journ 290—History and Principles of Journalism 3
Additional courses to meet University requirements 39-50

Junior and Senior Years

Journ 360—Principles of Advertising 3
Journ 361—Advertising Sales 3
Journ 370—Advanced Reporting 2
Journ 392—Specialized Reporting 2
Journ 380—News Editing 2
Journ 381—Advanced News Editing 2
Journ 491-492-493—Senior Seminar 6
Journ Electives (including sequence requirements) 15-35
Additional Electives 67-29

Total recommended hours in Journalism 195
Total recommended hours in General Education 147

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 367, 380, 470, 493.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 346; Journalism 335, 369, 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 should take the radio-telephone sequence in Journalism. The School of Journalism also offers a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 SOCIAL ROLE OF MASS MEDIA 3. Open to non-majors.
150 ELEMENTS OF WRITING 3.
190 CURRENT AFFAIRS 1. Open to non-majors.
227 ELEMENTARY PHOTOGRAPHY 3 prereq c/i. Open to non-majors.
270 REPORTING 3. Open to non-majors.
290 HISTORY AND PRINCIPLES OF JOURNALISM 3. Open to non-majors.
297 HISTORY 3.
327 NEWS PHOTOGRAPHY 3 prereq 227.
332 MAGAZINE MAKEUP AND EDITING 3 prereq c/i. Open to non-majors.
333 MAGAZINE ARTICLE WRITING 3 prereq c/i. Open to non-majors.
334 TRADE AND TECHNICAL WRITING 3 prereq c/i. Open to non-majors.
335 PROMOTION AND PUBLIC RELATIONS 3 prereq c/i. Open to non-majors.

Undergraduates specialize in one of four sequences: news-editorial, radio-television, advertising or magazines.

Many graduates obtain positions on newspapers in Montana and other states. Some are foreign correspondents. Several are editors and publishers. Others hold positions with news services, radio-television stations, technical magazines, public relations firms, advertising agencies and government departments. Several are distinguished scholars, authors and editors.

A Master of Arts in Journalism is offered (see Graduate School).
The Supreme Court of Montana admits graduates to practice without examination. Most graduates become practicing attorneys. Others enter government service, business, or finance, with or without additional studies in these latter fields. Some take advanced or more specialized studies (such as in taxation) at the American institution. 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 practitioners in many large cities of the United States.

CALENDAR

FALL SEMESTER 1970

September 21-22, Monday and Tuesday........................................... Orientation of new law students
September 22, Tuesday............................................. Registration
September 29, Wednesday......................................... Classes begin at 9:00 a.m.
October 6, Thursday……………… Registration
November 11, Wednesday……………… Classes begin at 9:00 a.m.
November 18, Wednesday……………… Thanksgiving, no classes
November 30, Monday……………… Classes resume at 9:00 a.m.
December 19, Saturday……………… Christmas vacation begins after last class
January 4, 1971, Monday……………… Classes resume at 9:00 a.m.
January 25 through January 30, Monday through Saturday…………….. Semester examinations

SPRING SEMESTER 1971

February 10, Wednesday…………………… Registration
February 11, Thursday……………… Classes begin at 9:00 a.m.
March 29, Monday……………… Classes resume at 9:00 a.m.
May 31 through June 5, Monday through Saturday…………….. Semester examinations
June 6, Sunday……………….. Commencement

GENERAL STATEMENT: The Law School is accredited by the American Bar Association and the Association of American Law Schools. Organization of instruction is upon the semester basis, the school being divided into two semesters of approximately eighteen weeks each, including vacation periods. For detailed information concerning facilities, descriptions of courses, and miscellaneous 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 the Law School. Non-theory courses are not acceptable except for required courses in physical education to the extent of ten percent of the total credits offered for admission.

Applicants with undergraduate degrees from the University of Montana must have taken English 450 (Advanced English Composition) and received a grade of "C" or better. Applicants having degrees from other institutions must have completed, with a grade of "C" or better, an equivalent course or must achieve a satisfactory score on an examination required by the Law School in the proficient use of English. A candidate who fails an examination may be admitted on probation, but must take English 450 during the first semester of Law School and achieve a grade "C" or better as a condition of being permitted to register for the second semester.

The Law School faculty reserves the right to require any student to take further work and study in English Composition at any time that he evidences a deficiency.

College credit in the principles of financial accounting is also required for admission. Normally two quarters or two semesters of accounting are necessary to fulfill this requirement.

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 for which admission is sought. Information concerning the test and application forms may be obtained from the School of Law or from the Educational Testing Service, P. O. Box 944, Princeton, New Jersey 08540.

Special students are not admitted to the Law School. Students otherwise qualified for admission may register 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 submitted before June 1 of the year in which entrance is contemplated. In addition to the credentials required by the Registrar of the University, the applicant must submit to the Law School (a) an official transcript of all college and law school work previously undertaken; (b) a statement as to the work described on the transcript of 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 $20.00 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 law student activity fee.

ADMISSION TO ADVANCED STANDING: Applicants for admission 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 work for which the student has registered and received a grade is equivalent to that required for graduation from the institution attended; (3) that the applicant is in good LAW
standing and eligible to continue in the law school previously attended; 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 more than 10 credits shall be excluded from the Law School. Any student who has completed two semesters of law study but thereafter fails two courses in any semester shall be excluded from the Law School. (2) Weighted Average: A student whose law school record is deficient more than five (5) grade points at the end of his second or third semester shall be excluded. 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 shall be excluded from the Law School.

Any required course in which a student has received an F grade shall be repeated. No other course may be repeated. The grade received on the repeated course will not replace the prior grade. Both grades will be included in calculating the student's grade point index for all purposes.

A student excluded on the basis of substandard academic performance shall not be readmitted except in extraordinary cases when a satisfactory showing is made to the faculty, by written petition, that the substandard performance was the result of unusual circumstances beyond the control of the student, that such circumstances no longer exist, and that the student has the capability and desire to perform satisfactory work.

**REQUIREMENTS FOR GRADUATION:** Candidates for the degree of Juris Doctor (J.D.) must: (1) graduate of an approved college or university; (2) complete six semesters in residence at an approved law school, the last two of which must be at the University of Montana; (3) complete ninety semester hours of law with an index of 2.0 in all courses for which the student has registered and received a grade; and (4) complete the following required courses: all courses taught in the first and second years as specified in the instruction below, and the following third year courses: Courtroom and Office Practice, Law Review or Legal Aid and one Seminar. Credit is earned by the student in all law courses for which he has registered and received a grade, and to maintain such an index thereafter shall be excluded from the Law School.

Candidates for graduation with honors must achieve an index of 3.1 (honors) or 3.5 (high honors) on law credits attempted and in all credits attempted. The liberal arts curriculum is not an optional credit or the student earns an average of 3.1 (honors) or 3.5 (high honors) on the credits attempted and in all credits attempted.

A candidate for the degree of Juris Doctor who has fulfilled the requirements for graduation will be recommended for the degree if, in the opinion of the majority of the law faculty, he is unequal in a capacity in accordance with generally accepted standards of admission to the bar.

A student may not register nor receive credit for more than 16 hours of law in a semester.

**LIBERAL ARTS—55**

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>515—Torts</td>
<td>525—Introduction to Law</td>
<td>665—Real Property (Seminar)</td>
</tr>
<tr>
<td>521—Torts</td>
<td>531—Legal Writing I, II</td>
<td>671—Secured Transactions</td>
</tr>
<tr>
<td>536—Property I, II</td>
<td>536—Property I, II</td>
<td>681—Secured Transactions</td>
</tr>
<tr>
<td>541—U.S. Legal History</td>
<td>552—U.S. Legal History</td>
<td></td>
</tr>
<tr>
<td>(Add 1 hour of Legal Method (Remedial) for those deficient grade points at end of first semester. No course credit.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SECOND YEAR**

- 553—Agency & Partnership
- 557—Civil Procedure II
- 561—Secured Transactions I, II
- 564—Contracts
- 565—Corporations
- 566—Crimes
- 573—Evidence
- 583—Legal Writing I, II
- 593—Legal Writing III, IV

**ALL COURSES IN THE FIRST TWO YEARS ARE REQUIRED**

**THIRD YEAR**

- 600—Administrative Law
- 601—Comparative Law (Seminar)
- 602—Contemporary Legal Problems (Seminar)
- 604—Contemporary Legal Problems (Seminar)
- 615—Civil Practice & Procedure I, II
- 621—Creditor and Debtor
- 626—The Family (Seminar)
- 631-632—Federal Tax I, II
- 656—Jurisprudence (Seminar)
- 641—Labor Law

**LIBERAL ARTS**

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. It 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.

Students must have completed, or be eligible for, English 100 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 100: 3 credits
  - Group I or II: 15 credits
  - Foreign Languages: 23-30 credits
  - Physical Education (3 quarters): 3 credits

- **Major Requirements (courses under 300)**
  - Art 200-209: 9 credits
  - Humanities 151-152-153: 9 credits
  - Anthropology, Economics, Geography, Psychology, Sociology, any two: 15 credits
  - History or Political Science or both (History 104-105-106 or 261-262 recommended): 15 credits
  - Literature (English 211-212-213 and 231-232-233 recommended): 12 credits
  - Philosophy (Philosophy 266, 269, 300 recommended): 10 credits

- **Major Requirements (courses 300 and above)**
  - Anthropology, Economics, Geography, Psychology, Sociology, any two: 24 credits
  - History or Political Science or both: 24 credits
  - Literature or Philosophy or Humanities 351 and 451 or any combination: 48 credits

Elective credits to bring the total to 195 credits

- 33-36 credits

**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, 444, 445, 447, 448 and 449. 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. and abroad. The following is a list of linguistics courses offered by departments in the university (each is applicable to a major in the department concerned):

Anthropology 380—Historical Linguistics
Anthropology 480—Linguistic Methods
English 360—Introduction to Linguistics
English 371—The Structure of Modern English
English 372—The History of the English Language
English 373—Old English
English 496—The Teaching of English as a Foreign Language
English 497—Problems in English Linguistics
French 401—Applied Linguistics
German 401—Applied Linguistics
Spanish 401—Applied Linguistics
Romance Philology 360—Introduction to Romance Philology
German 460—History of the German Language
Spanish 460—History of the Spanish Language
Speech Path. & Audiology or Speech Communication 119—Phonetics
Speech Path. & Audiology or Speech Communication 232—Introduction to Communication (Phonology)
Speech Path. & Audiology or Speech Communication 419—Advanced Phonology
Speech Path. & Audiology or Speech Communication 420—Motor and Perceptual Phonetics
Speech Path. & Audiology or Speech Communication 451—Psycholinguistics

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 present 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 DEGREE IN MATHEMATICS. In addition to the general requirements for an education 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) and English composition 101 and 200 are required. Students scoring at or below the 33rd percentile on the ACT English test must pass English 001 before entering English 100. Those at or above the 92nd percentile are exempt from this requirement. Four credits for English 100 are not required to take 300. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 311, 351, 352, 353, 421, 422, 423 and 9 credits in other approved Mathematics courses, including 3 credits in courses numbered above 300. The student must present 32 credits in at most three sciences selected from Botany, Chemistry, Geology, Microbiology, Physics, Zoology and Mathematical Statistics (i.e. Math 341, 342, 343, 344, 345, 347). In order for the student to present 15 credits of German, French, or Russian and 18 credits of the above sciences, provided that the language substitution is not one offered to satisfy the language requirement listed above, he must take 12 credits in other approved Mathematics courses numbered above 252. The student must complete certification requirements for teaching in the secondary schools.

GRADUATE WORK. See Graduate School Bulletin and Mathematics Department Bulletin—Graduate Work in Mathematics. Additional information may be obtained from the Chairman of the Mathematics Department.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

001 (100) INTERMEDIATE ALGEBRA 5. A remedial course, of which the content is second year high school algebra. (Credit not allowed toward a degree.)

116 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination or two years of high school algebra. 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 or three years of college preparatory mathematics including trigonometry. Trigonometric functions and their graphs, Pythagorean identities, addition formulas, laws of sines, cosines, and tangents, exponential and logarithmic functions and their graphs, solution of triangles.

118 INTRODUCTION TO CALCULUS 5 prereq 117, or exemption by examination or four years of college preparatory mathematics including trigonometry. Continuity, differentiation, and integration of functions of one real variable, applications, the fundamental theorem of calculus. Credit not allowed for this course if Math 151 was previously taken.

121 ELEMENTARY FUNCTIONS 5 prereq 001 or exemption by examination and high school trigonometry three years of college preparatory mathematics including trigonometry. Polynomial, rational, circular, and other elementary functions of one variable.

125 STATISTICS 5 prereq 001 or exemption by examination or two years of high school algebra. Probability, statistical independence, sampling, tests of statistical hypotheses.

130 THEORY OF ARITHMETIC 5 prereq 001 or exemption by examination. 4 credits for elementary majors.

151-152 CALCULUS I-II 5 prereq 121 or 117 or exemption by examination or four years of college preparatory mathematics including trigonometry. Limits, continuity, differentiation, integration, differentiation and integration of elementary functions, infinite series, Taylor series, applications.

153 LINEAR ALGEBRA 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 c/o. Axion systems, essentials of Euclidean plane geometry, and selected topics. (For elementary education majors.)

251 CALCULUS III 5 prereq 153. Partial differentiation, multiple integrals, line and surface integrals, series of functions, improper integrals, applications to geometry.

252 CALCULUS IV 5 prereq 251. Development of concepts of limit, continuity, convergence, differentiation, and integration.

253 ELEMENTARY DIFFERENTIAL EQUATIONS 4 prereq 153. Solution of ordinary differential equations with emphasis on linear equations and applications to physical problems. Laplace transform methods and series solutions are considered.
### Mathematics Courses

#### Undergraduate and Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>271-272-273</td>
<td>Computing and Mathematics 3 (3-4) preq Math 001 and c/i. The elements of linear equations, inequalities, calculus logic and probability are presented with the aid of a digital computer. 271) Linear Algebra (4). 272) Intuitive calculus. 273) Logic and probability theory. (Credit not allowed for this course and Computer Science 271-272-273.)</td>
<td></td>
</tr>
<tr>
<td>301-302-303</td>
<td>Mathematics for Teachers 3 preq 153. An axiomatic development of the elementary number system. The theory of algebraic equations with considerations for the secondary school curriculum. Various geometries and geometric transformations are applied to the secondary school geometry. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)</td>
<td></td>
</tr>
<tr>
<td>305</td>
<td>Topics in Mathematics V preq 1 year experience in teaching high school mathematics. The main purpose of this course is to help the student who is teaching or intending to teach to improve his teaching method. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)</td>
<td></td>
</tr>
<tr>
<td>307</td>
<td>Foundations of Mathematics 4 preq 30 credits in mathematics. Axiom systems, logic, set theory, cardinal numbers, propositions equivalent to the axiom of choice, paradoxes and the avoidance of paradoxes, and intuitionism.</td>
<td></td>
</tr>
<tr>
<td>317</td>
<td>Differential Equations 4 preq 358. Existence of solutions, methods of solution, and applications of ordinary differential equations, with emphasis on linear equations. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>324-325</td>
<td>Introduction to Algebraic Structures 3 preq 252. Mathematical proofs, sets, mappings, and algebraic systems. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>327-328</td>
<td>Modern Algebra 5 preq 252 and c/i. Groups, rings, integral domains, fields, and vector spaces. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>329</td>
<td>Topics in Algebra 4 preq 257. A topic in advanced algebra is studied in appropriate depth. Possible topics may be chosen from the theory of groups, rings, fields, or commutative rings. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>337</td>
<td>Introduction to General Topology 4 preq 358 or c/i. Topological spaces, connectedness, compactness, convergence, separation axioms, metric spaces. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>341-342-343</td>
<td>Mathematical Statistics 3 preq 252 and c/i. Development of necessary mathematical concepts, probability, random variables and their distribution functions, sampling, testing hypotheses, confidence intervals.</td>
<td></td>
</tr>
<tr>
<td>344-345-346</td>
<td>Statistical Methods 3 preq 252 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 and estimation in the plane. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>347-348</td>
<td>Statistical methods 4 (373-378) Statistical methods 4 preq 252 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 and estimation in the plane. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>351-352-353</td>
<td>Modern Advanced Calculus 3 preq 252 or c/i. Set theory, real number system, metric spaces, normed linear spaces with applications to differential equations, functions of several variables, inverse function theorem, integration and Stokes' theorem.</td>
<td></td>
</tr>
<tr>
<td>355-356</td>
<td>Principles of Analysis 5 preq 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.)</td>
<td></td>
</tr>
<tr>
<td>359</td>
<td>Topics in Real Analysis 4 preq 358. A topic in advanced analysis is studied in appropriate depth. Possible topics include introductory measure theory, metric spaces, and normed linear spaces. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>Complex Analysis 4 preq 358. Complex numbers, analytic functions. Cauchy's integral theorem and formulas, conformal mapping, theory of residues. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>Computer Methods 4 (8-2) preq 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.)</td>
<td></td>
</tr>
</tbody>
</table>

---

#### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>381</td>
<td>Euclidean Geometry 5 preq 153, Geometry from a Rigorous, Axiomatic Viewpoint. Hilbert's Axioms, models of axiom systems, introduction to non-Euclidean geometries.</td>
<td></td>
</tr>
<tr>
<td>383</td>
<td>Differential Geometry 3 preq 253. Curves and surfaces in three space, the Frenet formulas for a curve, first and second fundamental forms of a surface, Christoffel symbols and covariant differentiation on a surface, geodesics.</td>
<td></td>
</tr>
<tr>
<td>387</td>
<td>Foundations of Geometry 4 preq 252 and c/i. Axiom systems for geometries; extended consideration of one or more geometries; those geometries and the NSF Summer Institute. Other students may enroll by special permission.)</td>
<td></td>
</tr>
<tr>
<td>391-392</td>
<td>Elementary Number Theory 5 preq at least 20 credits in Mathematics with a grade of C or better. Congruence arithmetic, primitive roots, quadratic residues, continued fractions, algebraic numbers.</td>
<td></td>
</tr>
<tr>
<td>399</td>
<td>Seminar V R-18 preq c/i. Guidance in special work for advanced students.</td>
<td></td>
</tr>
<tr>
<td>411-412-413</td>
<td>Mathematical Methods of Science 3 prereq 352, 311-312-313. Applied statistical inference. Design of experiments, least squares procedures, non-parametric statistics and other topics chosen to fill the needs of the students.</td>
<td></td>
</tr>
<tr>
<td>417</td>
<td>Real Analysis 3 preq 353. Lebesgue measure and integration. Lebesgue point set topology, metric spaces, and selected topics.</td>
<td></td>
</tr>
<tr>
<td>420-421-422</td>
<td>Complex Analysis 3 preq 353. Complex numbers and functions, analytic functions, Cauchy integral theorem and formulas, conformal mapping, theory of residues, analytic continuation, and selected topics.</td>
<td></td>
</tr>
<tr>
<td>447-472-473</td>
<td>Numerical Analysis 4 (3-4) preq 253 and 248 for 471, 290 recommended; c/i for 472 and 473. Error analysis; approximation and interpolation, numerical solution of linear and non-linear equations, numerical integration of the ordinary and partial differential equations, selected topics. Assigned work on the digital computer. (Credit not allowed for this course and Computer Science 417-417-472.)</td>
<td></td>
</tr>
</tbody>
</table>

---

#### For Graduates

Before beginning work on an M.A., a student should have an undergraduate major in Mathematics with a B average in upper division courses in Mathematics. As preparation for advanced courses, he or she must have Math 358, 359, and 421 with Math 422 and 423.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>511-512-513</td>
<td>Advanced Mathematical Methods 3 preq 415 or c/i. Theory of approximation including steepest descent, Newton's method, and replacement of integral and differential equations by algebraic equations.</td>
<td></td>
</tr>
<tr>
<td>521</td>
<td>Theory of Groups 3 preq 423. Sylow theorems and applications to finite groups. Series decompositions and selected topics.</td>
<td></td>
</tr>
<tr>
<td>522</td>
<td>Theory of Fields 3 preq 423. Algebraic and transcendental number theory. Functions from Galois theory, algebraic functions, and/or ordered fields.</td>
<td></td>
</tr>
<tr>
<td>524</td>
<td>Structure of Rings 3 preq 423. Radicals and the Wedderburn theorem. Group rings, tensor products, and selected topics.</td>
<td></td>
</tr>
<tr>
<td>525</td>
<td>Commutative Rings 3 preq 423. Noetherian rings, integral domains, extensions, and related topics.</td>
<td></td>
</tr>
<tr>
<td>526</td>
<td>Modules 3 preq 3 credits from 521, 522, 523, or 524 or c/i. The language of categories, direct and inverse limits, projective and injective modules. Abelian group theory.</td>
<td></td>
</tr>
<tr>
<td>531-532-533</td>
<td>Topology 3 preq 353. Set theory, topological spaces, metrizability, continuous mappings, topological mappings, and selected topics.</td>
<td></td>
</tr>
</tbody>
</table>
MEDICAL TECHNOLOGY

is a combined study of chemistry, physics, physiology and microbiology. A medical technologist is one who, by education and training, is capable of performing, under the supervision of a pathologist or other qualified physician, the various chemical, microscopic, bacteriologic and other medical laboratory procedures used in the diagnosis, study and treatment of disease. Four years are required to earn the degree of Bachelor of Science in Medical Technology. The first two years are devoted to the development of a sound foundation in physics, chemistry and microbiology and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of internship, a student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this certification is desirable, persons receiving the B.S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratory 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 years 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 receives a B.S. in Medical Technology after approximately 3½ 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 preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 111, 300, 310, 416, 411, 415, 420; Physics 111-112-113; Zoology 111-112-113, 202, 204, 215; Chemistry 121-122-123, 245, 261-262, Math 116, 117, 118 or Computer Science 271-272-272; English 100 and/or 350 and 450. A minimum total of 45 credits from Microbiology courses listed above and from the following courses is required: Microbiology 306, 307, 404, 405, 418, 419, 420; Chemistry 370, 481, 482, or any other courses approved by the advisor and the chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Option I

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>General Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 111—Survey of Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Math 116-117-118—College Algebra, Trigonometry</td>
<td>5</td>
</tr>
<tr>
<td>Introduction to Calculus</td>
<td>5</td>
</tr>
<tr>
<td>HPER—Physical Education</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 111-112-113—General Physics</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 202—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 204—Comparative Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>English 300—Upper Division Composition</td>
<td>5</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbiology 206—Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 310—Immunology and Serology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 415—Medical Mycology</td>
<td>5</td>
</tr>
<tr>
<td>English 301—Upper Division Composition</td>
<td>3</td>
</tr>
<tr>
<td>Group III or IV Electives</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbiology 406—Clinical Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 420—Virology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 404—Molecular Genetics</td>
<td>5</td>
</tr>
<tr>
<td>English 404—Vertebrate Histology</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology Electives</td>
<td>5</td>
</tr>
<tr>
<td>English 480—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Option II

Under Option II, a student must complete a minimum of 45 elective credits in residence during the senior year. Successful completion of the hospital training in a hospital approved by the American Society of Clinical Pathologists and the Department of Microbiology are required. The student will receive the equivalent of not more than 36 credit hours toward the B.S. degree for the successful completion of the hospital internship.

MICROBIOLOGY

is the study of microorganisms, including the bacteria, yeasts, molds, rickettsiae, viruses and protozoa. Special emphasis is placed on their structure, function, interactions, and relationships with man. Subtopics within the field of microbiology are listed under courses offered.

A Bachelor of Arts degree is granted upon successful completion of the curriculum in Microbiology. The initial work in this curriculum is intended to provide the student with a working knowledge of the basic principles of the physical and biological sciences and mathematics. The remaining study is devoted to a more intense and broadened training in Microbiology and ancillary fields, and may include independent study. This latter experience provides the student with an opportunity to prepare adequately for graduate studies.
Grades are employed in clinical and research laboratories, in industrial and pharmaceutical laboratories, in county and state health offices, in various federal offices and laboratories, and in many other advantageous positions.

Highly capable graduates often continue their education in Microbiology at the graduate level. The Department of Microbiology offers the Master of Arts, Master of Science, and Doctor of Philosophy degrees. These degrees require an independent research project culminating in a thesis. Opportunities for persons holding graduate degrees in Microbiology are numerous and varied. The Department of Microbiology has available, for qualified graduate students, a number of teaching and research assistantships. (For general requirements of all graduate students and for information regarding graduate study in Microbiology, see Graduate School Bulletin).

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation includes Algebra, Geometry, Trigonometry, Chemistry, Physics, and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 111, 200, 305, 310, 350, 404, 405, 411, 415, 439; Zoology 111-112-113; Chemistry 121-122-123, 245, 251-252; Physics 111-112-113, Math 116-117-118 or Computer Science 271-272-273; Engl 100 and/or 360 and 450. Students planning to do graduate work are recommended, in addition to the following courses: Chemistry 370, 481-482; History 392-393-394; Philosophy 310.

The foreign language requirement listed earlier in the catalog must be satisfied. Normally Microbiology majors take 5 quarters of French, German, or Russian. Other languages or combinations must be approved by the department.

A minimum of 45 credits in the major field is required to receive a baccalaureate degree. This requirement may be satisfied by a successful completion of Microbiology courses listed above and any of the following courses: Microbiology 396, 397, 400, 404, 418, 419, 430; Zoology 321: Botany 441; Chemistry 481, 482, or any other courses approved by the advisor and chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chem 121-122—College Chemistry</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 111—Survey of Microbiology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Math 116-117-118—College Algebra, Trigonometry, Introduction to Calculus</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>HPER—Physical Education</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Sophomore Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chem 261-262—Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Chem 245—Quantitative Analysis</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 200—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engl 105—Lower Division Composition</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Foreign Language</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Group III or IV Electives</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Junior Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physics 111-112-113—General Physics</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Foreign Language</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engl 300—Upper Division Composition</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Micro 350—Microbial Physiology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 302—Medical Microbiology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 310—Immunology and Serology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Group III or IV Electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Senior Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Micro 415—Medical Mycology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 420—Virology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 411—Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Micro 494—Molecular Genetics</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Micro 405—Seminar</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Group III or IV Electives</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Electives in Major</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Engl 450—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

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 control, and industry. The course is designed for those who can decide at the end of their college career to major in Microbiology. (Students enrolling in Micro 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 (4-0) preq 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.)

111 SURVEY OF MICROBIOLOGY 1 (1-0) R-3. The field and subject matter of Microbiology. (Not applicable to Group I requirements.) (Required of all Microbiology and Medical Technology freshmen). (Credit not allowed for both 100 and 200.)

200 GENERAL MICROBIOLOGY 5 (3-4) preq Chem 123 or 102. Bacterial taxonomy, morphology, physiology, and ecology; effect of environmental factors on bacteria; microbiology of soil, water, milk and foods; and industrial microbiology. (Credit not allowed for both 200 and 300.)

302 MEDICAL MICROBIOLOGY 5 (3-4) preq 200 or 102. The pathogenic microorganisms: clinical, therapeutic and diagnostic aspects of the diseases they produce in man. (Credit not allowed for both 200 and 300.)

306 APPLIED MICROBIOLOGY 5 (3-4) preq 200 or 100, 101. The fundamental principles of food, water, sewage, soil and industrial microbiology.

307 ENVIRONMENTAL HEALTH 3 (3-0) preq 302. Environmental health as related to food, water, housing, institution, and recreational sanitation; sanitary disposal of liquid and solid wastes; vector control; communicable disease control; vital statistics; industrial hygiene; and environmental health administration.

310 IMMUNOLOGY AND SEROLOGY 5 (3-4) preq 302.

350 MICROBIAL PHYSIOLOGY 5 (3-4) preq 200.

404 MOLECULAR GENETICS 5 (3-4) preq senior standing in one of the biological sciences and C/1. Biochemical mechanisms of mutation, DNA replication, nature of the genetic code, genetic recombination, genetic transcription and translation.

405 SEMINAR 1 (1-0) R-4 preq 200, 202. Recent literature in microbiology and related subjects.

406 CLINICAL MICROBIOLOGY 3 (3-0) preq 200, Chem 160, 262, or 266. Principles of hematology, blood chemistry, urinalysis and some other clinical parameters of disease and health.

407 CLINICAL MICROBIOLOGY LABORATORY 2 (4-0) preq or coreq 406 or Chem 304 or 481 or Zool 340. Clinical diagnostic methods.

411 EPIDEMIOLOGY 3 (3-0) a/yr preq 350. The classification, cytology, composition, genetics, metabolism and growth and significance of the yeasts.

418 YEASTS 3 (3-0) a/yr preq 350. The classification, cytology, composition, genetics, metabolism and growth and significance of the yeasts.

419 MYCOPLASMA AND L-FORMS 2 (2-0) a/yr preq 302. Physiology, immunology, pathogenesis, taxonomy, and interrelationships of microorganisms such as lachez cell walls, including Mycoplasma (Pfo and Pplo), bacterial, fungal and other L-forms, and bacterial protoplasts and spheroplasts.

420 VIROLOGY 3-5 (3-4) preq 200. Properties, characteristics and infectious nature of bacteriophages, animal viruses and rickettsiae.

430 SPECIAL PROBLEMS IN MICROBIOLOGY 5 (3-4) preq 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) a/yr preq 310.

505 MICROBIOLOGY LITERATURE (1-0) R-9.

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 acquire 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 Education
- with a major in Elementary Music
- with a major in Choral Conducting
- with a major in Instrumental Conducting

Bachelor of Music
- with a major in Performance
- with a major in Theory or Composition

Bachelor of Arts
- with a major in Music.

GRADUATE WORK. See Graduate School Bulletin.

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, conscientious 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 Education, the course requirements in Curriculum A must be completed.
2. For the Bachelor of Music with a major in Performance 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., B.M.E., or B.A. degree are required to participate in Band, Orchestra or a Choral Group each quarter of residence of the regular school year (with the exception of the major in Elementary music). Students who are wind instrument majors in the performance field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter, voice majors must register for choir or collegiate chorale every quarter. Students registered in any group must participate in that group for the remainder of the academic year. Piano and organ majors must fulfill this requirement by the election of Music 140 or 106-110. Exceptions to this requirement may be made only by action of the Music faculty.
6. All candidates for the Bachelor of Music or Music Education degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217. Elementary music majors (Curriculum A-1) must complete 4 credits of Piano 100.
7. Outstanding seniors in curriculum A or C may give joint senior recitals. Details will be supplied by the department on request.
8. All candidates for the B.M.E., B.M., or B.A. degree enrolled in Music 201 or 401 shall take a divisional jury in fall and winter quarters. All freshmen majoring in Music shall take a divisional jury at the end of Spring quarter. At the option of the division and/or instructor concerned, all other students registered in Music 201 or 401 may be required to take a divisional jury at the end of Spring quarter. If to be exercised said option to be exercised at the beginning of spring quarter. Students may be excused from divisional juries if (a) graduating in that quarter or (b) they have played a half or full recital that quarter.

All students seeking upper-division standing shall take a full faculty jury in the spring quarter. The jury will include:
- (a) Performance
- (b) Sight-reading on performing instrument
- (c) Sight-singing
- (d) Evaluation of academic record for satisfactory completion, or current enrollment in 212, 239, 236, 217 (or functional), and sixth quarter of 201 (or the equivalent)

Failure to pass the jury will bar students from admission to music courses numbered 300 or above with the following exception: Transfer students who shall be admitted to 300 or above courses with the stipulation that they will have completed all lower division requirements within their first three quarters of residence.

STUDIO 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 studio instruction for less than a full quarter or who withdraw before the end of the quarter, a charge of $1.25 per hour for each lesson will be made. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Lessons 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 $5.00 per quarter.

A. CURRICULUM FOR BACHELOR OF MUSIC EDUCATION DEGREE

For students who sincerely feel the challenge and vital service opportunity in the professional field, an intensive four-year pre-professional course background includes experience in musical organizations, the University of Montana offers the degree of Bachelor of Music Education, which meets the state requirements for certification for public school teaching (see Education). (1) with a major in Elementary Music: training and background preparation of a teacher to meet the different special and general music classes in the elementary grades (K-8).

Music course requirements for Curriculum A (Elementary) shall include a total of 70 credits as follows: 201 (Piano or voice), 6 cr.; 401, 1 cr. 100 (Piano or voice), 4 cr.; 103, 2 cr. 106-110 or 146 (with faculty approval), 4 cr.; 150, 3 cr.; 151, 3 cr. 213, 3 cr. 236 and 238, 6 cr.; 233, 300, 350, 355, 377, 11 cr.; 320, 3 cr.

In cases of a demonstrated proficiency in piano or voice other applied study may be substituted with the approval of the music faculty.
Non-music requirements shall include the following: English 100, 300, 400, 450, 2 er.; Psychology 100; Music 106, 110; Speech 119, 2 cr.; Art 303, 3 cr.; Drama 101, 3 cr. Group I requirements shall be satisfied by Major in Music and 130, 230, 6 cr. and by General 125, 126, 127, 15 er. Electives will be presented to complete a total of 82 credits, including requirements for Group III.

Professional courses totaling 34 credits shall include the following: Education 300, 21 er.; Education 304, 15 er.; Education 307, 3 cr.; and HPER 327, 3 cr.

It is recommended that elementary teachers take Health, Physical Education and Recreation 110-120 as part of their required electives in Physical Education (3 cr.).


Suggested Freshman Program: Music 201, Theory I, Aural Perception I, Introduction to Music Literature; English 100; HPER; Academic Electives, 13 credits.

MAJOR IN INSTRUMENTAL CONDUCTING

Music course requirements for Curriculum B with Major in Instrumental Conducting shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 106 or 107, 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.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr. and 140 (vocal repertoire), 6 credits.

Non-music requirements include a minimum of 59 credits, including English Composition, 9 cr.; and Foreign Language, 15 cr.

Suggested Freshman Program: Music 201, 106 or 107; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 100; HPER; Academic Electives, 13 credits.

MAJOR IN ORCHESTRAL INSTRUMENT

Music course requirements for Curriculum B with a Major in Orchestral Instrument shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 108 or 109, 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.; 125, 4 cr.; Music History, 9 cr.; 140, 6 cr.; 331, 3 cr.; Upper division electives, 12 cr. and 445, 2 cr.

Non-music requirements include a minimum of 59 credits, including English Composition, 9 cr.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 100; HPER; 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 121 credits as follows: 201, 6 cr.; 401, 6 cr.; 106-110, 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.; 125, 4 cr.; Music History, 9 cr.; 140, 6 cr.; 331, 3 cr.; Upper division electives, 12 cr. and 445, 2 cr.

Non-music requirements include a minimum of 60 credits, including English Composition, 9 credits.

ADDITIONAL REQUIREMENTS: Students taking voice or instrument in the Music Department may present a recital of original music (or equivalent) for solo voice or instrument, and 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 100; HPER; Academic Electives, 13 credits.

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 arts, music, and other disciplines, 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: a minimum of 57 credits in Music and a minimum of 120 credits in non-music courses (excluding PE) of which 40 credits must be in the College of Arts and Sciences. Music students with a possible applicable toward this degree: Applied Music, 12 cr.; Ensemble Music, 6 cr. (however, Music Department requires participation in ensemble during all resident quarters).

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, 6 cr.; Music 211-212-213, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division music electives, 13 cr.; English Composition, 9 cr.; HPER, 3 cr.; 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 100; HPER; Academic Electives, 21 cr.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given the prerequisite and training with which he is familiar previously training and experience entitle him.

MUSIC 100: Performance Minor 1-2 prereq c/1.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide for study in a performance minor. This study is designed to give the beginning
Further development of harmonization, transposition, memorization.
Continuation of Theory I.

Quarter. The history of music in Western Civilization from its origin to modern times and its relationship to general cultural development.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102-103-104 REPETORY BAND, CHORUS, ORCHESTRA 1-3. The literature of school music. Observation of conducting and teaching methods. Study of second or primary instruments.

105 SUMMER SESSION CHORUS 1.

106 UNIVERSITY CHOIR 1.

107 COLLEGIATE CHORALE 1.

110 UNIVERSITY BAND 1.

Courses 106 through 110 are major musical organizations. Pre-req c/1. Music majors must satisfy requirements as stated for each curriculum; non-music majors may apply 6 credits toward graduation.

111-112-113 THEORY I 2. Materials and structure of music. Analysis of major and minor scales, chords, and at the keyboard. 111 is prereq to 112; 112 and 113 are prereq to 111.

119-119-116 PIANO IN CLASS 1. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Harmonization of melodies using primary IV and V degrees. Materials such as Oxford and Burrows Adult Beginners books. Transposition, memorization, and sight-reading.


122-123-124 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS 2, W S 3. (122) Keyboard Fundamentals and basic rules of music. (123-124) Integration of materials into the elementary classroom. Emphasis placed on all aspects of teaching music creatively in the elementary school. (Not open to music majors. 122 may be waived on basis of proficiency examination. It is advisable to take Educ 200 before enrolling for this sequence.)

125-126-127 STRING INSTRUMENTS IN CLASS 1. Group instruction for beginning students on violin, viola, cello, and bass, with emphasis on teaching procedures.

128-129-130 WOODWIND; BRASS; PERCUSSION AND BAND 2. (128) Basic instruction in woodwinds. (129) Basic instruction in brass instruments. (130) Basic instruction in percussion and secondary instruments. (128-130) 1-2 credits. Materials and equipment for teaching piano, string, and woodwind methods and materials.

134 INTRODUCTION TO CONCERT MUSIC 4 (3-2). Music in our present-day culture; illustrated lectures for the layman on forms, function, and significance. 1-2 prereq or coreq 112-113. A continuation of composition with writing in the larger forms.

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. Study of recordings. Concert attendance required. Open to non-majors with c/l. (Credit not allowed for both 134 and 135.)

138-139 AURAL PERCEPTION I 2 prereq or coreq 112-113. A laboratory course in singing and dictation to supplement Theory I.

140 ENSEMBLE GROUPS 1. Any small group of two or more players. Directors may have a course outline from the Institute. Further development of sight reading and acquaintance with music literature; conducting experience. 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 substituted for upper division electives for students not majoring in theory or composition.)

211-212-213 THEORY II 2 prereq 113 and 139, coreq 237-238-239. Continuation of Theory I.

215-216-217 INTERMEDIATE PIANO IN CLASS 1 prereq Music 119. A continuation of methods and materials. Further development of harmonization, transposition, memorization, and sight-reading. Materials such as Pianist Progressing Studies and Bartok Mikrokosmos Books I and II.

234-235-236 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.
511 (431) ADVANCED CONDUCTING 3 R-12 prereq 322 (Choral majors), 333 (others), and c/l. A continuation of 311-312-333. Class and/or individual study of the art of conducting with emphasis on performance with university performing groups.

512 LITERATURE FOR HIGH SCHOOL INSTRUMENTAL GROUPS 2 a/y. Comparative study and performance of new publications.

513 LITERATURE FOR HIGH SCHOOL CHORAL GROUPS 2 a/y. Comparative study and performance of new publications.

514 CURRENT LITERATURE FOR HIGH SCHOOL SOLO AND SMALL ENSEMBLE GROUPS 2 a/y. Comparative study and performance of literature with attention to pedagogical use as related to style.

515 PROBLEMS IN TEACHING ELEMENTARY MUSIC 2 a/y. Evaluation of new approaches; state and city course outlines; Music in ungraded schools; Elementary music methods class study.

516 PROBLEMS IN TEACHING JUNIOR HIGH SCHOOL MUSIC 2 a/y. Evaluation of new courses of study; Development of curriculum for general and special classes; Problems selected for class study.

517 OFFF AND KODALY APPROACHES TO ELEMENTARY MUSIC 2 a/y. Procedures currently in use in Germany and Hungary.

518 CHILDREN'S MUSIC LITERATURE 2. Texts, recordings, and books related to growth in musical understanding through the child's reading and listening.

519 TESTS AND MEASUREMENTS IN MUSIC 2. Evaluation of selected standardized tests.

520 RESEARCH IN MUSIC EDUCATION 2. Research problems; their statement, organization, techniques, tabulation of materials, concepts necessary for interpretation of data.

523 SCHOOL MUSIC ADMINISTRATION 3. School systems, plans for organizing and administering the music program in the elementary, junior and high school. For students whose primary purpose in advanced study is preparation for administrative or supervisory work in music education.

524 MUSIC IN HIGHER EDUCATION 3. A survey of administrative problems, curricular content, contemporary teaching techniques, teaching personnel, and other areas of interest to the music teacher at the college level.

530 INDEPENDENT STUDY V R-6. Students must have projects approved by a music staff member before enrolling.

531 SYMPHONIC LITERATURE 3. A survey of orchestral music; the Mahlerian controversy, the Viennese classics, the Romantics, and contemporary European and American developments.

532 OPERATIC LITERATURE 3. Opera from its beginnings, the Florentine Camerata, 16th and 17th century French and Italian opera, Gluck's reforms, Mozart's dramatic works. The Romantic opera in Italy and Germany, contemporary opera trends.

533 KEYBOARD LITERATURE 3. Keyboard literature from the developments of the Baroque era to the contemporary period, including the suite, sonata, character pieces, etc.

534 CHAMBER MUSIC LITERATURE 3. Survey of chamber music, duet, trio, quartet, quintet, etc., with special attention given by the lit. theory of formal structure and aesthetic values are discussed.

535 SONG LITERATURE 3. The art song from the classic period to the contemporary era including the German lied, French chanson, and related literature.

538 CHORAL LITERATURE 3. Survey of both secular and sacred music for choral ensembles, dealing chiefly with the music from the 16th century to the contemporary school.

539 TRENDS IN CONTEMPORARY MUSIC 3. A survey of trends in European and American music from the end of World War II to the present. Emphasis on the development of electronic music, the serial technique, and other new techniques of composition.

541 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of an evolving democratic state on the arts, the development of various centers of performing arts and the types of music performed.


543 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

551-552-553 ADVANCED ORCHESTRATION 2 prereq 329. Styles in orchestral techniques from 1750 to present.

554-555-556 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approaches of leading composers from the polyphonic period to the present.

557 TECHNIQUES OF COMPOSITION 2. An introduction to composition for graduate students. Development of techniques and skills necessary to the composer.

558 PEDAGOGY OF THEORY 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of individual and group methods. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

559 COMPOSITION V R-12.

560 SEMINAR V 1-5 R-15. Investigation of research in fields of individual interest.

599 GRADUATE PROJECT IN MUSIC V R-6.

599 THESIS V R-15.

PHARMACY

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 fields. The second two years provide the general university requirements. During the final two 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 "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 pharmacy, an especially 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 1907 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 prescribed 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 State University of Montana, although students transferring from other accredited schools of pharmacy may be admitted to an advanced standing determined on the basis of credits presented, providing that they are in good academic standing. Transfer credit for required professional courses taken at other institutions will not be accepted from students who previously received the grade of F on those courses at the University of Montana.

Upper class students may choose approved elective courses designed to prepare them specifically for either community pharmacy, sales and management, research and teaching, or for hospital and institutional pharmacy. Such elective courses will be determined by the area of specialization best suited to the student, and must be approved by the faculty advisor.

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, trigonometry, biology, chemistry, physics and particularly, if the student may pursue advanced studies in pharmacy, a foreign language.

REQUIREMENTS FOR ADMISSION TO THE PROFESSIONAL CURRICULUM:
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 another college):
   - First year: Chemistry 121-122-123, English, Physical Education 100 (3 cr.), Math 116, 117, Zoology 111, 113, and electives.

Applicants presenting two years of satisfactory college work but with grade deficiencies in the above list may be admitted, but such deficiencies must be removed.

The English composition requirement should be completed by the end of the third year of full-time college enrollment. Effective fall quarter 1969 and based on ACT norms for college-bound students, those below the 25th percentile shall take English 001, 100 and either English 300, 301, or Speech Communication 111. If the ACT scores are above the 25th but below the 90th percentile, the student shall take English 100 and either English 300, 450 or Speech Communication 111. The ACT scores above the 90th percentile are required to take only one quarter of English 300, 450 or Speech Communication 111.

Each applicant for admission to the professional curriculum must have a cumulative grade point index of 3.0 on all college work taken, and completed for credit at the time 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 with the application for admission. Applications for admission to the professional curriculum must be received by the faculty 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. A candidate for admission to the senior year in the professional curriculum may have any grade point deficiency of more than 10. If he has a greater deficiency, he will not be granted senior standing but will be required to retake such courses, as the faculty may direct, in which he has received grades of "F" until he has reduced his deficiency to 10 or less. The student must meet 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 requirements 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 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 3 credits in required Health and Physical Education and basic ROTC courses when these are taken.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for licensure as a pharmacist 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 be licensed until he has completed an internship following graduation, in an approved pharmacy. Thereafter, the candidate must pass a qualifying examination for the various phases, column, paper, thin-film, gas and ion exchange, will be applied and evaluated.

PHARMACY CURRICULUM
First year: English 101-102 or Speech Communication 111; Business Administration 201; Chemistry 481, 482, 485, 486 or 385; Pharmacy 306, 324, 325, 326, 331, 361, 362; Pharmacy 340, 341, 342, and electives.
Third year: Microbiology 411: Pharmacy 503, 504, 505-506, 516, 517-518-519, 545, 575, 577, 578, 596, and electives.

FOR UNDERGRADUATES
For Explanation see Course Descriptions (Index)

110 USE AND ABUSE OF DRUGS 3 The nature of drugs: their historical development and normal use in treatment of disease. Drug dependence and abuse, the special classes and types of drugs involved. (Not open to pharmacy majors.)
306 (206) ORIENTATION TO PHARMACY 1 (1-0).
320 (220) PHARMACEUTICAL CALCULATIONS 3 (2-2).
324 (424) PHARMACOGNOSY 4 (3-3) prereq Chem 482 or =.
330-331 PHARMACOLOGIC PRINCIPLES 3 prereq or coreq Zoology 311. Concepts of dosimetry, and other factors governing the known functional activity of prototype drugs that influence the mind or body or both.
361 (461) PHARMACY 5 (3-4) prereq 320 and Chem 262. Fundamental techniques of pharmacy and the various classes of pharmaceutical preparations.

3. TRANSMUTER APPLICATIONS TO PHARMACY 2 (3-0) prereq CS 201 or =. Exercises in programming with reference to inventory, finances and drug activity.
404 INTRODUCTION TO DISPENSING 2 (1-2) prereq 463.
418 MEDICINAL CHEMISTRY LABORATORY 2 (0-6 to 9) R-4 prereq 414. Synthesis, identity and purity tests of organic medicinals.
425 (285) PHARMACOGNOSY 4 (3-3) prereq Chem 482 or =. Continuation of 324.
440 DRUGS OF PSYCHOPHARMACOLOGY 3 (3-0) prereq Chem 322 and 462, Zool 341. Drugs which influence behavior.
442 (340) RADIOPHARMACOLOGY 2 (2-0) R-6 prereq Chem 476 or C. Drug metabolism and internal dosimetry.
444 APPLIED PHARMACOLOGY 5 (5-0) prereq 380, 391, Chem 422. Therapeutic and toxicologic aspects of chemical agents used as drugs.
452 DRUG ANALYSIS 4 (2-6). Special and instrumental methods used in the analysis of pharmaceutical preparations.
463-464 PHARMACY 5 (3-4) prereq 320, 361 and Chem 262. Continuation of 361.
466 MEDICINAL PLANTS AND PHARMACOGNOSTICAL TECHNIQUES V 1-5 (0-3/cr) R-10 prereq 425. Collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.
468 DRUG MICROSCOPY V 1-4 (0-3/cr) R-5 prereq Bot 115 or =. Microscopic and micro-chemical examination of drugs, foods and spices. The identification and examination of natural products.
503-504 BIOLOGICAL MEDICINAL PRODUCTS 3 (3-0) prereq Microb 362. Biologicals, antibiotics, vitamins, hormones, and other medicinal products of biological origin.
505-506 DISPENSING 4 (2-4) prereq 404.
516 PHARMACEUTICAL LAW 3 (3-0) prereq senior standing in pharmacy.
517-518-519 PHARMACEUTICAL PRACTICE 1 (0-2) prereq senior standing in pharmacy.
545 APPLIED PHARMACY 5 prereq 444. Continuation of 444.
575 TOXICOLOGY 2 (2-0) prereq 416. The role of the pharmacist in poisoning prevention and emergency treatment.
577-378 PHARMACY ADMINISTRATION AND FINANCIAL MANAGEMENT 3 (3-0) prereq senior standing in pharmacy.

FOR UNDERGRADUATES AND GRADUATES
555 ADVANCED PHARMACY V 3-5 (6-9 to 15) prereq 506 or =. Problems involved in formulation and preparation of pharmaceuticals.
570 COSMETICS 3 (1-6) prereq 463. Cosmetic formulation.
585 ADVANCED DRUG ANALYSIS 3 (1-4) prereq 452.
690-693 HOSPITAL PHARMACY 1-3 (0-2/cr) prereq 505. Instruction and participation in the routine of a hospital pharmacy.
594 INSTITUTIONAL PHARMACY 3 (3-0) prereq c. coreq 593. Duties and responsibilities of a pharmacist practicing in a hospital or related institution.
596 SEMINAR 1 (1-4) R-6 prereq senior standing in pharmacy.
599 SPECIAL PROBLEMS IN PHARMACY V 1-5 (0-3/cr.) R-15 prereq senior standing in pharmacy or c. Research studies by conference, library and laboratory research in pharmacy, pharmacetical chemistry, pharmacognosy, pharmacy administration or pharmacology.

FOR GRADUATES
580 ADVANCED PHARMACEUTICAL LAW 3 (3-0) prereq c. Federal laws affecting the pharmaceutical industry.
581 DRUG DEVELOPMENT AND MARKETING 3 (3-0) prereq c. Administrative activities and decisions involved in the development and marketing of pharmaceutical products.
582 ADVANCED PHARMACY ADMINISTRATION 3 (3-0) prereq c. Analysis of the pharmaceutical industry.
586 PARENTERAL PREPARATIONS 3 (2-6) n/a. Evaluation of the various methods currently used in the preparation of bulk and individual dosage unit sterilized products.
587 CHROMATOGRAPHY 3 (2-6) n/a. Advanced theory and applications of the various technics of modern chromatography. All phases, column, paper, thin-film, gas and ion exchange, will be expected and evaluated.
590 ADVANCED PHARMACOGNOSTICAL TECHNICS V 1-3 (0-2/cr.) R-10 prereq 466 or c. Technics used in investigative pharmacognosy.
605 CHEMISTRY OF NATURAL PRODUCTS 3 (3-0) R-9 prereq 410 and 415.

608 PHARMACEUTICAL CHEMISTRY 3 (3-0) R-9 prereq 415. Organic medicinal chemicals with emphasis on proof of structure, synthesis, structure-activity relationships and chemistry.

611 ADVANCED MEDICINAL CHEMISTRY LABORATORY 2 (0-6 to 8) R-6. Preparation, isolation and purification of organic medicinal chemicals by advanced techniques.

619 ADVANCED PHARMACOLOGY V 3-5 (0-9 to 15) prereq 548 or =. The more involved actions of drugs upon cells and organs.

630 PHARMACEUTICAL MANUFACTURING 3 (1-6) R-6. Preparation of various pharmaceutical dosage forms in bulk quantity.

632 PHYSICAL PHARMACY 3 (3-0) R-6. Pharmaceutical kinetics and biopharmaceutics.

634 PRODUCT DEVELOPMENT AND FORMULATIONS 3 (0-9) R-6 prereq 630. Practical aspects of manufacturing and theory of systems in developing new product formulation.

636 AEROSOLS 3 (2-3). Formulation and production of aero­sols with emphasis upon pharmaceutical applications.

640 RADIOSEROTOPES IN PHARMACY 3 (2-3) prereq chem 478. Types of radiation, methods of detection and use in pharmacy as therapeutic agents and as diagnostic and research tools.

665-656 ADVANCED MOLECULAR BIOLOGY LABORA­TORY V 1-3 prereq chem 482 or c/i. (Crosslisted as Botany, Chemistry, Microbiology, Zoology.)

699 THESIS V R-15.

FOR UNDERGRADUATES

FOR UNDERGRADUATES AND GRADUATES

300 (203) HISTORY OF MODERN PHILOSOPHY 5 prereq 299.

301-302-303 GREAT PHILOSOPHERS 1. (Given in the Summer for each quarter.) (301) Greek, Roman, and early Christian thinkers. (302) Late Medieval, Renaissance and some modern thinkers. (303) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

310 (335) PHILOSOPHY OF SCIENCE 5 o/y prereq c/i. The metaphysical foundations of modern classical (Newtonian) science: contemporary views on the nature and limitations of scientific "conclusions," the concepts, methods and principles underlying them.

311 (332) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/i. 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 360. Recent theories on the nature of moral concepts.

323 (336) POLITICAL PHILOSOPHY 3 o/y prereq 5 credits in philosophy. Basic concepts, ideas, and principles which underlie the political theories of 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/i. 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 3 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 concepts 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 5 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 4 o/y prereq 5 credits in Philosophy and c/i. Philosophical themes in some Hindu, Buddhist and Taoist literature.

357 THE PHILOSOPHY OF HISTORY 5 e/y prereq c/i. The development, structure, and functions of the speculative and analytic philosophies of history. The relationship of history and the relevance of the philosophy of history for the working historian.

360 PLATO 5 e/y prereq 298 or 10 credits in Philosophy and c/i. Reading and interpretation of selected works.

361 ARISTOTLE 5 e/y prereq 298 or 10 credits and c/i. Read­ing and interpretation of selected works.

365 DESCARTES, SPINOZA, LEIBNIZ 5 e/y prereq 300 or 10 credits in Philosophy and c/i. The development of Continental Rationalism.

366 LOCKE, BERKELEY, HUME 5 o/y prereq 298 or 10 credits in Philosophy, and c/i. The development of British Empiricism.

387 KANT 5 o/y prereq 300 or 10 credits in Philosophy and c/i. Reading and interpretation of selected works.

370 MAJOR PHILOSOPHERS OF THE NINETEENTH CENTURY 5 e/y prereq 300 or 10 credits in Philosophy and c/i. Selection to be announced in the class schedule.

373 EXISTENTIALISM 5 prereq 10 credits in philosophy and c/i. Selected readings from the philosophical works of one or more existentialist thinkers.

390 PROBLEMS IN PHILOSOPHY V prereq c/i.

400 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/i.

453 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 210 and 310 and c/i.

460 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY V prereq c/i.

FOR GRADUATES

300 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 150 credits, 3 of which must be in required physical education activity courses. This work is to include the general requirements for graduation (the second and third years must be taken in residence at the University of Montana). The fourth or professional year of training, involving twelve to sixteen months of work, would be taken at any physical therapy school meeting standards 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 other 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 hour credits and sufficient grade points to meet 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. In addition, some schools require a "C+" minimum grade point average. Courses in the biological and physical sciences must be "C" or better for acceptance by a number of these schools.

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 and trigonometry. 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:

<table>
<thead>
<tr>
<th>University and Departmental Requirements</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition 100, 200</td>
<td>9</td>
</tr>
<tr>
<td>Required Physical Education (3 quarters)</td>
<td>3</td>
</tr>
<tr>
<td>Major Requirements</td>
<td></td>
</tr>
<tr>
<td>Zoology 111, 113, 203</td>
<td>15</td>
</tr>
<tr>
<td>Microbiology 102</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 116, 117</td>
<td>10</td>
</tr>
<tr>
<td>Physics 111</td>
<td>8</td>
</tr>
<tr>
<td>Sociology 101, 102</td>
<td>10</td>
</tr>
<tr>
<td>Elect 2 credits, other than Soc 101, 102</td>
<td>2</td>
</tr>
<tr>
<td>Elect 12 credits, at least 8 of which must be in one discipline, from Group IV</td>
<td>12</td>
</tr>
<tr>
<td>Elect an additional course in physical science</td>
<td>12</td>
</tr>
<tr>
<td>Psychology 110, 301</td>
<td>10</td>
</tr>
<tr>
<td>Speech Communication 111</td>
<td>10</td>
</tr>
<tr>
<td>Speech Pathology and Audiology 330</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics 148</td>
<td>3</td>
</tr>
<tr>
<td>Health and Physical Education 240, 290, 384 (380-382), 385, 386, 387, 389, 390, 392 (2 quarters), 399, 400, 445, 446, 449, 450</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
<tr>
<td>School of Physical Therapy</td>
<td></td>
</tr>
<tr>
<td>Forty-five hours of credit</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>195</td>
</tr>
</tbody>
</table>
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.

The major fields of Political Science are (1) American Government and Politics with national, state and local government, politics, and public law as sub fields, (2) Public Administration, (3) Political Theory, (4) Comparative Government, and (5) International Relations, Organization and Law.

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 with a major in Political Science: English 100 and 300 unless exempt by examination, Economics 201-202-203 and a minimum of 45 credit hours in Political Science with 30 credits from courses numbered 200 and over. Political Science courses required of all majors are: 201, 202, 231 and 406, and one course required. Majors must take at least one additional course in 3 of the 5 fields listed above.

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 20 credits in History. A minimum of 30 credits must be selected from courses numbered over 200.

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 27 credits must be in each discipline. Required courses are: Political Science courses 201, 202, and Economics 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, and 232. At least 12 additional credits will be chosen from upper division economics courses and 18 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 Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101 INTRODUCTION TO POLITICAL SCIENCE 3. Issues and principles confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 3 prereq or coreq 101. Law as a system of social control; legal systems and law-making institutions.

201 (202) AMERICAN GOVERNMENT 5. Constitutional principles of the American political system; domestic political processes, including public opinion, interest groups, political parties, and election. Structure of the national government, congress, the presidency, and the courts.

202 (203) AMERICAN GOVERNMENT 5 prereq 201. Functions of the national government, including finance, business, labor, agricultural, and international relations. National defense; foreign policy, and selected problems of public policy.

231 INTRODUCTION TO INTERNATIONAL RELATIONS 5. The nation-state system; development and organization of nation-states, blocs, international organizations; factors affecting stability and change in the system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICS 3 prereq 201. Study of government and politics of other than the United States, with emphasis on the parliamentary and modified parliamentary types of government in Great Britain and France.

322 COMPARATIVE GOVERNMENT AND POLITICS 3 prereq 201. Structure and policies of authoritarian and dictatorial forms of government with emphasis on the Soviet Union.

323 THE POLITICS OF MODERNIZATION 5 prereq 231. The process of political change, the role of violence, the nature of revolution, evolutionary change and government-engineered changes. Special reference to underdevelopment and political change.

325 POLITICS OF LATIN AMERICA 5 prereq 231. Structure of politics, government and authority in the developing area of Latin America.

326 POLITICS OF AFRICA 3 prereq 231. Structure of politics, government and authority in the developing area of Africa.

327 POLITICS OF ASIA 5 prereq 231. Structure of politics, government and authority in the developing area of Asia.

331 THEORIES OF INTERNATIONAL RELATIONS 3 prereq 231. Survey of basic concepts and theoretical approaches to international relations as they relate to the international system.

332 (331) INTERNATIONAL ORGANIZATIONS 3 prereq 231. The machinery of international cooperation with particular reference to the United Nations.

335 AMERICAN FOREIGN POLICY 3 prereq 202 and 231. American foreign policy since World War II and its significance in international politics.

341 (341) POLITICAL PARTIES 5 prereq 201. Nature and organization of political parties; conduct of nominations and political campaigns; role of political parties in the political parties; role of political parties in the political system, with special emphasis on the American system.

342 (341) POLITICAL INTEREST GROUPS 3 prereq 341 or c/l. Interest groups in the political system; the 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: behavior and attitudes of voters; the significance of election results for the political system.

351 CLASSICAL POLITICAL PHILOSOPHY 5 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Plato to Aquinas.

352 EARLY MODERN POLITICAL THEORY 3 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Machiavelli through John S. Mill.

353 AMERICAN POLITICAL THOUGHT 3 prereq 351 or 352. 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 351 or 352. An exposition and critical analysis of the major political philosophers in the nineteenth and twentieth centuries.

361-362 PUBLIC ADMINISTRATION prereq 201. (361) 5. Legal and institutional setting of the administrative system; dynamics of organization and processing of public policy. Problems and techniques of administration illustrated by case materials and field investigation.


366 THE AMERICAN PRESIDENCY 3 prereq 201. The constitutional foundation and evolution of the executive branch, the structure of the office, executive functions and powers. Case studies of the problems of decision-making in the White House.
Students in Pre-veterinary Medicine and in Optometry are...s program carefully. The University of Montana in order to ensure meeting the admission requirements to a School of Veterinary Medicine, or Optometry.

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-med 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 studies 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.

Applicants for entrance to Schools of Medicine exceed the number that can be admitted so the well qualified, well motivated, well qualified, and competent students are admitted to Schools of Medicine. Well qualified students from the University are usually accepted into Medical Schools.

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choice. However, he should make sure that he can satisfy within the time available (1) the University requirements for graduation, (2) the minimum pre-medical science requirements listed below, and (3) the major requirements in his chosen major field. The student should consult with the pre-medical sciences adviser during the freshman year, and consult with both the pre-medical sciences adviser and the major adviser beginning not later than the sophomore year in residence.

The Western Interstate Commission for Higher Education was designed to provide financial aid to Medical, Dental, Veterinary, and other professional students attending Western professional schools.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT. English, Physical Education, Group, and other University requirements listed earlier in the catalog: Chemistry through Organic, Quantitative, and Survey of Physical; one year of college mathematics; one year of college physics; Zoology through Embryology and Genetics; a reading knowledge or 23 credits in French, German, or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR IN THE PRE-MEDICAL SCIENCES: In addition to the minimum course requirements listed immediately above, the student must take Psychology 8-10 credits; 15 credits of an approved course of study in one field; and additional electives selected from the non-sciences to complete University credit requirements for graduation.

It is possible for the Pre-medical Sciences student who has satisfied course requirements specified above to earn a Bachelor's degree in a further field than Pre-medical Sciences. A degree in a related field such as Chemistry, Mathematics, Microbiology or Zoology may be earned by completing course work in the area selected as approved by the Chairman of the major department concerned. See Chemistry and Zoology for degrees in those areas with the Pre-med Option.

PRE-MEDICAL SCIENCES CURRICULUM

(Dentistry, Medicine, Veterinary Medicine)

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116, 117, 118</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 121-122-123</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psych 110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPER (see below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 300</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zool 111, 112 or 113, 304</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 261 or 262, 379</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For Lang 101 or elective</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group requirements</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPER (see below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Junior Year
Chem 245, 481 and 482 recommended
5
Physics 221, 222, 223 or 111, 112, 113
5
For Lang or electives
5
Engl 450
3

Senior Year
Zool 404, 485
5
For Lang or elective
5
Science sequence
5
Elective
5
HPER (3 quarters)
193

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.

111 INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY 5 (4-2) prereq 110. Advanced general psychology. Experimental and quantitative methods employed in laboratory approaches to the scientific study of behavior.

190 PSYCHOLOGICAL INVESTIGATION V 1-3 R-5 prereq 110 and 212. Supervised investigation of psychological problems.

298 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. Behavioral biology and ethology of man and other animals.

210 PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111, course(s) in zoology recommended. Basic neural regulatory mechanisms underlying behavior.

230 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 111 and Math 125. 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.

340 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Individual behavior as a function of interpersonal interaction. Emphasis on research literature.

FOR UNDERGRADUATES AND GRADUATES
310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 111.

311 LEARNING 5 (4-2) prereq 111. Principles involved in modifying behavior.

312 MOTIVATION 5 (4-2) prereq 111. 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.

349 INDUSTRIAL PSYCHOLOGY 5 (4-0) prereq 110. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (4-0) prereq 110. Description and classification of abnormal orientations, with emphasis on their psychodynamic dynamics.

390 PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/l.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.

420 PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/l. Principles of motivation, frustration, conflict, and defense mechanisms. Major emphasis on psychoanalytic dynamics.

451 INDIVIDUAL DIFFERENCES 3 (3-0) prereq 110. Nature and extent of individual and group differences.

480 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prereq 220 and 311 or c/l. Derivation and evaluation of some of the more complex models of learning, choice-behavior, and signal detection.

491 TOPICAL SEMINAR V R-6 prereq 15 credits in psychology and c/l. Topics of current interest with critical examination of the literature.

FOR GRADUATES
501-502-503 PROSEMINAR 8 (8-0) prereq graduate standing in psychology. Survey of the basic fields of psychology. (501) Learning, motivation and thought processes; (502) Comparative perception, physiological, and sensory; (503) Personality, psychopathology, and social.

505 PROFESSIONAL PROBLEMS IN PSYCHOLOGY 2 (3-0). 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.

PRE-NURSING, PSYCHOLOGY—69

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, a psychology major must complete at least 45 credits in psychology which must include Psych 111, 112, 220: four other laboratory courses, two of which must be 300 level courses; a minimum of three credits of 200 during the junior or senior year, and 411. Twenty-five of the 45 credits must be in courses numbered 300 or above. At least one English composition course, Math 125 and Zoology 111-112 or 113 and 205, are required. The major is strongly advised to take Math 344-348, all other mathematics and psychology courses. At least eight credits in literature, work in anthropology, philosophy, sociology and additional work in zoology. The major preparing for graduate work in psychology is well advised to take Psychology 450 and 481. Those students with sufficient preparation and who show promise are encouraged to take some graduate courses during their senior year.

GRADUATE WORK. See Graduate School Bulletin.
RADIO AND TELEVISION

courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-televison have many vocational opportunities as announcers, performers, writers, newsman, program directors, managers, and executives of radio and television stations, or as radio-televison specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. Production of programs for broadcast from the University's radio station, KUFM, and closed circuit television studio is included in the course of study.

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism.

The School of Journalism offers the following curriculum leading to a Bachelor of Arts degree in Radio-Television.

University Requirements

University Requirements

Credits

Physical Education 100 (3 quarters) 3
Group I and II 12
Group III 12
Group IV 12
42 42

Additional Requirements:

Group III 13
Group IV 13
Foreign Language 23-25 49-51 49-51

Major Requirements:

32 credits from Radio-Television 140, 341-342-343, 346, 348, 440, 441-442-443, 494, Drama 329 (354); Journalism 100, 227 32
Drama 121, 131 7
Journalism 150, 270, 297 9

Free Electives 48 48 54-56 195

FOR UNDERGRADUATES

140 INTRODUCTION TO RADIO AND TELEVISION 3. Open to non-majors.
341-342-343 (240, 243, 348) RADIO PRODUCTION 2 prereq 140 for 341; prereq 341 and 342 for 342; prereq 342 for 343. Work on faculty-directed University radio station. (341) Operation of broadcasting equipment, F.C.C. regulations and writing for radio. (342) Planning and production of news and special affairs. (343) Advanced training in areas of broadcasting.
346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).
348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 3 prereq 140.

FOR UNDERGRADUATES AND GRADUATES

399 ADVANCED RADIO-TELEVISION PROBLEMS V prereq consent of the chairman.
440 CINEMATOGRAPHY (see Journalism).
441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses. Preparing, producing and directing television programs. Preparation of news and specials programming for television.
494 RADIO-TELEVISION SEMINAR 3 prereq or coreq 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.
RELIGIOUS STUDIES

The proper sphere for the academic study of religions is understood to be coextensive with the broad field of humane learning in which the question of the humanity of man lies closest to the surface. It is intended that the study of religions in the University therefore be taken up in closest conjunction with the humanities, arts, letters, and the natural, social and life sciences. Radial relations are planned with existing departments in these areas, with regard both to curriculum and faculty.

In the course offerings of the Department two emphases are expected to prevail: first, the scholarly analysis and transcription of the enormous body of literature on the world’s religions and, second, the sensitization of the student to the pertinence of religious studies for a critical and appreciative stance toward his personal and social existence. Thus courses are designed to liberate the student from the modern western and non-western cultures generally, and the American cultural situation in particular. The anticipated result will be liberating in the fundamental sense of the “liberal arts;” the student of religion will be afforded critical distance on his own religious tradition and at the same time liberated to appreciate the faith of his fathers and alien faiths on a new and richer plane.

Inaugurated in 1969, the Department is still in process of formation; thus a major in the Department and various degree programs have still to be formulated. The following list of courses is by no means complete and will be revised with the addition of faculty.

101-102 INTRODUCTION TO THE STUDY OF RELIGION 3. Enter either quarter. Religion as a humanistic discipline: the phenomenology of religion and its relation to other aspects of culture and in relation to root human questions.

121 JEWISH AND CHRISTIAN LITERATURE OF LATE ANTIQUITY 3. The phenomenology of the Jewish and Christian traditions, including both canonical and non-canonical materials.

201-202 HISTORY OF THE ANCIENT NEAR EAST 3. Enter either quarter. 201. Introduction to the ancient Near East and its religious, cultural and political history from the time of Alexander the Great (332 B.C.) to A.D. 325. 202. The 600 year period of Hellenistic civilization with special emphasis on the problem of cultural syncretism.


212 THE LEGACY OF PAUL 3. The life and letters of Paul: the structure of the Pauline understanding of the Christian faith; the legacy of Paul in historical and post-Reformation Christianity.

226 THE RISE OF HISTORICAL CONSCIOUSNESS IN THE ANCIENT NEAR EAST 3 prereq History 201 or R.S. 201. Mythology, mythography, ethnography and rule historiography and their influence on the Western concept of history.

246 CHRISTIANITY AND MARXISM 3 prereq 5 credits of Political Science or c/i. Intellectual, social, and political engagement between the representative forms of Christianity and Marxism, primarily in the west.

276 CONTEMPORARY THEOLOGY 3 prereq 3 credits in Philosophy or R.S. The thought of major Christian figures, Protestant and Roman Catholic, in the 20th Century.

311 THE BIBLE IN THE AMERICAN TRADITION 3 prereq History 261 and 262 or c/i. Primary documents in the history of American biblical interpretation; the relation of biblical interpretation to the political, theological, and cultural phenomena.

312 CONTEMPORARY BIBLICAL INTERPRETATION 3 c/i. Major biblical interpreters in the twentieth century.


331 RHETORIC IN CLASSICAL GREEK AND SEMITIC LITERATURE 3 prereq R.S. 121 or Greek 211 and 212. Rhetoric from Gorgias and the Hebrew homily through Paul.

346 RELIGION AND SOCIAL REALITY 3 prereq 5 credits in sociology or c/i. Critical stance from the standpoint afforded by various religious traditions.

347 HUMAN SPIRIT AND TECHNOLOGY 3 prereq 10 credits in physical sciences or c/i. The relation between “reverence” and “production” in human society. Religious ideas will be taken up in close conjunction with the humanities, arts, letters, and the natural, social and life sciences. Radial relations are planned with existing departments in these areas, with regard both to curriculum and faculty.

348 GOD-LANGUAGE IN NINETEENTH CENTURY THOUGHT 3 prereq 10 credits in Philosophy or c/i. Theories of deity (especially the origins of the “death of God” idea) in 19th century Europe, especially in Hegel, Nietzsche, Feuerbach, Stirner, Marx, and Kierkegaard.

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 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 United States Air Force. Candidates who are successful in the two-year program are commissioned as second lieutenants with pilot or navigator skills and are assigned to active duty. Students who are satisfied with their selection of either program and being awarded a degree from the University.

FOUR-YEAR PROGRAM

The four-year program requires completion of the General Military Course and the Professional Officer Course during four years or c/i. Intellectual, social, and political engagement with existing departments in these areas, with regard both to curriculum and faculty. Further information may be obtained from the Department of Aerospace Studies.

GENERAL MILITARY COURSE

101-102-103 WORLD MILITARY SYSTEMS 2. Enter any quarter. The doctrine, mission, and organization of the United States Air Force; U.S. strategic offense and defense forces; their mission, function and employment of nuclear weapons; civil defense; aerospace defense; U.S. general purpose and aerospace support forces; the mission, resources, and employment of the Air Force, with special attention to limited war. One hour classroom and one hour Corps Training each week.

201-202-203 WORLD MILITARY SYSTEMS 2 Enter any quarter. Prereq 101-102-103. Defense policies; nature and context of war; military policies and strategies of major world powers; the role of alloys of United States defense strategies; defense organizations and decision-making; organization and function of the Department of Defense, role of the military in the United States’ national policies; the elements and process of defense decision-making. One hour classroom and one hour Corps Training each week.

PROFESSIONAL OFFICER COURSE

Completion of the General Military Course (Field Training for the Two-Year Program is prerequisite) leads to the Professional Officer Course. In addition the student must enlist in the Air Force Reserves, or be an Air Force ROTC cadet. The student must pass a physical examination and the Air Force Officer Qualifying Test. The following courses are taken in the following sequence:

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3 c/i. (301) The development of airpower from the beginnings of manned flight to 1901. (302) Aerospace Power today, the future of manned and unmanned aircraft. (303) The elements and space operations. Attention is devoted to developing the communicative skills needed of Air Force officers. Three academic class hours and one hour of Corps Training per week which provides for advanced leadership experiences.

304 FIELD TRAINING 0. Four weeks of training conducted on an Air Force base in the summer for Air Force ROTC cadets participating in the four-year program and Air Force Reserves. Courses include physical training, military fundamentals and physical training.

401-402-403 THE PROFESSIONAL OFFICER 3 c/i. (401) Foundations and responsibilities of leadership. The nature of Air Force leadership, human relations and the military justice system. (402) Leadership and management in the Air Force emphasizing principles and functions of military management. (403) Leadership and management problems pertinent to the junior Air Force officer. Communicative skills and problem solving. Three class hours and one hour of Corps Training per week. Corps training provides practical work in command and staff positions with primary responsibility for the preparation and conduct of the Corps Training Program.

TWO-YEAR PROGRAM

The two-year program requires the student to pass a physical examination, the Air Force Officer Qualifying Test; attend Six Week Field Training and complete the Professional Officer Course. A monthly retainee fee (currently $50) is paid by those students enrolled in the Professional Officer Course. Scholarships (full tuition, fees, book allowance and the monthly retainee fee) are available for those students enrolled in either the General Military or the Professional Officer Course.

These programs are designed to provide education that will develop the skills and attitudes vital to the career professional Air Force officer. Communicative skills are tendered during the selection of either program and being awarded a degree from the University.
FLIGHT INSTRUCTION PROGRAM

The Flight Instruction Program is offered to all pilot qualified AFROTC cadets during their senior year. Successful completion leads to a private pilot license and entry into the U.S. Air Force Pilot Training Program.

404 CLASSROOM INSTRUCTIONS 0 coreq 405. Pre-Flight, Meteorology; Aircraft Radio Communications; Radio Navigation; Federal Aviation Regulations; Army Radio Communications; and Federal Aviation Regulations; and Radio Safety and preparation for the Private Pilot Written Examinations. Two 90 minute classes per week.

405 FLYING INSTRUCTION 0 coreq 404. Basic flying maneuvers: cross country flying and advanced flying maneuvers for a total of 36½ hours of flying time. Flying time consists of 20 hours dual instruction and 16½ hours in practical solo application and ½ hours for FAA examination. Instruction is given by arrangement.

ARMY ROTC

The Department of Military Science offers a two and a four-year program leading to a commission in the United States Army Reserve. The program offers an academic and military training designed to meet the program and university requirements for a baccalaureate degree.

The four-year program requires completion of Military Science courses during four years of attendance at the University. In addition, the six-week summer camp is the initial portion of the second year of ROTC. The two-year program is a competitive program and encompasses the on-campus portion of the first and last year of the four-year program, and the six-week summer camp upon completion of the junior year of ROTC. However, as a prerequisite to beginning this course, the student must attend a six-week summer camp following the sophomore year. A monthly retainer (current $500) is paid to cadets enrolled in Military Science. Scholarships are available for students enrolled in the four-year program. Further information may be obtained from the Professor of Military Science.

FOUR YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION

101-102-103 INTRODUCTION TO THE ARMY 2. (101) An introduction to the organization of the Army and an evaluation of Military Weapons Systems, Leadership, drill and command, basic and progressive training in leadership through practical exercise in drill, ceremonies and military customs and courtesies. (102) National Security and the United States Army with emphasis on the Army's role in America. (103) Continuation of leadership, drill, and command. (103) Continuation of National Security and the United States Army. Continuation of leadership, drill, and command.

201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 2 prereq 101-102-103. (201) Topographical recording techniques with emphasis on the duties and responsibilities of the junior leader. (202) Techniques of leadership with emphasis on small unit activities. Continuation of leadership drill and command. (203) Techniques of leadership with emphasis on the origins of the American Army to the present with emphasis on the factors which lead to tactics and leadership patterns found in our present-day Army. Continuation of leadership, drill, and command.

ADVANCED COURSE: OFFICER TRAINING

In the four year program, completion of the Basic Course is a prerequisite for admission to the Advanced Course. An applicant must pass a physical examination and the mental screening test prescribed by Department of the Army, the Army Reserve, and the University. Students interested in the four-year program must be endorsed by both the President of the University and the Professor of Military Science. In addition, the student is required to enlist in the U.S. Army Reserve. This enlistment may be canceled if the student withdraws from the University or for other specific reasons.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3 coreq 304. Principles and techniques of leadership with emphasis on problems of leadership and military teaching methods. Leadership and command to include principles of technique and application in small unit activities. Continuation of leadership, drill and command. (303) Principles and techniques of tactical operations with emphasis on operational unit operations. Continuation of leadership, drill and command.

304 SUMMER CAMP. No credit. Six weeks at an Army Training Center for officer candidates or military science cadets. Field training is conducted on Army installations and at the receiving camp by instruction in the basic skills of combat operations and instruction in tactical and technical subjects with specific emphasis on leadership development. Student is reimbursed for travel to and from camp at the rate of $6 per mile, and receives pay of $259.60 per the complete camp period.

401-402-403 MILITARY TEAM 3 prereq 301-302-303. (401) Military administration and logistics with emphasis on duties and functions of military officers. Leadership, drill and command with practical application and exercises designed to develop the junior officer. (402) Military tactical operations with emphasis on functions of staff officers. Continuation of leadership, drill and command. (403) A survey of world change and military implications. Military law.

404 FLIGHT TRAINING. No credit. This elective is offered to selected qualified students concurrent with 401, 402, and 403. Successful completion of requirements for FAA Private license and assignment to Army Aviation duty upon graduation.

TWO-YEAR PROGRAM

The two-year program requires attendance at two summer camps and the two years of the Army ROTC Advanced Course. Admission into the Advanced Course under this program does not require the two years of Basic ROTC as a prerequisite. In lieu of that, it is required that students complete a six-week summer camp at a U.S. Army training facility during the summer immediately prior to entering the Advanced Course. The two-year program in the Advanced Course is identical to the four year program. Students currently enrolled in this program who wish to enter the Advanced Course through the two year program should consult the Professor of Military Science.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (Same as for the four year program.)

304 SUMMER CAMP. (Same as for the four year program.)

401-402-403 MILITARY MANAGEMENT 3. (Same as for the four year program.)

404 FLIGHT TRAINING. (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 endeavors. 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 recommended.

Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is preparatory. Social workers are employed in such positions as agencies, workers, 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 who wish: (1) to prepare for employment in the social services; (2) prepare for entry into a graduate school of social work; (3) prepare for graduate education for helping professions; (4) prepare for intelligent and informed citizen participation in the solution of social problems.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE

The special requirements for the Bachelor of Arts degree are listed earlier in the catalog. 40 credits in social welfare courses are required for the Bachelor of Arts degree with a major in social welfare. The following courses must be taken: SW 101 and 200. In addition, Soc. 101 and 201 or an acceptable equivalent in the area of social research must be taken. Prof. 101 is recommended. Students are urged to take a wide variety of courses in the social and behavioral sciences. English 100 and 200 are required. Students scoring at or above the 3rd percentile on the ACT English examination will be exempt from this requirement. Those at or below the 25th percentile must pass English 901 before entering English 100. Students who demonstrate in departmental course work substantial proficiency may be required to take additional tutorials or written examinations. Those in need of help in planning a program to meet their needs and goals.

The SOCIAL WORK CERTIFICATION SEQUENCE. Students preparing for graduate social work education are urged to: (1) plan a course of study leading to secure employment as social work practitioners without such educational preparation may, upon completion of the requirements for a baccalaureate degree, secure a Certificate of Completion in the Social Work Sequence awarded by the Department for students who suc-
cessfully complete the following requirements: SW 181, 200, 340-341-342, 499 (12 credits); Anth 153; Soc 207; Speech Comm 110; and Psych 250 or H Ec 266 or 268. The completion of the Social Work Sequence is not required for students who wish a degree with a major in social welfare. It is an optional sequence available to social work majors interested in entering the behavioral and social sciences. Social welfare credits earned as a part of the Social Work Sequence may be counted toward a major in social welfare.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

161 THE FIELD OF SOCIAL WELFARE 5. The range of social welfare activities and programs; basic value orientations as the organizing principles for the development of social welfare programs; the goals and relative efficiency of selected programs; and the relationship of the field of social welfare and the social work profession.

200 INTRODUCTION TO SOCIAL WORK PRACTICE 4 prereq 181. Social work as a professional practice concerned with helping individuals, groups, and communities; its goals, guiding philosophy, and basic assumptions. Major processes in social work practice.

FOR UNDERGRADUATES AND GRADUATES

340-341-342 SOCIAL WORK INTERVENTION 3 prereq 200. Theoretical, conceptual, and practical considerations for social work practice with different client populations. Requirements for successful intervention are directed to the development of the social work interventionist in the behavior of: (340) individuals, (341) small groups, (342) complex organizations.

344 SOCIAL WELFARE POLICY AND SERVICES 4 prereq 181. Historical, philosophical, and comparative review of social welfare systems in the United States and other countries. The nature and adequacy of different social welfare programs and services and major issues in social policy planning.

346 SELF ENCOUNTER AND PERSONAL GROWTH 4 prereq c/i. Utilization of small group interactional processes in developing individual self-knowledge, acquiring greater awareness of others, and identifying personal growth needs.

348 MANAGEMENT AND USE OF INFORMATION IN SOCIAL WORK 4 prereq 200. Basic skills necessary for social work practice in a wide variety of settings, including interviewing, data recording and retrieval techniques, and data analysis in relation to intervention planning.

374 THE ADMINISTRATIVE PROCESS IN SOCIAL WORK PRACTICE 3 prereq 200. Responsibilities of staff, executive, and board in defining and carrying out agency or department purposes and functions. The roles of the administrator, supervisor, and worker in the administrative process in relation to the social, cultural, psychological, and political forces operating in social welfare administration. The relation of administration to policy making, community planning, and social action. Personnel methods and standards.

471-472-473 SOCIAL WORK PRACTICE IN SPECIAL SETTINGS V R-12-12. The training and practice of social work in a specialized setting such as child welfare, corrections, family welfare, psychological services, work with people with particular handicaps, and school social work, including, in each case, examination of requisite specialized skills and knowledge, value systems, and the principles of inter-professional cooperative relationship.

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 INDEPENDENT STUDY V 1-2 R-6 prereq c/i.

489 SEMINAR V R-9 a/y prereq 15 credits in social welfare.

499 FIELD WORK PRACTICUM V R-12 prereq 181, 200, and either previous completion or concurrent enrollment in 340, 341, or 342; concurrent enrollment in 489, Practicum Seminar, is also required. Field work or internship, under supervision, in public and private agencies and institutions.

502 ADVANCED RESEARCH METHODS (see Sociology)

Courses 530, 540, 550, 560, 570 will be offered only by off-campus extension.

530 ADVANCED SOCIAL WORK THEORY 4 prereq graduate standing.

540 THE SUPERVISORY PROCESS IN SOCIAL WORK 4 prereq experience in social welfare work and graduate standing.

550 BEHAVIORAL AND SOCIAL SCIENCE CONCEPTS FOR SOCIAL WORK 4 prereq graduate standing.

550 ADVANCED SOCIAL WORK INTERVENTION 4 prereq graduate standing.

570 TOOLS OF SOCIAL WELFARE PLANNING 4 prereq graduate standing.

599 FIELD WORK PRACTICUM (see Sociology).

SOCIOLOGY

is a social science concerned with relationships which link man with his institutions and his society. Sociology is also a profession which offers various services to business, government, and other agencies seeking help in developing desired relationships among their members. 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, in addition, the following 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 45 credits in sociology must include the following courses: Soc 101, 201, 207 or 208, 310, 401 and 402. In addition, Anthropology 153 and one upper division Anthropology course must be taken. Students must take Math 001 or be exempt through examination. Students planning to undertake graduate work should also take Sociology 205 and 314 and Anthropology 572. English 100 and 300 are required. Students scoring at or above the 85th percentile on the ACT English examination will be exempt from this requirement. Those at or below the 31st percentile must pass English 001 before entering English 100. Students who demonstrate in departmental course work substantial proficiency may be required to take additional courses in English composition.

COMBINED MAJOR. For the combined major leading to the degree of Bachelor of Arts in Sociology and Economics the following combination of courses is recommended for students planning to undertake both fields of study: Sociology 100, 101, 200, 207, 301, 402, and 404. Sociology 301, 304, and 402 are required. Sociology 303 is recommended. Economics 100, 102, 201, 202, and 204 are recommended. Economics 203 is recommended. Sociology 205 and 314 and Anthropology 572, English 100 and 300 are required. Students scoring at or above the 85th percentile on the ACT English examination will be exempt from this requirement. Those at or below the 31st percentile must pass English 001 before entering English 100. Students who demonstrate in departmental course work substantial proficiency may be required to take additional courses in English composition.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTORY SOCIOLOGY 5.

102 SOCIAL PROBLEMS 5.

200 AMERICAN SOCIETY 5 prereq 5 credits in sociology or c/i. Structure and function of contemporary American society.

201 (303) SOCIAL SCIENCE METHODS 5 prereq 10 credits in social sciences, including courses in English (may be c/i in the social sciences departments). The methodology, techniques and instruments of measurement used in the social sciences must be mastered. English 100 and 300 are required. Students scoring at or above the 85th percentile on the ACT English examination will be exempt from this requirement. Those at or below the 31st percentile must pass English 001 before entering English 100. Students who demonstrate in departmental course work substantial proficiency may be required to take additional courses in English composition.

204 COURTHSHIP AND MARRIAGE 2. Factors in courtship and marriage. (Credit not allowed toward a degree in sociology.)

205 ELEMENTARY SOCIAL STATISTICS 5 prereq Math 001 or exemption by examination and 5 credits in sociology or c/i. Simple statistical and graphic techniques commonly used in the social sciences.

207 INTRODUCTION TO SOCIAL CHANGE 5 prereq 5 credits in sociology or c/i. Analysis of the process of change and the characteristics of the new state. Comparative methods in research on social change.

220 (301) INDIVIDUAL AND SOCIETY 5 prereq 5 credits in sociology or c/i. Human development through interaction of social structure, heredity, and culture.


403 INDEPENDENT STUDY V 1-2 R-6 prereq c/i.

FOR UNDERGRADUATES AND GRADUATES

302 SOCIAL STRATIFICATION 3 a/y prereq 10 credits in sociology or c/i. 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 10 credits in social sciences. A quantitative and qualitative analysis of world population; vital statistics and population trends; international migration; and population policies and planning.

305 (402) THE FAMILY 5 prereq 10 credits in sociology or c/i. Comparative, historical and analytical study of the family.

306 CRIMINOLOGY 5 prereq 10 credits in sociology or c/i. The causes, prevention, detection, and correction of crimes.

307 SOCIALIZATION 3 prereq 10 cr. in Sociology including 208 or c/i. Processes and products of social learning.

308 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 356. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 308 and Anth 308.)

309 INTRODUCTION TO COMPLEX ORGANIZATIONS 4 prereq 10 credits in sociology or c/i. Bureaucracies and bureaucratization in modern society.

310 DEVELOPMENT OF SOCIAL THOUGHT 5 prereq 10 credits in sociology or c/i. Social thought from earliest times to the establishment of sociology.

311 (S W 281) JUVENILE DELINQUENCY 5 prereq 10 credits in sociology or c/i. Nature and extent of the problem. The role of courts, social agencies, and schools in its prevention and treatment.
SPEECH COMMUNICATION

is that branch of the behavioral sciences concerned directly with human message systems. Courses in speech communication emphasize theoretical conceptions of the nature, production, use, and role of messages in life and society, and applications of these conceptions to interpersonal, public and organizational communication.

Undergraduates are awarded the Bachelor of Arts degree in Speech Communication, but may select one of several emphases, depending upon their interests. Students interested in teaching may select either the Teaching Communication Skills emphasis or the Speech Communication Education emphasis; students interested in entering business, industry, government or graduate school, and/or desiring a liberal arts background, may select the Special Communication emphasis.

Graduate students are awarded a Master of Arts degree or a Master of Speech Communication degree (see Graduate Bulletin).

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, the student must complete a minimum of 45 credits and not more than 70 credits in Speech Communication. All students majoring in this department are required to complete a core curriculum as follows: Speech Communication 110, 111, 112, 118, 234, 314, 330, 355, 444, and 446 and 446; Anthropology 103 or 105; 5 credits in Psychology: Philosophy 110; Sociology 101; and 5 credits in Statistics. Additional requirements for the special emphases are listed below:

SPEECH COMMUNICATION

FOR GRADUATES

501 GRADUATE RESEARCH V 1-5 prereq graduate standing in sociology or c/l.

502 ADVANCED RESEARCH METHODS 5 prereq 201 or = and graduate standing in sociology or c/l. The criteria for social science investigation and current methodological orientations.

503 SOCIOLOGICAL STATISTICS 5 prereq Math 125 or Soc 205 and graduate standing in sociology or c/l. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

504 MEDICAL SOCIOLOGY 5 prereq 15 credits in sociology or c/l. An introduction to sociological analysis of medical phenomena in terms of such theoretical concepts as complex organization, adult socialization, institutions, and social change.

507-508-509 SEMINAR V 2-5 R-15 prereq 15 credits in sociology or c/l. (Topics vary.)

510 PENOLOGY 5 a/y prereq 15 credits in sociology including 306 or 311 or c/l. Theory and practice of penal methods in correctional institutions. Probation and parole.

511 PERSONALITY AND SOCIAL STRUCTURE 3 prereq 15 credits in sociology or c/l. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

531 URBAN SOCIOLOGY 4 a/y prereq 10 credits in sociology or c/l. The rise and development of cities; social organization of the city; problems of urban communities.

532 RURAL SOCIOLOGY 4 Su 3 a/y prereq 10 credits in sociology or c/l. Organization and social relationships of rural life; the rural community, problems of rural life. Special emphasis on Montana and the Northwest.

599 THESIS OR DISSERTATION V R-9 for M.A.; R-15 for Ph.D.
### TEACHING COMMUNICATION SKILLS

<table>
<thead>
<tr>
<th>Level</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>Engl 100</td>
<td>Lower Division Composition</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td>SpCo 110</td>
<td>Introduction to Systems of Communication</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td>SpCo 112</td>
<td>Argumentation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SpCo 115</td>
<td>Practicum in Oral Expression</td>
<td>3</td>
</tr>
<tr>
<td>Senior</td>
<td>SpCo 224</td>
<td>Introduction to Communication: Process</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Jour 270</td>
<td>Reporting</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engl 300</td>
<td>Upper Division Composition</td>
<td>3</td>
</tr>
</tbody>
</table>

### FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 INTRODUCTION TO SYSTEMS OF COMMUNICATION 5. Theory and evidence relevant to interpersonal and intrapersonal systems of communication. The role of language in human interaction.

111 INTRODUCTION TO PUBLIC SPEAKING 3. Theories and principles of public speaking. Practice in preparation, delivery and criticism of speech.

112 ARGUMENTATION 5. The principles by which belief and conduct are influenced through appeals to logical reasoning. Evidence, analysis, logic, fallacies, refutation, rebuttal and their application to current economic, social and political problems.

115 PERSUASIVE COMMUNICATION 4. 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 recording and evaluation.

119 PHONETICS 2 (2-1). (See Speech Pathology and Audiology.)

222 (223) PUBLIC SPEAKING PRACTICUM 5 (0-4) prereq 111. Practice in speech composition, delivery and criticism beyond that introduced in Speech-Communication 111.

223 INTRODUCTION TO COMMUNICATION: PHONOLOGY 5 (4-2). (See Speech Pathology and Audiology.)

224 INTRODUCTION TO COMMUNICATION: AUDILOGY 5 (4-2). (See Speech Pathology and Audiology.)

234 INTRODUCTION TO COMMUNICATION: PROCESS 5 (5-0). Major concepts and principles relevant to the nature and use of signs and symbols in the total process of communication, with particular reference to meaning.

265 FORENSICS 1 R-6. Preparation of debates, orations, extemporaneous and impromptu speeches, and other types of public address.

301 HISTORY OF THE FIELD OF COMMUNICATION 3. The major lines of influence leading to present theories, concepts and methods in the field of oral communication.

313 CONFERENCE LEADERSHIP 2. Methods and procedures of conducting meetings, including the use of parliamentary procedure.

314 (214) DISCUSSION AND SMALL GROUPS 3. The processes involved in informal small-group interaction. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4. Intra-organizational problems. Theory and research on questions of informational and directive communication as related to such factors as channels, structures, status, involvement, morale.

335 COMMUNICATION DISORDERS I 5 (5-1) prereq 119, 223, 232, and 234. (See Speech Pathology and Audiology.)

336 COMMUNICATION DISORDERS II 5 (5-1) prereq 335. (See Speech Pathology and Audiology.)

337 COMMUNICATION DISORDERS III 3 (3-1). (See Speech Pathology and Audiology.)

351 DEVELOPMENTAL SEMIOLOGY 3 prereq 118, 223, 232, 234. (See Speech Pathology and Audiology.)

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.

355 MESSAGE COMPOSITION 3 prereq 111. Preparation of oral messages, with emphasis on organization and language choice.

356 SPEECH CRITICISM 2. The bases upon which the various forms of public speaking are evaluated.

361 (261) ORAL INTERPRETATION 3 (2-3). The analysis and oral presentation of literature.

371 SOCIODRAMA 3. Principles and practice of role-playing as a technique of communication.

383 LANGUAGE AND CULTURE 3. (See Anthropology.)

### FOR UNDERGRADUATES AND GRADUATES

419 ADVANCED PHONOLOGY 3 a/y. (See Speech Pathology and Audiology.)

420 MOTOR AND PERCEPTUAL PHONETICS 4 (3-2) a/y. (See Speech Pathology and Audiology.)

422 (421) TEACHING SPEECH IN THE SECONDARY SCHOOL 3 prereq 18 credits in Speech Communication. Planning the speech curriculum and its relationship to other school subjects; instructional materials and methods of teaching speech.

430 BUSINESS AND PROFESSIONAL INTERVIEWING 3. Theory and practice of communication behavior in dyadic situations as confronted in business, education, and professions. Experience in informational, employment, and decision-making interviews.

443 (343) ADVANCED PUBLIC SPEAKING 3 prereq 111 and 335 or c/i.

444 (344) RHETORICAL THEORY 3. The historical development and current status of rhetorical theory.

445 HISTORY OF AMERICAN PUBLIC ADDRESS 3 prereq c/i. Critical analyses of speeches of historically prominent American speakers and issues with which they were identified.

446 HISTORY OF BRITISH AND EUROPEAN PUBLIC ADDRESS 3. Critical analysis of speeches of historically prominent British and European speakers and the issues with which they were identified.

451 PSYCHOLINGUISTICS 3 a/y prereq 234. Recent theories and evidence concerned with the empirical analysis of linguistic behavior. (Credit not allowed for this course and SPA 450.)

462 DIRECTING THE FORENSIC PROGRAM 3. Philosophy, organization, and administration of competitive speech activities.

469 (369) ADVANCED ORAL INTERPRETATION 3 prereq 361 or c/i.

490 LINGUISTIC METHODS 3. (See Anthropology.)

490 PROBLEMS V R-6.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 18 credits of junior and senior level Speech Communication or c/i. The basic approaches to graduate and professional activities.

### FOR GRADUATES

511 THEORIES OF COMMUNICATION 3 prereq c/i. A critical evaluation of theories and research in the field of communication.

512 ORGANIZATIONAL COMMUNICATION 3 prereq c/i.

514 SMALL GROUP COMMUNICATION 3 prereq c/i.

519 SEMINAR: COMMUNICATION MEASUREMENT 3 prereq Statistics.

521 INFORMATION AND COMMUNICATION 3 prereq c/i. The nature and function of information in human communication systems.

522 SEMINAR: SPEECH COMMUNICATION EDUCATION 3. prereq 422 or c/i.

541 PERSUASION 3 prereq c/i. Theories and research concerned with the processes by which behavioral and attitudinal change are produced primarily by communication.

545 SEMINAR: SPEECH CRITICISM 3 a/y prereq c/i.

551 CONTEMPORARY PUBLIC ADDRESS 3 a/y prereq c/i.

553 SEMINAR: HISTORY OF RHETORIC AND PUBLIC ADDRESS 3 a/y prereq c/i.

571 SOCIODRAMA 3 a/y c/i.

598 COMMUNICATION PRACTICES 3. (See Business Administration)

597 RESEARCH METHODS AND MATERIALS 5 prereq Statistics: 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/i.

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.
SPEECH PATHOLOGY AND AUDIOLOGY represents an integration of disciplines among social and life sciences concerned with the processes by which people communicate and with difficulties arising in these processes. Study in this field is designed to provide a deeper understanding of the processes, resources, facilities and disabilities of human communication.

Although students take the Bachelor of Arts degree in Speech Pathology and Audiology, this is a professional degree and is not intended to prepare a student for employment in the field. For students intending to engage in professional clinical work, it is recommended that requirements for clinical certification by the American Speech and Hearing Association be met. Persons receiving the degree, Master of Speech Pathology and Audiology, meet all requirements for a Certificate of Clinical Competence; persons receiving the Master of Arts degree in Speech Pathology and Audiology may or may not meet certification requirements depending on their professional goals. Professional employment opportunities for persons receiving graduate degrees in Speech Pathology and Audiology include clinical service centers, hospitals, public schools, health departments, colleges and universities, industrial programs, research centers, and private practice.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, the student must complete a minimum of 45 credits and not more than 70 credits in Speech Pathology and Audiology. All students majoring in the Speech Pathology and Audiology program are required to complete a core curriculum as follows: Speech Communication 111, 112, and 353; 337, 338, 339, 341, 342, 351, 380, and 423 (4 credits); Anthropology 152 or 153; English 300 or Speech Communication 388; Sociology 101; Psychology 110 and 212; Zoology 202; and 3 credits each in Normal Development of the Child Philosophy and Statistics.

SUGGESTED PROGRAM FOR UNDERGRADUATES

<table>
<thead>
<tr>
<th>Freshman</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W</td>
<td>S</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>HPER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For Lang</td>
<td>4-5</td>
<td>4-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Composition</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoology</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthro 152 or 153</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soc 101</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Psych 110</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soc 111</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 100, 101</td>
<td>14</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W</td>
<td>S</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>For Lang</td>
<td>4-5</td>
<td>4-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zool 302</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 119</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 332, 233, SpCo 234</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Sci</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soc or Anthro</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psych 380</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 125</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-17</td>
<td>14-15</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W</td>
<td>S</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>Humanities (in addition to Philosophy)</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 335, 336, 338</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 341, 342</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 380</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 331, SpCo 333</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPA 423</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>0-1</td>
<td>0-2</td>
<td>2-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-17</td>
<td>14-16</td>
<td>14-16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA 337</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psych 220 or Soc 205</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>9-11</td>
<td>12-14</td>
<td>15-17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14-16</td>
<td>15-17</td>
<td>15-17</td>
<td></td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate Bulletin.

FOR UNDERGRADUATES

100 ORIENTATION TO SPEECH PATHOLOGY AND AUDIOLOGY I 1 (1-1) prereq c/l. Orientation to history and current development of field of Speech Pathology and Audiology with supervised observations in University Speech and Hearing Clinic.

101 ORIENTATION TO SPEECH PATHOLOGY AND AUDIOLOGY II R-3 (1-1) prereq SPA 100. Principles of observation and reporting along with participation in clinical activities as assistant to clinicians.

119 PHONETICS 2 (2-1). Transcription (International Phonetic Alphabet) and standards of pronunciation and dialect.

222 INTRODUCTION TO COMMUNICATION: PHONOLOGY 5 (4-2). Theories, research and selected remedial procedures relating to phonological, phonetic, sociological, and cultural determinants of the production and reception of signs in human communication, with special reference to the production of language.

223 INTRODUCTION TO COMMUNICATION: AUDIOLGY 5 (3-2). Psychological, sociological, and sociolinguistic factors that influence determinants of the production and reception of signs in human communication, with special reference to the perception and use of language and other acoustic stimuli.

234 INTRODUCTION TO COMMUNICATION: PROCESSES. See Speech Communication.

330 INTRODUCTION TO SPEECH PATHOLOGY 3 (3-1). For non-majors. Speech and language problems commonly encountered. (Non-majors may take for graduate credit.)

335 COMMUNICATION DISORDERS I 5 (5-1) prereq 119, 232. Theories, research and selected remedial procedures relating to receptive and expressive aspects of disorders of articulation and language.

336 COMMUNICATION DISORDERS II 5 (5-1) prereq 335. Theories, research and selected remedial procedures relating to disorders of language, rhythm, fluency and voice.

337 COMMUNICATION DISORDERS III 3 (3-1). Psychosocial problems of communication including those language problems associated with disturbances of affect and personality, with emphasis on etiological variables, and socio-cultural differences between speakers and listeners.

338 (337) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS 3 (3-1) prereq 336 or c/l. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

341 (340) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS 2 4-2 prereq or cor 235. Clinical experiences with tools and techniques needed to assess and diagnose speech and hearing problems of the adult and child.

342 (341) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS II 2 4-2 prereq 341. Supervised clinical practice in the out-patient clinic.

351 DEVELOPMENTAL SEMIOTIC 5 prereq SPA 119, 223, 232; SpCo 234. Characteristics and determinants of the sign process associated with the main stages in human development through life.

360 (340) CLINICAL AUDIOLGY 3 (3-1) prereq 233. Fundamental principles related to the measurement of hearing. Psychosocial problems and clinical techniques employed with the acoustically handicapped.

FOR UNDERGRADUATES AND GRADUATES

419 ADVANCED PHONOLOGY 3 a/y. Intonational and phonological systems of language.

420 MOTOR AND PERCEPTUAL PHONETICS 4 (3-2) a/y. Analysis and synthesis of voice, speech and hearing mechanisms.

423 (333) CLINICAL PRACTICUM I 3-0-2 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 (3-1) prereq 336. Stuttering as learned behavior; emphasis on prevention and habilitation.

432 (323) ORGANIC DISORDERS OF COMMUNICATION I 3 (3-1) prereq 336 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical structure.

433 (323) ORGANIC DISORDERS OF COMMUNICATION II 3 (3-1) prereq 336 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 2 prereq 336. Methods and policies related to establishing and conducting a speech and hearing program in a school system with emphasis at the elementary level.

437 LANGUAGE DISORDERS IN CHILDHOOD 4 (3-2). Evaluative techniques, etiological factors, and therapeutic approaches to deviant language behavior in children.

451 PSYCHOLINGUISTICS 3 a/y prereq SpCo 234 and Engl 360. Recent theories and evidence concerned with the empirical analysis of linguistic behavior. (Credit not allowed for both SPA and SpCo 451.)

471 COMPARATIVE SEMIOTIC 3 a/y prereq Zool 111-112-113 or c/l. The sign process based on evidence and observation at selected levels of the phyletic scale.
481 DIAGNOSTIC AUDIOLOGY 3 (3-1) prereq 380. Special audiological procedures used in otological diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.

482 REHABILITATION OF THE HEARING HANDICAPPED 3 (3-1) prereq 380. Speech reading, auditory training, hearing aid fitting and evaluation, speech habilitation and conservation in children and adults; relationships with education and vocational counseling.

490 PROBLEMS V R-6 prereq c/l.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 15 credits of junior and senior level Speech Pathology and Audiology or c/l. The basic approaches to graduate and professional activities.

FOR GRADUATES

500 RESEARCH V R-10 prereq c/l.

513 PSYCHOACOUSTICS 3 a/w prereq c/l. Current research relating to experimental uses of speech and hearing and to the processes of speech and analysis and synthesis.

515 SEMINAR: LABORATORY AND CLINICAL INSTRUMENTATION 3 prereq c/l.

523 ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS V (0-2) R-6 prereq 4 credits of 423.

536 PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V (0-3) R-9 prereq 435.

537 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/l.

538 SEMINAR: ANATOMICAL DEFECTS OF SPEECH 3 prereq c/l.

539 SEMINAR: NEUROMUSCULAR DEFECTS OF SPEECH 3 prereq c/l.

542 ADVANCED DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS 2 (1-3) R-6. Supervised practicum in diagnostic clinics.

547 SEMINAR: LANGUAGE DISORDERS 3 prereq c/l.

583 ADVANCED CLINICAL AUDIOLOGY 3 (3-1) prereq 481. Noise measurement exposure and control; hearing conservation in industry; architectural acoustics survey; experimental clinical procedures, administrative aspects of audiological services.

594 INSTRUMENTATION FOR AUDITORY REHABILITATION 3 (3-1) prereq 482. Recent research relating to experimental uses of amplification. Theory and practice in the design, construction, and application of hearing aids, portable amplifiers, auditory training units, and institutional audiovisual instrumentation.

595 SEMINAR: MEASUREMENT OF HEARING 3 (3-1) prereq c/l.

596 SEMINAR: REHABILITATION OF THE ACOUSTICALLY HANDICAPPED 3 (3-0) prereq c/l.

597 SEMINAR: HEARING CONSERVATION PROGRAMS 3 prereq c/l.

599 TOPICAL SEMINAR V R-9 prereq c/l.

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. The undergraduate curriculum described herein, constitute prerequisites to the basic physical sciences required for future employment in fish and game conservation.

Very few employment opportunities exist in wildlife management and research for holders of the Bachelor's Degree. Wildlife Biology students should plan to continue their education, at least through the Master's Degree, in order to qualify for state and federal wildlife management and/or research positions.

Within the broad designation of Wildlife Biology there are three optional curricula: Terrestrial, Aquatic and Honors. As indicated below, Terrestrial and Aquatic Options follow the same schedule of courses for the next three years. Each leads to the Bachelor of Science in Wildlife Biology.

The Wildlife Honors curriculum is designed particularly for students with strong academic records who intend ultimately to work toward a doctorate. Entrance into this option is open only to students at the beginning of their junior year who have a 3.0 GPA and who petition the staff for entrance.

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 admission to the University the student should elect four years of mathematics in high school.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN WILDLIFE BIOLOGY. 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 Honors option.

CURRICULA IN WILDLIFE BIOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany-Zoology 111—General Biology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Botany 114, 116—General Botany</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry 101, 102, 160—General Survey, Organic.</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>English* 100—Lower Division Composition</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Malby 116, 117, 119—College Algebras, Trigonometry, Introduction to Calculus</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Zool—Bot—For 170—Survey of W.L. Careers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>0-2</td>
<td>0-2</td>
</tr>
<tr>
<td>HPER—Physical Education</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Entrance into and/or exemption from these courses will be determined by placement scores.

Sophomore Year

Terrestrial Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 115, 116—General Zoology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bot 265, 266—Plant Physiology, Systematic Botany</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 126—Statistics</td>
<td>0-5</td>
<td>0-5</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bot—Zool 260—Basic Concepts of Ecology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bot—Zool 251—Ecology Lab</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Physics 111, 112 or 113—General Physics</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>0-2</td>
<td>0-2</td>
</tr>
</tbody>
</table>

Junior Year

Terrestrial Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 300, 308—Mammalogy, Ornithology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool* 202—Human Physiology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>For 300—Range Management</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>For 220—Technical Writing</td>
<td>0-2</td>
<td>0-2</td>
</tr>
<tr>
<td>or Engl 300—Upper Division Composition</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>6-7</td>
<td>15-18</td>
</tr>
</tbody>
</table>

Zool 340, 341 may be elected in place of Zool 202, 331.

Senior Year

Terrestrial Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 470, 471, 472—Advanced Wildlife, Big Game, Habitat</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bot 355—Plant Ecology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool* 331—Comp. Physiology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 410 Advanced Animal Ecology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 405—Animal Behavior</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 360—For 491, 492, 493—Sr. Wildlife Seminar</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>4-7</td>
<td>4-7</td>
</tr>
</tbody>
</table>

Zool 340, 341 may be elected in place of Zool 202, 331.

Sophomore Year

Aquatic Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 113, 112—General Zoology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bot 355—Plant Physiology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 123—Qualitative Analysis</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 125—Statistics</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>0-3</td>
<td>0-3</td>
</tr>
<tr>
<td>Bot—Zool 250—Basic Concepts of Ecology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bot—Zool 251—Ecology Lab</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Physics 111, 112 or 113—General Physics</td>
<td>0-5</td>
<td>0-5</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Zool 340, 341 may be elected in place of Zool 202, 331.

Zool 115, 116—General Zoology

Bot 355—Plant Ecology

Chem 123—Qualitative Analysis

Math 125—Statistics

SpCo 111—Introduction to Public Speaking

Bot—Zool 250—Basic Concepts of Ecology

Bot—Zool 251—Ecology Lab

Physics 111, 112 or 113—General Physics

Group Requirements and Electives

15-18 15-18 17-18

(SpCo 111 and/or Engl 300 could be taken Spring Junior Year.)
**ZOLOGY**

is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.

In addition to the Bachelor’s degree, the Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and conservation agencies. Many, with further training, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. 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 Zoology: Zool 111, 112, 113, 365, and at least one course from each of the following 6 groups: (1) Zoology 304, 305, 313, 404; (2) Zoology 304, 306, 307, 313, 365, 385, 391; (3) Zoology 304, 308, 309, 410; (4) Zoology 304, 310, 340, 341; (5) Zoology 304, 405, 410, 428, 461; (6) Zoology 365.

Students may substitute Chem 261, 262 for either group 3 or 4. The following must also be completed: Botany 114-115; Chemistry 121-122-123; Mathematics 116, 117, 118; Physics 111-112-113 or 121-122-123; English 100 and 101. English 490 recommended.

The foreign language requirement listed earlier in the catalog must be satisfied. Normally Zoology majors take 5 quarters of French, German or Russian. Other languages or combinations must be approved by the department.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 35 credits in Zoology or related fields as follows: Zooll 111, 112, 113, 404, 485; any one course from Zool 206, 306, 309, 310, 311, 394, 395, 396, 410, 428, 461; any one course from Microbiology or Zoology or Botany or one course from Zoool 206, 306, 309, 310, 313, 322, 323, 324, 340, 341.

Senior examinations are given only to candidates for honors.

GRADUATE WORK. See Graduate School Bulletin.

SUGGESTED CURRICULUM IN ZOOLOGY

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 100—Lower Division Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116, 117, 118—College Algebra, Trigonometry and Introduction to Calculus</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 111, 112, 113—Introduction to Biology, General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPER 100—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>18</td>
<td>15-17</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>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Foreign Language 101-102-103—Elementary French, German or Russian</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5-7</td>
<td>2-4</td>
<td>5-7</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>15-17</td>
<td>15-17</td>
<td>15-17</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>English 300—Upper Division Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Language 211-212—French, German, or Russian Readings</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics 111-112-113 or 221-222-223—General Physics</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology Advanced Courses</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group requirements</td>
<td>0-3</td>
<td>0-3</td>
<td>2-4</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>14-17</td>
<td>14-17</td>
<td>15-17</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 114, 115—General Botany</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoology 429—Biological Literature</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoology Advanced Courses or Chem 201, 202</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>9-10</td>
<td>5-6</td>
<td>7-8</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>14-15</td>
<td>16-17</td>
<td>17-18</td>
</tr>
</tbody>
</table>
FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

Courses also offered at Biological Station (*Courses only at Biology Station are indicated by an asterisk). For other courses, see the catalog of the University of Washington. (See also Biology and Zoology sections of the catalog of the University of Washington for courses not listed below.)

INTRODUCTION TO BIOLOGY 5 (3-4). Basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and methods 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.)

170 SURVEY OF WILDLIFE CAREERS 1 (1-0) (cross listed as Forestry and Botany 170).

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.

208 FIELD ZOOLOGY 3 (2-5) prereq 113. Collection, identification and study of selected invertebrates and vertebrates. (Credit not allowed for this course and Bot 250.)

250 (30) GENERAL CONCEPTS OF ECOLOGY 3 (3-0) prereq one year of college biology. Ecological principles with emphasis on the distribution and interaction of organisms in aquatic habitats. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

251 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq or coreq 202. Preparation of microscope slides, field techniques, and introductions to the study of aquatic habitats. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

252 ANIMAL MICROTECHNIQUE 2 (2-6) prereq Zool 112-113. 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. (Credit not allowed for this course and Bot 252.)

263 ZOOLOGY LABORATORY 3 (2-5) prereq 113. Collection, identification and study of selected invertebrates and vertebrates. (Credit not allowed for this course and Bot 250.)

290 MAMMALOLOGY 5 (3-4). The comparative morphology of the vertebrates. (Credit not allowed for this course and Bot 290.)

292 ANIMAL PARASITOLOGY 5 (3-4) e/y prereq Zool 112-113. Parasitism as a biological phenomenon, origin of parasitism, parasitic adaptations and life cycles, parasites and their environment, host-parasite interrelationships, and parasite metabolism will be emphasized.

294 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates.

296 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. (Credit not allowed for this course and Bot 296.)

298 ORNITHOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The structure, classification and life histories of birds. Field trips. Students are expected to provide themselves with binoculars.

299 MAMMALOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. Saturday field trips.

310 ICHTHYOLOGY 5 (3-4) prereq 113. The systematic and distribution of the more important orders of fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

321 PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoans.

322 LOWER METAZOANS 5 (3-4) prereq 113. Structural ecological and phylogenetic relationships among sponges, coelenterates, accoelates and nematodes.

323 MIDDLE METAZOANS 5 (3-4) prereq 113. Structural ecological and phylogenetic relationships among the mollusks and annelids and certain smaller invertebrate phyla.

324 ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

325 CELLULAR PHYSIOLOGY 5 (3-4) e/y prereq two courses in Physiology (Chem 202 or Chem 205) and Biology and Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 320.

330 COMPARATIVE PHYSIOLOGY 5 (3-4) prereq 320. The physiology of the major animal phyla. Special attention is paid to those functions related to the environment.
487 CYTOGENETICS 5 (3-2) prereq 485 or =. The structure and design of chromosomes from bacteria to higher organisms. Chromosome behavior and changes and their role in development and evolution. Cross-list with Botany.

490 SEMINAR IN BIOLOGY 1 (2-0). Credit not allowed for this course and Bot 490.

491-492-493 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

500 SEMINAR 1 prereq graduate standing in a biological science.

501 AREAS AND CONCEPTS OF ZOOLOGY 1 prereq graduate standing in Zoology or in Wildlife Biology. An orientation course for all new graduate students in zoology.

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


504 ADVANCED ANIMAL BEHAVIOR 5 (2-6) prereq 405 or c/l. The causation and function of normal behavior with emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior.

505 ACAROLOGY 5 (3-4) o/y prereq 324 or 365 or c/l. Comparative adaptive morphology, bionomics and current taxonomic concepts.

515 ZOOGEOGRAPHY 4 (3-1) prereq 2 courses in advanced vertebrate zoology. Past and present distribution of animals, with special emphasis on vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidences considered.

516 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, speciation and the various philosophies influencing systematic zoology.

523 PHOTOBIOLOGY 4 (3-4) prereq 330. The interaction between non-ionizing radiation and biological systems including photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light on plants, animals and microorganisms. (Credit not allowed for this course and Bot 523.)

524 RADIOBIOLOGY 4 (3-4) prereq 330. The influence of ionizing radiation (x-rays, gamma rays, and accelerated particles) on biological systems and the use of radio-isotopes in biology. (Credit not allowed for this course and Bot 524.)

531 (403) COMPARATIVE PHYSIOLOGY-INVERTEBRATE 5 (3-4) prereq Physics 113 or 223, Chem 262 and one animal physiology course. Physiological processes of the organ systems of the major invertebrate phyla in relation to environment.

532 (402) 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 in relation to environment.

533 (333) ENDOCRINOLOGY 5 (3-4) prereq Zool 113 and one animal physiology course. The physiology of the glands of internal secretion of the vertebrates with a survey of those of the invertebrates.

551 GENERAL ECOLOGY Su 5 (6-15) prereq Bachelor's degree; major preparation in Botany, Biology or Zoology. Community concepts including succession, stratification, periodicity and energy relationships; introduction to population problems.

561 LIMNOLOGICAL METHODS 3 (3-12) prereq 461, Chem 123. Practice in standard procedures employed. Field work.

590 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Botany, Chemistry, and Microbiology.)

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

685-686-687 ADVANCED MOLECULAR BIOLOGY LABORATORY 1-3 prereq 482 or c/l. Modern biochemically oriented research techniques. (Cross listed as Botany, Chemistry, Microbiology and Pharmacy.)

699 THESIS V R-15.
FACULTY DIRECTORY—83

FIELDS, ROBERT W., Ph.D., University of California; Chairman and Professor of Geology

FISCHER, WILLIAM C., B.S., University of Michigan: Research Associate in Forestry (Curator of Herbarium and Botany)

FISHER, DAVID M., M.A., Ball State University; Assistant Professor of Speech Communication

FISHER, WILLIAM H., Ed.D., Teacher’s College, Columbia University; Assistant Professor of Education

FOREMAN, WILLIAM R., B.A., University of Montana; Lecturer in Jourmalism (part-time)

FORMULZ, PETER A., Jr., Ph.D., Michigan State University; Assistant Professor of Economics (on leave 1969-70)

FRANDSEN, WILLIAM H., M.A., University of Washington; Associate in Forestry (Faculty Affiliate)

FRAZIER, ADRIENNE (Mrs.), B.A., University of California, Los Angeles; Assistant Professor of Religious Studies

FRANKEN, RICHARD L., M.A., University of Washington; Assistant Professor of Agriculture

FREEMAN, ROBERT I., M.F., University of Montana; Assistant Professor of Forestry

FREED, DALE B., B.S., Gustavus Adolphus College; Instructor in Anthropology

FRERE, EDMUND L., M.A., Northwestern University; Professor of History

FRISCH, EDDIE, Ph.D., University of Washington; Assistant Professor of English

FREED, SIDNEY S., Jr., Ph.D., University of Minnesota; Assistant Professor of Forestry

FREITZ, HARRY W., M.A., University of Montana; Instructor in History

FUKAYA, DONALD M., M.S., University of Washington; Research Associate in Forestry (Faculty Affiliate)

GANZ, EARL S., M.F.A., University of Illinois; Associate Professor of English

GAPOL, JEROME (Luitjen), Ph.D., University of Minnesota; Visiting Lecturer in Applied Science

GARDNER, ARTHUR L., Ph.D., University of Illinois; Assistant Professor of Foreign Languages

GARRISON, ROBERT J., M.S., Oregon State University; Assistant Professor of Mathematics

GARDNER, ROBERT L., M.F., University of Nevada; Professor of Forestry

GARRETT, WILLIAM H., M.A., Ohio State University; Associate Professor of Management

GARRETT, RICHARD, Ph.D., University of Chicago; Professor of English

GARRETT, ROBERT I., M.F., University of Montana; Assistant Professor of Forestry

GILL, ROBERT K., D.R.E., University of Oregon; Assistant Professor of Accounting and Finance (Business Administration)

GILMORE, VIRGINIA, B.S., Simmons College; Librarian, Minuteman Library Association (Faculty Affiliate)

GLACIER, FRANCIS W., Ph.D., Ohio State University; Associate Professor of Forestry (on leave 1969-70)

GLICK, HELEN, M.A., University of Wisconsin; Professor Emeritus of Geology

GOGOL, IWAN, J.A., Ph.D., University of Chicago; Professor of Sociology

GOODSPEED, JOHN C., M.A., University of Montana; Associate Professor of Botany

HAINSWORTH, BRAD E., Ph.D., University of Utah; Assistant Professor of English

HALL, CHARLES B., M.A., State University of New York; Instructor in English

HALL, HARLEY F., Ed.D., University of Montana; Coordinator of Extension and Continuing Education; Assistant Professor of Education

HALVORSON, CURTIS H., B.S., University of Wisconsin; Research Associate in Forestry (Faculty Affiliate)

HAMANN, OSCAR J., Ph.D., University of Wisconsin; Professor of History

HAMILTON, H. DUANE, Ph.D., University of Colorado; Assistant Professor of History

HANNON, WILLIAM T., Jr. (Major), B.S., State University of New York Maritime College; Associate Professor of Military Science (Faculty Affiliate)

HANSEN, BESS, M.A., University of Washington; Professor Emeritus of Speech

HANSEN, DAVID L., M.S., Michigan State University; Instructor in Mathematics (part-time)

HARDY, CHARLES E., M.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

HARDY, MARCELLA G., M.A., University of Montana; Instructor in Sociology and Social Welfare (part-time)

HARRIS, DALE A., B.A., University of Montana; Research Associate in Forestry (part-time)

HARRIS, DONALD A. (Major), Ph.D., University of Michigan; Associate Professor of Wildlife Management

HAY, RAY L., Ph.D., Yale University; Chairman and Professor of Religious Studies

HARTING, ALAN L., M.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

HARVEY, LEROY H., Ph.D., University of Michigan; Professor of Botany

HARVEY, MARIA (Mrs.), M.A., University of Michigan; Lecturer in Foreign Languages

HATCHER, KAREN A. (Mrs.), M.S., University of Wisconsin Library Administration; Graduate Assistant in Library Science (Faculty Affiliate)

HATTORI, DONALD C., A.M., University of Oklahoma; Instructor in Anthropology

HEATHER, JEROME L., B.S., Gonzaga University; Associate Professor of Military Science (Faculty Affiliate)

HAY, ROGER G., B.S., University of Montana; Research Associate in Forestry (Faculty Affiliate)

HAY, JOHN G., M.A., University of Wisconsin; Instructor in Forestry

HAYDEN, RICHARD J., Ph.D., University of Chicago; Professor of Physics and Astronomy

HAYES, LOUIS D., Ph.D., University of Arizona; Assistant Professor of Physical Education and Recreation

HELINGS, ALBERT T., Ph.D., Johns Hopkins University; Professor Emeritus of Business Administration (Management)

HEILIKER, GEORGE B., Ph.D., University of Michigan; Professor of Economics

HENRIKWAY, PETER, Ph.D., Michigan State University; Associate Professor of Psychology

HENDERSON, DOROTHY L., M.S., University of Tennessee; Associate Professor of Home Economics

HENDERSON, MARION E., Ph.D., Oregon State University; Associate Professor of Mathematics

HENDERSON, JOHN H., M.M., University of Oregon; Campus Service Coordinator and Instructor in Materials Science (Assistant Professor)

HENDERSON, FREDERICK A., M.A., University of Montana; C.P.A., Montana; Professor of Business Administration (Accounting and Finance)

HENRY, J. STEPHEN, M.A., University of Montana; Operations Manager of Computer Center; Instructor in Computer Science

HERTEL, CHARLES F. M., Columbia University; Professor of Health, Physical Education and Recreation

HESSE, PHILIP J., M.A., State University of Iowa; Director of Radio Television; Associate Professor of Journalism

HERWIG, CLAYTON C., Ph.D., University of Washington; Associate Professor of Mathematics

HILL, FRANCES A., Ph.D., Ohio State University; Assistant Professor of Psychology

HILL, WALTER E., Ph.D., University of Wisconsin; Assistant Professor of Chemistry

HINMAN, CLAY, B.S., University of New Mexico; Research Associate in Forestry (Faculty Affiliate)

HISLOP, ROBERT I., Ph.D., University of Colorado; Visiting Professor, Utah Education Program (Malmstrom Air Force Base)

HOBBS, LAWRENCE W., M.A.L.S., University of Michigan; Associate Professor of Education

HOFFMAN, ALAN R., Ph.D., University of Michigan; Assistant Professor of Mathematics

HOFFMAN, RUDOLPH O., M.A., University of Wisconsin; Professor of Political Science

HOFMEISTER, JON F., M.A., University of Oregon; Instructor in Anthropology

HOGAN, HENRY W., M.D., Jefferson Medical College; Lecturer in Psychology (Faculty Affiliate)

HOKLAND, FEES S., Ph.D., University of Michigan; Dean of the Graduate School; Professor of Science 1969-70

HOLTON, JAMES E., M.A., University of Southern California; Assistant Professor of Education

HOUDE, CHARLES W., M.A., University of Montana; Professor of Education

HOUDE, CHARLES E., Ph.D., University of Montana; Instructor in Journalism

HOOK, WALTER M., University of New Mexico; Professor of Art (Sculp tural, winter and spring 1969-70)

HOOPER, JAMES C., Ph.D., University of Alabama; Professor of Physics

HUBBARD, A. DONALD W., Ph.D., University of California; Visiting Lecturer in Anthropology

HUFF, ROBERT S., Ph.D., University of Texas; Assistant Professor of Political Science

HUFF, THOMAS P., Ph.D., Rice University; Assistant Professor of Political Science

HUGGINS, ROBERT L., M.F., University of Montana; Assistant Professor of Mathematics

HUMMEL, C. J. GRIMES, M.A., Columbia University; Professor of Music

HUTTON, J. ED., Colorado State College; Associate Professor of Education

HUSTRULID, PETER, B.S., Colorado State University; Assistant Visiting Lecturer in Management (Winter and spring, 1969-70)

HUUSE, DONALD W., Ph.D., University of California; Professor of Geology (Faculty Affiliate)

IVING, ROBERT S., Ph.D., University of Texas; Assistant Professor of Political Science

IVANJACK, WALTERS F., (Captain), B.S., University of Illinois; Associate Professor of Military Science (Faculty Affiliate)

JACOBSON, RICHARD M., Ph.D., University of Illinois; Assistant Professor of Music

JACKSON, MARK J., Ph.D., University of California; Chairman and Professor of Physics and Astronomy

JACKSON, RICHARD H., M.F., University of Montana; Acting Chairman and Associate Professor of Drama

JAGUIN, PHILIP H., M.F., University of Minnesota; Visiting Lecturer in Management, Business Administration (Winter and spring, 1969-70)
<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JARA, ROBERT, Ph.D.</strong></td>
<td>University of Vienna; Professor of Foreign Languages</td>
</tr>
<tr>
<td><strong>JAY, ROBERT H., Ed.D.</strong></td>
<td>University of Oregon; Associate Professor of Education</td>
</tr>
<tr>
<td><strong>JEFFREY, WILLIAM L., Ph.D.</strong></td>
<td>University of Minnesota; Lecturer in Zoology (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>JENNY, DONALD A., Ph.D.</strong></td>
<td>University of Florida; Associate Professor of Zoology</td>
</tr>
<tr>
<td><strong>JENNI, MARY ANNE, M.A.</strong></td>
<td>University of Florida; Assistant in Mathematics (Fall and winter, 1969-70)</td>
</tr>
<tr>
<td><strong>JENKINS, JOSEPH W., Ph.D.</strong></td>
<td>Michigan State University; Assistant Professor of Psychology</td>
</tr>
<tr>
<td><strong>JEPPSEN, CARL L., Ph.D.</strong></td>
<td>University of California, Professor of Microbiology</td>
</tr>
<tr>
<td><strong>JEPPSEN, RALPH, M.S.</strong></td>
<td>University of Illinois; Assistant Professor of Physics and Astronomy</td>
</tr>
<tr>
<td><strong>JEPPSEN, RALPH, M.S.</strong></td>
<td>University of Illinois; Assistant Professor of Physics and Astronomy</td>
</tr>
<tr>
<td><strong>JOHANSON, WALTER B.</strong></td>
<td>Russell Sage College; Assistant Professor of Health, Physical Education and Recreation</td>
</tr>
<tr>
<td><strong>JUPITER, D. S.</strong></td>
<td>National Catholic School of Social Service; Instructor in Sociology and Social Welfare</td>
</tr>
<tr>
<td><strong>JUNDAY, RICHARD E., Ph.D.</strong></td>
<td>University of Wisconsin; Professor of Chemistry</td>
</tr>
<tr>
<td><strong>KAERLIN, JULIE A., Ph.D.</strong></td>
<td>University of Minnesota; Professor of History</td>
</tr>
<tr>
<td><strong>KELLY, EDWARD J., B.A.</strong></td>
<td>San Jose State College; Lecturer in Chemistry</td>
</tr>
<tr>
<td><strong>KEMPNER, J. J., Ph.D.</strong></td>
<td>Ohio State University; C.P.A., Montana; Chairman and Professor of Accounting and Finance (Business Administration)</td>
</tr>
<tr>
<td><strong>KETLEWELL, NEIL, M., Ph.D.</strong></td>
<td>University of Michigan; Assistant Professor of Psychology</td>
</tr>
<tr>
<td><strong>KING, WALTER N., Ph.D.</strong></td>
<td>Yale University; Professor of English</td>
</tr>
<tr>
<td><strong>KIRKPATRICK, THOMAS O., Ph.D.</strong></td>
<td>Ohio State University; Associate Professor of Business Administration (Management)</td>
</tr>
<tr>
<td><strong>KITRIDGE, WILLIAM A., M.F.A.</strong></td>
<td>University of Iowa; Assistant Professor of Music</td>
</tr>
<tr>
<td><strong>KNIGHT, ARTHUR C., M.D.</strong></td>
<td>University of Maryland; Staff Physician, Health Service</td>
</tr>
<tr>
<td><strong>KNOWELL, GERHARD M., M.S.</strong></td>
<td>University of Montana; Instructor-Administrative Assistant in Center for Natural Resources, Forestry</td>
</tr>
<tr>
<td><strong>KOEPPEN, DONALD E., Ph.D.</strong></td>
<td>University of Wisconsin; Chairman and Professor of Business and Administration Office (Business Administration)</td>
</tr>
<tr>
<td><strong>KONIEZKI, RICHARD, L., Ph.D.</strong></td>
<td>University of Chicago; Professor of Forestry</td>
</tr>
<tr>
<td><strong>KOEZRA, WALTER, Ph.D.</strong></td>
<td>University of South Dakota; Assistant Professor of Microbiology</td>
</tr>
<tr>
<td><strong>KOKUK, EDWARD S., M.S.</strong></td>
<td>University of Michigan; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>KRAMER, JOSEPH, Ph.D.</strong></td>
<td>University of Nebraska; Professor Emeritus of Botany</td>
</tr>
<tr>
<td><strong>KRUEGER, JOHN P., Ph.D.</strong></td>
<td>Yale University; Professor of Forestry</td>
</tr>
<tr>
<td><strong>KUHLMAN, JUDE V., M.S.</strong></td>
<td>University of Santa Clara; Associate Professor of Military Science (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>KUSCHEK, ROBERT R., M.S.</strong></td>
<td>University of Yale; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>KNUE, IRENE, J., Ph.D.</strong></td>
<td>Northern State College, Aberdeen, South Dakota; Assistant Professor of Education</td>
</tr>
<tr>
<td><strong>LACKEY, LAWRENCE, B.S.</strong></td>
<td>University of Michigan; Professor of Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>LACKMAN, DAVID B., Ph.D.</strong></td>
<td>University of Pennsylvania; Lecturer in Immunology, Department of Microbiology (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>LACKEY, WILLIAM, M.M.</strong></td>
<td>University of Montana; Instructor in English</td>
</tr>
<tr>
<td><strong>LAMBERT, J. RAY, Ph.D.</strong></td>
<td>Rice University; Assistant Professor of Philosophy</td>
</tr>
<tr>
<td><strong>LANGE, ROBERT W., M.F.</strong></td>
<td>Colorado State University; Associate Professor of Forestry</td>
</tr>
<tr>
<td><strong>LASSER, HERBERT RAY, Ph.D.</strong></td>
<td>University of Utah; Visiting Professor of Administration and Social Welfare</td>
</tr>
<tr>
<td><strong>LASKER, CARL L., M.D.</strong></td>
<td>University of Minnesota; Director of the Stella Duncan Memorial Institute; Professor of Microbiology</td>
</tr>
<tr>
<td><strong>LAWRY, ELEANOR YOST (Mrs.), Ph.D.</strong></td>
<td>Stanford University; Assistant in Mathematics (Winter, 1970)</td>
</tr>
<tr>
<td><strong>LAWRY, JOHN F., Ph.D.</strong></td>
<td>Harvard University; Associate Professor of Psychology</td>
</tr>
<tr>
<td><strong>LEA, MURIEL JANE (Mrs.), M.Mus.</strong></td>
<td>College Conservatory of Music, Cincinnati; Assistant Professor of Music</td>
</tr>
<tr>
<td><strong>LAGE, WILLIAM C., Ph.D.</strong></td>
<td>Harvard University; Dean Emeritus and Professor Emeritus of Law</td>
</tr>
<tr>
<td><strong>LEE, ANDREW E., Ph.D.</strong></td>
<td>University of New Mexico; Assistant Professor of Psychology</td>
</tr>
<tr>
<td><strong>LESTER, JOHN L., B.Mus.</strong></td>
<td>Southern University; Professor of Music</td>
</tr>
<tr>
<td><strong>LEWIS, GEORGE D., M.Mus.</strong></td>
<td>University of Montana; Associate Professor of Music</td>
</tr>
<tr>
<td><strong>LEWIS, HARLEY W., M.S.</strong></td>
<td>University of Montana; Track and Cross Country Coach and Instructor in Health, Physical Education and Recreation</td>
</tr>
<tr>
<td><strong>LEWIS, MARY JEANNE (Mrs.), B.M.</strong></td>
<td>University of Montana; Lecturer in Music (part-time)</td>
</tr>
<tr>
<td><strong>LEWIS, VANETTA (Mrs.), B.Ed.</strong></td>
<td>University of Montana; Associate Professor of Home Economics</td>
</tr>
<tr>
<td><strong>LINTON, PETER C. H., M.S.</strong></td>
<td>University of Iowa; Research Associate in Bureau of Economics, Assistant Professor of Business Administration</td>
</tr>
<tr>
<td><strong>LINDERMANN, ZONA, M.S.</strong></td>
<td>Wisconsin State University; Instructor in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>LINDSAY, ROBERT O., Ph.D.</strong></td>
<td>University of Oregon; Associate Professor of History</td>
</tr>
<tr>
<td><strong>LINE, ROBERT C., M.A.</strong></td>
<td>Harvard University; Professor Emeritus of Business Administration</td>
</tr>
<tr>
<td><strong>LITWIN, PAUL J., B.S.F.</strong></td>
<td>West Virginia University; Instructor in Forestry (Fall and spring, 1969-70)</td>
</tr>
<tr>
<td><strong>LOFTGARDEN, DON Q., Ph.D.</strong></td>
<td>Montana State University; Assistant Professor of Mathematics</td>
</tr>
<tr>
<td><strong>LOUIS, WALTER W., Ph.D.</strong></td>
<td>Harvard University; Professor of Forestry</td>
</tr>
<tr>
<td><strong>LUCAS, ROBERT C., Ph.D.</strong></td>
<td>University of Minnesota; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>LUCES, ROBERT W., M.S.</strong></td>
<td>North Dakota State University; Assistant Professor of Forestry (part-time)</td>
</tr>
<tr>
<td><strong>LUDWIG, WILFRED, J.D.</strong></td>
<td>University of Southern California; Assistant Professor of Law</td>
</tr>
<tr>
<td><strong>LUTZ, PHILIP H., Ph.D.</strong></td>
<td>University of Michigan; Assistant Professor of Psychology</td>
</tr>
<tr>
<td><strong>LYMAN, NORMA JANE, M.A.</strong></td>
<td>University of Denver; Catalog-Advisor Professor of School of Law-Library</td>
</tr>
<tr>
<td><strong>LYNCH, RICHARD L., Ph.D.</strong></td>
<td>University of Michigan; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>MACHAO, MANUEL J., B.S.</strong></td>
<td>University of California, Santa Barbara; Associate Professor of Microbiology (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>MACON, GEORGE, Ph.D.</strong></td>
<td>University of Southern California; Instructor in Forensic Sciences</td>
</tr>
<tr>
<td><strong>MACLEAN, STEPHEN P., Ph.D.</strong></td>
<td>University of California; Assistant Professor of Zoology</td>
</tr>
<tr>
<td><strong>MAIDEN, FORREST H., B.S.</strong></td>
<td>Montana State University; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>MALLORY, ALINE, B.S.</strong></td>
<td>University of Utah; Assistant in Home Economics (part-time)</td>
</tr>
<tr>
<td><strong>MALLON, DONALD, B.S.</strong></td>
<td>University of Montana; Professor Emeritus</td>
</tr>
<tr>
<td><strong>MANN, RICHARD, Ph.D.</strong></td>
<td>University of Arizona; Assistant Professor of Physics and Astronomy</td>
</tr>
<tr>
<td><strong>MARSHALL, ROBERT R., M.S.</strong></td>
<td>University of Montana; Professor of Administration and Social Welfare</td>
</tr>
<tr>
<td><strong>MATT, RONALD J., B.S.</strong></td>
<td>University of Montana; Business Manager of Athletics (Instructor)</td>
</tr>
<tr>
<td><strong>MAYNARD, WILLIAM, M.Mus.</strong></td>
<td>Drake University; Acting Chairman and Associate Professor of Music</td>
</tr>
<tr>
<td><strong>MAYS, RAY L., M.A.</strong></td>
<td>University of Montana; Assistant Professor of History</td>
</tr>
<tr>
<td><strong>MAYS, WILLIAM D., M.S.</strong></td>
<td>Colorado State University; Research Associate in Forestry (Faculty Affiliate)</td>
</tr>
<tr>
<td><strong>MEYER, PHILIP C., M.A.</strong></td>
<td>University of Montana; Associate Professor of Psychology</td>
</tr>
<tr>
<td><strong>MIEHELIN, ALFRED, J., M.Ed.</strong></td>
<td>University of Montana; Associate Professor of Business Education and Office Administration (Business Administration)</td>
</tr>
</tbody>
</table>
THOMPSON, GRAHAM R., M.A., Dartmouth College; Instructor in Geol-
THOMPSON, RONALD B., Arch., Dip. T.P., University of London; Lect-
turer in Sociology (Autumn Quarter)

TIBBS, JOHN, Ph.D., University of Southern California; Assistant Pro-
fessor of Zoology (on leave, fall 1969)

TOSSENDT, WARD, M.A., Occidental College; Instructor in English

TOOLE, J. HOWARD, LL.M., Harvard University; Professor Emeritus of Law

TOOLE, K. ROSS, Ph.D., University of California at Los Angeles; Pro-
fessor of History

TOOCATOS, ALEXANDER, M.A., University of California, Berkeley; Re-
search Associate in the Bureau of Business and Economic Re-
search; Instructor in Economics

TUBNER, ROBERT T., Ph.D., University of California at Los Angeles; Pro-
fessor of History

ULLRICH, JAMES R., Ph.D., Southern Illinois University; Assistant Pro-
fessor of Psychology

USHIJIMA, RICHARD N., Ph.D., University of Utah; Associate Professor of Microbiology

VAN DE WATERING, JOHN, B.A., University of California at Los Angeles; Lecturer in Humanities

VAN HORN, GENEVA (MRS.), M.A., University of Wisconsin; Lecturer in Education

VAN HORN, ROBERT L., Ph.D., State University of Iowa; Dean and Professor of Pharmacy

VAN MEER, WAYNE P., Ph.D., University of Washington; Associate Professor of Chemistry

VAN SLYKE, ROBERT S., M.Ed., Oregon State University; Assistant Pro-
fessor of Education

VARNEY, JOEL R., M.S., Stanford University; Research Associate in Wildlife Research

VICK, OREN C., Ph.D., Pennsylvania State University; Assistant Pro-
fessor of Psychology

VIZZUTI, LEO J., M.A., Lecturer in Music (part-time) (eff. 11-1-69)

VOGEL, SALLY A. (MRS.), M.A., University of New Mexico; Instructor in History

VON KUSTER, LEE N., M.Ed., University of Montana; Instructor in Edu-
cation (part-time)

VOORHEES, TWILA B., M.A., Montana State University; Instructor in Sociology and Social Welfare (Winter and spring, 1969-70)

VOORHES, GEORGE F., Ph.D., University of Michigan; Associate Professor of Mathematics

WADDELL, THEODORE J., M.P.A., Wayne State University; Instructor in Art

WAGNER, PAUL, M.D., University of Minnesota; Staff Physician, Health Service

WAILES, JOHN L., Ph.D., University of Colorado; Professor of Pharmacy

WALDON, ELIS L., Ph.D., University of Wisconsin; Professor of Pol-
itical Science and Director of the Bureau of Governmental Re-
search (Sabbatical leave, 1969-70)

WALDorf, GEORGE W., Ph.D., University of Minnesota; Assistant Professor of Zoology

WALLACE, ROBERT F., Ph.D., University of Minnesota; Chairman and Professor of Economics

WALTON, H. A., Ph.D., Pennsylvania State University; Associate Pro-
fessor of Psychology

WALTON, RICHARD E., M.A., Claremont Graduate School; Visiting In-
spector in Philosophy

WARMACH, ROBERT F., Ph.D., University of Minnesota; Associate Pro-
fessor of Forestry; Associate Director, Forest and Conservation Experiment Station

WANG, JOHN B., Ph.D., University of Maryland; Assistant Professor of Foreign Languages

WARWICK, PAUL S., M.A., Claremont Graduate School; Instructor in English

WATERS, WILLIAM L., Ph.D., University of California, Berkeley; As-
sistant Professor of Chemistry

WATKINS, JOHN G., Ph.D., Columbia University; Director of Clinical Training and Professor of Psychology

WEBB, JAMES E., JR., B.S., North Carolina State University; Associate Professor of Mathematics

WEBB, JOHN F., Ph.D., University of Illinois; Professor of Ge-
ology (Sabbatical leave, 1969-70)

WEBER, ROBERT M., Ph.D., University of California; Professor of Geology

WEBER, EUGENE, B.Mus., Yale University; Professor of Music

WEBER, GEORGE F., Ph.D., University of California at Los Angeles; Professor of Sociology

WEI, KATHERINE M. (MRS.), M.A., Ohio State University; Instructor in Anthropology

WELCH, LOIS H., (MRS.), Ph.D., Occidental College; Assistant Pro-
fessor of English

WENSTEN, RUDOLPH, M.Mus., Eastman School of Music, Professor of Music

WHEATLEY, MICHAEL, M.A., Ohio State University; Instructor in Art

WHEDON, THOMAS R., M.S., University of Montana; Visiting Instructor in Physical Education

WHITE, ELAINE, M.A., University of Montana; Instructor and Execu-
tive Secretary of Education

WHITE, M. CATHARINE, M.A., University of Montana; Assistant Librari-
an and Reference Librarian Emeritus (Professor Emeritus)

WHITE, GEORGE W., Ed.D., University of Montana; Assistant Professor of Business Administration

WICKS, JOHN H., Ph.D., University of Illinois; Associate Professor of Mathematics

WILLIAMS, ROSE, M.F., Yale University; Dean and Professor Emeritus of the University of California, Berkeley; Professor of Business Administration (Business Education and Office Administration)

SHERMAN, GEORGE W., M.L.S., University of Illinois; Assistant Reference Librarian (Instructor)

WILSON, BRINDA F. (MRS.), M.A., University of Southern California; Professor Emeritus of Business Administration (Business Education and Office Administration)

WILSON, PAUL B., M.A., University of Nebraska; Instructor in Ge-
ology

WILSON, RALPH A., M.A., University of Oregon; Research Associate in Forestry (Faculty Affiliate)

WILSON, VINCENT, M.A., New York University; Professor of Health, Physical Education and Recreation

WINCKLE, GORDON G., M.A., Syracuse University; Visiting Instructor, Philosophy

WINTON, DONALD II, Ph.D., University of Texas; Associate Professor of Zoology

WINSTON, RALPH J., D.B.A., Washington University; Visiting Professor in Management (Business Administration)

WOOD, GEORGE W., Ph.D., University of Minnesota; Assistant Professor of Chemistry

WOODWARD, LESLIE E., Ph.D., University of California, Berkeley; Visiting Professor in Management (Business Administration)

WRIGHT, PHILIP L., Ph.D., University of Wisconsin; Professor of Zo-
ology (Sabbatical leave, winter and spring, 1969-70)

YALE, I. KEITH, Ph.D., University of California; Assistant Professor of Mathematics

YATES, LELAND, M., Ph.D., Washington State University; Associate Pro-
fessor of Chemistry

ZIMMERMANN, ROBERT R., Ph.D., University of Wisconsin; Professor of Mathematics
index ...

Absence from Class ................. 13
Academic Requirements .......... 6
Accreditation of University ....... 2
Administrative Officers ......... 1
Admission ........................ 3
Advanced Placement ........... 4
Application Deadlines .......... 4
Application Fee ................. 9
Archives ........................ 3
Examination, by .................. 3
General Requirements ........ 3
Health Examination ............. 5
How to apply .................... 4
Law School ...................... 54
From Non-English Speaking Countries 4
Notifiable Admissions ......... 3
Notification of Admission ....... 4
Basis of Instructions ........... 3
Special Students ............... 4
Testing ........................ 8

TOEFL .......................... 4
Total .......................... 14
When to Apply ................. 4

Arts and Sciences, College of Arts and Sciences, College of 13
Astronomy ...................... 16
Biology ......................... 17
Botany ........................ 17
Business Administration .... 19
Chemistry ...................... 22
Classes ......................... 39
Computer Science .............. 29
Dental Hygiene ................ 28
Drama ........................ 27
Economics ...................... 29
Education ........................
English .........................
Foreign Languages ........... 38
Forestry ........................ 40
French ........................ 40
General Courses ............... 44
General Literature .......... 44
Geography ...................... 45
Geology ........................ 45
German ........................ 39
Greek .......................... 39
Health, Physical Education, Recreation 47
History ........................ 50
Home Economics ............... 52
Humans ........................ 44
Introductory Courses: 
Biology ........................ 44
Humans ........................ 44
Italian ........................ 40
Jazz ................................ 39
Law .............................. 54
Liberal Arts ..................... 54
Library Service ............... 55
Lincoln ......................... 52
Mathematics .................... 58
Medical Technology .......... 58
Microbiology .................. 54
Music ............................ 60
Pharmacy ........................ 65
Philosophy ...................... 65
Physical Therapy .............. 66
Physics .......................... 66
Political Science .............. 67
Portuguese ...................... 67
Pre-Medical Sciences ....... 68
Pre-Medical Sciences ....... 68
Psychology .................... 69
Radio-Television .............. 70
Religious Studies ............ 74

ROTC, Aerospace Studies ........ 71
Romantic Philology .......... 40
Russian ........................ 49
Science ........................ 44
Social Welfare ................ 73
Sociology ....................... 73
Spanish ........................ 40
Speech Communication ....... 74
Speech Pathology and Audiology 74
Wildlife Biology .............. 73
Zoology ........................ 75

Credit by Examination ........ 8
Credit Load, Maximum ...... 6
Credits, for Degree ......... 8
Correspondence Study ....... 8
Limitations ........................

Degrees and Majors ............ 5
Advanced Professional ....... 5
Candidate for .................. 8
Credits required for ......... 8
Music, Faculty ................. 6
Drugs .......................... 12

Education Research and Services, 
Elementary Teaching Certificate 30
Examination, Senior, for Honors 30
Executive Board, Local ....... 1
Examination of Course Descriptions 14
Extension, Continuing Education and Public Service 9

Facilities ........................
Family Housing ................. 12
Falsehood or Suppression of Information 12
Family Housing ................. 12
Fee Schedule ................... 9
Blue Cross (optional) ....... 11
Building ........................ 9
Change of Enrollment ......... 10
Credit Examination .......... 10
Dishonesty Checks ............ 10
Field Trips ......................
Graduate Students ........... 10
Health Service ................ 9
Incidental ......................
Late Registration .............. 10
Limited Registrants ........... 9
Listeners ........................
Motor Vehicle Registration 9
Music, Studio .................. 9
Non-resident ................... 9
Payment of ...................... 9
Public Laws 634 or 815 .... 15
Refunds ........................ 10
Registration ........................
Removal of Incomplete ....... 10
Special Examination ....... 10
Special Purposes .............. 10
Student Activity .............. 6
Student Union ................ 9
Summary ........................ 10
Summer ........................ 10
Terminal Graduate Student ....
Transcript of Record ......... 9
War Service Exemptions .... 9

Financial Aid .......... 12
Financial Need Analysis (Financial Aid) 12
Financial Obligations ....... 12
Fine Arts, School of ......... 12
Forest and Conservation Experiment Station 7
Foundation and Name ........ 9
Fraternity and Sorority Houses 12
Freedom of Expression ........ 12
Functions and Goals, University 2

Government, Research, Bureau of 3
Grade Point Requirements (Quality of Work) ....

On Transfer Credits ........ 7
Grade Points ................... 7
Grades .......................... 9
Graduate School .............. 9
Graduation, Catalog Governing .... 8
Graduation, Requirements for ....
Graduation With Honors or High Honors ....
Group Requirements ........... 7

Health Service, Student ........
Honors, Senior Examination for ....
Housing, Family ............... 11
Housing, Student .............. 11

Incognitive Grades, Fee for Removal 10
Incomplete Grades, Removal of ....
Independent Work .............. 6
Instruction, Organization of ....... 13

Leaves of Absence ............ 13
Library ....................... 2
Limited Registrants .......... 9
Liquor ........................ 13
Listeners ........................

Major, Credits for .......... 8
Motor Vehicles, Use of ....... 12
Music Fees ..................... 60

Non-Resident Fees ........... 9
Number System, Courses 14

Organization of Instruction .... 13
Orientation ..................... 5

Payment of Fees ............... 9
Placement Center ................
Placement in Foreign Languages 7
Press and Broadcasting Research, 
Property ......................... 3
Public Service, Division of ....

Quality of Work ............... 7

Refunds (Fees) ................ 10
Registration .....................
University Employees' ........
Registration Fee ............... 10
Registrar ....................... 5
Registration ..................... 5
Removal of Incomplete, Time Limit 10
Removal of Incomplete Fee ....
Replication of a Course ....... 6
Required Courses ............... 7
Requirements, Groups .......... 7
Requirements of Particular Curricula 8
Residence Halls and Food Service 11
Residence Requirements ....... 7

ROTC ........................... 71

Scholastic Requirements, Minimum 6
School of Business Administration 13, 19
School of Education .......... 13, 20
School of Fine Arts ........... 13
School of Forestry ......... 13, 31
School of Journalism ...... 13, 33
School of Law ............... 13, 54
School of Pharmacy ........... 13, 62
Secondary Teaching Certificate 30
Senior Examination ............ 7
Senior Examinations for Honors 8
Social Science Research, the Institute for .... 3
Special Examination Fee ..
Special Examinations .......... 10
Special Students, Admission of .... 4
Specialization ................ 6
Speech and Hearing Clinic .... 11
Standards of Student Conduct 12
Stella Dunham Memorial Institute 5
Student Housing ............... 11
Student Marriage .............. 12
Student Organizations, Recognition, 
Obligations .................... 10
Student Services .............. 10
Summer Session ............... 9
Support and Endowment ....... 2

Teaching Certificates .......... 30
Teaching Major and Minor Fields .... 32
Transcripts, Fee for ........... 19

University Center .......... 10
University of Montana ...... 2

Veteran Registration (P.L. 634 or 815) .... 9

Waiver of Prerequisite ........ 5
War Service Fee Exemptions 3
Wildlife Research Biology ....
Withdrawal from a course ....
(with changes in program) ....
Withdrawal of a Course ....... 5
Withdrawals from the University 5
Women's Cooperative House 11