1969-1970 Course Catalog

University of Montana–Missoula. Office of the Registrar

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The Montana University System is constituted under the provisions of Chapter 92 of the Laws of the Thirteenth Legislative Assembly, approved March 14, 1913 (effective July 1, 1913).

The general control and supervision of the University System are vested in the State Board of Education, ex-officio Regents of the Montana University System. For each of the component institutions there is a local executive board.

MONTANA STATE BOARD OF EDUCATION
Ex-officio Regents of the Montana University System
FORREST H. ANDERSON, Governor Ex-Officio President
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T. T. HEDERLY, 1977 Havre

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

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

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

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

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

EASTERN MONTANA COLLEGE, BILLINGS
Established March 12, 1927, and consisting of
The School of Liberal Arts
Division of Humanities
Division of Science and Mathematics
Division of Social Science
The School of Education
Division of Elementary and Secondary Education
Stanley J. Heywood, President

NORTHERN MONTANA COLLEGE, HAVRE
Established March 8, 1929, and consisting of
The Division of Education—Elementary, Secondary, Vocational-Technical, Graduate
The Division of Basic Curricula—Two-year General College and Pre-Professional Courses
Joseph R. Crowley, President

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

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

use of the catalog...
1. Students should study with care those sections on REGISTRATION AND GENERAL REGULATIONS and on GRADUATION REQUIREMENTS. This information should be reviewed before registration periods.
2. When checking on particular courses, be sure to review COURSE DESCRIPTIONS (see Index).
3. Detailed fall quarter class schedules carry course forecasts for winter and spring quarters, for which detail is usually available by the middle of each preceding quarter.
4. If you have selected a major, study carefully the specific additional requirements for graduation listed under your chosen field. You are responsible for planning your program.
5. When in doubt as to meanings or interpretation of listed information, consult your adviser or department chairman.

UNIVERSITY OF MONTANA BULLETIN
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calendar 1969-1970...

UNIVERSITY OF MONTANA

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

1969

AUTUMN QUARTER

September 22-27, Monday through Saturday.........Orientation Week
September 25-28, Thursday and Friday..............Registration
September 29, Monday..................................Instruction begins
November 11, Tuesday..................................Veterans' Day, a holiday
November 27, Thursday................................Thanksgiving Day, a holiday
December 19, Friday, 5:20 p.m.........................Autumn Quarter ends

1970

WINTER QUARTER

January 5, Monday......................................Instruction begins
February 17, Tuesday..................................Charter Day
March 17, Tuesday, 5:20 p.m...........................Winter Quarter ends
June 7, Sunday........................................Commencement

SPRING QUARTER

March 29, Thursday.....................................Instruction begins
May 30, Saturday.......................................Memorial Day, a holiday
June 5, Friday, 5:20 p.m................................Spring Quarter ends

SUMMER QUARTER

June 15, Monday (9 weeks and First Half-Session) Instruction begins
July 4, Saturday........................................Independence Day, a holiday
July 15, Wednesday.....................................First Half-Session ends
July 16, Thursday........................................Second Half-Session begins
August 14, Friday, 5:20 p.m.........................Summer Quarter ends

AUTUMN QUARTER

September, 21-26, Monday through Saturday........Orientation
September 24-25, Thursday and Friday..............Registration
September 29, Monday..................................Instruction begins
November 11, Wednesday................................Veterans' Day, a holiday
November 27, Thursday................................Thanksgiving Day, a holiday
December 18, 5:20 p.m................................Autumn Quarter ends

Christmas recess begins

official directory, 1968-1969...

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THEODORE JACOBS, MISSOULA
ALEX M. STEPHANOFF, MISSOULA

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ROBERT E. GORMAN, ED.D.............Director of Counseling Center

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Berger, Bertrand, M.A., Loyola University; Associate Professor of Microbiology

Berger, Bertrand, M.A., Loyola University; Associate Professor of Forestry

Berger, Bertrand, M.A., Loyola University; Associate Professor of Mathematics

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Berger, Bertrand, M.A., Loyola University; Assistant Professor of Sociology
8—OFFICIAL DIRECTORY

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about the university . . .

FOUNDING 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, 1965, 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—Lower Flathead, Bitterroot, Clark Fork, Blackfoot and Frenchtown.

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

Each of the professional schools or departments with additional accrediting is approved by the appropriate national accrediting organization: the American Association of 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 biennial legislative appropriations and student fees. It also receives gifts, grants and endowments, for general development, 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 Board of Higher 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 offices of the executive secretary are 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 world in which he lives and to the heritage of free men and institutions. It seeks to liberate his intellectual capacities for continued learning and to deepen his awareness of ethical and aesthetic values. 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 general 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 insights and discoveries of the past and stimulates the individual to seek new insights and discoveries, (e) provides maximum opportunities for each student to develop his individual talents and capacities and (f) encourages a growing awareness of the significance of ethical values and the personal and social responsibilities of the educated person.

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 is Fort Missoula where the University owns a parcel of 266 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 450,000 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 area 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 1949. The dean of the School of Forestry was designated as director. The act specifies that the purpose of the station are:

"To study the growth and the utilization of timber . . . To determine the relationship between the forest water conservation and waterflow regulation; the forest and pasture for domestic livestock and wildlife; the forest and recreation and the other divisional services and failures that may be secured by the maintenance of or the establishment of forest or woodlands . . . To study and develop the establishment of windbreaks, shelter belts and woodlots on the farms of the State, to study logging, lumbering and milling operations and other operations dealing with the products of forest soils with special reference to their improvement . . ."

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

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

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

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

THE BUREAU OF GOVERNMENT RESEARCH, an adjunct of the Department of Political Science, furnishes an opportunity for independent faculty research, provides a training ground for undergraduate and graduate students and serves public officials and civic groups through organizing institutes and preparing publications. It is an information clearinghouse with collections of state legislative materials and publications of governmental agencies and similar bureaus and publications. The program includes the preparation of pamphlets and monographs prepared by bureau staff, University faculty and other professionals in the field.

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

The purpose of the Cooperative Wildlife Research Unit is stated in the Memorandum of Understanding signed jointly by representatives of the above cooperating agencies as follows:

"To provide assistance to active school districts in the development, 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 and the unit leader. The research should be helpful, but no loss of time would be involved if the student did not take them in high school.

CREDENTIALS . . . Applications for admission should be sent to the Director of Admissions, University of Montana, Missoula, Montana 59801, on forms which may be obtained from high school principals or by writing to the director of admissions at the University. Applications should be sent in at least a month before registration. The following credentials are required: (a) completed application and high school transcript on forms provided by the University of Montana; (b) official transcript from each college attended, including the institution in which the student must be in good standing, carrying a statement of honorable dismissal from the last college attended; and (c) a completed University Health Record Form signed by a qualified physician and mailed by him directly to the University Health Service.

ADMISSION APPLICATION FEE. Effective fall quarter 1968, a non-refundable $10 fee must be sent with the application for admission by all under-graduate applicants (applicants with less than a baccalaureate degree).
TESTING . . . All new freshmen, and transfer students with less than a full year in college, are required to take the AMERICAN COLLEGE TESTING PROGRAM examination preferred by October 1st or December 1st. This test also is offered in February, May and August. 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 REGISTRAR, 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 non-resident admissions.

New freshmen who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance and have the results sent to the University will pay 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:

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

When the student arranges to take the test, he may request the EDUCATIONAL TESTING SERVICE (ETS) to send the examination results to the Director of Admissions, University of Montana, Missoula, Montana 59801.

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 or creed are not relevant to admission.

RESIDENT: Graduates of any fully accredited Montana 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, including three years of English and one year of American history and government, is the standard for general admission.

NON-RESIDENT: Entering freshmen must be in the upper 50 per cent of their high school graduating class. If rank in class is not available, scores from the ACT (or College Board Test, requiring a separate English placement exam) will be used to establish the equivalent level of competency.

BY EXAMINATION: A person not a graduate of an accredited high school may be admitted by proving competency on examinations. The examinations, on not less than fifteen units of secondary school work, must cover the specifically required courses in English and American history and government. Credit is allowed for any courses taken in an accredited high school.

The State Superintendent of Public Instruction issues a high school equivalency certificate under authorization of the State Board of Education on the basis of the General Educational Development Tests. These certificates are granted to service personnel, honorably discharged veterans and non-veteran adults, upon the applicant meets requirements.

Registration 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 non-resident admissions.

New freshmen who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance and have the results sent to the University will pay 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:

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

When the student arranges to take the test, he may request the EDUCATIONAL TESTING SERVICE (ETS) to send the examination results to the Director of Admissions, University of Montana, Missoula, Montana 59801.

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 or creed are not relevant to admission.

RESIDENT: Graduates of any fully accredited Montana 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, including three years of English and one year of American history and government, is the standard for general admission.

NON-RESIDENT: Entering freshmen must be in the upper 50 per cent of their high school graduating class. If rank in class is not available, scores from the ACT (or College Board Test, requiring a separate English placement exam) will be used to establish the equivalent level of competency.

BY EXAMINATION: A person not a graduate of an accredited high school may be admitted by proving competency on examinations. The examinations, on not less than fifteen units of secondary school work, must cover the specifically required courses in English and American history and government. Credit is allowed for any courses taken in an accredited high school.

The State Superintendent of Public Instruction issues a high school equivalency certificate under authorization of the State Board of Education on the basis of the General Educational Development Tests. These certificates are granted to service personnel, honorably discharged veterans and non-veteran adults, upon the applicant meets requirements.

Detailed information will be sent on request.

EARLY: A limited number of high school students who have completed their junior year may be granted early admission with specific agreement and recommendation of the high school and the University.

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

TRANSFER: A transfer student who is a Montana resident must meet general admission 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.

Non-resident transfer students must meet all the requirements above for Montana transfers and have a transcript proving a C average on all college work attempted.

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

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.

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

AS A SPECIAL STUDENT: Persons 21 years of age or older who are not graduates of high schools, who cannot meet all the requirements for regular standing, but are prepared to pursue successfully college courses.

Special students may acquire status as regular students and become candidates for degrees by taking the 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.

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 this 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 WEEK . . . The first week of autumn quarter is set aside for the orientation and registration of new students. The program includes: (1) acquainting the student with the campus, the classroom buildings and residence halls; (2) explaining the University program in detail—the types of instruction offered and the careers for which a student may prepare at the University; (3) various tests to help student determine University aptitudes and the courses in which he or she will learn most effectively; (4) social gatherings at which students become acquainted with fellow classmates, students of other classes and members of the faculty; 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 advisor. 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
- Biology
- Botany
- Chemistry
- Communication
- Speech Communication
- Speech Communication Education
- Speech Pathology and Audiology
- Economics
- Economics-Political Science
- Economics-Sociology
- English
- French
- Geography
- Geology
- German
- Health, Physical Education, Recreation
- History

Bachelor of Science, with majors in:
- Chemistry
- Computer Science
- Health and Physical Education
- Home Economics and Recreation
- 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
- Music
Bachelor of Fine Arts with majors in
- Elementary Music
- Choral Conducting
- Instrumental Conducting
- Choral and Instrumental Conducting
- Music Administration
Bachelor of Science in Forestry
Bachelor of Science in Resource Conservation
Bachelor of Arts in Journalism
Bachelor of Science in Pharmacy
Bachelor of Arts in Radio-Television

ADVANCED PROFESSIONAL DEGREES

Bachelor of Laws
Juris Doctor

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 count toward the maximum load according to the number of class hours per week.

All requests for credits beyond the maximum must be approved by the student’s major dean (professional schools) or department chairman (College of Arts and Sciences).
MINIMUM SCHOLASTIC REQUIREMENTS . . . A student may be dropped from the University or placed on probation any quarter if his record is very unsatisfactory. These requirements are applicable to all students, effective fall quarter 1969.

<table>
<thead>
<tr>
<th>Number of Credits Attempted</th>
<th>Minimum Cumulative GPA Required</th>
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<tbody>
<tr>
<td>1-44</td>
<td>1.0</td>
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<tr>
<td>45-89</td>
<td>1.75</td>
</tr>
<tr>
<td>90-134</td>
<td>1.9</td>
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<tr>
<td>135 or more</td>
<td>2.0</td>
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In order to graduate, a minimum grade-point average of “C” or 2.0 is required in (1) all college work attempted, (2) all college work undertaken at the University of Montana and (3) all work attempted in the major field.

Students 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 topics or problems chosen by themselves with the approval of the departments concerned and with the supervision of instructors. Such work must be registered for at the beginning of the quarter. The student cannot obtain a larger number of credits than he is registered for, but a smaller number may be completed and credit obtained with the instructor's approval.

CREDIT BY EXAMINATION . . . Under certain circumstances, a student may challenge and receive credit for a course in which he has not been regularly registered. The challenge system does not apply to law courses. Each school or department determines which, if any, courses within the department may be challenged. The dean of the school or head of the department must approve any arrangements prior to testing for challenge credit.

A student must have a 2.0 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.

GRADING SYSTEM . . . The class work of the student will be rated on a system of letter grades: A—work of the best grade; B—work better than average; C—average work; D—work below average, but barely passing; F—failure; P—pass without defining the grade, applies only to (1) non-credit courses and (2) certain seminars and courses in the 100-299 series designating independent work, which are designated by the department concerned and announced in advance. The P grade must apply to all registrants in the course. Students in physical education 100, may elect to be graded on a pass-fail basis or by the letter grade system. The grade F—Incomplete, is given if all the work in a course has not been completed and there is sufficient reason for this. An I will be changed to an F if the work is not completed during the student's next quarter of attendance.

In research and thesis courses, the letter “N” not accompanied by a grade is assigned at the end of each quarter to indicate that the student is entitled to continue the course. Completing the course, the student is assigned a grade which applies to the whole course.

Grade points are computed as follows: 4 grade points for each credit of A; 3 grade points for each credit of B; 2 grade points for each credit of C; and 1 grade point for each credit of D.

The cumulative grade-point average is computed by dividing total grade points by the total number of hours undertaken, excluding non-credit courses, courses assigned W, P, 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 selectively by schools or departments for any or all of their majors. English 150 must be taken during the freshman year. English 250 and 350, if required, may be taken during any two of the three remaining years, but in no case will any student be allowed to take both English 250 and English 350 in the same year.

Placement in English is determined from the ACT examination. Those who fail to demonstrate an acceptable college standard must take English 001 without credit and receive a "pass" before enrolling in English 150. English 001 is offered through the Extension Division.

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

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

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

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

Groups III and IV. At least 12 credits in each of Groups III and IV, in each group at least 8 of the required 12 credits must be in one discipline.
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 dean or 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 candidates for the degree of Juris Doctor; (b) they must complete the general University requirements shown in the following 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 two hours of laboratory work. 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 a year in which the student was enrolled for the first time in any year or more, he must graduate under the catalog in effect at that time. A student may, with the approval of his dean or department chairman, graduate under a later catalog than that under which he entered. The professional degree, Bachelor of Fine Arts, requires 110 credits in art.

CREDITS REQUIRED FOR A MAJOR . . . Students may be required to complete from 45 to 70 credits in the chosen field. For degrees in education, the number of credits is from 40 to 70. In curricula allowing 5 credits of a survey course to count as part of major requirements, the total maximum of elective credits allowed in the major includes these 5 credits. This rule on maximum credits allowed does not apply in the Schools of Business Administration, Forestry, Journalism, Law, Pharmacy and the music department in the School of Fine Arts. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.

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

Except in the music department, not more than 12 credits in applied music (Music 100, 201 through 401, 114 through 119; 125, 126, 127, 128, 129, 130) nor 6 credits in ensemble music (Music 105 through 110, and 140) may be counted toward graduation.

Only students majoring in business administration or those taking a teaching major or minor in business administration are required to present more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188 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 in each department or school at the convenience of the persons concerned. If the student fails to pass this special examination, he shall be given another opportunity within six months without the necessity of taking additional courses. In case of a second failure, further opportunity will be granted at the discretion of the department or school concerned and the committee on graduation. For details, check under the alphabetically listed curricula in the catalog.

**GRADUATION WITH HONORS OR HIGH HONORS** . . .

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

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

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

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

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 1970 summer session will open June 22 and close August 21; the first half-session, June 22 to July 22; the second half-session, July 23 to August 21.

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

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

Courses will be offered in all of the basic arts and sciences, as well as in the areas of business administration, education, 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 by the dictates 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 session.

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**the graduate school** . . .

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

Detailed information on requirements for particular degrees may be secured by writing to the dean of the school or the department chairman involved.

**financial obligations** . . .

**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 $109 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.

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**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 1969-70 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.

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

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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.
ORGANIZATION

ALL STUDENTS REGISTERED

FOR SEVEN OR MORE CREDITS

Registration $15.00
(Many honor scholarships entitle the holder to a waiver of the registration and incidental fees)
Incidental (for laboratory supplies in all courses, diploma, etc.) $60.00
Building 20.00
Student Union Building 10.00
Student Activity 15.00
For support of activities sponsored by the Associated Students of the University of Montana. (Optional to students who have a B.A. or B.S. degree and to students registered for less than seven credits.)
Health Service 13.00
(Required of all students enrolled for class work.)

--- Motor Vehicle Registration Fee (drivers only) 9.00
Total fall quarter $142.00

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 FEES 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 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 Building $5; 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 student 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, plus $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. The fee also is payable by students who register during the prescribed registration period except for payment of fees. If a bank declines payment of a personal student check and returns it to the University and such action is due to fault of the student, the fee shall be charged from the date of the check tendered by the student to the University.

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 1/2-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.

REGULAR STUDENTS

Week of Instruction
First Second Third
Registration None None None
Incidental 75% 50% 50%
Building 100% 50% 50%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service 100% 50% 50%
(No refund if medical service furnished or physical examination taken)
Non-Resident Tuition 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.

REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS

Registration None None None
Incidental 40% 20% 20%
Building 50% 25% 25%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service None None None
Non-Resident Tuition 80% 60% 40%
student organizations...

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 new University Center (Student Union), completed in January 1969, 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, ball room, coffee shops, bowling lanes, billiard and cards rooms, lounges, student legislative chambers, offices, lounges, work areas, music listening rooms, hobbies and craft areas, art gallery, conference areas, ball room, coffee shops, bowling lanes, billiard and cards rooms, lounges, library, including student legislative chambers, offices, lounges, work areas, music listening rooms, hobbies and craft areas, art gallery, conference areas, ball room, coffee shops, bowling lanes, billiard and cards rooms, lounges, library, gymnasiu...
ter also aids University graduates in later years in finding new positions for which both a degree and experience are required.

University placement services are provided free of charge to graduates except for a $5 fee for compiling credentials. No additional charge is made in subsequent years. All University students are covered by these services. The Placement Center is located in the Liberal Arts Building.

STUDENT HOUSING includes eight residence halls, two housing areas for married students, a women's cooperative house and nine fraternity and six sorority houses. Rooms are available also in private homes in Missoula.

REGULATIONS . . . Freshman students, both men and women, who are unmarried and under 21 years of age and who are not living in their own homes while attending the University are required to live in University residence halls unless excused as special cases by the dean or associate dean of students.

Upperclass, unmarried, undergraduate women under the age of 21 are required to live in women's residence halls or with approved living groups unless excused as special cases by the associate dean of students.

Women students between the ages of 21 and 24, inclusive, may live in the 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 they elected to live in the hall after 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.

"NO-HOURS" PRIVILEGE . . . All men's residence halls and at least one of the women's halls are operated on a "no-hours" basis. Women students may chose to live in a "no-hours" residence hall if they are: (1) over 21 and if space is available; (2) seniors (minimum 135 credits); (3) sophomores and juniors (minimum 45 credits and not less than 135 credits) and have parental permission.

RESIDENCE HALLS AND FOOD SERVICE . . . Application forms and detailed information may be obtained by writing to the Admissions Office, University of Montana.

Dormitory charges must be paid in advance at the beginning of the quarter or in installments as arranged with the Financial Aid Office. This installment plan is available only on a full-year basis with both fees and board and room included.

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. This fund is expended for social activities which are planned by the group.

Board is provided by the Food Service for the residents of all halls. Experienced dietitians provide appetite 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 housing and meals. When costs go up, charges for these services must go up unless the services themselves are to be allowed to suffer unduly in quality or quantity. New or additional services, when demanded, also require additional charges. Such charges are fixed from time to time, effective 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 pledges 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 has available for its students an extensive program of financial aid and participates in the College Scholarship Service (CSS) and the Air Force Aid Service. Aid is also administered by colleges and universities in determining the student's need for financial assistance. Entering freshmen seeking financial help through loans, grants or the Work-Study program should submit a copy of the Parent's Confidential Statement (PCS) form to the College Scholarship Service or the Family Financial Statement to ACT by March 1. The student should indicate on the statement that he intends to enroll at the University of Montana. The forms may be obtained from a secondary school or the University Financial Aid Office.

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

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

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

SCHOLARSHIPS AND PRIZES: The University offers many rewards for outstanding academic achievement. Many are available for those who apply for admission to the University. Graduate scholarships are administered by the graduate dean and undergraduate scholarships by the dean of students. Prize awards relating to specific departments are awarded by the department concerned.

standards of student conduct . . .

Personal honor and self-discipline play a large part in one's success in the University. A record, built during undergraduate years, for integrity and personal honor is as important for future success as academic accomplishment. The policy of the University, therefore, is pointed toward student development along both lines.

This policy begins with the assumption that all students coming to the University have common sense and normal conceptions of honor, morality, integrity and respect for order and the rights of others. It also assumes that all students have a respect for the University and regard their attendance here as a privilege, not a right; that, in a sense, each generation of students feels it has a responsible
stewardship and desires to leave for future generations of students a University even better in fame and reputation than the one they have known.

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

Every student knows that to be personally honorable he cannot lie, cheat, steal, be destructive of public or private property, participate in riotous activity, be guilty of immoral acts or be in violation of University or local law. The rights and lives of others or be oblivious to the laws of city, state or nation. Guilt in any of these areas, he knows, is not good citizenship and can result in the withdrawal of his privilege of attending the University.

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

UNPAID BILLS . . . Individual students who owe bills to the University for fees, fines, board and room in the residence halls and dormitories are not permitted to register for the succeeding quarter, secure transcript of record or obtain diplomas until the obligation is paid or satisfactorily adjusted. Similar action is taken when students owe bills to student organizations whose books are kept in the Business Office of the University of Montana, including charges for board and room in fraternity and sorority houses.

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 motor vehicles.)

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 who drive cars should be adequately covered by insurance (liability, property damage, medical payments, etc.).

LIQUOR . . . The use or possession of intoxicating liquor (including beer) in the buildings and on the grounds of the University or 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. Students violating this regulation are liable to suspension or expulsion. Other University students are expected to abide by state and federal laws in the use or possession of intoxicating liquor or drugs.

DRUGS . . . Use, sale or possession of various drugs including opium, heroin, cannabis, marijuana, Indian hemp, peyote, mescaline and others are made illegal under both federal and state laws. The punishment for violating these laws is very severe with conviction resulting in long-term imprisonment (usually two to forty years) and with special limitations on the convicted drug offender’s right to probation and parole. Further, with the advent of LSD and STP and the increasing use of stimulants or depressants, the federal law has been broadened to include barbiturates, amphetamines and other non-narcotic drugs with similar effects on the central nervous system. The penalties for illicit use or possession of these drugs are usually a fine or imprisonment for less than two years. This is heresy. It is harm. Every student should be fully aware of the risks involved in violating the drug laws.

The illegal use or sale of drugs is also a violation of University regulations. Therefore, it is essential that the University take action toward any student who illegally uses or sells drugs. The University will arrange for transfer to professional rehabilitive services, may place him on probation, may suspend him, may expel him or may take such other action as it deems justifiable under the circumstances of the case. However, the action taken by the University will in no case be directed toward punishing the drug offender but only toward achieving the fundamental University objectives of helping the individual student and providing the best possible educational environment for the entire student body.

STUDENT MARRIAGES . . . The Montana Statutes on marriage require (a) parents’ (or guardian’s) consent for marriage under 18 years of age and 21 years of age 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.

FALSIFICATION OR WILLFUL SUPPRESSION of any information called for on any University form will be grounds for cancellation of registration. This includes falsification of advisers’ signatures on program request cards.

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 University, with the person in charge of the Board of Judicial Review appointed by the President. If the members disagree 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.

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

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, the students must submit a written statement to 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 program 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
Communication
Computer Science
Dental Hygiene
Economics
English
Foreign Languages
French
German
Greek (no major)
Italian (no major)
Latin
Russian
Spanish
Geography

SCHOOL OF BUSINESS ADMINISTRATION

Accounting Management
Business Education Marketing
Finance Office Management
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

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

SCHOOL OF JOURNALISM

Advertising News-Editorial Magazines Radio-Television

SCHOOL OF LAW

SCHOOL OF PHARMACY

AFFILIATED SCHOOL OF RELIGION (no major)

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
500-599 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.

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

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 year) 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
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 include the following fields in which actual 152, 153, 355, 391, 392, 383. In addition, one course in ethnology and one course in archaeology must be taken. Not more than 20 total credits in the following variable credit courses may be counted toward the degree: Anth 353, 356, 451, 530, and 551. The following sociology courses must be completed: Soc. 101, 201, and 205; English 360; Geography 355; 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. The departmental English composition requirement must be completed.

GRADUATE WORK. See Graduate School Bulletin FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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 groups, institutions—economic life, religion, political forms, education, and arts.

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

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

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 and identical Sociology 308.)

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 =. The origins and distribution of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field courses in which 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 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.

358 PHYSICAL ANTHROPOLOGY 4 prereq 152 or =. The history, evolution, and present nature of man's bodily structure. Identification and determination of age and sex of human osteological materials.

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

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

362 INDIANS OF SOUTH AMERICA 4 prereq 152 or 153 or =. The cultures of the Indians of South America.

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

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

366 NORTHWEST ETHNOLOGY Any quarter in which field parties are organized. V 1-5 R-12 prereq 152 or 153 or = and c/i. A field course. Indian tribes of Montana and related areas.

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

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

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

372 CULTURE AND THEORY 4 prereq 152 or 153 or =, and Soc. 310. The development of theory and method in cultural anthropology since the present. Various archaeological, ethnological, and socio-psychological theories in the light of historical anthropology.

375 APPLIED ANTHROPOLOGY 3 prereq 152 and 153 or c/i. Analysis of case material in which anthropological assumptions, facts, theories and methods have been applied to implement desired socio-cultural change. Problems of cross-cultural conflict and adjustment. Relevance of anthropological knowledge to native administration.

380 HISTORICAL LINGUISTICS 4 prereq 152 or 153 or =, and English 360. Some significant theories and methodological assumptions of selected schools of linguistic theory.

383 LANGUAGE AND CULTURE 3 prereq 119 and c/i. Analysis of relationships between languages and cultures of the world. (Also listed as Speech 383.)

385 PEOPLES OF THE FAR EAST 4 prereq 152 or 153 or =. The cultures and culture of China, Japan, Korea, Southern Asia, and adjacent areas.

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


451 ADVANCED PROBLEMS V 1-2 R-6 prereq 152 or 153 or =, and c/i. (Only 1 unit credit per quarter.)

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

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

473 CULTURAL DYNAMICS 3 prereq 152 and 153. The processes of cultural change, acculturation and integration.

480 LINGUISTIC METHODS 3 prereq 383 and c/i. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant. (Also listed as Speech 480.)

FOR GRADUATES

530 PRECEPTORIAL READINGS V R-9 prereq 152, 153, and 10 upper division credits in anthropology. Readings in the major divisions of anthropology, ethnology, etc.

551 RESEARCH V.


699 THESIS V R-9.
ART

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Bachelor of Arts Degree with a major in Art: 58 or more credits (up to a maximum of 70) including Drawing 12 cr., Design 6 cr., Art History 9 cr., Painting 9 cr., Sculpture 9 cr., Ceramics 2 cr., Printmaking 2 cr., Lettering 2 cr., Photography 2 cr., and elective as desired or needed. The departmental English composition requirement 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, Painting and Watercolor 12, Design 6, Ceramics 6, Printmaking 6, Photography 4, Lettering 2, Art History 15, Sculpture 12 and art electives 33 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 at least 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.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


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. Pen and brush lettering, commercial art techniques.

200 SURVEY OF WESTERN ART: THE ANCIENT WORLD 3.

201 SURVEY OF WESTERN ART: EARLY CHRISTIAN TO MANNERISM 2 prereq 200.

202 SURVEY OF WESTERN ART: MANNERISM TO PRESENT 3 prereq 201.

215 PHOTOGRAPHY 2 R-6 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.

233 (133) SCULPTURE 3 R-9 prereq 9 credits of 123.

239 (139) WATERCOLOR 3, Su 2 R-6 prereq 9 credits of 123. Offered by extension for 1 credit.

240 (140) PAINTING 3, Su 2 or 4, R-9 prereq 9 credits of 123 or c/l. Variable credit by extension. Techniques of oils and related media.

FOR UNDERGRADUATES AND GRADUATES

300 INTRODUCTION TO ART EDUCATION 2.

303-304 ELEMENTARY SCHOOL ART 3. Variable credit by extension. (303) Individual experience in Media; creative processing techniques.


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 335.

340 ADVANCED PAINTING V 2-6 R-6 prereq 9 credits of 340.

383 EARLY RENAISSANCE 3 prereq c/l.

384 HIGH RENAISSANCE 3 prereq c/l.

385 BAROQUE AND ROCOCO ART 3 prereq c/l.

386 EUROPEAN ART 1750-1800 3 prereq c/l.

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

393 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 315.

423 INDEPENDENT WORK IN DRAWING 2 R-6 prereq 4 credits of 323.

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

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

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

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

440 INDEPENDENT WORK IN PAINTING V 2-6 R-15 prereq 6 credits of 346.

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 R-15.
BIOLOGY deals with living things. This program provides basic education in the biological sciences (botany, micro-biology, and zoology). It is intended for students who wish to work in the broad area of biology rather than in one of the specific fields, particularly for those who plan graduate work in the interdisciplinary areas of biology or the medical sciences, and for those who plan to teach biology at the secondary level.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BIOLOGY. In addition to the general requirements listed earlier in the catalog the following special requirements must be completed for a Bachelor of Arts degree with a major in Biology: 55 or more credits in Biology including Botany 111, 114, 115; 2 credits of 495 and at least one course from each of the following groups: (1) Morphology, Botany 250, 251, 252, 253, 257, 258, 259; (2) Evolution: Botany 360, 361, 362, 363, 364, 365, 366, 367; (3) Genetics: Botany 265, 266, 267, 268, 269, 270, 271, 272, 273; (4) Anatomy-Cytology: Botany 433, 434, 435; (5) Taxonomy 265, 266, 267, 268, 269, 270, 271, 272, 273. Recommended: Chemistry 112, 113; Mathematics 150, 250, 255; Microbiology 260; Chemistry 160 or 261; Physics 110-112, 113 or 221, 222, 223; Recommended electives: Geography 350, Geology 110; Chem. 481, 482; and a course in statistics. The foreign language requirement listed in the catalog must be satisfied: French or German preferred.

The following courses in allied sciences must be completed: Chemistry 121-122-123 (College Chemistry), Chemistry 281-293 (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).

The foreign language requirement listed earlier in the catalog must be satisfied. English 150, 250 and 350 are required.

BOTANY is the study of various aspects of plant life, such as form, structure, physiology, reproduction, classification, evolution and distribution. The study of plants provides any educated person with a better understanding of his environment and a greater comprehension of general biological principles. It is a basic science for many professional fields such as forestry, pharmacy, agriculture, horticulture, plant pathology and plant breeding. A degree in botany will also prepare the student to make satisfying use of such leisure time activities as gardening, landscaping and other forms of outdoor recreation.

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

Besides offering a Bachelor of Arts degree, the department also offers opportunities for graduate work (see Graduate School) leading to the Master of Arts, Master of Science and the Doctor of Philosophy. Following are the major areas of botany: Anatomy, Cytology, Ecology, Morphology, Mycology, Paleobotany, Physiology, Forest Pathology and Taxonomy. More detailed information can be obtained from the chairman of the department.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs chemistry and 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 BOTANY. 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 Botany: 45 credits in Botany including Botany 111, 114, 115; 2 credits of 495 and at least one course from each of the following groups: (1) Morphology: Botany 250, 360, 361, 362, 363, 364, 365, 366, 367; (2) Evolution: Botany 259, 333, 334, 335, 336, 337, 338, 339, 340; (3) Genetics: Botany 265, 266, 267, 268, 269, 270, 271, 272, 273; (4) Anatomy-Cytology: Botany 433, 434, 435; (5) Taxonomy 265, 266, 267, 268, 269, 270, 271, 272, 273. Recommended: Chemistry 112, 113; Mathematics 150, 250, 255; Microbiology 260; Chemistry 160 or 261; Physics 110-112-113 or 221, 222, 223; Recommended electives: Geography 350, Geology 110; Chem. 481, 482; and a course in statistics. The foreign language requirement listed in the catalog must be satisfied: French or German preferred.

Courses 265, 266, 267, 268, 269, 270, 271, 272, 273 may require field trips extending some miles from the campus. Students are required to pay their pro rata share of transportation, insurance, etc. costs for such trips.

Suggested first year program:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Course Description (Index)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>FIELD BOTANY 3 (0-6). The collection, preservation and identification of plants and consideration of where they grow. Given only as an extension course. Credit not allowed toward degree in Botany.</td>
</tr>
<tr>
<td>111</td>
<td>INTRODUCTION TO BIOLOGY 5 (3-4). An introduction to the basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanics of evolution and adaptation. Credit not allowed for this course and Zool 111.</td>
</tr>
<tr>
<td>114</td>
<td>(113) GENERAL BOTANY 5 (3-4) prereq 111 or =: A survey of the morphology, reproduction and evolutionary relationships of the various plant groups.</td>
</tr>
<tr>
<td>115</td>
<td>(112) GENERAL BOTANY 5 (3-4) prereq 114 or =: An introduction to the anatomy, physiology and ecology of higher plants.</td>
</tr>
<tr>
<td>250</td>
<td>BASIC CONCEPTS OF ECOLOGY 3 (3-0) prereq one year of college biology. Introduction to ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Zool 250.)</td>
</tr>
<tr>
<td>251</td>
<td>ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq or coreq 250. Population and community composition, distribution, and interrelationships with environmental factors. Field work included. (Credit not allowed for this course and Zoology 251.)</td>
</tr>
<tr>
<td>265</td>
<td>(123) LOCAL FLORA 4 (3-4) prereq 114. An introduction to the identification of flowering plants.</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES AND GRADUATES

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>325</td>
<td>(225) PLANT PHYSIOLOGY 5 (3-4) prereq 115 and Chem 160 or 123. An introduction to the chemical and physical basis of metabolism, photosynthesis, nutrition, water relationships and growth of plants.</td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>CELLULAR PHYSIOLOGY (see Zoology)</td>
<td></td>
</tr>
<tr>
<td>334</td>
<td>MICROTECHNIQUE 3 (1-4) prereq 15 cr. in Botany. Techniques of preparing cleared whole mounts, cytological squashes, woody and non-woody celloloidin mounts; maceration of wood; use of freezing, sliding and rotary microtomes.</td>
<td></td>
</tr>
<tr>
<td>355</td>
<td>PRINCIPLES OF PLANT ECOLOGY 5 (3-4) prereq 250, 251 and 335. Plants and plant communities in relation to their physical and biotic environment. (Six credit course at Biological Station.)</td>
<td></td>
</tr>
<tr>
<td>365</td>
<td>SYSTEMATIC BOTANY 5 (2-6) prereq 115 or =: The identification and classification of higher plants, collecting and preserving of vascular plants. (Credit not given for both 265 and 365. Given for 6 cr. at the Biological Station.)</td>
<td></td>
</tr>
<tr>
<td>366</td>
<td>AGROSTOLOGY 5 (2-6) prereq 285 or =: Identification, classification, and ecological relationships of grasses, sedges, and rushes. (Given for 3 cr at the Biological Station.)</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>AQUATIC FLOWERING PLANTS 3 (0-7) prereq 285 or =: Identification, classification and ecological distribution of the higher aquatic flowering plants.</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>FOREST PATHOLOGY 4 (3-4) prereq 250 or 355, and For 290-291. The agencies of disease and decay of trees and structural timbers.</td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>CHEMISTRY OF PLANT CONSTITUENTS (See Chem 390 and For 386.)</td>
<td></td>
</tr>
<tr>
<td>463</td>
<td>BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and 1/2 Introduction to the biological sciences. Skills of producing illustrative materials relevant to the biological sciences. (55 special supplies fee. Credit not allowed for this course and Zool 463.)</td>
<td></td>
</tr>
</tbody>
</table>
421 MINERAL NUTRITION 5 (3-4) e/y prereq 325. The absorption, translocation and utilization of nutrients in plants. General requirements of plants: research methods in plant tissue analysis and the culture of plants under controlled nutrient regimes.

422 PHYSIOLOGY OF PLANT WATER RELATIONS 8 (3-4) o/y prereq 325. Water metabolism in plants, plant-soil relationships with emphasis on experimental techniques.

423 (325) RESPIRATORY METABOLISM IN PLANTS 5 (3-4) o/y prereq 325, Chem 260 and Phys 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 420. Plant diseases and the diseases which they cause. The isolation, purification, identification, and host ranges of selected plant viruses.

428 ALGAL PHYSIOLOGY 5 (3-4) prereq 325, 441 or c/l. Comparative macro- and ultrastructure, physiology, biochemistry, and ecology of the photosynthetic bacteria and 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 439, 449 (389). 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 (332) MORPHOGENESIS 5 (4-3) o/y prereq 325 or =. The effect of internal and external factors on the growth and forms of organisms.

434 ADVANCED MICROTECHNIQUE 4 (1-6) prereq 20 cr in Botany or c/i. Training in techniques such as photomicrography, photography, audio-radiography, in vitro culture, etc.

435 (335) PLANT ANATOMY 5 (2-6) o/y, prereq 115 or =. The origin of organs and tissues and the anatomy of vascular plants.

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

439 (339) PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1-6 (6-3/cr) R-6 prereq 435, 436 or 437 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 (341) PHYSIOLOGY 5 (2-6) e/y prereq 115 or =. Morphology, taxonomy and ecology of the algae, especially of the Northern Rocky Mountains (given for 6 credits at the Biological Station).

442 (342) BRYOLOGY 5 (2-6) o/y prereq 115 or =. The morphology, taxonomy and ecology of the bryophytes, especially of the Northern Rocky Mountains (given for 3 cr at the Biological Station).

443 PTERIDIOLOGY 5 (2-6) o/y prereq 115 or =. The morphology, taxonomy and ecology of the pteridophytes, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

445 (345) SPERMATOPHYES 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, 444 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.

459 (359) PROBLEMS IN PLANT ECOLOGY V 1-6 (0-3/cr) R-6 prereq 355 or 353 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.

461 PRINCIPLES OF BOTANICAL NOMENCLATURE 2 (3-0) 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) o/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 370 or 375 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 (3-4) o/y prereq 115 or =. An introduction to the study of fossil plants.

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

485 (355) GENETICS. (See Zoology.)

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

487 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 487.)

489 PROBLEMS IN PALEOBOTANY V 1-6 (0-3 per credit) R-6 prereq 485 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.

490 SEMINAR IN BIOLOGY 1 (2-0). Special problems in Biology. (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

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

522 BSCS BIOLOGY 6 prereq Bachelor's degree: major preparation in Botany, at least 2 years' teaching experience in Biology or Zoology and the secondary level. Basic concepts of biological ecology as applied to the use of American Institute of Biological Sciences. Biological Sciences Curriculum Study (BSCS) Green-Version materials in teaching high school biology. Not to be allowed for a major in Botany.

523 PHOTOBIOLOGY 4 (2-4) prereq 330. The interaction between non-ionizing radiation and biological systems including phototaxis, vision, photoperiodism, bioluminescence; methods for studying effects of light on plants, animals and microorganisms. (Credit not allowed for this course and Zoology 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 (6-10) prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Community concepts including succession, stratification, periodicity and energy relationships; introduction to population problems. Offered at the Biological Station. (Credit not allowed for this course and Zoology 551.)

555 ADVANCED PLANT ECOLOGY 4 (2-4) e/y prereq 555, Math 125 or =. Field and laboratory analysis of theories and methods used in the description and interpretation of plant and environmental relationships.

563-583 TAXONOMY OF VASCULAR PLANTS 5 (3-4) o/y prereq c/l. Classification, distribution and evolutionary relationships of the vascular plants.

584 EXPERIMENTAL TAXONOMY 4 (2-4) e/y prereq 437, 486, 564. Modern concepts in plant taxonomy with emphasis on cytological, chemotaxonomic and other modern approaches to the problems of plant classification.

585 (465) PHYTOGEOGRAPHY 4 (4-0) e/y prereq 355, 486, 562, 563. Geol 101-102 or 110. Vegetation types of the world and their history in North America.

571 ADVANCED FOREST PATHOLOGY 3 (2-2) e/y prereq 373, 415. Mycorrhizal, rust and defoliating fungi and dwarf mistletoes of the forest.

590 MOLECULAR BIOLOGY SEMINAR (see Chemistry 580, Microbiology 580 and Zoology 580).

591 GRADUATE SEMINAR 1 (2-0) R-5 prereq graduate standing in biological sciences.

600 RESEARCH V (0-3/cr) R-15.

699 THESIS V R-15.

COURSES OFFERED AT THE BIOLOGICAL STATION

Many of the courses listed are offered during the summer session at the Biological Station on Flathead Lake. In the past, these have traditionally been Bot 365, 366, 368, 403, 441, 442, 445, 446, 475, 490, 549, 651, 659, 660, 670.
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 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 core of basic courses. The areas of concentration in which the student may specialize are: accounting, finance, business education, general business, marketing, office administration, personnel or production management, and real estate.

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 whose undergraduate training has been in areas other than business administration. Further details may be obtained from the Graduate Studies Bulletin or by specific inquiries directed to: Director of Graduate Studies, School of Business Administration.

PRE-BUSINESS PROGRAM

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

The general university and pre-business administration requirements include: Health and Physical Education 100 (3 quarters, 3 credits), English 150 (fall quarter), English 330 (in the junior or senior years); requirements from Group I; requirements from Group II involving Mathematics, Accounting, Business Education and Finance, Social Studies, History, or English 330 (in the junior or senior years); and Economics 201-202-203; requirements from Group IV; Speech 111 or 112; Business Administration 201-202 and 203. Pre-requisites are prerequisites for all business administration courses numbered 300 and above.

ADMISSION AND GRADE POINT REQUIREMENTS

Admission to the School of Business Administration requires junior high school completion of the required subjects, and a minimum of a "C" average on all credits attempted. To continue work in the School of Business Administration the student must maintain at least a "C" average in all course work in Business Administration and for course work in the area of concentration selected.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

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

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

b. Complete core courses: Economics 301, Bus Ad 322, 340, 342, 350, 357-358, 360, 370, and 446. Core courses may not be taken for graduate credit by Bus. Ad. majors. Non-business majors may arrange, by 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, Finance, Marketing, Business Education, Office Administration, or Computer Science and Information Systems.

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 400; History 473, 474; and courses listed in the curricula of the areas of concentration.

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

Bus. Ad 203—Accounting Principles .................................................. cr. 3
Bus. Ad 303—Cost Accounting .......................................................... 3
Bus. Ad 309—Intermediate Accounting ............................................. 3
Bus. Ad 401—402—Income Tax .......................................................... 3
Bus. Ad 409—Advanced Accounting .................................................. 3
Bus. Ad 413—Accounting Theory ...................................................... 3

Total................................................................. cr. 29

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

Bus. Ad 305—Governmental Accounting ............................................. 3
Bus. Ad 370—Electronic Information Processing ................................ 3
Bus. Ad 410—Advanced Accounting .................................................. 3
Bus. Ad 418—C.P.A. Review ............................................................ 5

Total................................................................. cr. 19

BUSINESS EDUCATION

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

Bus. Ad 183—Production Typewriting .............................................. cr. 2
Bus. Ad 184—185—186—Signal Typewriting ..................................... 15
Bus. Ad 193—Beginning Secretarial Practice ...................................... 2
Bus. Ad 194—Records Management .................................................. 2
Bus. Ad 203—Elementary Accounting .............................................. 2
Bus. Ad 292—Office Machines Practice ............................................ 2
Bus. Ad 380—Methods of Teaching Typewriting ................................. 2
Bus. Ad 381—Methods of Teaching Bookkeeping and Computerized Typesetting .................................................. cr. 3
Bus. Ad 383—Office Management ..................................................... 3
Bus. Ad 384—Methods of Teaching Shorthand and Transcription ........ 2

Total................................................................. cr. 35

*Business Education students are not required to take Speech 111 or 112, Bus Ad 322, 340, 342, 350 or 446.

FINANCE

Three optional areas of concentration are offered in the field of Finance:

Option A. Financial Management

The financial management curriculum is designed to give students an understanding of the financial markets and their relation to banking and investments as well as to acquaint students with the concepts and methods relevant to financial analysis and management.

Bus. Ad 233—Commercial Banking .................................................. cr. 3
Bus. Ad 239—Theory of Business Finance ........................................ 3
Bus. Ad 330—Principles of Insurance and Risk .................................. 3
Bus. Ad 420—Investment Analysis .................................................... 2
Bus. Ad 421—Problems in Finance .................................................... 3
Bus. Ad 438—Analytical Methods in Finance ..................................... 3

Total................................................................. cr. 11

*Business students are advised to take Econ 311 before BA 347.
### BUSINESS ADMINISTRATION

#### Option B. Insurance

This curriculum provides the student with a basic understanding of risk and uncertainty prerequisites for the risk manager, with special attention to the concepts and techniques of the insurance profession.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 330</td>
<td>Principles of Insurance and Risk</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 331</td>
<td>Life and Health Insurance</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 332</td>
<td>Property and Liability Insurance</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 334</td>
<td>Real Estate Law</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 335</td>
<td>Management of Financial Institutions</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 401</td>
<td>Real Estate Income</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 426</td>
<td>Social Insurance</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Option C. Real Estate

The course of instruction offered in the field of Real Estate is intended to equip the student with the necessary training to handle the managerial, financial, and procurement problems incident to land and its usage.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 324</td>
<td>Real Estate Law</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 342</td>
<td>Money and Capital Markets</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 426</td>
<td>Property Valuation Theory</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 427</td>
<td>Property Management</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 383</td>
<td>Land Economics</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 587-588-589</td>
<td>Seminar in Urban Studies (anyone of the three)</td>
<td>21</td>
</tr>
</tbody>
</table>

#### GENERAL BUSINESS

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 347</td>
<td>Industrial Economics</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 353</td>
<td>Analysis of Marketing Communication</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 460</td>
<td>Marketing Management I</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Problems in Finance</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 441</td>
<td>Personnel Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 444</td>
<td>Regulation of Industry</td>
<td>3</td>
</tr>
</tbody>
</table>

#### MANAGEMENT

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

#### Option A. Industrial Organization and Management (Production)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 441</td>
<td>Personnel Management</td>
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</tr>
<tr>
<td>Bus. Ad. 442</td>
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</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Problems in Finance</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 444</td>
<td>Regulation of Industry</td>
<td>4</td>
</tr>
<tr>
<td>Econ. 321</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 322</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 324</td>
<td>Industrial Relations</td>
<td>4</td>
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</tbody>
</table>

#### Option B. Personnel Management and Human Relations

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 441</td>
<td>Personnel Management</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 442</td>
<td>Personnel Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Problems in Finance</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 342</td>
<td>Personnel Psychology or Psych 343 Industrial Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 321</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 322</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 324</td>
<td>Industrial Relations</td>
<td>4</td>
</tr>
</tbody>
</table>

#### MARKETING

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 301</td>
<td>Administrative Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 302</td>
<td>Analysis of Consumer Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 360</td>
<td>Analysis of Marketing Communication</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 400</td>
<td>Marketing Management I, II</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 466</td>
<td>Marketing Research</td>
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<tr>
<td>Engl. 456</td>
<td>Problems in Composition</td>
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### OFFICE ADMINISTRATION

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Bus. Ad. 183</td>
<td>Production Typewriting</td>
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</tr>
<tr>
<td>Bus. Ad. 184</td>
<td>Production Stenography</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 185</td>
<td>Production Stenography</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 186-191</td>
<td>Advanced Shorthand Transcription</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 192</td>
<td>Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 194</td>
<td>Records Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 203</td>
<td>Elementary Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 242</td>
<td>Office Managerial Practice</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 322</td>
<td>Advanced Secretarial Practice</td>
<td>5</td>
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<tr>
<td>Bus. Ad. 383</td>
<td>Office Management</td>
<td>3</td>
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<tr>
<td>Engl. 460</td>
<td>Problems in Composition</td>
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</table>

*Office Administration students are not required to take Speech 111 or 112, Bus. Ad. 322, 340, 350, 360, or 446.

### BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

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

### ACCOUNTING

#### FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)


202 ACCOUNTING PRINCIPLES 3 prereq 201. Continuation of 201.

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

#### FOR UNDERGRADUATES AND GRADUATES

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

301 ADMINISTRATIVE ACCOUNTING 4 prereq 202. Open only to non-accounting majors. The significance of accounting data with or without involvement in mechanical techniques: interpretation of financial statements, internal control, budgeting, costing of products manufactured and sold, and accounting reports for administrative control. (Credit not allowed for both Bus Ad 301 and 303-304.)

302 COST ACCOUNTING 3 prereq 203. The methods of accumulating material, labor and manufacturing costs; the development of specific cost systems applicable to various types of production situations, e.g., job order, process and standard cost systems. The use of cost information in relation to managerial activities, which includes reports to management, budget preparation, break-even analysis, and cost-volume-profit relationship. (Credit not allowed for both Bus Ad 301 and 303-304.)

304 COST ACCOUNTING 3 prereq 303. Continuation of 303. (Credit not allowed for both Bus Ad 301 and 303-304.)

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

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

307 INTERMEDIATE ACCOUNTING 4 prereq 306. Continuation of 306.

401 INCOME TAX 3 prereq 202. The accounting aspects of federal income tax law. The tax statutes as applied to individuals with problems that emphasize the filing of individual returns.

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

403 AUDITING 3 prereq 307. The general scope and purpose of auditing, encompassing generally accepted auditing standards and procedures, the audit program, and analysis of internal control. Procedures for verifying the reliability of accounting and operating accounts; preparation of audit working papers, reports, and submission of the auditor's opinion.

404 AUDITING 3 prereq 403. Continuation of 403.


410 ADVANCED ACCOUNTING 3 prereq 307. The theory and preparation of consolidated statements.
412 ACCOUNTING THEORY 3 prereq 307. A critical examination of the major accounting principles and practices. Emphasis on the theoretical basis for current accounting procedures, with emphasis on the problem of valuation as it relates to the measurement of periodic income. Readings in current and historically important literature.

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

418 C.P.A. REVIEW 5 prereq 304, 404, 408, 410, 412 and c/w. Primarily for students preparing to take the examinations for the certificate of Certified Public Accountant. Comprehensive review of questions and problems in auditing, and auditing given by the American Institute of Certified Public Accountants. 499 SEMINAR V R-4.

FOR GRADUATES

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

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

505 MANAGERIAL ACCOUNTING 3. Principles, theories and procedures of recording transactions for the development and interpretation of cost, management and control. Interpretation, use and limitations of accounting reports.

506 MANAGERIAL ACCOUNTING 2 prereq 505 or =. The significance and usefulness of accounting data in relation to managerial activities. Concepts and procedures for presentation of data for management and control purposes. Emphasis on cost analysis, cash flow, and analytical reports. Interpretation, use, and limitations of accounting reports.

509 RESEARCH V R-6. Special research problems.

605 ADMINISTRATIVE ACCOUNTING CONTROLS 3 prereq 506 or =. The use of accounting information for business decision making and the responsibility of the controller in providing an effective information system for over-all financial planning and control. Concentration on complex control problems, including relevant cost, capital budgeting, transfer-pricing and return on investment, and measurement 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

322 BUSINESS FINANCE 3 prereq all pre-business requirements. Forms of business organization, financial analysis, management of current assets, capital budgeting, financial planning, cost of capital, external financial aid, dividend policy.

323 COMMERCIAL BANKING 4 prereq Econ 301 and BA 322. Liquidity, loan and investment policy, credit analysis, loan administration, and credit policies and procedures. Credit analysis, cash flow, and analytical reports.

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 relationship.

325 MANAGEMENT OF FINANCIAL INSTITUTIONS 3 prereq 322 and 323. Analysis of problems in the management of commercial banks, savings and loan associations, life insurance companies and other financial institutions.

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

330 PRINCIPLES OF INSURANCE AND RISK 3 prereq Econ 203. Basic risk analysis: introduction to fire, casualty, life and health coverage. Sources of insurance protection, the risk management process, accounting and administration of insurance organizations and industry practices; the liability peril; automobile insurance, fire insurance, insurance claims, and insurance claims adjustment. (Graduate credit available for non-business majors only.)

331 LIFE AND HEALTH INSURANCE 3 prereq 330. Analysis of individual and group contracts; human life values and insurance needs; estate planning and life insurance; insurance regulation; business continuance agreements and insurance; pensions and annuities for business and individual retirement programs.

332 PROPERTY AND CASUALTY INSURANCE 3 prereq 330. Conceptual bases of, and problems in, insurance; management and performance problems facing specific types of business and personal risks; multiple-line policies and the cost of insurance; legal and practical case problems in liability and direct loss situations.

341 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 4 prereq 240, 360. Current practice and problems in the industrial production areas of: materials procurement, inventory control, material-handling, materials-handling.

358 LEGAL ENVIRONMENT OF BUSINESS 3 prereq all pre-business requirements. Analysis and theory of law as related to business environment. What law is; sources and classifications of law, legal process, governmental procedures for regulation of business; principles of tort and criminal law, trends in law and business.

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

360 INVESTMENTS 3 prereq 322 and Econ 301. Securities markets, sources of investment information, security valuation, investment timing, portfolio management.

361 PROBLEMS IN FINANCE 3 prereq 322. Analysis of problems relating to management of current assets, capital budgeting, dividend policy, external financial aid, financial planning.

362 (522) SECURITY ANALYSIS 3 prereq 420. Principles and techniques. Technical preparation for security analysis work with financial organizations, insurance companies, trust institutions, investment companies, investment banking firms, security dealers and brokers, and others.

363 ADVANCED PROBLEMS IN FINANCE 3 prereq 421. Functions of various investment in financial planning, with emphasis on long-term financing, dividend policy, debt policy, valuation for corporate mergers.

364 MONEY AND CAPITAL MARKETS 3 prereq 322 and Econ 301. Money and capital market institutions, flow of funds analysis, monetary and fiscal policies, forecasting, recent developments.

365 REAL ESTATE FINANCE 3 prereq 322, 424. Sources and analysis of real estate, mortgage markets, nature and extent of government participation in real estate finance, types of primary and secondary financing devices, and financing instruments.

366 (Ec 387) PROPERTY VALUATION THEORY 3 prereq 385. The theoretical basis for appraising and basic value principles and non-economic limitations thereon, market indicators, locational analysis, classic approaches to value, valuation techniques, capitalization techniques, correlating the approaches.

367 PROPERTY MANAGEMENT 3 prereq 324. Management principles: feasibility of commercial or residential properties; acquisition, promotion, development and physical maintenance of properties; owner, tenant and personnel relations; accounting and record keeping for property management.

368 SOCIAL INSURANCE 3 prereq 330. The background, development, and current status of various plans contributing to the financial security of individuals and groups in our society. Particular emphasis will be placed on social security, unemployment insurance, industrial accident and health, military death, and liability perils.

369 ANALYTICAL METHODS IN FINANCE 3 prereq 322 and 333. The application of analytical methods such as linear programming and statistical decision making to financial problems, including investment and capital budgeting problems.

369 SEMINAR V R-4.

FOR GRADUATES

523 FINANCIAL MANAGEMENT 3 prereq Econ 510-511-513 or =. Financial problems of corporate enterprise involving the planning, procuring, and controlling of financial resources. The theoretical and practical aspects of financial management from the point of view of the individual business unit are analyzed together with specific problems that arise out of changes in corporate structures and financial markets.

599 RESEARCH V R-6. Special research problems.

601 PROBLEMS IN FINANCIAL MANAGEMENT 3 prereq 322 and 523 or =. Internal and external aspects of business finance as viewed by the financial manager. Theoretical basis for and applicability to the management of working capital, capital budgeting, financial planning, external financing and corporate mergers.

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

360 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.

361 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 4 prereq 240, 360. Current practice and problems in the industrial production areas of: materials procurement, inventory control, material-handling, materials-handling.

363 LEGAL ENVIRONMENT OF BUSINESS 3 prereq all pre-business requirements. Analysis and theory of law as related to business environment. What law is; sources and classifications of law, legal process, governmental procedures for regulation of business; principles of tort and criminal law, trends in law and business.

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

359 C.P.A. LAW REVIEW 3 prereq 358. The legal theory and principles underlying bankruptcy, fraudulent transfers, secured transactions, creditor's right, trusts and estates, wills and inheritance tax. Examination of contemporary development (intending to take the CPA examinations, but open to all students.)

371 INTRODUCTION TO COBOL PROGRAMMING 2 prereq Math 501 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 of production facilities; design and operation of a production system—production as a function of the business rather than as a strictly manufacturing activity; and research and development to the point of the physical facilities (management, process design, production planning and control.

342 ORGANIZATIONAL HUMAN RELATIONS 3 prereq all pre-business requirements. Select general behavioral models, with emphasis on perceptual, motivational, 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 nationalization relating to oligopoly.

347 MANAGERIAL ECONOMICS 4 prereq 340. The application of economic analysis to the operation of a business. Demand and cost analysis, competitive and non-competitive pricing, and multiple-equation production functions. Selection of advertising and marketing strategies, revenue maximization, cost minimization, pricing.

350 QUANTITATIVE MODELS FOR GUIDING BUSINESS DECISIONS 3 prereq all pre-business requirements. Formulation and analysis of quantitative models for guiding behavioral decisions. Certainty and uncertainty models such as statistical inference, regression, correlation, and linear programming.

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

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

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

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

444 REGULATION OF INDUSTRY 4 prereq 340, 360, and Econ 301. Economic and social control of business and industry emphasizing regulation, administrative agencies, national policies and social control.

446 ADMINISTRATION AND BUSINESS POLICIES 4 prereq 340, 360, and Econ 301. (May be taken in one of last two quarters of the last two years of study for graduate credit only.) Top management orientation directed to develop an integrated view of the organic specializations. Practice in analytical tools involved in problem solving and in coordination.

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

459 QUANTITATIVE PROBLEMS ANALYSIS V R-6 prereq 350 or = or c/1. Practice in the application of selected quantitative techniques to business problems. Topics and projects selected in consultation with the instructor.

470 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS 3 prereq 370, and Econ 301. Structures for the design and operation of business information systems utilizing the computer. Flow-charting, decision tables, data matrixes, structure and problem solving. Design and programming. Applications to business systems and judging the feasibility of computer processing.

475 COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prereq 459 and selected courses in computer information and control systems for simulation on electronic computers. Application in inventory control, planning, forecasting and budgeting.

499 SEMINAR V R-4.

FOR GRADUATES

540 INDUSTRIAL HUMAN RELATIONS 4. Analysis of management practices and interpersonal relationships of consumer to the firm through use of behavioral models drawn from contemporary psychology and social psychology.

542 RESEARCH METHODS 2. Sources of data, governmental and non-governmental reliability of data, problems of use and interpretation; problem formulation, research organization and planning; case selection, case study, and statistical analysis.

543 MANAGEMENT OF ENTERPRISE 3. Management as an art and science. Descriptive and analytical explanations of manage-
CHEMISTRY—29

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

490 MARKET ANALYSIS AND PLANNING 3 prereq 486. Utilization of statistical and accounting techniques in analyzing past and planning future marketing performance.

499 SEMINAR V R-4.

FOR GRADUATES

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

588 COMMUNICATION PRACTICES 2. Spoken communication in the organizational setting; theories, principles, and techniques of public speaking and small-group interaction, with emphasis on the latter area.

599 RESEARCH V R-6. Special research problems.

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

697 PROFESSIONAL PAPER 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.

BUSINESS EDUCATION AND OFFICE ADMINISTRATION

Not more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189, and 190-191 may be applied toward graduation by students not majoring in Business Administration or having a technical major in Business Administration. To register for any course in stenography or secretarial practice a student must have passed the English entrance examination, completed English 180 or its equivalent, or be concurrently enrolled in English 150.

FOR UNDERGRADUATES

189 BEGINNING TYPEWRITING 2 Development of basic skills. With 1 H.S. entrance unit, no credit.

181 INTERMEDIATE TYPEWRITING 2 prereq 180 or equivalent. Development of basic skills. With 2 H.S. entrance units, no credit.

182 ADVANCED TYPEWRITING 2 prereq 181 or equivalent. Development of basic skills and job application.

183 PRODUCTION TYPEWRITING 2 prereq 182 or placement. Application of basic skills to production jobs.

184 BEGINNING STENOGRAPHY 5 Theory development. With 1 H.S. entrance unit, no credit.

185 INTERMEDIATE STENOGRAPHY 5 prereq 184 or equivalent. Theory development and dictation. With H.S. units, no credit.

186 ADVANCED STENOGRAPHY 5 prereq 185 or equivalent. Dictation and Transcription.

187-188-189 ADVANCED STENOGRAPHY 5 prereq 187: 186 or placement; 188: 187 and 190 or placement; 189: 188 and 191 or placement. Review, speed development, Civil Service and State Merit tests. Concurrent enrollment in 190-191.

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

193 BEGINNING SECRETARIAL PRACTICE 2 prereq 182. Duplicating, dictating and transcription machines.

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

292 OFFICE MACHINES PRACTICE 2. Calculators and Adding.

CHEMISTRY

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

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Science degree with a
major in Chemistry: a total of 185 credits including the PE requirement. 70 Chemistry credits including Chem 121-122, 223, 265-266-267, 271-372-373, 375-376-377, 431-432-433, 446, 452, 453, 474, and 6 credits selected from Chem 455, 463, 464, 469, 490, or with the consent of the department, from graduate courses in Chemistry, Geol 427, Geol 428, Geol 448, Geol 529, and advanced courses in Mathematics or Physics. Two or three of these credits must be chosen from Chem 455, 469 or 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 433, Mathematics 252 or 253. For the B.A. degree, advanced mathematics and/or advanced physics courses may be substituted for Chem 431, 432 and 446 with the consent of the department. See also the curriculum for the Pre-Med Science option which follows. The departmental English composition requirement must be completed.

CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

Freshman Year

<table>
<thead>
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<th>Course</th>
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<td>Chem. 121-2-3</td>
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<tr>
<td>Math 121-151-152</td>
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<td>English 150</td>
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<td>Electives</td>
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<td>R.O.T.C. 101-2-3 (Optional)</td>
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(Beginning Math course actually dependent on placement test.)

Sophomore Year

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<td>Chem. 265-6-7</td>
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<td>Math 251-151-152</td>
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<td>Physics 221-2-3</td>
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<td>Chem. 245</td>
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<td>Electives or Eng. 250</td>
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<td>R.O.T.C. 201-2-3 (Optional)</td>
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(Can defer Physics 223 to spring quarter Junior Year and replace by 5 cr. elective.)

Junior Year

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<th>Course</th>
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<td>Math 253</td>
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<tr>
<td>Chem. 375-6-7</td>
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<td>German 101-2-3</td>
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<td>16-16</td>
<td>16-17</td>
<td>16-17</td>
</tr>
</tbody>
</table>

(Recommended electives other than Group 1 (3 cr.), III and IV requirements and other Chemistry include further Mathematics, Physics, advanced Geology and French or Russian.)

CHEMISTRY CURRICULUM FOR THE B.A. DEGREE

(PRE-MEDICAL OPTION)

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121-2-3</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 121-151-152</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 150</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2-3</td>
<td>4-6</td>
<td>4-6</td>
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<tr>
<td>Phys. Ed. (and Mill. Sci.—optional)</td>
<td></td>
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<tr>
<td></td>
<td>(Beginning Math course actually dependent on placement test.)</td>
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</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
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</thead>
<tbody>
<tr>
<td>Chem. 265-6-7 (or 265-6-7)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 111-112-113 or 304</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 245</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Ed. 210-211-212</td>
<td>5</td>
<td>2-3</td>
<td></td>
</tr>
<tr>
<td>Mill. Sci.—optional</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Eng. 250</td>
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<td>16-16</td>
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Junior Year

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Phys. 221-2-3</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>For. Lang. 101, 102, 103</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 404</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives (e.g., Zool. 304) or Engl. 350</td>
<td>5-6</td>
<td>0-3</td>
<td>0-3</td>
</tr>
<tr>
<td>Chem. 370</td>
<td></td>
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<td>5</td>
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</tbody>
</table>

Senior Year

For. Lang. 211, 212 | 4 | 4 |
Chem. 446 | 3 |
Chem. 451, 452 | 5 | 5 |
Electives or Engl. 350 | 0-5 | 3-6 | 15-17 |
(Zool. 485) | | | |

GRADUATE WORK. See Graduate School. For details on the four summer programs leading to the Master of Science for Teachers, write to the chairman of the chemistry department.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101-102 GENERAL CHEMISTRY 4 (S-2). The basic laws, properties and reactions of elements for the pre-med student. For science majors and those students wishing more than one year of chemistry. Students who have completed Chem 101-102 may not receive credit for 121-122.

121-122-123 COLLEGE CHEMISTRY 5 (S-4). For science majors and those students wishing more than one year of chemistry. Students who have completed Chem 101-102 may not receive credit for 121-122.

160 SURVEY OF ORGANIC CHEMISTRY 5 (S-4). Normally to follow Chemistry 101-102 as the third quarter of chemistry for students in other sciences requiring a year general course only. Chemistry 160 is also open for credit to students who have completed Chemistry 125 or 126 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 and colorimetric 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 169 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 328. Designed to familiarize prospective high school chemistry teachers with tests, 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, 160 or 261, 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 345, and 372-375, 376 or concurrent enrollment.

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

390 (361) CHEMISTRY OF PLANT CONSTITUENTS V 3 or 4 (3-6) prereq 264 or 266. Chemistry and biochemistry of plant components, including sugars, glycoalkyls, polyesaccharides, lignin and extractives. (Same as Bot. 390 and For. 360).

391 (362) CHEMISTRY OF WOOD PRODUCTS 3 (3-0) prereq 264 or 362. The chemistry of pulp, paper, cellulose derivatives, naval stores, industrial polymers, flame retardants, modified woods, and other wood products. (Same as For. 361).

431-432-433 SEMINAR 1 (0-2) R-4 (433 R-2) 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 376. Theory and practice of chemical instrumentation and instrumental analysis.

448 ADVANCED INSTRUMENTAL METHODS AND PHYSICAL MEASUREMENTS 5 (0-6) prereq 371, 372 and 446. Advanced instruction in modern electronic instrumentation.

452 INORGANIC CHEMISTRY 3 (3-0) prereq 123, 263 or 267, 371 or 370. The principles of systematic Inorganic chemistry.

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

455 INORGANIC CHEMISTRY LABORATORY 2 (0-6) prereq 123, 263 or 267 and c/l. The techniques in preparation of inorganic compounds.

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

463-464 THEORETICAL ORGANIC CHEMISTRY 3 (4-0) prereq 263.
COMMUNICATION—31

COMMUNICATION

represents a discipline among the social sciences directly concerned with the manner and means by which people interact with one another through symbols. Study in this field is designed to provide a deeper understanding of the processes, resources, facilities, and disabilities of human symbolic interaction.

The communication program consists of three curricula from which courses are drawn for majors in the Department of Speech Communication and the Department of Speech Pathology and Audiology. Students may select courses from any of the three curricula for a major in either department.

The courses in Foundations of Communication emphasize theoretical conceptions of the communicative process and its basic determinants.

The courses in Systems emphasize the application of these theoretical conceptions to personal, public, and organizational communication.

The courses in Disorders emphasize the application of the theoretical conceptions of the communication process to abnormal speech, hearing, and language.

Undergraduates are awarded the Bachelor of Arts degree in Communication with an emphasis in Speech Communication, Speech Pathology and Audiology, or Speech Communication Education.

Graduate students are awarded one of the following degrees: the Master of Arts with a major in Speech Communication or a major in Speech Pathology and Audiology; the Master of Speech Communication or the Master of Speech Pathology and Audiology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES. 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 Communication. All students majoring in the Communication program are required to complete a core curriculum as follows: Communication 111, 220, 223, 234, and 325; Psychology 110; Sociology 101; Sociology 209 or Psychology 220; Anthropology 152 or 153 and 5 credits in Philosophy. The foreign language requirement listed earlier in the catalog must be satisfied. Additional requirements for the special programs in Communication are listed in the following sections.

Suggested Programs for Undergraduates:

SPEECH COMMUNICATION EMPHASIS

Freshman

Sph 111—Introduction to Public Speaking

Phil elective

Sph 112—Argumentation

Soc 101—Introduction to Sociology

Anthro 152—Man and His Culture

Anthro 153—Cultural Anthropology

English Composition

Sophomore

SpCo 222—Introduction to Communication

SpCo 223—Introduction to Communication

SpCo 234—Introduction to Communication

Junior

Sph 314—Discussion and Small Groups

SPA 235—Introduction to Speech Pathology

SpCo 333—General Semantics

Sph 355—Speech Composition

Soc 358—Elementary Social Statistics

or

Psych 220—Psychological Statistics

Elections from Communication Curriculum

Senior

Sph 441—History of Rhetorical Theory

Sph 443—History of American Public Address

Sph 446—History of British Public Address

Elections from Communication Curriculum
SPEECH PATHOLOGY AND AUDIOLOGY EMPHASIS

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>H. &amp; P.E.</td>
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<tr>
<td>For. Lang.</td>
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<tr>
<td>English Comp.</td>
<td></td>
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<tr>
<td>Zool. 111</td>
<td></td>
</tr>
<tr>
<td>Anthro 152 or 153</td>
<td></td>
</tr>
<tr>
<td>Psych 111</td>
<td></td>
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<tr>
<td>Electives</td>
<td></td>
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Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>For. Lang.</td>
<td>4-5</td>
</tr>
<tr>
<td>Zool. 202</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 119</td>
<td>4-5</td>
</tr>
<tr>
<td>SpCo 232, 233, 234</td>
<td></td>
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<tr>
<td>Physical Sci.</td>
<td>5</td>
</tr>
<tr>
<td>Soc or Anthro</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
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Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Humanities (in addition to Philos)</td>
<td>4-5</td>
</tr>
<tr>
<td>SPA 335, 336, 338</td>
<td>5</td>
</tr>
<tr>
<td>SPA 341</td>
<td>5</td>
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<tr>
<td>SPA 380</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 133, 135</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>10-15</td>
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Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 220 or Soc 205</td>
<td>15-15</td>
</tr>
<tr>
<td>Electives</td>
<td>15-17</td>
</tr>
</tbody>
</table>

SPEECH COMMUNICATION EDUCATION EMPHASIS

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spch 111—Introduction to Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Spch 265—Forensics</td>
<td>1</td>
</tr>
<tr>
<td>Psych 110—Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Phil elective</td>
<td>5</td>
</tr>
<tr>
<td>Soc 101</td>
<td>5</td>
</tr>
<tr>
<td>Anthro 152-153</td>
<td>5</td>
</tr>
<tr>
<td>English Composition</td>
<td>3</td>
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Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spch 112—Argumentation</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 232—Introduction to Communication</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 233—Introduction to Communication</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 234—Introduction to Communication</td>
<td>5</td>
</tr>
<tr>
<td>Educ 200—Orientation to Education</td>
<td>4</td>
</tr>
<tr>
<td>Educ 205—Educational Psychology</td>
<td>4</td>
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Junior

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Spch 119—Practicum in Oral Expression</td>
<td>3</td>
</tr>
<tr>
<td>Spch 265—Forensics</td>
<td>3</td>
</tr>
<tr>
<td>Spch 314—Discussion and Small Groups</td>
<td>3</td>
</tr>
<tr>
<td>SPA 333—Introduction to Speech Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 233—General Semantics</td>
<td>3</td>
</tr>
<tr>
<td>Spch 355—Speech Composition</td>
<td>3</td>
</tr>
<tr>
<td>Electives from Communication Curriculum</td>
<td>3</td>
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</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spch 361—Performance of Literature</td>
<td>3</td>
</tr>
<tr>
<td>Spch 422—Teaching Speech in the Secondary School</td>
<td>3</td>
</tr>
<tr>
<td>Spch 442—History of American Public Address</td>
<td>3</td>
</tr>
<tr>
<td>Spch 462—Directing the Forensic Program</td>
<td>3</td>
</tr>
<tr>
<td>Educ 300—Secondary School Teaching Procedures</td>
<td>3</td>
</tr>
<tr>
<td>Educ 460—Student Teaching: Secondary</td>
<td>10</td>
</tr>
<tr>
<td>Educ 467—Problems in Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Educ 422—Educational Measurement</td>
<td>4</td>
</tr>
</tbody>
</table>

GRADUATE WORK. See Graduate School Bulletin.

FOUNDATIONS OF COMMUNICATION

Courses in this curriculum are directed to the study of signs, symbols, and signals as they function in a context of human interaction. Theory and data derived from a wide variety of scientific fields are integrated to form the basis of study in human communication.

Courses in this curriculum are designed to contribute to the student’s basic education in communication and to prepare him for graduate study.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

119 PHONETICS 2. Transcription (International Phonetic Alphabet) and standards of pronunciation and dialect.

232-233-234 INTRODUCTION TO COMMUNICATION 5 (4-2)-

301 HISTORICAL DEVELOPMENT OF THE FIELD OF COMMUNICATION 3. The major lines of influence leading to present theories, concepts and methods in the field of oral communication.

351 DEVELOPMENTAL SEMIOLGY 3 prereq 234 and Psych 230. Characteristics and determinants of the sign process associated with the major stages in human development through the life span.

353 GENERAL SEMANTICS 3. The influence of language and language habits on perception, evaluation and decision; particular attention to the concepts of structure and meaning.

353 LANGUAGE AND CULTURE 3. (See Anthropology.)

FOR UNDERGRADUATES AND GRADUATES

451 PSYCHOLINGUISTICS 3 a/y prereq 234 and Engl 960. Recent theories and evidence concerned with the empirical analysis of linguistic behavior.

471 COMPARATIVE SEMIOLGY 3 a/y prereq Zool 111-112-113. The sign process and evidence on observation and selection levels of the phyletic scale.

490 LINGUISTIC METHODS 3. (See Anthropology.)

497 PROBLEMS V R-6 prereq 25 credits in Communication and c/l.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 16 credits of junior and senior level Speech Communication or c/l. The basic approaches to graduate and professional activities.

FOR GRADUATES

511 THEORIES OF COMMUNICATION 3 prereq c/l. A critical evaluation of theories and research in the field of communication.

513 PSYCHOCOUSTICS 3 a/y prereq c/l. A critical evaluation of current research relating to the basic physical variables of speech and hearing and to the processes of speech analysis and synthesis.

515 SEMINAR: LABORATORY AND CLINICAL INSTRUMENTATION 3 prereq Psych 220 or Soc 205 or =.

521 INFORMATION AND COMMUNICATION 3. prereq c/l. The nature and function of information in human communication systems.

541 PERSUASION 3 prereq c/l. An examination of theories and research concerned with the processes by which behavioral and attitudinal change are produced primarily by communication.

597, 599 RESEARCH METHODS AND MATERIALS 5 prereq Soc 205 or Psych 220 or =. Principles and techniques of research design and use in social science research.

599 TOPICAL SEMINAR V R-9 prereq c/l.

600 RESEARCH V R-10 prereq c/l.

699 THESIS V R-12.

SYSTEMS OF COMMUNICATION

(Speech Communication)

Few processes are more fundamental to an understanding of the dynamic patterns of human existence and social organizations than the systems by which men communicate. Study in this area provides an historical background, together with a knowledge of the sociocultural and communication principles and practical experience which contributes to competence in professional speech and teaching in secondary schools, preparation for professional study at the graduate level, and for employment in business and industry in communication-oriented occupations. At the graduate level, an emphasis in Systems of Communication leads to a Master of Arts or a Bachelor of Speech Communication degree with a specialization in speech communication education, public, personal, or organizational communication.

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. The theories and principles of public speaking. Practice speech composition, delivery and criticism.

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. Principles and practice of attitude and behavior modification primarily by oral communication.

118 PRACTICUM IN ORAL EXPRESSION 3 (2-3). Principles of vocal expression, articulation and diction, with practical application through recording and evaluation.

223 (123) PUBLIC SPEAKING PRACTICUM 2 (0-4) prereq 111. Practice in speech composition, delivery, and criticism beyond that introduced in Speech-Communication 111.

265 FORENSICS 1 R-6. Preparation of debates, orations, extemporaneous and impromptu speeches, and other types of public address.

313 (113) PARLIAMENTARY PROCEDURES 2. Theory and practice of leadership in large groups.

314 (214) DISCUSSION AND SMALL GROUPS 3. Study and practice in 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. Emphasis on intra-organizational problems. Consideration of theory and research on questions of informational and directive communication as related to such factors as channels, structures, status, involvement, morale.

355 SPEECH COMPOSITION 3 prereq 111. Factors related to materials, organization and support in the development of the speech.

356 SPEECH CRITICISM 2 prereq 355. The bases upon which the various forms of public speaking are evaluated.

361 (261) PERFORMANCE OF LITERATURE 3 (2-3) prereq 118. The analysis and oral presentation of literature.

371 SOCIODRAMA 3. Principles and practice of role-playing as a technique of communication.

FOR UNDERGRADUATES AND GRADUATES

422 (421) TEACHING SPEECH IN THE SECONDARY SCHOOL 3 prereq 15 credits in 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 355 or c/i. Principles and practice in public speaking beyond that considered at the beginning levels; emphasis on informative and persuasive speaking.

444 (344) HISTORY OF RHETORICAL THEORY 3 prereq 15 credits in Communication. Rhetorical theory from Corax to the present.

445 HISTORY OF AMERICAN PUBLIC ADDRESS 3 prereq 356 or c/i. Biographies and 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 prereq 356 or c/i. Biographies and critical analysis of speeches of historically prominent British and European speakers and the issues with which they were identified.

462 DIRECTING THE FORENSIC PROGRAM 3. Philosophy, organization, and administration of competitive speech activities. Prereq 422 or c/i.

469 (369) THE INTERPRETIVE ARTS 3 prereq 361 or c/i. The theories and relationships of the interpretive arts.

490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

512 ORGANIZATIONAL COMMUNICATION 3 a/y prereq 310 or c/i.

514 SMALL GROUP COMMUNICATION 3 a/y prereq 314 or c/i.

522 SEMINAR: SPEECH COMMUNICATION EDUCATION 3. Prereq 422 or c/i.

545 SEMINAR: SPEECH CRITICISM 3 a/y prereq 356 or c/i.

551 CONTEMPORARY PUBLIC ADDRESS 3 a/y prereq 444 or 445 or c/i.

553 SEMINAR: HISTORY OF RHETORIC AND PUBLIC ADDRESS 3 a/y prereq 444 or 445 or c/i.

571 SOCIODRAMA 3 a/y prereq 371.

588 COMMUNICATION PRACTICES 3. (See Business Administration.

599 TOPICAL SEMINAR V R-9 prereq c/i.

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.

DISORDERS OF COMMUNICATION  (Speech Pathology and Audiology)

Although students take the Bachelor of Arts degree in Communication with an emphasis in Speech Pathology and Audiology, this is a pre-professional degree and is not intended to prepare a student for employment in the field of Speech Pathology and Audiology. While appropriate graduate preparation, the student can meet the requirements for the Master of Arts degree in Speech Pathology and Audiology and qualify for a Certificate of Clinical Competence which is issued by the American Speech and Hearing Association. Persons thus certified are employed in a variety of settings, such as: clinics, speech centers, hospitals, public schools, health departments, colleges and universities, industrial programs, research centers and private practice.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

330 INTRODUCTION TO SPEECH PATHOLOGY 3. For non-majors. A survey of speech and language problems commonly encountered in the classroom. (Non-majors may take for graduate credit.)

335 COMMUNICATION DISORDERS I 5 prereq 119, 223, 233, and 354. 2. Introduction to communication disorders in educational and clinical field. Theories, research and selected remedial procedures relating to disorders of articulation, voice and language reception.

336 COMMUNICATION DISORDERS II 5 prereq 335. Theories, research and selected remedial procedures relating to disorders of language production, rhythm and fluency.

337 COMMUNICATION DISORDERS III 3. Theories, research and selected remedial procedures relating to logical, semantic and process disorders.

338 (337) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS I 3 prereq 326 or c/i. Principles and methods of handling speech and language problems in clinical practice.

339 (338) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS II 3 prereq 326 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical structure.

340 (339) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS III 3 prereq 326 and 341. Theories, research and therapeutic procedures for problems of communication associated with neurological disorders.

343 (338) METHODS OF SPEECH AND HEARING THERAPY IN THE SCHOOL 3 prereq 339. Principles and policies related to establishing and conducting a speech and hearing program in a school system with emphasis at the elementary level.

349 (340) DIAGNOSTIC AUDIOLOGY 3 prereq 339. Special audiological procedures used in otological diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.

350 (341) DIAGNOSTIC AND REHABILITATION OF THE HEARING HANDICAPPED 3 prereq 349. 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/i.

FOR GRADUATES

533 (433) ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS V R-6 prereq 4 credits of 432.

536 (450) PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V R-9 prereq 435.
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 computer courses 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, the student needs two years of mathematics (algebra and geometry). 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 201, 212, 220, 201, 202, 301, 312, 320, 401, 402, 403, 471, 472, 473; Mathematics 125, 151-152-153, 201-202 and Philosophy 210. Computer Science 470, 477, 478 and Mathematics 311, 312, 313, 321 are strongly recommended. Three courses must be taken, selected from: English 150, 250, 350; Journalism 354; Communication 111, 112, 115, 118.

FOR UNDERGRADUATES

100 INTRODUCTION TO COMPUTERS 1 (1-0) Computer application for liberal arts students and an introduction to a simplified programming language.

201 (101) FORTRAN 3 (3-0) prereq Math 001 or c/i. Flow charting and coding of problems. Computer programs will be written and developed by the students.

212 (102) COBOL 3 (3-0) prereq Math 001 or c/i. Primarily for students in business and economics. Computer programs will be written and developed by the students. (Credit not allowed for this course and Bus Ad 371.)

220 INTRODUCTION TO DISCRETE STRUCTURES 3 prereq Phil 210 and CS 201. Introduction to the algebra of sets and algebraic structures including semi-groups and groups as well as the theory of graphs. Applications of these structures to computer science.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq 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 equations and inequalities, linear programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Math 210-211.)


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 preventative 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. The following courses are required for the Bachelor of Science degree in Dental Hygiene: English 150; Mathematics 115, 125; Chemistry 101, 102, 106; Health, Physical Education and Recreation 199, 290; Microbiology 100-101 or 200, 307; Home Economics 146 or 246, 366; Psychology 110, 230; Speech Communication 199, 290; Physical Education 100, 101, 302, 304, 305, 306, 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.

### DENTAL HYGIENE CURRICULUM FOR THE B.S. DEGREE

#### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Freshman Composition</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>College Algebra (Math 116)</td>
<td></td>
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<tr>
<td>Elementary Statistics (152)</td>
<td></td>
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</tr>
<tr>
<td>Introduction to Biology (Zool 111)</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Psychology (PSY 101)</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>General Zoology (Zool 113)</td>
<td>3</td>
<td></td>
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<tr>
<td>Principles of Public Speaking (Sp Co 111)</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>Health, Physical Education and Recreation (HPER 100)</td>
<td></td>
<td></td>
<td>1 1 4</td>
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<tr>
<td>Group Requirements</td>
<td></td>
<td></td>
<td>17 15 16</td>
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</table>

#### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
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<tbody>
<tr>
<td>Human Physiology (Zool 202)</td>
<td>5</td>
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<tr>
<td>General Chemistry (Chem 101-102)</td>
<td>4</td>
</tr>
<tr>
<td>Survey of Organic Chemistry (Chem 160)</td>
<td></td>
</tr>
<tr>
<td>Elementary Microbiology (Micro 100-101)</td>
<td>5</td>
</tr>
<tr>
<td>General Microbiology (Micro 200)</td>
<td></td>
</tr>
<tr>
<td>Human Anatomy (HUM 101-102)</td>
<td>4</td>
</tr>
<tr>
<td>Elementary Medical Microbiology (Micro 102)</td>
<td>3</td>
</tr>
<tr>
<td>First Aid (HPER 190)</td>
<td></td>
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<tr>
<td>Elementary Nutrition (Home Ec 246 or 146)</td>
<td>4</td>
</tr>
<tr>
<td>Child and Adolescent Psychology (Psych 230)</td>
<td>5</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminar in Dental Hygiene</td>
<td>1</td>
</tr>
<tr>
<td>Human Development (Home Ec 366)</td>
<td>3</td>
</tr>
<tr>
<td>Oral Histology (DH 301)</td>
<td>3</td>
</tr>
<tr>
<td>Dental Materials (DH 305)</td>
<td>3</td>
</tr>
<tr>
<td>Techniques of Oral Propylaxis (DH 310)</td>
<td>3</td>
</tr>
<tr>
<td>Dental Anatomy (DH 306)</td>
<td>3</td>
</tr>
<tr>
<td>General and Oral Pathology (DH 302)</td>
<td>3</td>
</tr>
<tr>
<td>Oral Microbiology (Micro 307)</td>
<td>2</td>
</tr>
<tr>
<td>Periodontics (DH 304)</td>
<td>3</td>
</tr>
<tr>
<td>Drugs and Dental Therapeutics (Pharm 341)</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements and Electives</td>
<td>8</td>
</tr>
<tr>
<td>Seminar in Dental Hygiene</td>
<td>17</td>
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</tbody>
</table>

#### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
<td>Dental Ethics and Jurisprudence (DH 312)</td>
<td>3</td>
</tr>
<tr>
<td>Roentgenology (DH 408)</td>
<td>3</td>
</tr>
<tr>
<td>Preventive Dentistry (DH 306)</td>
<td>3</td>
</tr>
<tr>
<td>Clinical Practice (DH 311)</td>
<td>3</td>
</tr>
<tr>
<td>Clinical Oral Prophylaxis (DH 402)</td>
<td>3</td>
</tr>
<tr>
<td>Clinical Dental Hygiene (DH 401)</td>
<td>3</td>
</tr>
<tr>
<td>Community Dental Hygiene (DH 403)</td>
<td>3</td>
</tr>
<tr>
<td>Field Practice (DH 410)</td>
<td>2</td>
</tr>
<tr>
<td>Problems in Dental Hygiene (DH 411)</td>
<td></td>
</tr>
<tr>
<td>Seminar in Dental Hygiene</td>
<td></td>
</tr>
<tr>
<td>Dental Literature</td>
<td></td>
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<tr>
<td>Electives and Group Requirements</td>
<td></td>
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</tbody>
</table>

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 essential units.

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 101 and Dental Hygiene 300. A study of the diseases and abnormalities of the hard and soft tissues of the oral cavity.

304 PRINCIPLES OF PERIODONTOLOGY 3 (3-0). Classification, etiology, and principles of treatment of periodontal diseases and their relationship to dental hygiene practice.

305 DENTAL MATERIALS 3 (3-0) prereq Chemistry 100 (2-4). Physical and chemical properties of dental materials, with laboratory experience in their manipulation.

306 PREVENTIVE DENTISTRY 3 (3-0). Etiology and control of dental caries. Physiology and composition of saliva, sociology of the mouth, chemical composition of the teeth, degradation of carbohydrates, systemic control of caries process, enzyme inhibitors, fluorides, etc., and caries susceptibility tests.

310 TECHNIQUES OF ORAL PROPHYLAXIS 3 (2-4). Objectives and principles of oral hygiene; instrumentation and procedure 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 several individual professions and communities. Professional loyalty. Legal status of dentistry and dental hygiene.

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 Educated Students—Dental Hygiene, Public Health, 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 programs in local school inspection 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

The study is designed to train the student in acting, directing, designing, 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

The following requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree with a major in drama: Drama 101, 102, 201, 202, 203, 244, 290, 302, 303, 308, 499 (4 crs., plus a minimum of 12 additional elective credits in Drama. All drama majors are required to enroll in Drama 200 or 300, Drama Workshop, for three years.

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

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

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 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.
### DRAMA MAJORS PLANNING TO TEACH in Montana secondary schools must take, in addition to their drama major, a teaching major in another area for certification purposes. They will be certified in drama as a teaching major only if the teaching major chosen is English (highly recommended); the student should follow the English requirements in the English broad fields major listed under Education. The English electives may be selected from English 306-309 and 341 (12 hours). Drama majors electing a teaching major will not be required to include Drama 301-302 or five credits of drama electives, as part of their drama degree.

In addition to the above requirements state certification requires 24 hours in education (Education 200, 204, 205, 405, 407) plus Psychology 110. See Education listings.

#### Program for the B.A. and B.F.A. degrees

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
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</thead>
<tbody>
<tr>
<td>Freshman year</td>
<td>Drama 101</td>
<td>4</td>
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<tr>
<td></td>
<td>Drama 121-122-123</td>
<td>3</td>
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<tr>
<td></td>
<td>Drama 131-132-133</td>
<td>4</td>
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<tr>
<td></td>
<td>Drama 200</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>Speech</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>English 150</td>
<td>3</td>
<td>3</td>
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<td></td>
<td>Electives from Groups I, II, III</td>
<td>5</td>
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<tr>
<td></td>
<td>H. &amp; F.E. 100 (Dance or fencing)</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Sophomore year</td>
<td>*Drama 200</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>Drama 201, 202, 203</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Drama 244</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>English 250</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Group electives or language</td>
<td>5</td>
<td>5</td>
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<tr>
<td></td>
<td>Electives</td>
<td>5-5</td>
<td>5-5</td>
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<td></td>
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<td>15-15</td>
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<tr>
<td>Junior year</td>
<td>*Drama 300</td>
<td>A</td>
<td>W</td>
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<tr>
<td></td>
<td>Drama 301, 302, 303</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Drama 311</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>English 343</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Electives</td>
<td>6-9</td>
<td>6-9</td>
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<tr>
<td>Senior year</td>
<td>Drama 499</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>*B. A. degree candidates are not required to enroll in these courses for credit.</td>
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</tbody>
</table>

#### GRADUATE WORK

See Graduate School Bulletin.

### FOR UNDERGRADUATES

#### For Explanation see Course Descriptions

<table>
<thead>
<tr>
<th>Index</th>
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</thead>
<tbody>
<tr>
<td>100 (101) REHEARSAL AND PERFORMANCE 1 R-6. Enter any quarter. Prereq c/l. Students engaged in any aspect of production including acting, directing, lighting, stagecraft, makeup, costumes, production business and publicity, are eligible for registration.</td>
</tr>
<tr>
<td>110 INTRODUCTION TO THE THEATER 3. A survey of the elements which make up the art of play production. The principles underlying all the arts.</td>
</tr>
<tr>
<td>121-122-123 (121) ELEMENTARY ACTING 3. Principles of pantomime (movement, stage vol.) in relation to the work of the actor.</td>
</tr>
<tr>
<td>131-132-133 (131) STAGECRAFT 4 (2-3). Enter any quarter. The physical theater, scenery, construction, painting, rigging, stage properties and fundamentals of lighting and costuming.</td>
</tr>
<tr>
<td>200 BEGINNING THEATER WORKSHOP V 6-4 R-12. Study and experience in the arts of theater according to the needs of the beginning theater student. Emphasis upon laboratory production, including all arts of the theater.</td>
</tr>
<tr>
<td>221-222-223 INTERMEDIATE ACTING 3 prereq 121-122-123 or c/l. Characterization and scene work. Additional work in voice and pantomime.</td>
</tr>
<tr>
<td>244 (251) STAGE MAKE-UP 2. Principles of and practice in theatrical make-up. Students will work on make-up for major productions.</td>
</tr>
</tbody>
</table>

### FOR UNDERGRADUATES AND GRADUATES

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
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</thead>
<tbody>
<tr>
<td>300 (304) WORKSHOP IN THEATER V 2-10 R-20 prereq previous work in theater or drama courses and consent of chairman. Study and experience in the arts of the theater according to the needs, preparation, and desires of the students; costumes, makeup, lighting stagecraft, backstage organization, stage design, acting, directing, rehearsal and performance, business, and house organization and management.</td>
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<tr>
<td>306 PLAYWRITING 2 R-6 prereq c/l. Techniques and practice in writing short and full length plays.</td>
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</table>

### DRAMA (see English)

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<thead>
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<th>Quarter</th>
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<tbody>
<tr>
<td>311-312-313 (223, 422) DIRECTING 4. Elements of directing the play. Direction techniques in farce, comedy, melodrama, tragedy, musical comedy and opera. Laboratory directing assignments in conjunction with the Theater and Opera Workshops.</td>
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</tr>
<tr>
<td>321-322-323 (301) ADVANCED ACTING 3 prereq 221-222-223 or c/l. Historic and contemporary study of the actor's craft.</td>
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<tr>
<td>329 (342) ACTING FOR TELEVISION 3 prereq 121. Theory and practice of acting before the television camera.</td>
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<tr>
<td>331 (332) ADVANCED STAGECRAFT 3 R. Advanced studies and practice in scenery construction and painting, properties, sound, lighting, costuming and related areas.</td>
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</tr>
<tr>
<td>335-336 (345) STAGE LIGHTING 3 prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment, instruments and their use. Students will work on lighting for major productions.</td>
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<tr>
<td>341-342-343 (341) STAGE COSTUMING 3. Costuming theory and practice; the history of costume; the design and construction of costumes.</td>
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<tr>
<td>351-352-353 (352) DRAMATIC INTERPRETATION 3 prereq 3 hrs. of any voice course. Theory and practice of oral interpretation of dramatic literature, including Reader's theater.</td>
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<tr>
<td>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.)</td>
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<tr>
<td>374 THEATER FOR CHILDREN 3 prereq c/l. History and objectives of the theater for the child audience; survey of existing productions and related activities; study of children's theater programs. Techniques of acting, directing, and producing plays for children to be shown before child audiences in the community.</td>
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<tr>
<td>377 (364) CREATIVE DRAMATICS 3 prereq c/l. Children's literature suitable for dramatic form; improvisational and other playmaking techniques; the dramatic method in teaching non-theater subjects, demonstrations and exercises with laboratory groups of children.</td>
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<tr>
<td>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.</td>
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<tr>
<td>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.</td>
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<tr>
<td>431-432-433 SCENE DESIGN 3. Principles of stage design and the relation of the setting to the play, including principles of design, rendering, drafting and period decor.</td>
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</tr>
<tr>
<td>439 SOUND IN THE THEATER 2. Principles, practice and equipment used to create sound and music effects for the theater.</td>
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</tr>
<tr>
<td>441 (441) ADVANCED MAKE-UP 2 prereq 244 or experience and c/l. Principles and techniques of creating make-ups for characters from dramatic literature. Students will work on make-up for major production.</td>
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</tr>
<tr>
<td>491-492-493 (401-402-403) THEATER PROJECTS V 2-4 prereq the director must have at least 1 yr. of experience in English 244-245-246 and demonstrated ability in theater and drama; to others with c/l on basis of much work in drama and the theater. Independent work in planning, lighting, costume design, direction, playwriting, study of drama.</td>
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<tr>
<td>499 (491) SEMINAR 2 R-6 prereq 10 credits in drama courses or in Eng 267-268-269, 341-342-343, and c/l. Intensive study of dramatic theory relating to acting, directing, design, and dramaturgy.</td>
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#### FOR GRADUATES

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<thead>
<tr>
<th>Quarter</th>
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<tbody>
<tr>
<td>501 STUDIES IN DRAMATIC LITERATURE 2 R-6 Concentration of study of a play or a style.</td>
<td></td>
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</tr>
<tr>
<td>506 (541) ADVANCED PLAYWRITING V 2-4 R prereq 306. Creative work of the student's choice. Structure, characterization and dialogue as used in the play form.</td>
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<tr>
<td>511 (522) SPECIAL PROBLEMS IN DIRECTION 2-4 prereq 312. Special directing problems involved in areas such as musical and opera production, pre-modern drama, etc. Individual directing projects.</td>
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<tr>
<td>512 (521) THEATER ADMINISTRATION 3 c/l. Administration and organizational techniques in the operation of theater producing organizations.</td>
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<tr>
<td>511 (511) TECHNICAL DIRECTION V 2-4 R-6 prereq strong technical background. Includes areas such as purchasing, scheduling, budgeting, staff and cost control, and implementation of performances. Student may serve as technical director for a production.</td>
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<tr>
<td>551 (531) SEMINAR IN HIGH SCHOOL THEATER PRODUCTION 2 prereq 321. Intensive study of play production in the secondary schools with particular emphasis upon direction and training of high school students.</td>
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<tr>
<td>690 THESIS V 2-5 R-15</td>
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</table>
**ECONOMICS**

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

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

Students may major in economics 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, 50 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. The departmental English composition requirement must be completed.

Unless circumstances peculiar to the student’s best interest indicate otherwise the student shall take in the sophomore or junior year, Economics 201-202-203; Mathematics 116 (or equivalent), 125, Computer Science 101; Political Science 201; History 261-262; Anthropology 101 or Sociology 101; Philosophy 110; in the junior or senior year, Economics 301 and 311. It is strongly recommended that all students also take Mathematics 118 or 153 and Economics 408 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 major in Economics: Geography 211; History 247-248-249, 373-374-375, 473-474; Political Science 365; Mathematics 118 or 153, 344-345-346; Business Administration 360, 421, 460. 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 481-482; 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 301, 311 and at least 12 additional credits in upper division courses. Political Science 201-202 and 18 additional credits, of which 12 must be in upper division courses. A comprehensive examination is required of seniors with a major in the Economics-Political Science concentration.

**GRADUATE WORK.** See Graduate School.

**FOR UNDERGRADUATES**

For explanation see Course Descriptions (Index)

101 CULTURAL ECONOMICS 5, Su 3. Institutional 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**

301 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.


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

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

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

A six-year program in school administration (two years of graduate work beyond the bachelor's degree) is offered. The program is designed for practicing and prospective school administrators of demonstrated ability and promise. Admission to the Graduate School is a prerequisite for admission to graduate programs.

General certification requirements for Montana's elementary, junior and senior high schools are set forth below. In addition to satisfying course, credit, and degree requirements, an applicant for certification in Montana must be a citizen of the United States (provisional certification is available for non-citizens upon request of a board of trustees), (2) at least 18 years of age, and (3) able to present a satisfactory health certificate signed by a physician. Additional information may be secured from the Dean of the School of Education.

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

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 the Education major, who file a Statement of Intent with the Executive Secretary of the School of Education at the time they enroll for Education during the freshman and sophomore years. Any student who plans to do student teaching in the kindergarten must have completed Education 331, Early Childhood Education during the freshman and sophomore years. Students preparing to teach in the elementary grades should take Introduction to Psychology in the freshman year.

ADMISSION TO PROFESSIONAL QUARTER AND STUDENT TEACHING. During the spring quarter of the student's junior year formal application for student teaching and assignment to a full quarter in the professional education must be made on forms obtained from the Director of Student Teaching. Normally, the professional quarter occurs during the student's senior year.

Elementary: to qualify for this assignment, the student must have a cumulative gpa of 2.3 or better in all courses attempted, (2) have no grade below C in Education courses, (3) have the consent of the Director of Student Teaching. The professional quarter for the student preparing for elementary certification entails student teaching for an entire day for one full quarter (15 credits), or building up their backgrounds in the field or fields which they teach. The University of Montana offers graduate work leading to the master's and doctor's degrees.

Secondary: to qualify for this assignment, the student must have a cumulative gpa of 2.3 or better in all courses attempted, (2) have no grade below C in Education courses, (3) have the consent of the Director of Student Teaching. The professional quarter for the student preparing for elementary certification entails student teaching for an entire day for one full quarter (15 credits), or building up their backgrounds in the field or fields which they teach. The University of Montana offers graduate work leading to the master's and doctor's degrees.

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

Preparation for Teaching in the Secondary Grades: Candidates must earn a minimum of 40 credits in Education, including the following required courses totaling 35 credits: Education, 200, 208, 300, 309, 310, 407, 408, 450, 459, and their equivalents, and elective courses totaling 5 credits selected from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 45 or more credits in a teaching major and 30 or more credits in a teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in Secondary Education:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
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<tbody>
<tr>
<td>Engl. 190—Freshman Composition</td>
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<td>Group Requirements, Humanities</td>
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<tr>
<td>Group Requirements, Humanities</td>
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<tr>
<td>Psych. 110—Introduction to Psychology</td>
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<td>Total</td>
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Sophomore Year

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Engl. 250—Intermediate Composition</td>
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<tr>
<td>Group Requirements, Humanities</td>
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<tr>
<td>Group Requirements, Social Sciences</td>
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<tr>
<td>English</td>
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<tr>
<td>Teaching Major</td>
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<tr>
<td>Teaching Minor</td>
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Junior Year

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<tbody>
<tr>
<td>Engl. 300—Advanced Composition</td>
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<tr>
<td>Educ. 343—The School Library in Teaching</td>
<td>3</td>
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<tr>
<td>Educ. Electives (Special Area Methods or Others)</td>
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<tr>
<td>Teaching Major</td>
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<td>Total</td>
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<td>18</td>
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</table>

Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 40 credits: Education 200, 208, 300, 309, 310, 407, 408, 450, 459, and their equivalents, and elective courses totaling 5 credits selected from other courses in Education. Students wishing to qualify for standard elementary certification are required to earn 45 or more credits in a teaching major and 30 or more credits in a teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in Elementary Education:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
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<th>Cr.</th>
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<tbody>
<tr>
<td>Engl. 150—Freshman Composition</td>
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<tr>
<td>Gen. 125—126—127—Science for Elementary Teachers</td>
<td>3</td>
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<tr>
<td>Speech 111—Introduction to Public Speaking</td>
<td>3</td>
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<tr>
<td>Psych. 110—Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>Elective Courses</td>
<td>3</td>
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<tr>
<td>Total</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>18</td>
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</tbody>
</table>
Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Educ. 200—Orientation to Education</td>
<td>2</td>
</tr>
<tr>
<td>Educ. 201—Education Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>Educ. 202—The Elementary School Child</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 200—Intuitive Geometry</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 198—First Aid</td>
<td>2</td>
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<tr>
<td>Hist. 261—262—United States History</td>
<td>4</td>
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<tr>
<td>Mat. 130—Theory of Arithmetic</td>
<td>5</td>
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<tr>
<td>Mat. 310—Intuitive Geometry</td>
<td>4</td>
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<tr>
<td>Sci. 201—Modern and Human</td>
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<tr>
<td>Soc. Sciences—Elective Courses</td>
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<tr>
<td>Electives</td>
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</table>

15 16 16

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Educ. 340—Survey of Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 306—TeachingElem. School Reading and</td>
<td>5</td>
</tr>
<tr>
<td>Other Languages</td>
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<tr>
<td>Educ. 309—Teaching Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
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<tr>
<td>Educ. 310—Teaching Elementary School</td>
<td>4</td>
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<tr>
<td>Social Sciences</td>
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<tr>
<td>Engl. 355—Advanced Composition</td>
<td>3</td>
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<tr>
<td>Art 333—340—Elementary School Art</td>
<td>3</td>
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<tr>
<td>Gen. 360—Conservation of Natural and Human</td>
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<tr>
<td>Resources in Montana</td>
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<tr>
<td>H &amp; PE 230—Teaching Physical Education in</td>
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<tr>
<td>Elementary Schools</td>
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<tr>
<td>H&amp;PE 375—The School Health Program</td>
<td>3</td>
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<tr>
<td>Social Sciences—Elective Courses</td>
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<td>Electives</td>
<td>4 6</td>
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<td>16 16 16</td>
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Senior Year

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Educ. 404—Student Teaching: Elementary</td>
<td>15</td>
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<tr>
<td>Educ. 407—Problems in Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>16 16 16</td>
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<td></td>
<td>18 16 16</td>
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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 Dean of the School of Education. Students who expect to teach in states other than Montana should investigate specific requirements because they differ in various states.

Academic and professional requirements for University 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 as 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 baccalaureate has completed a four-year course of elementary school education.
2. Specific requirements in general education that have particular reference to teaching areas in the elementary grades.

Students who expect to be certified to teach in the secondary grades 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 405) will 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

Freshman year: Psych 110 (not counted among the 24 credits required for secondary certification).

Sophomore year: Educ. 200, 2 credits.

Junior year: Educ. 205, 4 credits.

Senior year: Educ 305, 5 credits; 405, 10 credits; 407, 3 credits.

SEQUENCE OF CERTIFICATION COURSES IN ELEMENTARY EDUCATION. Since certification for teaching at the elementary level is based solely 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 requirement for schools of under 100 enrollment includes Education 343, 344, and 345. The student planning a more extended program should consult the library service instructor for advice on additional courses.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

200 ORIENTATION TO EDUCATION 2 prereq Psych 110. Teaching as a profession. The American public school and its purposes, Problems, issues, and trends in education today. Career opportunities in education, certification requirements.

201 EDUCATION LABORATORY V R-6 prereq c/i.

202 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 2 hours per week will be spent in observation of children in the school environment.

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

210 OUTDOOR EDUCATION 2. Outdoor activities and material enrich the elementary school program with practical experience in student teaching.


308 (301) TEACHING ELEMENTARY SCHOOL READING AND OTHER LANGUAGE ARTS 5 prereq 202.

309 (302) TEACHING ELEMENTARY SCHOOL MATHMATICS 3 prereq 202, Math 130, 220.

310 (303) TEACHING ELEMENTARY SCHOOL SCIENCE AND SOCIAL STUDIES 4 prereq 202.

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

323-324-325 SCHOOL MUSIC. (See Music.)

330 PRINCIPLES OF RELIGIOUS EDUCATION. (See Religion.)

341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 4 prereq 120. Organization, routines and procedures, library buildings and equipment, the library's place in governmental organization, library extension work.

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

402 OBSERVATION AND PARTICIPATION: ELEMENTARY V R-6 prereq 308, 309, 310 or =, teaching experience and c/i. Observation and participation in teaching of a demonstration class of grade school students. For students with teaching experience who cannot secure the regular course in student teaching.

403 OBSERVATION AND PARTICIPATION: SECONDARY V R-6 prereq 308 or =, teaching experience and c/i. Observation and participation in teaching of a demonstration class of high school students. For students with teaching experience who cannot secure the regular course in student teaching.

404 STUDENT TEACHING: ELEMENTARY 15 prereq 200, 202, 308, 309, 310, 340 and consent of Director of Student Teaching. Observation and participation in the day-to-day activities of a demonstration class of grade school students. For students with teaching experience who cannot secure the regular course in student teaching.

405 STUDENT TEACHING: SECONDARY 10 prereq 200, 205, 305, and consent of Director of Student Teaching. Classroom teaching and student teaching in a secondary school. Althought some observation and participation are included, the main emphasis is upon responsible student teaching. It includes as many of the regular duties and responsibilities of a teacher as can be included.

406 PROBLEMS IN TEACHING 3 prereq 404 or 405 or concurrent registration. Observation, participation, and study in teaching and observation.

408 LIBRARY PRACTICE 5 prereq 20 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under the supervision of a trained professional librarian. Weekly meeting with Director of Library Service.
FOR UNDERGRADUATES AND GRADUATES

302 ALGEBRA FOR TEACHERS. (See Mathematics.)
303 GEOMETRY FOR TEACHERS. (See Mathematics.)
306 METHODS OF TEACHING EARTH SCIENCE. (See Geology.)
307 METHODS OF TEACHING SECONDARY ART. (See Art.)
316 SCHOOL PUBLICATIONS. (See Journalism.)
322 METHODS OF TEACHING BIOLOGY. (See General.)
326 TEACHING OF CONSERVATION 3 prereq Gen 300 and 12 credits in Educ and c/l. Current conservation programs and materials. Integral part of summer Conservation Education Workshop.
327 PROBLEMS IN CONSERVATION EDUCATION prereq c/l. May be repeated for 3 credits if taken concurrently with Educ 326 or for 6 credits if preceded by Educ 326 and Gen 306. Designing, selection, and evaluation of materials for the teaching of conservation.
328 METHODS OF TEACHING PHYSICS. (See Physics.)
329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY. (See Chemistry.)
331 EARLY CHILDHOOD EDUCATION 3 prereq 12 credits in Elementary Education or teaching experience and c/l. Theory and techniques of teaching in pre-school and primary levels of education. Observation and participation in pre-school programs. Required for kindergarten and primary teachers.
334 REMEDIAL READING 3 prereq a basic course in teaching of reading or teaching experience, and c/l. Diagnosis and treatment of reading difficulties at elementary, secondary and college levels.
345 MATERIALS SELECTION AND BIBLIOGRAPHY 4, Su 3 prereq 341 or 343. Principles of classification and cataloging for small libraries.
349 LIBRARY REFERENCE MATERIALS 4, Su 3 prereq 341 or 343. Basic reference books and bibliographies commonly found in small libraries; reference methods, citation, and bibliographic form.
349 AUDIOVISUAL COMMUNICATION 3. Classroom utilization, organization, and teaching techniques. Prerequisites: some intensive laboratory work including 16mm., filmstrip, slide, overhead, opaque, record player, tape recorder and related instructional material.
360 EDUCATIONAL SOCIOLOGY 3. Education in modern social, industrial, and political life; the school, society, equipment and costs. For part-time teacher-librarians without library training.
370 THE TEACHER AND SCHOOL ORGANIZATION 3 prereq teaching experience or c/l. 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 and Physical Education.)
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.)
384 METHODS OF TEACHING SHORTHAND AND TRANSCRIPTION. (See Business Administration.)
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.)
411 (311) SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 3 prereq teaching experience and c/l. Analysis of current methods in the teaching of language arts in the elementary school. (Not a course in the teaching of reading.)
412 (312) SUPERVISION AND TEACHING OF READING 3 prereq teaching experience and characteristics of gifted readers. Programs and their development in accordance with present day understandings of children and youth.
414 (314) SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 3 prereq teaching experience or c/l. Curriculum trends, instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.
417 (317) SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience or c/l. Curriculum trends, instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.
420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq teaching experience or c/l. Curriculum trends, instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.
421 ADVANCED PROBLEMS IN TEACHING HOME ECONOMICS. (See Home Economics.)
422 TEACHING SPEECH IN THE SECONDARY SCHOOL. (See Communication.)
423 PRINCIPLES AND PRACTICES IN TEACHING OF SECONDARY MATHEMATICS. 3 prereq completion of at least 2/3 of the teaching major or minor in mathematics. Emphasis primarily on the teaching of secondary mathematics and the use of computers in secondary education.
429 SAFETY EDUCATION AND DRIVER TRAINING 3 prereq 3 credits in driver training or experience in this field. General safety education. Offered with moth American Automobile Association and the Montana Highway Patrol.
430 ADVANCED SAFETY EDUCATION AND DRIVER TRAINING 3 prereq 3 credits in driver training or experience in this field. General safety education. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.
427 READING IN JUNIOR AND SENIOR HIGH SCHOOL 3 prereq 205 or c/l. Prereq teacher certification. Programs, materials, testing, reading in the content fields, research and development.
431 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 3 credits in teaching social studies in junior and senior high schools. Curriculum trends, instructional methods, presentation 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, aims, traits, identification, curriculum, teaching methods, and research.
433 METHODS OF TEACHING PHYSICAL EDUCATION IN THE SECONDARY SCHOOL 3 prereq 3 credits in teaching physical education. Problems involved in the teaching of physical education in secondary schools.
434 READING IN ELEMENTARY SCHOOLS o/y 3. Selection and use of reading materials. Functions and use of classroom collections and centralized libraries for curriculum enrichment experiences, reading, guidance, and teaching library skills. Responsibilities of classroom teachers, elementary librarians, library supervisors, elementary principals and administrators.
435 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 3 prereq 12 credits in Librarian Service. Methods of evaluating and improving school c/l. Library service to teachers and students.
436 LIBRARY WORK WITH CHILDREN 3 c/l 341 or 343. A course in children's literature and services for children in public libraries, including story telling and organization of children's department in the public library.
437 LIBRARY WORKSHOP 3 R-8 prereq 9 credits in Librarian Service. Problems of unit organization. General sessions and committee work: individual work on problems of special interest within the workshop topic.
438 LIBRARY SEMINAR V R-10 prereq 20 or more hours in Librarian Service. Independent study and research. Group analysis and discussion of individual projects.
439 PREPARATION OF INEXPENSIVE INSTRUCTIONAL MATERIALS 3 prereq 12 credits in Librarian Service. Preparation of lettering, coloring, enlarging, mounting, and production in the preparation of media for projected and non-projected use.
440 UTILIZATION OF AUDIOVISUAL MEDIA 3 prereq 247. Selection and utilization of various types of audiovisual materials for an instructional communication system.
598 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq 550 or c/i. The background of education in its broadest sense as found in the religion, the economic system, the family, the estate, and other social institutions.

599 SCHOOL AND COMMUNITY 3 prereq c/i. Community resource which may be utilized for the enrichment of the educational program. The relationship of the school to the community as it strives to utilize more fully community recreational resources. Resource people and an inter-disciplinary approach to be used.

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

601 ELEMENTARY SCHOOL ADMINISTRATION 3 prereq teaching experience. Problems in administering the elementary school. Role and competencies of the elementary principal.

602 SECONDARY SCHOOL ADMINISTRATION 3 prereq teaching experience. Administration of secondary education: Role of the principal and areas of competency.

603 SCHOOL SURVEYS AND STUDIES 3 prereq 570. Techniques for organizing and conducting a study of future needs and direction of education in the local school district.

604 SCHOOL SURVIVAL 4 prereq teaching experience. Roles and responsibilities of assigned leaders for improving instruction and promoting in-service growth of personnel.

605 FINANCE 4 prereq teaching experience. Sources of school revenues; related costs, inequalities, legal limitations, and prospective expenditures; relationship of foundation programs and district reorganization.

606 SCHOOL FACILITIES PLANNING V 2-4 prereq 570 or c/i. Procedures in determining school facility needs and planning facilities through the specifications of educational requirements.

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

608 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.

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

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

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

612 PROBLEMS IN TEACHING TYPOWRITING. (See Business Administration.)

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

614 VOCATIONAL DEVELOPMENT THEORY 3 prereq 554. A comprehensive and current survey of vocational development. Special attention given to current literature.

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

616 SUPERVISION OF STUDENT TEACHING 3 prereq c/i. Problems of certified and non-certified personnel (not student); selection, in-service training, supervision, and welfare.

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

618 METHODS OF EDUCATIONAL RESEARCH 4. Research problems; their statement, organization, techniques, tabulation of materials, statistical concepts necessary for interpretation of research data.

619 EDUCATIONAL STATISTICS 4 prereq Math 128, Educ 482 and 565 or concurrent registration therein and c/i.

620 RESEARCH V R-15 prereq c/i.

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

622 THE AMERICAN JUNIOR COLLEGE 3 prereq c/i.

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

624 THESIS OR PROFESSIONAL WRITING V R-30.

COURSE REQUIREMENTS IN MAJOR AND MINOR TEACHING FIELDS

Students who wish to qualify for the Montana Secondary State Teaching Certificate must, according to the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete a minimum of 45 credits in a major teaching field. (Single endorsements on certificates will be allowed if the student presents a minimum of 60 credits in the teaching major in courses approved by both the department or school involved and the
School of Education.) In case the patterns of teaching majors and minors 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 listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits, but still not meet requirements for graduation as a major in the University department. Students who graduate with a major in a subject field taught in Montana high schools will ordinarily qualify for the certificate, provided other requirements are met. Students should keep in mind that a course may not be counted in more than one teaching major or minor.

### ART

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (31 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 123—Drawing</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Art 125, 126, 127—Design</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Art 129—Ceramics</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Art 129—Layout and Lettering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Art 199—200, 201, 202—Survey of Western Art</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Art 212—Printmaking</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Art 233—Sculpture</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Art 238—Water Color</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Art 240—Painting</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Art 254—Elementary School Art</td>
<td>6</td>
<td>3</td>
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<tr>
<td>Art 257—Methods of Teaching Secondary Art</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Art 253—Advanced Design (Photography)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Art 255—Advanced Design (Crafts)</td>
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<td>3</td>
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</tbody>
</table>

### BUSINESS ADMINISTRATION

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 123—Production Typewriting</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bus. Ad. 124—125, 126—Secretarial Stenography</td>
<td>15</td>
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<tr>
<td>Bus. Ad. 127—Beginning Secretarial Practice</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 128—Records Management</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 129—210, 212—Accounting Principles</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 129—Elementary Accounting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 195—292—Office Machines Practice</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 301—Electronic Information Processing</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 306—Methods of Teaching Typewriting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 308—Methods of Teaching Bookkeeping and Basic Business</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 309—210, 212—Accounting Principles</td>
<td>6</td>
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<tr>
<td>Bus. Ad. 390—Principles of Insurance and Risk Management</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 397—398—Legal Environment of Business</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 399—Marketing</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 390—Philosophy of Vocational Education</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 386—Cooperative Vocational Business Education Programs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 201, 202, 203—Principles of Economics</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Econ. 301—Money and Banking</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

**BUSINESS ADMINISTRATION**

*Bus. Ad. 180, 181, 182 are not applicable in the major or minor area.

**Electives:**

- Computer Applications in Education
- Math 110—College Algebra
- Math 117—Trigonometry

### COMPUTER SCIENCE (Minor Only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Minor (33 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>201-2, 2-3—Programming</td>
<td>4</td>
</tr>
<tr>
<td>301—Application of Digital Computers</td>
<td>4</td>
</tr>
<tr>
<td>401-2, 2-3—Advanced Programming</td>
<td>9</td>
</tr>
<tr>
<td>452—Computer Applications in Education</td>
<td>5</td>
</tr>
<tr>
<td>Math 118—College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>Math 117—Trigonometry</td>
<td>5</td>
</tr>
</tbody>
</table>

### DRAMA (Minor only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 101—Introduction to the Theater</td>
<td>3</td>
</tr>
<tr>
<td>Drama 121—Elementary Acting</td>
<td>3</td>
</tr>
<tr>
<td>Drama 131, 133, 135—Stagecraft (any 2)</td>
<td>5</td>
</tr>
<tr>
<td>Drama 244—Stage Make-up</td>
<td>5</td>
</tr>
<tr>
<td>Drama 201, 202, 203—Dramatic Literature (any 2)</td>
<td>6</td>
</tr>
<tr>
<td>Drama 211—Directing</td>
<td>4</td>
</tr>
</tbody>
</table>

**Electives:**

- Any courses in Drama except 100

- Those wishing to receive a teaching certificate while majoring in Drama should read the paragraph DRAMA MAJORS PLANNING TO TEACH at the beginning of the Drama Department course listings.

### ENGLISH (Minor only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 211—Applied Literary Criticism</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Engl. 212—Modern English</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 213—Introduction to Major British Writers</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Engl. 231, 233, 235—Introduction to Major American Writers</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Engl. 312—Shakespeare</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 313—The Structure of Modern English</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 314—Methods of Teaching English</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engl. 315—Problems in Composition</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 415—Literature for the High School Teacher</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Spec. 111—Introduction to Public Speaking</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives:**

- English courses | 21 | 3

*Students are expected to take two quarters of one sequence and one quarter of the other sequence from Engl. 211-212-213 and 231-233-235.

**Among the elective courses there must be at least one advanced course in American literature and one advanced course in British literature. English 360 and other courses in General literature may also be taken. Additional electives from the related fields of Drama, Journalism, and Speech are strongly recommended.

English 150, 250, and 350 may not be included in the teaching major or minor.

### ECONOMICS (Minor only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 201, 202, 203—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>Econ. 301—Money and Banking</td>
<td>4</td>
</tr>
<tr>
<td>Econ. 311—Intermediate Economics Analysis</td>
<td>4</td>
</tr>
</tbody>
</table>

**Electives:**

- Economics courses | 13 | 13

### FOREIGN LANGUAGES

Language taken in high school will be recognized by the University in fulfilling the equivalent for teaching major or minor in a language.

A recommendation by the Foreign Language Department to the School of Education regarding the proficiency of the student is prerequisite to student teaching. (This pertains to both Teaching Majors and Teaching Minors.)
**FRENCH**

<table>
<thead>
<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (45 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Fr 101, 102, 103—Elementary French</td>
<td>15</td>
</tr>
<tr>
<td>Fr 201, 202, 203—Intermediate French</td>
<td>12</td>
</tr>
<tr>
<td>Fr 301—Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>Fr 302—Oral and Written Expression</td>
<td>3</td>
</tr>
<tr>
<td>Fr 303—French Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Fr 311, 312, 313—Survey of French Literature</td>
<td>6</td>
</tr>
<tr>
<td>Fr 401—Applied Linguistics (minors may substitute Fr 402)</td>
<td>3</td>
</tr>
<tr>
<td>Fr 402—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>*For Lang 300—Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives:
- French courses numbered over 300 ........................................... 9
* Must be taken in the junior year.

**GERMAN**

<table>
<thead>
<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (45 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Ger 101, 102, 103—Elementary German</td>
<td>15</td>
</tr>
<tr>
<td>Ger 201, 202, 203—Intermediate German</td>
<td>12</td>
</tr>
<tr>
<td>Ger 301, 302—Oral and Written Expression</td>
<td>6</td>
</tr>
<tr>
<td>Ger 303—German Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Ger 311, 312, 313—Survey of German Literature</td>
<td>6</td>
</tr>
<tr>
<td>Ger 401—Applied Linguistics (minors may substitute Ger 402)</td>
<td>3</td>
</tr>
<tr>
<td>Ger 402—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>*For Lang 300—Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives:
- German courses numbered over 300 .......................................... 9
* Must be taken in the junior year.

**ITALIAN (Minor only)**

<table>
<thead>
<tr>
<th>Teaching Minor (35 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
</tr>
<tr>
<td>Ital 101, 102, 103—Elementary Italian</td>
</tr>
<tr>
<td>Ital 211, 212—Italian Readings</td>
</tr>
<tr>
<td>Ital 311—Italian Grammar Review and Composition</td>
</tr>
<tr>
<td>Ital 311, 312, 313—Survey of Italian Literature</td>
</tr>
<tr>
<td>For. Lang. 300—Methods of Teaching Foreign Languages</td>
</tr>
</tbody>
</table>

**LATIN**

<table>
<thead>
<tr>
<th>Teaching Major (48 credits)</th>
<th>Teaching Minor (36 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Latin 101, 102, 103—Elementary Latin</td>
<td>15</td>
</tr>
<tr>
<td>Latin 211, 212, 213—Latin Readings</td>
<td>11</td>
</tr>
<tr>
<td>Latin 490—Major Latin Writers</td>
<td>26</td>
</tr>
</tbody>
</table>

**RUSSIAN**

<table>
<thead>
<tr>
<th>Teaching Major (48 credits)</th>
<th>Teaching Minor (36 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Rus 101, 102, 103—Elementary Russian</td>
<td>15</td>
</tr>
<tr>
<td>Rus 201, 202, 203—Intermediate Russian</td>
<td>12</td>
</tr>
<tr>
<td>Rus 301—Applied Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Rus 302—Russian Composition and Conversation</td>
<td>3</td>
</tr>
<tr>
<td>Rus 311, 312, 313—Survey of Russian Literature</td>
<td>6</td>
</tr>
<tr>
<td>For. Lang. 300—Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
</tbody>
</table>

**SPANISH**

<table>
<thead>
<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (45 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Span 101, 102, 103—Elementary Spanish</td>
<td>15</td>
</tr>
<tr>
<td>Span 201, 202, 203—Intermediate Spanish</td>
<td>12</td>
</tr>
<tr>
<td>Span 301, 302—Oral and Written Expression</td>
<td>6</td>
</tr>
<tr>
<td>Span 303—Contemporary Hispanic Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Span 311, 312, 313—Survey of Spanish Literature</td>
<td>6</td>
</tr>
<tr>
<td>Span 351, 352, 353—Survey of Spanish American Literature</td>
<td>6</td>
</tr>
<tr>
<td>Span 401—Applied Linguistics (minors may substitute Span 402)</td>
<td>3</td>
</tr>
<tr>
<td>Span 402—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>*For Lang 300—Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives:
- Spanish courses numbered over 300 ........................................ 9
* Must be taken in the junior year.

**GEOGRAPHY (Minor only)**

<table>
<thead>
<tr>
<th>Teaching Minor (35 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
</tr>
<tr>
<td>Geog. 101—Physical Elements of Geography</td>
</tr>
<tr>
<td>Geog. 102—Introductory Human Geography</td>
</tr>
<tr>
<td>Geog. 201—Map Interpretation</td>
</tr>
<tr>
<td>Geog. 301—Economic Geography</td>
</tr>
<tr>
<td>Geog. 330—Cultural Geography</td>
</tr>
<tr>
<td>Geog. 350—Climateography</td>
</tr>
<tr>
<td>Geog. 370—Landform Analysis</td>
</tr>
</tbody>
</table>

**HEALTH AND PHYSICAL EDUCATION**

<table>
<thead>
<tr>
<th>Teaching Minor (60 credits)</th>
<th>Teaching Minor (36 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>H&amp;EPE 200—History and Principles of Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 215—Advanced Professional Preparation</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 240—Care and Prevention of Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 261—Introduction to Recreation</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 290—Human Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 302—Methods of Teaching Phys Educ Secondary Level</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;EPE 330—Teaching Phys Educ in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 350—The High School Intramural Program</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;EPE 360—Organization &amp; Administration of Phys Educ</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 375—The School Health Program</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 375—Methods in Teaching Health</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 390—Applied Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 395—Kinesiology</td>
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</tr>
<tr>
<td>H&amp;EPE 395—Preventive &amp; Corrective Physical Education</td>
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</tr>
<tr>
<td>H&amp;EPE 199—First Aid (or H&amp;EPE 393)</td>
<td>2</td>
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<tr>
<td>H&amp;EPE 400—Measurement and Evaluation in Phys Educ</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 400—Physiology of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;EPE 490—Teaching Physical Education Activities</td>
<td>2</td>
</tr>
</tbody>
</table>

**HISTORY AND POLITICAL SCIENCE**

<table>
<thead>
<tr>
<th>Teaching Minor (50 credits)</th>
<th>Teaching Minor (35 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Hist. 101, 102, 103—Modern European Civilization</td>
<td>9</td>
</tr>
<tr>
<td>Hist. 201, 202, 203—Survey of Ancient and Medieval History</td>
<td>6</td>
</tr>
<tr>
<td>Hist. 301, 302—United States History</td>
<td>8</td>
</tr>
<tr>
<td>Pol. Sci. 201, 202—American Government</td>
<td>10</td>
</tr>
<tr>
<td>Pol. Sci. 231—Introduction to International Relations</td>
<td>5</td>
</tr>
<tr>
<td>Educ. 426—Methods of Teaching Social Studies in Secondary Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

*Electives: Courses in History ................................................ 12
* Must include at least 9 credits of upper division courses.
### HOME ECONOMICS

<table>
<thead>
<tr>
<th>Teaching Major (56 credits)</th>
<th>Teaching Minor (37 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Ec. 155—Textile Selection</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 167—Introductory Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 209—Home Management in Theory and Practice</td>
<td>2</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. 246—Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 256—Clothing the Family</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 300—Home Planning</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 303—Interior Design and Furnishings</td>
<td>5</td>
</tr>
<tr>
<td>H Ec. 356—Meal Management</td>
<td>5</td>
</tr>
<tr>
<td>H Ec. 309—Family Finance</td>
<td>5</td>
</tr>
<tr>
<td>H Ec. 310—Home Living Center</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 321—Methods of Teaching Home Economics</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 325—Advanced Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 386—Child Development</td>
<td>2-3</td>
</tr>
<tr>
<td>H Ec. 387—Advanced Problems in Child Development</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 398—Human Development and Family Relationships</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 421—Advanced Problems in Teaching Home Economics</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 490—Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

*Must be taken before Education 405.

### JOURNALISM (Minor only)

<table>
<thead>
<tr>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jour. 100—Introduction to Journalism</td>
</tr>
<tr>
<td>Jour. 196—Current Affairs</td>
</tr>
<tr>
<td>Jour. 207—Elementary Education</td>
</tr>
<tr>
<td>Jour. 290—History and Principles of Journalism</td>
</tr>
<tr>
<td>Jour. 316—School Publications</td>
</tr>
<tr>
<td>Jour. 390—Principles of Advertising</td>
</tr>
<tr>
<td>Jour. 391—Advanced Reporting</td>
</tr>
<tr>
<td>Jour. 392—News Editing</td>
</tr>
<tr>
<td>Jour. 405—Editorial Writing</td>
</tr>
<tr>
<td>R &amp; TV 140—Introduction to Radio and Television</td>
</tr>
</tbody>
</table>

### LIBRARY SERVICE (Minor only)

<table>
<thead>
<tr>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ. 349—Organization and Administration of the School Library</td>
</tr>
<tr>
<td>Educ. 344—Cataloging and Classification</td>
</tr>
<tr>
<td>Educ. 345—Materials Selection and Bibliography</td>
</tr>
<tr>
<td>Educ. 346—Library Reference Materials</td>
</tr>
<tr>
<td>Educ. 347—Audiovisual Communication</td>
</tr>
</tbody>
</table>

Elections: From the following:
- 11-15 credits

| Educ. 346—Library Work with Children | 3                             |
| Educ. 444—Library Seminar | 5-10                           |
| Educ. 445—Library Practice | 2                             |
| Engl. 482—Literature for the High School Teacher | 3                             |

### MATHEMATICS

<table>
<thead>
<tr>
<th>Teaching Major (56 credits)</th>
<th>Teaching Minor (35 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 121—Elementary Functions (College Algebra and Trigonometry)</td>
<td>5</td>
</tr>
<tr>
<td>Math. 125—Statistics</td>
<td>5</td>
</tr>
<tr>
<td>Math. 152—Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>Math. 153—Analytic Geometry and Calculus II</td>
<td>5</td>
</tr>
<tr>
<td>Math. 154—Analytic Geometry and Calculus III</td>
<td>5</td>
</tr>
<tr>
<td>Math. 251—Analytic Geometry and Calculus IV</td>
<td>5</td>
</tr>
<tr>
<td>Math. 252—Analytic Geometry and Calculus V</td>
<td>5</td>
</tr>
<tr>
<td>Math. 300—The Real Number System</td>
<td>5</td>
</tr>
<tr>
<td>Math. 302—Algebra for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Math. 303—Geometry for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Educ. 325—Principles and Practices in Teaching Secondary Mathematics</td>
<td>(3)</td>
</tr>
</tbody>
</table>

### MUSIC

<table>
<thead>
<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 111, 112, 113—Theory I</td>
<td>6</td>
</tr>
<tr>
<td>Music 125—Introduction to Music Literature</td>
<td>4</td>
</tr>
<tr>
<td>Music 130, 139—Aural Perception I</td>
<td>4</td>
</tr>
<tr>
<td>Music 251, 252, 253—Th&lt;sup&gt;2&lt;/sup&gt;</td>
<td>6</td>
</tr>
<tr>
<td>Music 257, 258, 259—Aural Perception II</td>
<td>6</td>
</tr>
<tr>
<td>Music 322, 324, 325—School Music</td>
<td>6</td>
</tr>
<tr>
<td>Music 331—Conducting Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Music 332—Conducting Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Music 201, 401—Secondary Applied Major</td>
<td>11</td>
</tr>
<tr>
<td>Music 100—Secondary Applied Minor</td>
<td>5</td>
</tr>
</tbody>
</table>

### BIOLOGICAL SCIENCE

<table>
<thead>
<tr>
<th>Teaching Major (59-62 credits)</th>
<th>Teaching Minor (59-62 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro. 200—General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>Bot.-Zool. 111—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>Bot. 114, 115—General Botany</td>
<td>5-10</td>
</tr>
<tr>
<td>Bot. 265—Local Flora</td>
<td>4</td>
</tr>
<tr>
<td>Zool. 206—Field Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Bot. or Zool. 200—Basic Concepts of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Bot. 355—Principles of Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 113, 115—General Zoology</td>
<td>10-15</td>
</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Bot. 325—Plant Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 222—Human Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot.-Zool. 450—Genetics</td>
<td>5</td>
</tr>
<tr>
<td>Gen. 302—Methods of Teaching Biology</td>
<td>5</td>
</tr>
<tr>
<td>Gen. 132—Evolution, Genetics, and Man</td>
<td>3</td>
</tr>
<tr>
<td>Bot. 205—Local Flora</td>
<td>3</td>
</tr>
<tr>
<td>Bot. or Zool. 200—Basic Concepts of Ecology</td>
<td>3-4</td>
</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
</tbody>
</table>

Elections: From the following:
- Upper division Biology courses 5-7

The following supporting work must accompany the teaching major: *Chem 101, 102, 160, Geol 101, 102, 103 or Physics 111, 112, 113; and Math 116. Supporting work which may accompany the teaching minor: Chem 101, 102, 160.

### CHEMISTRY

<table>
<thead>
<tr>
<th>Teaching Major (54 credits)</th>
<th>Teaching Minor (54 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121, 122—College Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Chem. 245—Quantitative Analysis</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 201, 202—Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>Chem. 370—Survey of Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 332—Methods of Teaching High School Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 371—Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 452—Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 481—Elementary Biochemistry</td>
<td>5</td>
</tr>
</tbody>
</table>

Elections: From the following:
- Chemistry courses numbered over 300 3-5
EARTH SCIENCE

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(56 credits)</td>
<td>(34 credits)</td>
</tr>
</tbody>
</table>

**Required Courses:**
- Geol. 101—Physical Elements of Geography 5
- Geol. 110—Physical Geology 5
- Geol. 120—Introduction to Geologic Maps and Aerial Photos 3-4
- Geol. 201—Map Interpretation 3
- Geol. 128—Field Methods 3
- Phys. 131—Introduction to Astronomy 4
- Geol. 200—General Paleontology 4
- Geol. 203—Historical Geology 4
- For. 210—Forest Soils 4
- Geol. 210—Introduction to Rocks and Minerals 4
- Gen. 300—Conservation of Natural and Human Resources 3
- Geol. 310—Geomorphology 3
- Geol. 370—Landform Analysis 3
- Geol. 306—Methods of Teaching Earth Science 3
- Geol. 309—Climatology 5

**Electives:**
- 4-6

**Electives:**
- 3
- 7
- 3
- 3
- 4
- 4
- 3
- 3
- 3
- 3
- 3

**GENERAL SCIENCE (Broad Fields Major only)**

Does not qualify for teaching Chemistry or Physics.

**Teaching Major** (76 credits)

**Required Courses:**
- Micro. 100—Elementary Microbiology 5
- Bot. 111 or Zoo. 111—Introduction to Biology 5
- Bot. 114—General Botany 5
- Bot. 265—Local Flora 5
- Chem. 101—General Chemistry 8
- Chem. 160—Survey of Organic Chemistry 3
- Gen. 300—Conservation of Natural and Human Resources 3
- Geol. 101—Introduction to Geology 4
- Physics 111, 112, 113—General Physics 15
- Physics 131, 132—Introduction to Astronomy 4
- Zoo. 111—General Zoology 3
- Zool. 206—Field Zoology 3
- Educ. 420—Methods of Teaching Secondary Science (3)

**Electives:**
- Courses from Geology, Botany, Chemistry, Physics, Zoology 6

*Does not qualify for teaching Chemistry or Physics.*

**PHYSICS**

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(48 credits)</td>
<td>(36 credits)</td>
</tr>
</tbody>
</table>

**Required Courses:**
- Phys. 221, 222, 223—General Physics 15
- Phys. 301—Vector Analysis 3
- Phys. 314—Electricity 3
- Phys. 322—Light 4
- Phys. 328—Methods of Teaching Physics 3
- Phys. 341—Fundamentals of Modern Physics 5
- Phys. 342—Mechanics 3
- Phys. 441—Advanced Laboratory 2
- Phys. 480—Physics Seminar I 1

**Electives:**
- From Physics courses 6
- Math courses must be taken to satisfy requirements of the various physics courses.

**SOCIAL SCIENCES (Broad Fields Major only)**

Does not qualify for teaching Economics, Geography or Sociology.

**Teaching Major** (76 credits)

**Required Courses:**
- Econ. 201, 202, 203—Principles of Economics 9
- Geog. 331—Political Geography 3
- Geog. 334—Cultural Geography 3
- Hist. 101, 102, 103—Modern European Civilization 9
- Hist. 201, 202, 203—Survey of Ancient and Medieval History 6
- Hist. 204—17th-18th Century History 4
- Pol. Sci. 201, 202—American Government 10
- Soc. 101—Introduction to Sociology 5
- Educ. 426—Methods of Teaching Social Studies in Secondary Schools (3)

**Electives:**
- Limited to upper division courses in the areas of Anthropology, Economics, Geography, History, Political Science, Sociology, and must include at least two courses in history, one in economics, one in geography and one in sociology 22

**SOCIOLGY (Minor only)**

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(32 credits)</td>
<td>(35 credits)</td>
</tr>
</tbody>
</table>

**Required Courses:**
- Anthro. 152—Man and His Culture 5
- Anthro. 153—Cultural Anthropology 5
- Soc. 101—Introduction to Sociology 5
- Soc. 200—American Society 5
- Soc. 207—Introduction to Social Change 5
- Soc. 208—Individual and Society 5
- Soc. 307—Socialization 3
- Soc. 360—Introduction to Complex Organizations 4

**SPEECH**

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(55 credits)</td>
<td>(33 credits)</td>
</tr>
</tbody>
</table>

**Required Courses:**
- Spch 101—Introduction to Systems of Communication 3
- Spch 111—Introduction to Public Speaking 3
- Spch 115—Argumentation 5
- Spch 118—Practicum in Oral Expression 3
- Sp Co 232, 233, 234—Introduction to Communication 15
- Sp Co 236—Introduccion to Communication 5
- Spch 266—Forensics 3
- Spch 314—Discussion and Small Groups 3
- Sp Pa 330—Introduction to Speech Pathology 3
- Sp Co 353—General Semantics 3
- Spch 360—Speech Composition 3
- Spch 361—Performance of Literature 3
- Spch 420—Teaching Speech in the Secondary School 3
- Spch 461—History of American Public Address 3
- Spch 462—Directing the Forensic Program 3

**Electives:**
- Courses in Speech Communication 3

**ENGLISH**

Students study English for a variety of reasons. Some have practical purposes; they realize the need for greater clearness, precision and ease in their use of English. Some are motivated by a general cultural interest; they hope, through a study of literature, to clarify and enrich their knowledge of themselves and their world. Others combine cultural purposes with specific vocational or professional objectives, such as professional writing or teaching. Those who choose English as their major usually fall into one of three groups:

**SCHEDULE A:** Potential critics, scholars, and college teachers, who can increase their critical insight by study of the great literary works of the past and the present, and can prepare themselves for graduate work by gaining an understanding of the methods and materials of literary study.

**SCHEDULE B:** Potential creative writers, whose powers can be tested and directed in an environment favorable to the development of their individual abilities in the writing of poems, short stories, novels, and plays.

**SCHEDULE C:** Prospective teachers in high school, who need a program which will provide them with an adequate background in their subject matter as well as required course work for secondary school certification.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ENGLISH**

In addition to the general requirements for graduation listed earlier in the catalog, the student seeking the degree of Bachelor of Arts with a major in English must complete a minimum of 50 credits in the major but not more than 66 credits in the department. English 150, 250, 350 and English 202, 311, 351 when used as a substitute for 250 or 350 may 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 decided definitely which of the schedules he is to follow.

All students majoring or minoring in English, whether their degrees are taken in the department of English or the School of Education, will be required to take the basic core curriculum in English studies. Schedules A, B, and C presume such a core curriculum and build from that.
CORE CURRICULUM

I. English majors must satisfy the departmental composition requirement. All 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 to English 200 in the sophomore year; two quarters in one sequence and one in the other from English 211-212-213, and 221-222-223; English 342 or 343; 3 credits from English, 390 or 391. The foreign language requirement listed earlier in the catalog must be satisfied. Courses in Art, History, Philosophy, Psychology, and the Social Sciences are recommended.

SCHEDULE A. LITERATURE

Students who hope to do graduate study in English should supplement the above courses with the following required minimum.

English 485 (Chaucer); 3 credits from 491-492-493. The remaining credits required for completion of the minimum 50 may be selected from offerings in General Literature: English, American Literature numbered above 300. The maximum of courses up to 68 credits may include 401-402-403; 404, 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.

REQUIREMENTS: English 301, 302, 303; 3 credits from 306 may be substituted for one quarter in this sequence); 401, 402, 403, 3 credits from 440, 441, 442; 3 credits from 491, 492, 493. The additional electives may be taken from courses in General Literature; and English and American Literature and writing numbered above 300.

SCHEDULE C: TEACHING

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

Option 1

English 371, 382, 482; Speech 111.

Electives: Other electives may be chosen from courses in the departments of English, History, and Philosophy, 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.

Option 2

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).

20 credits of electives chosen from the following Related Fields: Drama, Journalism, Speech.

Students following Option 2 must take a minimum of 45 credits in English and 30 credits in Related Fields, as defined above. The program qualifies the student for the Montana State teaching certificate in English (Broad Fields). This certificate does not require a teaching minor.

GRADUATE WORK. See Graduate School 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 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 3. A remedial course with emphasis on problems of basic mechanics (usage, punctuation, spelling, etc.), sentence structure, and simple organization. (Credit not allowed toward a degree.)

100 LOWER DIVISION COMPOSITION 3. A course designed to help students learn to write accurately and logically about the subject they already understand.

300 UPPER DIVISION COMPOSITION 3. 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.)

FOR UNDERGRADUATES AND GRADUATES

460 ADVANCED COMPOSITION 3. 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 3. Practice in creative writing at the introductory level.

301-302-303 CREATIVE WRITING 3 prereq 202 or 351 or 352 and c/l. Enter any quarter. Fiction and/or poetry.

306 THE WRITING OF DRAMA. (See Drama.)

FOR GRADUATES AND UNDERGRADUATES

401-402-403 ADVANCED CREATIVE WRITING 3 prereq 301-302-303 and c/l. Enter any quarter. Fiction and/or poetry.

440 (305) 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.

441 (203) 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. Fiction writing. Class and individual instruction.

511 POETRY WORKSHOP V R-15 c/i. Poetry writing. Class and individual instruction.

512 DRAMA WORKSHOP. (See Drama 541.)

699 THESIS V R-6 to 9.

LINGUISTICS

FOR UNDERGRADUATES AND GRADUATES

360 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. Phonetico-grammatical and phonological 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 General 360 or English 371 or c/l. 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 General (English) 360 or English 371 or c/l. Subjects vary: application of linguistics, dialectology, styloistics, phonemics and morphemics, theories of grammar.

TEACHER TRAINING

FOR UNDERGRADUATES

432 LITERATURE FOR THE HIGH SCHOOL TEACHER 3. Open to seniors only. The literature usually taught in grades 7 through 12 with intensive study of a few selections.

FOR UNDERGRADUATES AND GRADUATES

382 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 grades 7 to 12; observation of expert teachers; some practice in teaching and correcting of student themes. Does not count in curricular A and B. Credit is not allowed for this course and the identical course Educ 362.

FOR GRADUATES

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

FOR UNDERGRADUATES

101 INTRODUCTION TO THE READING OF LITERATURE 3. Learning to read and understand types of literature for understanding and pleasure. (Credit not allowed toward a degree in English.)


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

211-212-213 INTRODUCTION TO MAJOR BRITISH WRITERS 3, 4. 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


341 TUDOR AND JACOBEAN DRAMA 3 prereq 9 credits of Literature. Repertory of literature from Shakespeare through Ford and Shirley, 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.

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

386 BRITISH LITERATURE: SIXTEENTH CENTURY 3 prereq 9 credits of Literature. May include both prose and poetry, but emphasis will be on the Neo-Augustan poets, Sidney, Marlowe, and the nondramatic poetry of Shakespeare.

388 BRITISH LITERATURE: SEVENTEENTH CENTURY. POETRY TO 1660 3 prereq 9 credits of Literature. Restricted to metaphysical poetry beginning with Donne, and classical (late 16th century) poetry beginning with Jonson, and their interrelationship as seen in poets like Carew and Marvell.

393 BRITISH LITERATURE: RESTORATION 3 prereq 9 credits of Literature. The major Neo-Augustan poets and prose writers, with emphasis upon Defoe, Swift and Pope.

390 BRITISH LITERATURE: EARLY EIGHTEENTH CENTURY 3 prereq 9 credits of Literature. The major Neo-Augustan poets and prose writers, with emphasis upon Gray, Johnson, and Fielding.

392 BRITISH LITERATURE: EARLY NINETEENTH CENTURY 3 prereq 9 credits of Literature. Principal focus on the Romantics: Blake, Wordsworth, Coleridge, Shelley, Byron, Keats.

393 BRITISH LITERATURE: MIDDLE AND LATE NINETEENTH CENTURY 3 prereq 9 credits of Literature. Major figures of the Victorian period: novelists (Dickens through Conrad), poets (Tennyson, Browning, Arnold, Hopkins), and essayists (Carlyle, Mill, Newman, Ruskin.)

398-399 BRITISH LITERATURE: TWENTIETH CENTURY 3 prereq 12 credits of Literature. Enter either quarter. Major figures in prose and verse.

400 CONTEMPORARY LITERATURE 3 prereq 12 credits of literature. Representative British, American, Spanish, and Continental writers.

400 ADVANCED LITERARY STUDIES V 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.

423-424-425 POETRY 3 prereq 9 credits of Literature. A chronological survey, with emphasis on close reading of representative works by major writers.

FOREIGN LANGUAGES—47

431 PROBLEMS IN AMERICAN LITERATURE 3 R-6 prereq 12 credits in Literature. Special genres, figures, and intellectual currents studied in depth.

440 (305) TECHNIQUES OF MODERN FICTION (See listing under Creative Writing.)

441 (203) TECHNIQUES OF MODERN POETRY (See listing under Creative Writing.)

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

484 BRITISH LITERATURE: MEDIEVAL 3 prereq 12 credits of Literature. Reading of the major medieval works. (484) Chaucer 3 prereq 12 credits of Literature. The intensive study of Chaucer's major poetry in original Middle English.

486 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: PROBLEMS IN BRITISH LITERATURE 3 R-6 prereq 12 credits in Literature offered from various points of view: a period, a person, a genre.

504-505 SEMINAR: PROBLEMS IN AMERICAN LITERATURE 3 R-6 prereq 12 credit standing. Enter either quarter. Studies in American Literature offered from various points of view: a period, a person, a genre.

600 SEMINAR: PROBLEMS IN RESEARCH V. Guidance in graduate subjects and research.

699 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 used to supplement regular class work, and are available to give the individual student opportunity to develop active use of the language.

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

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 or 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. The departmental English composition requirement must be completed.

RECOMMENDED BACKGROUND COURSES FOR FOREIGN LANGUAGE MAJORS. The Department of Foreign Languages strongly recommends that all foreign language majors take, as early as possible in their college career, the course entitled Introduction to the Humanities (Humanities 151-152-153) and Classical Mythology (Humanities 160).

GRADUATE WORK. See Graduate School Bulletin.

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 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, 209, 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

For Explanation see Course Descriptions (Index)

101-102-103 ELEMENTARY FRENCH 5.
201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =.
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 201-203.
311-312-313 (301-302-303) SURVEY OF FRENCH LITERATURE 2 prereq 203. Enter any quarter.
401 APPLIED LINGUISTICS 3 prereq 203 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
402 ADVANCED COMPOSITION 3 prereq 203 or c/l. Intensive practice in writing on different levels of usage and style.
411 (311) MEDIEVAL FRENCH LITERATURE 3 prereq 203.
421 (321) FRENCH RENAISSANCE 3 prereq 203.
431 (331) 17TH CENTURY FRENCH LITERATURE 3 prereq 203.
432 (351) 18TH CENTURY FRENCH LITERATURE 3 prereq 203.
433 (361) CONTEMPORARY FRENCH LITERATURE 3 prereq 203.
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 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 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, 320, 321, 322. German 303 may be substituted for one quarter of history, but if so, may not 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 for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 (213-215) GERMAN READINGS 4 prereq 103 or =. For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-203.
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/l. Emphasis on active use of German.
303 GERMAN CIVILIZATION AND CULTURE 3 prereq 302 or c/l.
311-312-313 (301-302-303) SURVEY OF GERMAN LITERATURE 2 prereq 203. Enter any quarter.
401 APPLIED LINGUISTICS 3 prereq 203 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
402 ADVANCED COMPOSITION 3 prereq 203 or c/l. Intensive practice in writing on different levels of usage and style.
431 (341) THE AGE OF GOETHE 3 prereq 311-312-313, or concurrent registration and c/l.
432 (341) FAUST 3 prereq 311-312-313, or concurrent registration and c/l.
433 (351) 19TH CENTURY REALISM 3 prereq 311-312-313, or concurrent registration and c/l.
451 20TH CENTURY GERMAN LITERATURE 3 prereq 311-312-313, or concurrent registration and c/l.
460 HISTORY OF THE GERMAN LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/l.
490 (491) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES

111-112 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.

GREEK

No major is given in Greek.

101-102 ELEMENTARY GREEK 5.
103 ELEMENTARY GREEK 3 prereq 102.
211-212 (213-215) GREEK READINGS 3 prereq 103.

HUMANITIES

160 (161) CLASSICAL MYTHOLOGY 2. Deities and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.
220 (221) FOREIGN LITERATURES IN TRANSLATION 2. Periods and literatures vary from quarter to quarter. No knowledge of foreign language necessary.

ITALIAN

No major is given in Italian.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY ITALIAN 5.
211-212 (213-215) ITALIAN READINGS 4 prereq 103 or =.
217 ITALIAN GRAMMAR REVIEW AND COMPOSITION 3 prereq 212 or =.
FOREIGN LANGUAGES—49

FOR UNDERGRADUATES AND GRADUATES

311-312-313 (301-302-303) SURVEY OF ITALIAN LITERATURE 2 prereq 201. Enter any quarter.

LATIN

MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in Latin must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Latin 101 to 213 inclusive, or equivalent.
2. At least 30 credits of Latin 490 (Greek 101-102 may be substituted for 4 credits of Latin 490.)
3. History 302 and 304 are also recommended for majors.

FOR UNDERGRADUATES AND GRADUATES

101-102-103 ELEMENTARY LATIN 5.
211-212 (213-215) LATIN READINGS 4 prereq 103 or =.
213 (217) LATIN READINGS 3 prereq 212 or =.

FOR GRADUATES

699 THESIS V R-15.

ROMANCE PHILOLOGY

FOR UNDERGRADUATES AND GRADUATES

360 (375) INTRODUCTION TO ROMANCE PHILOLOGY 2 prereq 203 or 217 (Latin or a Romance Language). The development of the Romance languages from Latin to their present-day forms.

RUSSIAN

MAJOR REQUIREMENTS: Candidates for the degree of Bachelor of Arts with a major in Russian must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. Russian 101 to 203, inclusive, or equivalent.
2. At least 30 credits of upper division work in Russian, 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, 305, 324, 325, 326.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY RUSSIAN 5.
201-202-203 INTERMEDIATE RUSSIAN 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in Russian, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
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 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
302 ADVANCED COMPOSITION 3 prereq 202 or c/l. Intensive practice in writing on different levels of usage and style.
421 (335) SPANISH NOVEL TO 1800 3 prereq 311-312-313, or concurrent registration and c/l.
422 (351) 19TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/l.
423 (363) 20TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/l.
431 (333) SPANISH DRAMA TO 1800 3 prereq 311-312-313, or concurrent registration and c/l.
432 (353) 19TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/l.
433 (361) 20TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/l.
441 (381) SPANISH POETRY 3 prereq 311-312-313, or concurrent registration and c/l.
460 HISTORY OF THE SPANISH LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/l.
490 (491) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES

111-112 SPANISH 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 Spanish.
590 GRADUATE SEMINAR 3 R-9.

THE TEACHING OF FOREIGN LANGUAGES

FOR UNDERGRADUATES AND GRADUATES

390 (391) METHODS OF TEACHING FOREIGN LANGUAGES 3 prereq Foreign Language 303 or equivalent. Fundamental concepts, objectives, and techniques in the teaching of modern foreign languages. Separate sections in individual languages whenever practicable.

FOR GRADUATES

501 RESEARCH METHODS 1. Required of all candidates for an advanced degree in any foreign language.
590 (591) SEMINAR ON LANGUAGE TEACHING 9. For language teachers (NDEA participants only). Credits may be applied toward a graduate degree in either languages or Education.
FORESTRY

is the professional management of natural resources, primarily forests and forest lands. A forester analyzes and interprets the physical, biological, social, 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 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 one-and-one-half years of algebra and one year of geometry are substantial. The increase of one-and-one-half years of algebra and one year of geometry are desirable.

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.

The University of Montana School of Forestry was founded in 1913, one of the original group accredited by the Society of American Foresters. It is currently one of 31 accredited schools in the nation.

HIGH SCHOOL PREPARATION. The student entering the School of Forestry should have a sound high-school background in English, mathematics, social studies, and the sciences. A minimum of one and one-half years of algebra and one year of geometry are desirable.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY. A minimum of 105 credits, with or without the physical education requirement. Three courses in communication selected from English 150, 250, 350, 450; Forestry 220; Journalism 334; Speech 111, 112, 115, 118. To continue as majors in the School of Forestry during the second, third and fourth years, students must maintain a grade-point average of 2.0 or above. Transfer students must have a grade-point average of 2.5 or above to be admitted to the School of Forestry.

Special Expense Charge: all students enrolled in the School of Forestry or taking Forestry courses are assessed $15.00 per quarter for travel, laboratory materials and other instructional costs.

BACHELOR OF SCIENCE IN FORESTRY.

This degree meets the professional requirement for foresters. There are three majors: forest resources management, forest science, and forest business.

CORE CURRICULUM

(Courses required of all majors in Forest Resources Management) (First Year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
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<tbody>
<tr>
<td>Bot 111-114-115—General Botany</td>
<td>A W S</td>
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<tr>
<td>Chem 101-102—General and Organic Chemistry</td>
<td>4 5</td>
</tr>
<tr>
<td>Math 116-117—College Algebra, Trigonometry</td>
<td>5 5</td>
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<tr>
<td>H &amp; PH 100</td>
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(Second Year)

| Bot 250—Basic Concepts of Ecology | - 3 |
| Bot 251—Ecology Laboratory | - 2 |
| Bot 355—Plant Physiology | (5) |
| Ecol 251—Introduction to Environmental Sciences | (3) |
| Phys 111—General Physics | 5 |
| For 210—Forest Soils | - 4 |
| For 252—Land Survey Systems and Graphics | - 5 |
| For 290-291—Dendrology | - 2 |

(Electives (2))

(Third Year)

| For 300—Forest Measurements | 4 - |
| For 310—Forest Biometrics | - 3 |
| For 351—Aerial Photogrammetry | - 3 |
| For 390—Foundations of Silviculture | - 3 |
| For 320—Range Management | 4 |
| For 370—Wildlife Conservation | (3) (4) (3) |
| For 385—Wildland Recreation Management | - 3 |
| For 386—Wildland Protection | (4) |
| For 322—323—Natural Resources Policy & Administration | 3 - |
| For 354—Transportation Systems | - 4 |

(Fourth Year)

| For 420-421—Forest Economics | 3 - |
| For 420-2-3—Integrated Forest Resources Management | 3 - |
| For 400—Senior Thesis | - 3 |
| For 401—Forest Management | - 4 |
| Electives | - - |

(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 in wood technology, wood chemistry, or forest industries

MAJOR IN FOREST RESOURCES MANAGEMENT

This major is for students who are preparing for work in resource management, administration, and staff specialties. Every student with a major in forest resources management receives a broad basic education in forest sciences 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 FOREST SCIENCE

This major is for students who wish to prepare for graduate study in some specific area of forest science. It is open only to students who are approved by the Dean of the School of Forestry and maintain a 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 BSRF degree; however, at the end of 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.
253 LAND SURVEY SYSTEMS AND GRAPHS 3 (4-3) prereq Math 112, 116, or c/i. The theory and practice of the land survey systems. Measurements and legal aspects of property boundaries and control that make up modern land surveying. Certain principles of descriptive geometry, maps, charts, contours and the graphical presentation of data.

290-291 DENDROLOGY 3 (2-3), 2 (1-3) prereq Bot 114, 115 or c/i. Identification, classification, silvical characteristics, range and economic importance, of the trees of the United States and Canada. (290) The broadleaf trees. (291) The conifers.

300 FOREST MEASUREMENTS 4 (3-4) prereq 252, Math 116, or c/i. The measurement, inventory and growth determination of the forest. Other forest inventory methods. Collection and analysis of data for volume and yield tables.

309 FARM FORESTRY 3 (2-4) prereq junior standing in the School of Forestry. The application of the principles of silviculture, management, and silviculture to small woodland holdings.

310 FOUNDATIONS OF SILVICULTURE 3 prereq Bot 251 or c/i. Forest site productivity, tree selection, site development, species composition, manipulation of vegetation, effect of environment on race and species formation. Development of seed, germination, seedling, and tree growth.

311 SILVICULTURAL METHODS 5 (4-4) prereq Bot 250, 251 or c/i. The production of forest crops including regeneration methods, nursery practices, intermediate cuttings and other cultural operations.

312 SEEDING AND PLANTING 3 (2-4) prereq 311. Artificial reproduction of the forest; collection, extraction, storage, and testing of forest plant material; seed; direct and range nurseries; nursery practices; forest planning.

351 FOREST FIRE PLANS 3 (3-0) prereq junior standing and 330. Area pre-suppression planning and fire use planning. Action planning on project size fires.

350 WOOD TECHNOLOGY 4 (3-3) prereq 290. Wood identification and anatomy; investigating the interactions of the physical, chemical and mechanical properties to specific uses.

357 TIMBER MECHANICS 3 (2-2). Elementary statics and strength of materials, with particular emphasis upon wood as a structural material.

363 RANGE LIVESTOCK PRODUCTION 2 (2-0) prereq 369 and c/i. Selection, production, and management of range livestock.

FORE FOR UNDERGRADUATES AND GRADUATES

301 (300) FOREST BIOMETRICS 4 (3-3) prereq Math 118. The application of statistical reasoning to methods of forest resources inventories.

322 (422) NATURAL RESOURCE POLICY 3 (3-0). Policy formation in the United States and a survey of the major policies interpreted in their historical and political contexts.

323 (423) NATURAL RESOURCE ADMINISTRATION 3 (3-0). The development and behavior of professional bureaucracies; budgeting; personnel; executive performance. Selected case studies of the administration of the forest, range, wildlife, water, and recreation resources.

330 FOREST FIRE MANAGEMENT 3 (3-0). Forest fire prevention, pre-suppression and fire use planning and fire management practices. The measurement of fire weather and the factors that influence fire control.

332 FOREST ENTOMOLOGY 3 (2-3) prereq Bot 250, 251 or c/i. Classification, identification, ecology and control of insects affecting forests and forest products.

341 CHEMICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq 340 and junior standing in the School of Forestry. Theory and practice of wood gluing. Familiarization with glues, and glued wood construction. Bent wood, painting and finishing, nail holding capacity, insulation values, and other physical properties of wood.

343 FOREST PRODUCTS AND INDUSTRIES 4 (3-4) prereq junior standing in the School of Forestry. Various types of wood products and industries, chemical properties, and uses of wood products. Grades, performance characteristics, and primary conversion industries. By-products and residue utilization. Current trends and problems. (343) Non-wood forest industries.

350 ADVANCED SURVEYING 4 (2-4) prereq 252 and c/i. Precision ordered instruments, electronic distance measurements, control surveys, and computerized data processing. Selected topics in land surveying.

351 AERIAL PHOTOGRAMMETRY 3 (2-3). The elements of photogrammetry, photogrammetric measurement, planimetric and topographic mapping, introduction to remote sensing and air photo analysis, and special applications to forest inventory.

354 (452) TRANSPORTATION SYSTEMS 4 (4-0) prereq 252. Transportation planning and development in relation to resource use, with emphasis on conflicts of interest.

350 RANGE MANAGEMENT 4 (3-3) prereq c/i. An introduction to the use of range resources, management of the grazing season, grazing capacity, control and distribution of livestock on range. Range improvements; forest and range interrelationships.

361 RANGE FORAGE PLANTS 4 (0-8) prereq 360, Bot 366 and c/i. Economic range plants and varieties of range animals; management problems in their use.

362 RANGE ECOLOGY 3 (2-3) prereq Bot 250, 251. Applied ecologic principles to use for grazing by domestic livestock and wildlife. The influence of biota, climate, fire, fertilizer, herbicides and treatments on natural vegetation.

370 WILDLIFE CONSERVATION 3 (3-0) prereq 360 and c/i. The concept of animal ecology and population dynamics, as a basis for the conservation of wild birds and mammals. The social, economic and political framework of wildlife administration. (Not for Wildlife Management major.)

380 THE RENEWABLE RESOURCES AND THEIR CONSERVA­ TION 3 (3-0) prereq 210 and Bot 250, 251. The interrelationships of renewable resources and problems of prevention. Management of development and use to meet the needs of our expanding economy. Conservation practices and facilities and the agencies involved in their implementation. (Not open for doctoral credit.)

383 WILDLAND RECREATION MANAGEMENT 3 (3-0). The management of land as an environment for outdoor recreation. Current recreation on public and private lands. Recreation planning and management on multiple-use forest lands, state and national parks, wilderness areas and private lands.

385 (385) RECREATION AREA PLANNING AND DESIGN 4 (3-4) prereq 385. Concepts, classification and analysis of environment, principles of recreation resource planning at national, regional, state, area, and site levels. Field projects.

386 (384) HYDROLOGIC PRINCIPLES 3 (2-4) prereq c/i. The hydrologic cycle; surface runoff and ground water recharge, movement and discharge.

390 CHEMISTRY OF PLANT CONSTITUENTS. (See Chem 361 and Bot 390.)

391 CHEMISTRY OF WOOD PRODUCTS. (See Chem 367.)

400 FOREST RESOURCE INVENTORY 4 (0-8) prereq 300, 301. Involves study of a forest resource unit and the physical basis for the conservation of wild birds and mammals. The social, economic and political framework of wildlife administration. (Not open for doctoral credit.)

401 FOREST MANAGEMENT 4 (4-0) prereq 311, 420, senior standing in Forestry. Organization and management of forest properties, determination of allowable cut and regulation of the growing stock.

410 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. The chemical properties of soils, their measurement and influence on growth and distribution of plants.

412 SOIL PHYSICS 2 (2-0) prereq 210. The physical properties of soils, their measurement and influence on growth and distribution of plants.

420-421 FOREST ECONOMICS 3 (3-0) (420) prereq Econ 202 or c/i. Application of economic analysis to problems of wildland recreation management and resource allocation. (421) kurz preq 420 or c/i. Economic problems involved in the use of the forest resource and in the distribution of forest products.

422 ECONOMICS OF WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq Econ 202 and c/i. Application of economic analysis to problems of wildland recreation management and resource allocation. (422) kurz preq 420 and c/i. Economic problems involved in the use of the forest resource and in the distribution of forest products.

424 FOREST TAXATION 3 (3-0) prereq 420, 421, or c/i. Systems of forest taxation and their effects on the economic management of forestland resources.

425 INDUSTRIAL FORESTRY 3 (3-2) labs by arrangement) prereq 421 and 490 or c/i. Fundamentals of production management engineering applied to forest industry operations—functional analyses and factor control.

430 (490) FOREST METEOROLOGY 4 (4-0). The basic meteorological factors that influence forest fire behavior. The physical meteorological concepts that are associated with forestry problems.

432 BIOLOGY OF FOREST INSECTS 3 (3-0) prereq Zool 113. Biology and biomics of insects, including life cycle, function, systems physiology, and genetics. (See Zool 442.)

433 FOREST INSECT ECOLOGY 3 (2-3) prereq 432. Ecological rules of insects significant in the total forest ecosystem; factors which regulate the distribution of insects; biological and behavioral components of insect population changes; rational bases for control, including principles of biological control. (See Zool 443.)

440 MECHANICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq junior standing in the School of Forestry. Theory, status and development in the manufacture of wood products. Relationships between utilisation and timber production. Major uses of wood in the round form. Primary and secondary manufacturing processes and products. Minor forest products.

441 SAWMILLING AND LUMBERING 3 (2-4) prereq junior standing in the School of Forestry. Various types of sawmill and planer operations, their organization and equipment. Lumber grades and uses, by-products and residue utilization. Fast and present day trends and problems. Brief survey of drying operations.

FORESTRY—51
445 SEASONING AND PRESERVATION 3 (3-0) prereq junior standing major. Several weekend trips to study and observe scale wood products on location.

450 ADVANCED PHOTOGRAPHY 3 (2-2) prereq 351 and c/i. Advanced techniques in field photography, basic black and white darkroom techniques, digital photography.

451 AERIAL REMOTE SENSING 3 (3-0) prereq 351 and c/i. Aerial imaging systems, multi-band spectral analysis, photo-image analysis, accuracy, vegetation and terrain information.

452 TIMBER HARVESTING 3 (3-0) prereq Econ 302. Production-cost analysis; methods of work simplification and materials handling: fundamentals of logging plans.

454-456-458 FOREST ENGINEERING 3 (3-0) prereq 364. (454) Route planning and design; application of economic alternatives to route selection. (455) Contemporary problems of forest road construction and design. (456) Applications and problems in the transportation development of forest land areas.

458 MECHANICAL PROPERTIES OF WOOD 3 (1-4) prereq 340, 357. The characteristics of wood as they relate to mechanical properties; wood materials testing.

460 RANGE TECHNIQUES 4 (2-4) prereq 360 and c/i. Range surveys, condition and trend analysis, utilization analysis, damage appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 5 (3-4) prereq 360 and c/i. Principles and methods of livestock nutrition. The nutritional characteristics of range forage plants. The nutritional requirements of livestock and big game animals.

463 RANGE ECONOMICS 3 (4-0) prereq 360, Econ 301 and c/i. Range economics and decision making. Economic aspects of game animal take, tenure, taxation, fees and leases, economic utilization of forage, economics of range improvements, ranch organization.

464 RANGE ADMINISTRATION 2 (2-0) prereq 360 and c/i. Legal aspects of range utilization. Development of policies developed in the acquisition of federal, state and private range properties. Administration, organization and methods for regulation of grazing on public lands.

465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and c/i. Regional range management problems and situations. Work done on senior spring trip.

470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq Zoöl 308, 369 or c/i. The application of knowledge of the biology of wild animals and management of populations to wildlife, to the principles and practice of wildlife conservation.

471 BIG GAME CONSERVATION 3 (2-field trips) prereq 360 or c/i. The biology of big game mammals and its application to problems of conservation and administration. Includes field trips to major big game winter ranges.

472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/i. Principles and techniques of assessment of wildlife populations patterns to ecological change. Relations of land-use patterns to wildlife ecology.

476-477 (491-492-493) SENIOR WILDLIFE SEMINAR 3 prereq 461. Emphasis on planning in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guest speakers on current topics in Wildlife Biology. (Double-listed as Zoöl 491-492-493.)

482 SOIL AND WATER CONSERVATION 4 (3-4) prereq c/i. Principles and methods of soil and water conservation and their application to specific type, condition, land use, and ownership. Analysis of field problems in land use planning and application for soil and water conservation.

483 PARK MANAGEMENT 3 (3-0) prereq 383, 385 and c/i. Theory, evolution and concepts in park system development in the United States, state, national and local levels. Analysis of recreation land management problems in park and forest.

485 WATERSHED MANAGEMENT 3 (2-4) prereq 385. Methods and effectiveness of land management on water yield from natural watersheds.

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.

490-491-492 (430-481) INTEGRATED FOREST RESOURCE MANAGEMENT IN THE SCHOOL OF FORESTRY. Principles involved in the planning and preservation of treatments of wood. Related wood anatomy. Application to present commercial problems. Several weekend trips to study and observe scale wood products on location.

496 FORESTRY AND ECONOMIC DEVELOPMENT 2 (3-0) prereq c/i. Readings and discussion of the problems of underdevelopment and the structural and procedural mechanics of economic growth, emphasizing the role of forestry.

497 WORLD RESOURCE PROBLEMS 2 (2-0) prereq c/i. Selected international problems in natural resource management.

498 SENIOR THESIS 2 prereq senior standing. Preparation of a major paper based on study or research in a field selected according to the needs and abilities of the student.

499 FORESTRY PROBLEMS V prereq completion of basic undergraduate work and c/i. Individual problem work. Offered by different instructors under various titles.

FOR GRADUATES

500 ADVANCED FOREST MANAGEMENT 3 prereq 401, 420, 421 and 490. Forest resource management problems.

502 ADVANCED FOREST MEASUREMENTS 3. The use and analysis of new mensurational techniques and equipment. The application of special mensurational techniques to forest research.

511 ADVANCED SILVICULTURE 3 (2-2) prereq 311 and c/i. Analysis of silvicultural problems in selected forest types.

520 ADMINISTRATIVE LEADERSHIP Extension course V prereq undergraduate degree from a college or university of recognized standing or of the Dent of the School of Forestry based on applicants' experience and competence. Intensive instruction in the fundamentals of sociology, psychology, speech, writing, business administration, public relations and related fields. One month, 30 hours per week. Staff of university specialists in fields involved.

491 ADVANCED FOREST RESOURCES EVALUATION AND MANAGEMENT 2 (4-0) prereq 320-1, 321-2. Economic analysis of forest resources and the effect of private ownership on the valuation of forest resources and forestland resources. (523) Economic definition and historical analysis of forest industries and forest land resources.

524-525-528 RESOURCE POLICY AND ADMINISTRATION SEMINAR 3 prereq 521 or c/i. Consideration of major resource problems in forest management through presentation of seminar papers. (524) Scarcity vs. growth at the resource level. (525) Economic and political decision making in resource administration. (526) Professional bureaus in natural resource administration.

530 FOREST FIRE BEHAVIOR 3 (3-0) prereq 330, 430. The forest fire as an economic factor. Topography, weather and the influence of these on behavior of wild and prescribed fire. Emphasis is placed on high intensity fires and catastrophic 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 (3-2) prereq 341, 440, 441. Techniques for volumetric survey. Classification and product uses for various types with detailed emphasis on the type most pertinent to the State of Montana. Topography, weather and the influence of these on behavior of wild and prescribed fire. Emphasis is placed on high intensity火灾 and catastrophic fire behavior.

543 WOOD RECONSTITUTED BOARDS 3 (1-8) prereq 342, 440, 458. Different types of boards with properties and uses of each. Raw materials, advance courses in forest products, and fire testing. Laboratory practice in making and testing sample boards.

545 ADVANCED AIR PHOTO ANALYSIS 3 (2-0) prereq 451, c/i. Analysis of the problems involved in the use of remote sensing methods. Emphasis on applications and implications of remote image processing. A model system for regional problems will be developed.

570 WILDLIFE SEMINAR 1 (1-0). Analysis of selected problems in wildlife biology and conservation.

584 (585). ADVANCED WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq 383 and c/i. Current management policy and research problems in park and wildland recreation. Current literature.

591-592 RESEARCH METHODS 3 prereq one course in statistics or statistical elements of forest measurement and c/i. Entry either quarter. (491) Introduction to the nature of scientific research, planning research projects, organization and presentation of research results. (592) Advanced Statistical Techniques. Application of design of research research, techniques of analysis of research data.

598 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, Wildlife, Forestry, Life 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 student is compiled 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 General Education 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 SEARCH FOR IDENTITY 3. Revisionism as manifested in the African past and in the conflicts faced by the American Negro from 1619 through the Civil War.

256 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.

297 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.)

FOR UNDERGRADUATES AND GRADUATES

351 STUDIES IN HUMANITIES 3 R-9 prereq Gen 151-152-153. Advanced studies in Humanities. Given by different instructors under various titles.

385 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.

396 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.

397 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, and cultural phenomena of the urban setting which reveal the racial character of our society.

440 STUDIES IN COMPARATIVE LITERATURE 3. The origins and dissemination of important literary ideas, trends, and movements.

451 SEMINAR IN THE HUMANITIES 3 R-9 prereq Humanities 351 or c/i. Specialized topics or areas such as Chinese and Japanese literature. Taught by various instructors from departments in the Humanities Group. Topics announced in class schedules.

SCIENCE

FOR UNDERGRADUATES

110 THE USE AND ABUSE OF DRUGS 2. 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.)

125-126-127 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 forces and motion, electricity, magnetism, wave motion, gravity, heat, states of matter, the universe, geological processes, and inter-related topics. (126) An investigation of the interrelationships of physical and biological sciences: the elements, chemical reactions, basic organic chemistry, interdependence and abuse and the special classes and types of drugs involved. (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 (3-4). An introduction to the basic principles of biology, including aspects of cytology, cellular metabolism, genetics, origin of life, mechanics of evolution and adaptation. Offered by the departments of Botany, Microbiology and Zoology. Primarily for students not majoring in Botany, Microbiology, or Zoology. Credit not allowed for this course and Botany or Zoology 111.

132 EVOLUTION, GENETICS AND MAN 3 prereq Gen. 131 or 161. An introduction to the study of evolution, especially as related to man and including evidence, mechanisms, genetic nature of hereditary material and biological variability. Not counted toward a major in Botany, Microbiology or Zoology.

FOR UNDERGRADUATES AND GRADUATES

200 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 3 prereq c/l. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare, and the development of principles underlying improved management of the natural resources. A survey of human and cultural resources. The methods of social implementation of desired practices. Primarily a teacher training course. Does not satisfy requirements for degrees in Botany or Zoology or the group requirements in science.

222 METHODS OF TEACHING BIOLOGY 3 (2-4) prereq senior or graduate standing. Designed to familiarize prospective high school biology teachers with texts, demonstrations and laboratory experiments used in contemporary approaches to teaching of biology.

GENERAL LITERATURE

FOR UNDERGRADUATES

101-102-103 INTRODUCTION TO THE READING OF LITERATURE 3. Enter any quarter. (101) Fiction. (102) Drama. (103) Poetry. (May be substituted for English 150 on recommendation of the Director of Composition. Not applicable to Group IV requirements.)

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 the description and analysis of the earth's surface. Geographers study and describe the location and distribution of physical and human elements as well as the associations between these various elements. A crucial part of geography is the study of achievements of an understanding of the processes involved in, the reasons for, and the significance of distributions of physical and human phenomena. Therefore, entails the study of such physical elements as terrain, climate, natural vegetation, soils and water, as well as the human elements which include population, settlements, cultural levels, economic activities and political groupings.

Geography provides the basis for a better understanding of the world in which we live and of the events which take place around us. Employment opportunities for those trained in geography exist in government, business and industry, and in the teaching profession at all levels.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Geography: a minimum of 50 credits in Geography including Geography 101, 102, 201, 211, 300, 360, 370, 380, and one of four Geography courses 331, 335, 483, and 492; Economics 201-202 or Political Science 201-202; Sociology 101 or Anthropology 152. The departmental English composition requirement must be completed.

The following courses with the consent of the advisor may be counted toward a major in Geography: Botany 255, 256, 365; History 291-292 or Political Science 201-202; Sociology 101 or Anthropology 152. The departmental English composition requirement must be completed.

The foreign language requirement listed earlier in the catalog may be satisfied: French or German are strongly recommended unless the student intends to specialize in a part of the world where the use of some other language prevails.

GRADUATE WORK. See Graduate School Bulletin.
FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 PHYSICAL ELEMENTS OF GEOGRAPHY 5. Content and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, vegetation, and landforms.

105 INTRODUCTORY HUMAN GEOGRAPHY 5. The study of man and his works. An analysis of the cultural features of the world's landscapes in relation to human occupation of the earth.


201 MAP INTERPRETATION 3 prereq 101 and c/i. Map and chart evaluation. The analysis of human and physical features on maps; progress, coverage, and quality of world mapping.

211 ECONOMIC GEOGRAPHY 5. Distribution of economic activities with emphasis on location factors.

280 CARTOGRAPHY 3 prereq c/i. The interpretation, construction, and use of important map projections. Cartographic techniques utilized in the presentation of data.

290 FIELD GEOGRAPHY 3 prereq c/i. Fundamental techniques of geographic field research, including observation and recording of environmental data, land use mapping, urban classification, and interviewing and report writing.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or c/i. An analysis of the cultural and physical background of the United States with emphasis on differences in regional development.

301-302 PHYSIOGRAPHY OF NORTH AMERICA 3 prereq 101 or c/i. Enter either quarter. The geomorphic regions of the continent. (301) Eastern North America; (302) Western North America.

325 GENERAL GEOGRAPHY 3. Description and analysis of basic relationships between physical and human elements in geography. Not for geography majors.

355 GEOGRAPHY OF EUROPE 3 prereq 101 or c/i. The physical and cultural backgrounds to problems of the South American republics.

361 GEOGRAPHY OF CENTRAL AMERICA, MEXICO AND THE CARIBBEAN 3 prereq 101 or c/i. Analysis of physical geography and cultural backgrounds in the light of current developments and problems.

371 GEOGRAPHY OF AFRICA 3 prereq 101 or c/i. Regional differentiation and political and economic development of the whole continent.

375 GEOGRAPHY OF THE FAR EAST 3 prereq 101 or c/i. The lands and peoples of monsoon Asia interpreted on the basis of economic activities with special reference to population problems.

381 GEOGRAPHY OF THE U.S.S.R. 3 prereq 101 or c/i. The geographic regions which are the basis for Soviet agriculture and industry.

391 GEOGRAPHY OF MONTANA 3. An analysis of regional differences within the state.

393 GEOGRAPHY OF THE PACIFIC NORTHWEST 3 prereq 101 or c/i. The physical environment and human geography of the northwestern United States.

331 POLITICAL GEOGRAPHY 3. Cultural, physical and distributional aspects of politically organized units. The traditions of geographical thought that condition political decisions in local, national, and international affairs.

353 CULTURAL GEOGRAPHY 3. The cultural approach to an understanding of the differing patterns of human use of the earth.

345 URBAN GEOGRAPHY 3 prereq 101 or c/i. The growth, morphology, and functions of towns and cities. Examination of the contemporary urban scene.

370 CLIMATOLOGY 5 prereq 101 or c/i. Elements and controls of weather and climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 3 prereq 101 or c/i. Topographic elements of the earth's surface with emphasis on processes of morphologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 3 prereq 101. Geol 110 or c/i. Landform development in the desert environment.

403 ADVANCED PHYSICAL GEOGRAPHY 3 prereq c/i. Specialized aspects of Physical Geography.

405 THE HISTORY OF GEOGRAPHY 3 prereq 12 credits in Geography or c/i. Geography from early Greek and Roman times to the close of the nineteenth century.

410 PROBLEMS IN GEOGRAPHY V 1-2 R-6 prereq 12 credits in Geography.

413 POPULATION AND RESOURCE GEOGRAPHY 3 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. Analysis in depth of a specific area.

420 ADVANCED CULTURAL GEOGRAPHY 3 prereq c/i. Specialized aspects of Cultural Geography.

490 SEMINAR IN GEOGRAPHY V R-4 prereq 16 credits in Geography including 101, or c/i.

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 3. The analysis of geographical concepts, approaches, and techniques developed in the twentieth century.

530 SEMINAR IN CULTURAL GEOGRAPHY 3 R-6 prereq c/i. Analysis of concepts, methodology, and research in cultural aspects of Geography. Topics vary.

570 SEMINAR IN PHYSICAL GEOGRAPHY 3 R-6 prereq c/i. Analysis of concepts, methodology, and research in physical aspects of Geography. Topics vary.

580 RESEARCH METHODS AND MATERIALS 3. Collection and preparation of materials in geographic research, including interviewing, library sources, and the cartographic presentation of data.

699 THESIS V R-15.

GEOL OGY

GEOLOGY is the study of the earth, the processes by which it is changed, and the history of its development. Geology aids in the location and exploitation of minerals and fuels, soils, building material, water, and other natural resources.

Degrees offered include the Bachelor of Arts, Master of Arts, Master of Science, and Doctor of Philosophy. A Bachelor's degree in education with a major in Earth Science Teaching is also available. Instruction includes the study of minerals, rocks, and fossils; their properties and the characteristics which lead to an understanding of how they were formed and the processes which accompanied their formation. It includes the use of the techniques and tools of modern geology—photographs, geologic and topographic maps, microscopic, chemical and X-ray analysis, and the instrumental methods of geophysics. Field work is an integral part of the training and most courses involve at least some study in the field. Instruction includes both the theoretical and practical aspects, as well as background courses in other sciences.

Petroleum companies, universities, research laboratories, governmental agencies such as federal and state geological surveys, and mining companies are the chief employers of geologists.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation, a student in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 119, 129, 200, 202, 203, 310 (or Geography 370 with consent of advisor), 311-312, 313, 3 credits of 320, 320-331, 429. Also required are Mathematics 116, 117, 118, or Mathematics 121, 122, 123; Chemistry 121-122-123; 245; Physics 111-112-113 or 255-256; English 150, 290, 480; Zoology 111, 112. A foreign language, 23 credits in one language, or 3 quarters in each of two languages, or a reading knowledge is required. French, German, Russian or Spanish is recommended.

Departmental requirements can be waived for students who at the end of any complete year have a B average in all college courses previously taken while pursuing a standard geology curriculum. A special geology curriculum may be devised for these students in consultation with their advisors. This will, for example, allow special areas of interest in chemistry, geophysics or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.
The grade of "P" or "F" is given for all work in Geology 590, 600, 601, 602.

FIELD TRIP EXPENSES. Students should consult the Department of Geology office for a statement of expenses connected with Geology 322, Field Geology for Natural Science Teachers, and Geology 429, Field Geology.

SUGGESTED CURRICULUM IN GEOLOGY

### Freshman Year

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<th>Course</th>
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<td>320 Geol 10 crs</td>
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<td>Chem 121 or 122-123</td>
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<td>Geol 110 or 120 or 130</td>
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<td>Group III or IV courses or electives</td>
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**Summer Session**

Geol 429-10 credits—Summer Field Camp

(To be taken either after freshman year or sophomore year)

### Sophomore Year

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<tr>
<td>Math 116, 117, 118</td>
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<td>Geol 260, 262, 263</td>
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<td>Zool 110 or 112</td>
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<td>Phys 111-112 or 211-212</td>
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<td>Engl Composition</td>
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<td>Group III or IV courses or electives</td>
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**Junior Year**

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<td>Physics 111-112 or 211-222</td>
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<tr>
<td>Geol 311-312, 315</td>
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<td>For Lang 101-102-103</td>
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<td>Engl Composition</td>
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<td>Group III or IV courses or electives</td>
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### Senior Year

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<td>For Lang 211-212</td>
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<td>Electives</td>
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**Summary of Requirements**

1. University requirements
   (Group III 12-15 crs.; Group IV Cr. 12-15 crs.; For Lang 23 crs.)
   17
2. Geology academic year course requirements
   48
3. Other departmental requirements (Math 15 crs.; Chem 20 crs.; Phys 15 crs.; Engl 9 crs.)
   69
4. Health and Physical Education
   3
5. Electives
   26
   195
6. Geology summer field camps (between Fr-Soph yrs) 10

### Graduation Work

See Graduate School Bulletin.

### Undergraduates

*Courses offered alternate years.

101-102 INTRODUCTION TO GEOLOGY 4 (3-4). Geologic activity of rain, streams, waves, wind and glacial ice; formation of sediments and sedimentary rocks; stratigraphic time and measurement of geologic time; origin and evolution of life; growth, movement and floating of continents; volcanoes: formation of igneous and metamorphic rocks; earthquakes: deformation of rocks; mining deposits. Credit not allowed for 101-102 and 110. 101 prereq to 102.

103 INTRODUCTION TO GEOLOGY 4 (3-4) prereq 102. Various topics in geology including ore deposits, geology of petroleum, dinosaurs, geology of Montana, glacial Lake Missoula, surface of the moon, geology and man. Several Saturday field trips.

110 PHYSICAL GEOLOGY 5 (3-4), Intended primarily for physical and biological science majors. Minerals, rocks, and structure of the earth's crust; the dynamic processes, volcanism, glaciation and gradation which shape the earth's landscape. Credit not allowed for 110 and 181-102.

120 INTRODUCTION TO GEOLOGIC MAPS AND AERIAL PHOTOS 4 (2-4) prereq 105 or 110. Interpretation of geologic maps. Geologic features in aerial photos. Elements of photogrammetry. Geologic illustration.

130 FIELD METHODS 3 (1 + all day Saturday field trips.) prereq 110 or 102. Problems covering wide range of geologic topics; introduction to basic geological mapping techniques.

200 GENERAL PALEONTOLOGY 4 (3-2) prereq 103 or 110. General principles of paleontology, evolution, and history of plants and animals.

202 PRINCIPLES OF STRATIGRAPHY 4 (3-2) prereq 200. Stratigraphic methods and principles. Examples drawn mostly from North American stratigraphic successions. Identification and classification of sedimentary rocks. (Credit not allowed toward a geology degree.)


210 INTRODUCTION TO ROCKS AND MINERALS 4 (3-4) prereq 110. Common rock-forming and economic minerals. Various rock types and their textures, origin, occurrence and physical and chemical properties. Laboratory mainly hand specimen study. (Credit not allowed toward a geology degree.)

211 INTRODUCTION TO ECONOMIC GEOLOGY 4 (4 + Field Trips) prereq 102 or 110. The geology of metallic, nonmetallic and solid and liquid fuel deposits of the world. Emphasis on descriptive, economic, geographic and utilization aspects of non-renewable resources.

210 GEOMORPHOLOGY 3 (2-2) prereq 120. Landforms in terms of the processes which create them. The basic processes of physical and biological weathering. Emphasis on modern concepts.

211-312 MINERALOGY 4 (2-6) prereq Chem 121 and Math 116. Elements of crystallography: origin, classification and determination of common minerals by physical (including optical) and chemical methods; special emphasis on ore and rock forming minerals.

215 PETROLOGY 4 (2-6) prereq 312. Identification, description, and origin of igneous and metamorphic rocks.

225 PROBLEMS V prereq 30 cr. in Geology or = and c/l. Supplementary course in diverse topics in geology. Intended primarily for advanced students majoring in geology. (Credit not allowed toward a degree in geology.)

230-331 STRUCTURAL GEOLOGY 3 (2-4) prereq 203, Math 118, Physics 113 or 223 or concurrent registration. Structural features of earth's crust; their analysis by geometric and stereographic projections. Mechanical principles of deformation.

429 FIELD GEOLOGY Su V 9-10 prereq 130, 203 and c/l. Given by Indiana University Geology Department at its field station near Whitehall, Montana. Detailed study of rocks, the organization of the field. Includes measuring and describing sections, mapping on aerial photographs and topographic maps, interpretation of geologic data. Trips from Black Hills to Yellowstone Park, and from Whitehall to Glacier Park. Registration must be completed by April 1.

FOR UNDERGRADUATES AND GRADUATES

300 GEOLOGY FOR NATURAL SCIENCE TEACHERS 4 (3-2) prereq c/l. Primarily for teachers of Natural Science. General physical geology including minerals, rocks, weathering, movement and floating of continents; volcanoes; formation of igneous and metamorphic rocks; earthquakes; deformation of rocks; mining deposits. Credit not allowed toward a degree in geology.

301 GEOLOGY AND MINERAL RESOURCES OF MONTANA 3 (2-3) prereq 300 and c/l. Primarily for teachers of Natural Science. Broad discussion of the geology and evolution of Montana and adjacent areas through the last two billion years. Metallic and non-metallic mineral deposits in and near Montana. Field trips. Credit not allowed toward a degree in geology.

302 FIELD GEOLOGY FOR NATURAL SCIENCE TEACHERS 3 (3-2) prereq 301, 303, 425-426. Provides a broad introduction to methods of teaching geology in the classroom and in the field. Includes field trips. Credit not allowed toward a degree in geology.

306 METHODS OF TEACHING EARTH SCIENCE 3 (2-4) prereq 203 or 210. Contemporary texts, demonstration techniques, laboratory experiments, and field procedures needed in devising an earth science curriculum. Credit not allowed toward a degree in geology. Course does not satisfy group requirements.

308 (306) INTRODUCTION TO VERTEBRATE PALEONTOLOGY 4 (2-4) 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 (2-4) prereq 110, 200 or Zool 111, 112 or concurrent registration. (410) Principles of biostatigraphy with examples taken chiefly from the arthropods, brachiopods, and coelenterates. (411) Principles of paleontologic examples taken chiefly from the mollusks and echinoderms. Labs include paleontologic techniques.

412 *MICROPALAEONTOLOGY 3 (2-2) prereq 200 or Zool 111, 112. The classification and biogeographic associations of major animal and plant microfossil groups.


425-426 PETROGRAPHY/PETROLOGY 4 (2-6) prereq 315, 420. Descriptive and interpretative study in thin section of igneous minerals, rocks, and metamorphic rocks. Interpretation of data. Advanced petrologic considerations included in both quarters.

433 SEDIMENTATION 3 (3-2) prereq 110, 315. Interpretation of depositional environments using both depositional and grain size and shape analyses; labs include statistical techniques and field methods.

440 INTRODUCTION TO GEOPHYSICS 3 (3-0) prereq Physics 113, or 223, Math 118 or concurrent registration, Geol 331. Theory of commonly applied geophysical methods, including gravimetric, magnetic, electric and radiometric; emphasis on the interpretation of geophysical anomalies and geologic structure. Geophysical methods are applied to geologic problems.

540 X-RAY ANALYSIS 3 (3-2) prereq Physics 223. Theory of X-rays; their use in the identification of polycrystalline materials using powder camera and diffractometer methods.


451 GROUND WATER GEOLOGY 3 (3-2) prereq 203, 315, Physics 222. Descriptive and quantitative analysis of factors controlling occurrence and development of ground water.

FOR GRADUATES

500 *SEDIMENTARY PETROLOGY 4 (2-4) prereq 420, 540. Composition and classification of terrigenous sedimentary rocks and interpretation of their provenance, transport and tectonic setting from thin section examination.

505 *ADVANCED GEOCHEMISTRY 3 (3-0) prereq 428. Application of physical chemistry to study of origin, internal structure and chemical composition of earth.

530 *PETROCLAY PETROLOGY 4 (2-4) prereq 420, 540. Description, classification and environmental interpretation of carbonate rocks chiefly from thin section examination.

531 *GEOTECTONICS 3 (3-0) prereq 331. Analysis, synthesis of prehistoric structural features including study of the relationships of compressional mountain systems, structure of plateaus, and broad warps. Conditions within earth; possible causes of deformation.

532 *METALLIC MINERAL DEPOSITS 4 (3-2) prereq 203, 315, 331. Descriptive and theoretical aspects of nature, origin, classification and geologic environments of metallic mineral deposits; field trips.

533 *NON-METALLIC MINERAL DEPOSITS 4 (3-2) prereq 203, 315, 331. Descriptive and theoretical aspects of origin, distribution, classification and use of non-metallic deposits of building and industrial materials; emphasis on geochemistry and tectonics of localization of ore; field trips.


551 *STRUCTURE OF MINERAL DEPOSITS 3 (3-0) prereq 331. 512, 513 recommended. Classification of mineral deposits according to structural environment and features; special reference to origin as related to tectonic control.

550 *PETROGENESIS 3 (3-0) prereq 429 and 428. Advanced discussion of modern theories of origin of igneous and metamorphic rocks.

552 *STRUCTURAL ANALYSIS 3 (2-2) prereq 315, 331. Study and interpretation of the fabric of naturally deformed rocks. Analysis of structures on all scales, including geologic map, hand specimen and thin section.

558 *X-RAY SPECTROGRAPHIC CHEMICAL ANALYSIS 2 (0-4) prereq Chem 245, Geol 445. Qualitative and quantitative chemical analysis by x-ray spectrophotographic techniques. Production and qualitative analysis of secondary x-rays; detectors and pulse height analysis; methods of quantitative analysis. Exercises in instrument operation, qualitative and quantitative analysis.

532 *ADVANCED MINERALOGY 3 (3-0) prereq 315. Detailed study of the crystal chemistry of geologically significant minerals in connection with their physical and chemical properties and genetic implications.

533 *SOLID STATE GEOPHYSICS 3 (3-0) prereq Math 311. Physics 223, Physics 301 recommended. Physical properties of crystals that have particular applications to geologic problems. Depositional environment of coal and subsequent biochemical and dynamochemical changes. Mineralogy and geology of radioactive materials. Occasional field trips.

540 *ADVANCED STRATIGRAPHY 3 (3-2) prereq 130, 331, 410-411. Advanced discussion of modern concepts concerning stratified rocks.


545 GRAVITY AND HEAT FLOW 3 (2-2) prereq 440, Math 311. Theory, instrumentation, field procedures and interpretational methods including computer models; emphasis on dynamic earth processes investigated; applications to local geologic problems. A field problem of Missoula will be conducted.

556 MAGNETIC AND ELECTRICAL FIELDS OF THE EARTH 3 (2-2) prereq 440, Math 311, Physics 222. Earth's natural magnetic and electrical fields described; rocks, minerals, instruments, computations, and interpretation; applications to exploration. A field problem near Missoula will be conducted.

564-565-566 *VERTEBRATE PALEONTOLOGY 4 (2-4) prereq 408 or Zool 304 or (564) The lower vertebrates: Taxonomy, morphology, paleoecology, and geologic history of fishes, amphibians and reptiles. (565) The higher vertebrates: History of mammals. (566) History and paleoecology of mammals and birds.

590 SEMINAR V prereq graduate standing in geology or comparable training in cognate areas and c/1.

595 ADVANCED PROBLEMS V. Investigations of geologic problems exclusive of thesis research.

599 RESEARCH V. Directed research to serve as thesis for graduate degrees.

599 THISIS V R-15. Credit assigned upon submission of final copy of approved and bound thesis.

HEALTH AND PHYSICAL EDUCATION

AND RECREATION

deals primarily with muscular activity and recreation to provide the individual with wholesome psycho-motor and organic development, with fitness for daily living, and with resources for use of leisure. The program provides (1) instruction in a wide variety of sports and recreation skills; (2) opportunity for student groups to organize teams and to participate in formal and informal competition, in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, touch football, softball and volleyball; and (3) preparation 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; Masters of Arts and Master of Science degrees in Physical Education or Recreation, and Master 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. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation and practice in group leadership, training in crafts and social activity skills for leaders of youth groups, and background for careers in industrial and community recreation and in recreation therapy. All levels of American Red Cross certification are offered in conjunction with swimming and first aid courses.

Many graduates enter the teaching profession. Some choose to continue graduate studies with specialization in physical education, coaching, the dance, physical therapy, or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. Many elect careers in leadership positions in youth-serving organizations in playground and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION. Two degrees are offered in this Department: Bachelor of Arts, which requires that the foreign language requirement listed earlier in the catalog be satisfied; and Bachelor of Science, which requires no course in foreign language. Students electing either degree will fulfill 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.
58—HEALTH AND PHYSICAL EDUCATION

327 Children's Dance Laboratory 2 prereq 116

336 Aquatic Program Management 3 prereq Senior Life Saving or =. Group methods of teaching swimming for various ages and groups. Organization and operation of student swimming. SCUBA diving, swimming for the handicapped, staging water shows. Swimming pool and waterfront management.


362 Recreation Leadership (Social Recreation) 3 prereq Soc W 362. Principles and procedures for organizing and conducting recreation programs with various age groups and groups. Credit not allowed for this and Soc W 362.

363 Recreation Leadership (Camp Leadership) 3 prereq 362. Principles and procedures for organizing and leading of camp activities; skills and understandings essential to organized outdoor camping. Credit not allowed for this and Soc W 362.

364 Field Work in Recreation 2, Su V R-4. Supervisory and leadership experiences, methods and techniques to be used in conducting recreation programs in outdoor recreation, community, social agencies and institutional situations. Laboratory given in various activities. Activities are coordinated to outdoor activities of the organization and group activities available for leadership training.

365 Organization and Administration of Physical Education 3 prereq 200. Principles and policies for the organization and administration of high school physical education departments. Management of the physical plant.

375 (373, 375) Methods in Teaching Health 3 prereq PE major or minor or Educ major. Foundations for teaching health; planning for instruction; methods and techniques in direct, correlated and standardized instruction; material aids and their sources, evaluation in health instruction.


388 Introduction to Physical Therapy 3 prereq or coreq 386. Theory and practice of massage. The treatment of defects and abnormalities of the human body. Functions of the human body.

390 Clinical Training in Physical Therapy V 1-4 R-4 prereq 386 and c/i. Practical experience in local physical therapy centers.

399 First Aid 3. First Aid Standard, Advanced and Instructor courses and Methods and Means of Self-Help. Certification at Instructor level may be secured from completion of course.

400 Teaching Physical Education Activities 2 R-4 prereq 115-120 and c/i. Assigned teaching projects in college classes, under supervision.

For Undergraduates and Graduates

329 Advanced Techniques in Modern Dance 2 prereq c/i. Advanced study of modern dance techniques contributing to flexibility, strength, and control in dance expression.


388 The School Health Program 2. Problem areas associated with adult and elementary school health problems; school and classroom aspects of healthful school living; health and safety programs of elementary school.

385 Kinesiology 2 prereq 380. Advanced study of muscle action and joint mechanics of the body.

396 Preventive and Corrective Physical Education 3 prereq 380. Prevention and detection of common physical defects and disabilities. Application of physical education; follow-up programs possible under medical supervision.

401 Dance Composition and Improvisation 3 prereq c/i. A study of dance composition in relation to form and content. Improvisation as a source of composition. Experience in creative effort.

402 Dance Production 3 prereq 401. Choreography, staging and showcasing of modern dance in public performance including concert dance and dance demonstrations. Performance in dance concert required.

410 Educational and Recreational Areas and Facilities 3. The plan, construction and maintenance of urban oriented recreation facilities and areas as they relate to organized activities in public and private parks, playgrounds and other selected use areas. Specific use camps and day camps. Methods and techniques for financing. Tax programs and possibilities. Federal support programs for area and state camps and day camps.

415 Seminar V 1-3 R-12. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

416 Organization and Administration of Recreation 3 prereq H&PE 358 or H&PE 464. Personnel, finance, facilities, programs and public relations. Coordination with youth-serving institutions and municipal agencies. (Credit not allowed for this and Soc W 464.)

417 Measurement and Evaluation in Physical Education 3. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures. Credit not allowed for this and Soc W 358.

420 Research Methods 3 prereq or coreq 503 or =. Research methods and techniques used in health, physical education and recreation. Instruction in developing individual studies.

425 Research in Recreation 3. Independent directed research.

503 Statistical Measurements in Physical Education 4 prereq 465 or =. Specific tests for evaluation of organic, neuro-muscular, psychological and social outcomes. Practice in constructing and applying tests, and interpretation of results.


531 Advanced Administration of Physical Education and Athletics 3 prereq 464 or c/i. Problems in the administration of high school and college physical education and athletic programs; finance, personnel, public relations.

532 (486) Supervision in Physical Education 3 prereq 385 or =. Roles and responsibilities of supervisors in exerting effective leadership.

535 Seminar in the Administration of Public Recreation Programs 3. Problem areas associated with administration of organized recreation, activity programs in municipal, state and national park systems and recreation departments.

543 Seminar in the Administration of Recreation 3. Problems in the organization and administration of recreation programs in various areas.


541 Recreation for the Aging 2. Concepts, principles, objectives and methods of recreation for the aging. Emphasis on cardiac problems, rest home programs, the retired, and the impact of increased leisure time and vacations.

575 Sports Medicine 2 (2-1) prereq 385, 478. The medical aspects of physical education and athletic training. Management of injuries, drug use and therapy, nutrition, fatigue problems and aging and other medical problems associated with participation in sports.

585 Advanced Kinesiology 3 prereq 385. Analysis of complex movements, specialized skills, and motor coordination in terms of the mechanics of skeletal and muscular movement.

591 Independent Study V R-5 prereq c/i. Investigation of problem areas in Physical Education and related fields (exclusive of thesis research).

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 basic patterns 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 international service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and 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 30 credits in History is required, with 30 credits from 201-401, 411, 412, 491 or 492. Only 2 credits in 491 or 492 will count in fulfilling the minimum of 30 upper division credits for the B.A. History majors must elect a minimum of 15 credits in American and 15 credits in European History. 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 30 credits in Political Science. A minimum of 30 credits must be selected from courses numbered above 300.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101-102-103 MODERN EUROPEAN CIVILIZATION 3. Enter any quarter. (101) Europe during the Renaissance, the Reformation, and the Age of Absolutism to 1700. (102) Europe during the Era of the Enlightenment, the French Revolution, Napoleon, and rise of nationalism to 1815. (103) Continuation to the present. (215) Continuation after 1815.


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 of 215.


285-286-287 HISPANIC-AMERICAN HISTORY 4. Enter any quarter. (285) The European background; the political and economic development of Spain and Portugal to the foundation of the Latin American colonies. (286) The Spanish and Portuguese colonies; the revolutionary period and the foundation of present day Latin American states. (287) The development of Latin American States in the 19th and 20th centuries.

FOR UNDERGRADUATES AND GRADUATES

201 ANCIENT NEAR EAST 3. Pre-Greek civilizations of Mesopotamia, Asia Minor and Egypt.

202 (303) ANCIENT GREECE 3. Greek culture during the period of the city-states and the Age of Alexander the Great.

203 THE HELLENISTIC AGE 3. The Ptolemalic, 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.

204 (306) ANCIENT ROME 3. Early Etruscan civilization; Rome as part of Hellenistic culture. The Republic, the Principate and the Empire.

205 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.

206 THE EXPANSION OF EUROPE 3. Exploration and coloniza-

tion of the non-European world in the sixteenth, seventeenth, and eighteenth centuries by the western European nations.

300 THE RENAISSANCE 3. The idea of the Renaissance applied to economic, political and cultural developments in Western Europe from 1300 to 1600; 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 1519. (312) From 1519 to 1648. (313) From 1648 to 1789.

314-315 FRENCH REVOLUTION AND NAPOLEONIC ERA 3 prereq 311 or 312. Enter any quarter. (314) The French Revolution to 1799. (315) The Directory, the rise of Napoleon, the First Empire, and the moderate republics of France from 1799 to 1814.


319 CONTEMPORARY EUROPEAN HISTORY 4 prereq 101. The internal affairs and the external relationships of the principal European states since 1933.

320 MEDIEVAL GERMANY 311-1250 3. The Frankish experiment, emergence and development of German society and the States of Salian, and Hohenstaufen 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.

324-325-326 HISTORY OF RUSSIA 3, 325 prereq to 326. (324) The beginnings of Russia to 1800. (325) Nineteenth and twentieth-century Russia; the role of the czars and the tsars and Russian emperors. (326) The Soviet Union since the Bolshevik Revolution.

327-328-329 MODERN FRANCE 3 enter any quarter. (327) The political and economic changes throughout the Francophone world from 1815 to 1871. (328) 1871 to 1914. (329) 20th century.


334 MODERN WAR AND WESTERN SOCIETY 3 prereq 101 or 242. English explorations and colonization. The First British Empire. Developments in the nineteenth and twentieth centuries. The Empire today.

336-337-338 THE MEDIEVAL WORLD 3 enter any quarter. (336) Political, religious, intellectual, artistic, social and economic changes in Europe from the reign of Diocletian to the disintegration of the Carolingian Empire, 284 A.D. to 900 A.D. (337) Continuation from the 10th through the 12th centuries, with the impact of Islam and Byzantium on Western Europe. (338) Continuation from the 13th to the 15th centuries; the religious conflict; the decline of the unity of the Middle Ages.

339 HISTORY OF CANADA 4 prereq 101, 242 or 261. Canada to the present time, with emphasis upon Canadian-American diplomatic and economic relations, Canadian economic development, the Canadian constitution, Canadian politics, social history, literature, and heroes.

345-346 ENGLISH CONSTITUTIONAL HISTORY 3 prereq 241-242. (345) English constitutional development to the end of the Middle Ages. (346) Continuation to the present time.


351-352 (353) COLONIAL AMERICA 3. (351) The transfer of English civilization to America in the seventeenth century, with attention to the qualities that supported permanent and particular settlements. (352) American civilization from 1689 to the founding of the Seven Years War, the political, social and economic maturing that prepared the colonies for the revolutionary era.

357-358 HISTORY OF THE SOUTH 3 enter any quarter. (357) The South from the Revolutionary era through Reconstruction, the "New South," and the South in the 20th century, with special emphasis on the historical development of racial issues.

359 RECENT UNITED STATES, 1800 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 three general plans available to the undergraduate major. Plan 1 prepares students for teaching. Plan 2 prepares students for work in Foods and Nutrition and for the Dietetic Internship. Plan 3 provides a program in general Home Economics. Here the student may emphasize ClothIng and Textiles, Child Development 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:


The following additional courses are required according to the plan selected by the student.

1. Preparation for Teaching: Home Economics 157, 210, 258, 302, 303, 305, 310, 221, 358, 357, 350, 421, 490 (321 and 421 may be taken in either Education or Home Economics); Art 125; Chemistry 101; Education 200, 205, 308, 405, 407; Microbiology 100, 101, 306. These courses plus electives combined with a teaching minor will prepare for the certificate to teach Home Economics in secondary schools.

2. Foods and Nutrition and Dietetic Internship: Home Economics 210, 258, 331, 342, 346, 406, 432, 433, 446; Chemistry 121, 122, 261, 262, 481; Microbiology 200; Zoology 202, Education 200, Business Administration 201, 441, Psychology 343. For further requirements consult advisor.


Clothing and Textiles emphasis: General Home Economics requirements plus Home Economics 310, 331, 346, 397, 308; Chemistry 101; Sociology 305; Social Welfare 181; Psychology 230, 361.

Child Development emphasis: General Home Economics requirements plus Home Economics 310, 331, 346, 397, 308; Chemistry 101; Sociology 201, 204, 205, 308; Social Welfare 181; Psychology 230, 240; Education 341.

GRADUATE WORK. See Graduate School Bulletin.
JOURNALISM

is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media. It includes instruction in the skills necessary for professional careers in newspaper work, radio and television, magazines and books, advertising and photography, public relations and promotion, free lance writing, and related fields. Approximately one-fourth of the academic work for a Bachelor of Arts degree in Journalism will be taken in the School of Journalism. The other three-fourths of the total credit required for graduation will provide a background in the liberal arts, with emphasis on history, government, economics, philosophy, literature, foreign languages, psychology, and sociology.

The degree of Master of Arts in Journalism also is offered (see Graduate School). Undergraduates specialize in a field which may be news-editorial, radio-television, advertising, or magazines. Instruction in many courses stresses ethics, legal and social responsibilities, and the opportunities for public service.

Graduates obtain positions on newspapers in Montana and in other states, including many metropolitan centers. Some are foreign correspondents. Many are editors and publishers, or hold positions on radio and television stations, with technical magazines, in public relations firms or advertising agencies, and government agencies. Some are distinguished scholars, authors and teachers.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that the high school preparation include study of a foreign language and typing.

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 29 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 100, 270, 280, 390, 391, 371, 372, 380, 381, 491-492, 493. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>Journ 100—Introduction to Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Eng 350—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 100 (3 quarters) — Health and Physical Education</td>
<td>3</td>
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<tr>
<td>Additional courses to meet University requirements</td>
<td>9-46</td>
</tr>
</tbody>
</table>

Sophomore Year

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<tr>
<th>Course</th>
<th>Cr.</th>
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<tr>
<td>Eng 250—Intermediate Composition</td>
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<tr>
<td>Journ 200—Reading</td>
<td>3</td>
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<tr>
<td>Journ 290—History and Principles of Journalism</td>
<td>3</td>
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<tr>
<td>Additional courses to meet University requirements</td>
<td>9-47</td>
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</table>

Junior and Senior Years

<table>
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<th>Course</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>Eng 350—Advanced Composition</td>
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<tr>
<td>Journ 300—Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Journ 361—Advertising Sales</td>
<td>2</td>
</tr>
<tr>
<td>Journ 372—Advanced Reporting</td>
<td>2</td>
</tr>
<tr>
<td>Journ 380—New Editing</td>
<td>3</td>
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<tr>
<td>Journ 491—Advanced News Editing</td>
<td>3</td>
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<tr>
<td>Journ 492-493—Senior Seminar</td>
<td>6</td>
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<tr>
<td>Journ Electives (including sequence requirements)</td>
<td>15-35</td>
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<tr>
<td>Additional Electives</td>
<td>51-26</td>
</tr>
</tbody>
</table>

Total recommended hours in Journalism: 48
Total recommended hours in General Education: 147

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 267, 268, 270, 490, 668.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 348; Journalism 362, 363, 364.

MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 237, 332, 333, 334.

RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 341-342, 343, 344, 348.

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO JOURNALISM 3. Open to non-majors. History, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper.

128 TYPOGRAPHY 2 prereq c/l. Problems of typographical design and application. Elementary work in printing and the handling of type.


227 ELEMENTARY PHOTOGRAPHY 3 prereq c/l. Open to non-majors. Photographic equipment, materials and facilities with practice in taking of pictures under varied conditions and processing of film and prints.

270 REPORTING 3. Open to non-majors. Groundwork in gathering, writing and evaluating news.

290 HISTORY AND PRINCIPLES OF JOURNALISM 3. Open to non-majors. American journalism from colonial times against a background of U. S. history with attention to the struggle for freedom of expression.

327 NEWS PHOTOGRAPHY 3 prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

332 MAGAZINE MAKEUP AND EDITING 3 prereq c/l. Open to non-majors. Theory and practice of editing magazines of general circulation. Practice includes editorial planning and writing.

333 MAGAZINE ARTICLE WRITING 3 prereq c/l. Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.
334 TRADE AND TECHNICAL JOURNALISM 3 prereq c/l. Open to non-majors. Writing and editing of trade and business journals, technical and specialized publications.

335 PROMOTION AND PUBLIC RELATIONS 3 prereq c/l. Open to non-majors. The techniques and theories of promotion and public relations.

346 RADIO-TELEVISION PUBLIC AFFAIRS 3. Radio and television special events and information programs, commentaries, interviews and interpretation.


352 NEWSPAPER MANAGEMENT 3 prereq 360. Problems of operation of daily and weekly newspapers.

360 PRINCIPLES OF ADVERTISING 3. Open to non-majors. Theory and techniques with emphasis on the role of advertising as it applies to the producer, consumer, and distributor.

361 ADVERTISING SALES 2 prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 3 prereq c/l. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising among the schedules.

363 ADVERTISING LAYOUT AND COPY 3 prereq 360. Open to non-majors. Application of typographical and advertising principles to preparation of layouts and copy.

365 RETAIL STORE ADVERTISING 3 prereq 360. Open to non-majors. Integration of retail store merchandising among advertising media. Technical aspects of advertising schedules for retail stores.

371 ADVANCED REPORTING 2 prereq 270. News coverage, reporting and publishing problems.

372 SPECIALIZED REPORTING 2 prereq 371. Specialization in fields of depth reporting.

380 NEWS EDITING 3 prereq 270. Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing.

381 ADVANCED NEWS EDITING 2 prereq 380. Editing and makeup problems.

FOR UNDERGRADUATES AND GRADUATES

315 SCHOOL PUBLICATIONS 3 e/p prereq c/l. Open to non-majors. For students who plan to teach journalism courses in high schools or act as advisers to school publications.

317 SCHOOL PUBLIC RELATIONS 3 prereq c/l. Degree or teaching experience. The principles of developing better understanding among the press and the community. For school administrators and teachers.

390 PUBLIC OPINION 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and methods used in its measurement.

397 LAW OF JOURNALISM 3. Legal guarantees and limitations of the right to gather and publish news and to comment on it.

399 ADVANCED JOURNALISM PROBLEMS V prereq consent of the dean. Training and research in advanced journalism problems.

440 CINEMATOGRAPHY 3 prereq 227 or --, and 12 hours in radio-television courses. Motion picture news photography. Film for television.

470 REPORTING PUBLIC AFFAIRS 3. Laboratory work in coverage of political and governmental news at the city, county, state, and federal levels.

491-492-493 SENIOR SEMINAR 2 prereq senior standing in journalism. Investigative methods of editing, study of several aspects of American society with construction of a casebook for many news stories, and practice in research methods.

495 EDITORIAL WRITING 3. The editorial pages of leading newspapers; practice in research and the writing of editorials.

497 MASS MEDIA IN MODERN SOCIETY 3. Interrelationships between media of mass communication and diverse facets of modern society.

499 INTERNATIONAL COMMUNICATIONS 3. Media of information in other countries, with emphasis on newspapers.

FOR GRADUATES

598 THEORIES OF COMMUNICATION 3 prereq consent of the dean. Structure, processes and effects of communication.

599 METHODS OF JOURNALISM RESEARCH 3 prereq consent of the dean. Problems and techniques in study and analysis of communications.

601 RESEARCH IN JOURNALISM V prereq consent of the dean.

699 THESIS V R-15.

LAW

is the study of the official rules and regulations under which people live in organized American society; of the methods by which such rules are administered and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions collected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and in legal writing. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana.

The Supreme Court of Montana admits graduates to practice without examination. Most graduates become 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 taxation) at eastern institutions; graduates with the requisite scholarship standing are readily accepted by other law schools specializing in more advanced legal education. They are also to be found in the ranks of leading practitioners in many large cities of the United States.

CALENDAR

FALL SEMESTER, 1969

September 22-23, Monday and Tuesday Orientation of new law students

September 23, Tuesday Registration

September 24, Wednesday Classes begin at 9:00 a.m.

November 11, Tuesday Veterans' Day, no classes

November 26, Wednesday Thanksgiving vacation begins after last class

December 1, Monday Classes resume at 9:00 a.m.

December 20, Saturday Christmas vacation begins after last class

January 5, 1970, Monday Classes resume at 9:00 a.m.

January 26-31, Monday through Saturday Semester Examinations

SPRING SEMESTER 1970

February 11, Wednesday Registration

February 12, Thursday Classes begin at 8:00 a.m.

March 29, Monday Spring vacation begins after last class

March 30, Monday Classes resume at 8:00 a.m.

June 1-6, Monday through Saturday Semester Examinations

June 14, Sunday Commencement

FALL SEMESTER 1970

September 21-22, Monday and Tuesday Orientation of new law students

September 22, Tuesday Registration

September 23, Wednesday Classes begin at 9:00 a.m.

November 11, Tuesday Veterans' Day, no classes

November 25, Wednesday Thanksgiving vacation begins after last class

November 30, Monday Classes resume at 9:00 a.m.

December 21, 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 8:00 a.m.

March 29, Monday Spring vacation begins after last class

March 30, Monday Classes resume at 8:00 a.m.

May 31 through June 5, Monday through Saturday Semester examinations

June 13, 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 year 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 matriculation in the Law School. An applicant who has completed in residence at an approved college or university three-fourths of the work required for an undergraduate degree may be considered for admission as an exceptional case upon submission of a petition and evidence of high scholastic standing and outstand-
ing aptitude for the study of law, on condition nonetheless that such an applicant qualify for an undergraduate degree prior to receiving a law degree. Non-theory courses are not acceptable except for re-
quired research, in physical fitness, and for failure more than ten percent of the total credits offered for admission. In addition to the foregoing requirements, no applicant will be admitted who has demonstrated a lack of capacity for self expression as evidenced, for example, by failing to achieve at least average grades (C) in English Composition. It is recommended that all prospectives for the Law School complete Latin 101, 102, 103 or the equivalent, and Accounting 201, 202 or the equivalent.

Prior to registration for courses in the second year of Law School, if the student has not received college credit in accounting fundamentals must pass an examination approved by the Law School, or he may reduce the number of law credits attempted in the first semester of the second year and enroll in an accounting course for law students which will be offered by the School of Business Administration.

The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the year prior to the one during which admission is sought. Information con-
cerning the test and application forms may be obtained from the School of Law or from the 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 for selected courses in law with the approval of the Dean of the Law School and the instructor of the course.

All applications for admission to the Law School must be sub-
mitted before June 1 of the year in which entrance is contemplated. In addition to the Law School Application Form, the Registrar of the Univer-

BASIS FOR EXCLUSION: (1) Failures: A student who has failed to maintain such an index thereafter shall be excluded from

ADMISSION TO ADVANCED STANDING: Applicants for ad-
mission to the Law School 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 student is eligible to continue in the law school under the policies specified herein. An applicant is not likely to

REQUIREMENTS FOR GRADUATION: Candidates for the degree of Juris Doctor (J.D.) must: (1) be graduates of an approved college or university; (2) complete six semesters in residence at an approved law school after the last year in which the student was a matriculated student of the University of Montana; (3) complete ninety semester hours of law with an index of 2.0; and (4) complete the following required courses: Contract Law, Property Law, Civil Procedure, and Jurisprudence.

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584 CORPORATIONS 3. Problems of corporate management; finance and investment; and regulation of securities issues, shareholders suits, dividend and corporate distributions.

615-616 COURTROOM AND OFFICE PRACTICE I, II 2. Established patterns in office procedure, in uncontested legal proceedings and in trial techniques.

621 CREDITOR AND DEBTOR 2. The procedures and methods whereby a creditor obtains recovery from a debtor, with emphasis upon bankruptcy.

515 CRIMINAL LAW 3. Crimes with emphasis upon the criminal act, the requirement and character of criminal intent and limitation upon criminal responsibility.

508 CRIMINAL PROCEDURE 2. Investigation and prosecution of alleged offenders with emphasis upon arrest, bail, indictments, trials and post conviction remedies.

509-570 ESTATE PLANNING I, II 3. The will and the trust and types of future interests in property as devices in the transfer of property at death or prior to death.

573 EVIDENCE 4. The production and presentation of evidence in the course of a trial.

605 THE FAMILY 2. The ways in which family relationships come into being, the various restrictions upon marriage, the problems posed by the family as an existing unit, adoption, juvenile court and the manifold legal relationships between husband and wife and parent and child.

631 FEDERAL TAXATION I 4. The federal income tax relating to individual trusts, partnerships and corporations.

632 FEDERAL TAXATION II 2. The federal estate and gift tax laws.

525 INTRODUCTION TO LAW 4. Legal method and the place of the legal profession in an adversary system of justice; the history of law; the development of types of remedial actions and the philosophies of the law; together with their impact upon legislation and adjudication.

606 JURISPRUDENCE 2. The nature and purposes of law and the nature of the judicial process.

641 LABOR LAW 2. The elements of collective bargaining and labor management relations.

642-643 LAW REVIEW I, II 1. Comprehensive research and writing in limited areas of law. Limited to members of the Law Review staff.

651-655 LEGAL AID I, II 1. Clinical experience under the supervision of a Montana attorney in both civil and criminal cases before the federal and state courts.

531 LEGAL WRITING I 1. Law books and their use and the preparation of legal memoranda and reports with emphasis upon legal writing.

532 LEGAL WRITING II 1. The drafting of legal instruments, moot court briefs and legal memoranda.

565-568 LEGAL WRITING III, IV, V 1. The preparation of a research paper under supervision of a member of the faculty, the preparation of a brief and presentation of oral appellate argument on a major constitutional question before a faculty-student court.

647 LEGISLATION 2. The preparation, passage and interpretation of legislation.

655 LOCAL GOVERNMENT 2. The administration of government with emphasis upon local governing bodies and their relationships with their state and federal counterparts.

697 NATURAL RESOURCES 2. Elements of mining law and the laws of public lands; selected problems of natural resources, particularly oil and gas law and water law.

661 OIL AND GAS 3. The production, conservation and transportation of petroleum.

590 PROFESSIONAL RESPONSIBILITY 2. The lawyer as counselor, advocate, citizen and public servant with emphasis on the nature and extent of professional responsibility.

535 PROPERTY I 2. The law of personal property, possession, and the requisites for acquiring title to land.

536 PROPERTY II 3. The transfer of interests in real property.

598 REGULATION OF BUSINESS 2. The regulation of private business with emphasis upon monopoly, anti-trust, trademarks and unfair competition.

640 REMEDIES 3. The judicial remedies available for injuries to persons and property, for breach of enforceable agreements, and for transactions induced by misrepresentation.

671 SECURED TRANSACTIONS 3. The use of real property security and the nature and foreclosure of mortgages.

603 SOCIAL LEGISLATION 2. Social security, workman's compensation, unemployment compensation and wages and hours legislation.

680 WATER LAW 3. The appropriation and use of water and the relative rights of federal and state governments in the use of this natural resource.

LIBERAL ARTS

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. The latter includes Anthropology, Economics, History, Political Science, Sociology and Geography.

This program permits the student to work in a combination of the above areas rather than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences. It also provides a broad background for students who decide to prepare for teaching. Those who elect to teach may qualify to do so by taking additional work in education.

Students must have completed, or be eligible for, English 150 in order to major in this program. Upperclassmen transferring into this program should have at least a C average in all credits attempted. The liberal arts curriculum is not designed for the student who is undecided as to his major.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

University requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 190, 250, 350</td>
<td>9</td>
</tr>
<tr>
<td>Group I or II</td>
<td>12</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>23-30</td>
</tr>
<tr>
<td>Physical Education (3 quarters)</td>
<td>3</td>
</tr>
</tbody>
</table>

Major Requirements (courses under 300)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology, Economics, Geography</td>
<td>9</td>
</tr>
<tr>
<td>History or Political Science</td>
<td>15</td>
</tr>
<tr>
<td>History or Political Science or both</td>
<td>15</td>
</tr>
<tr>
<td>Literature (English 211-212-213 or 231-232-233 recommended)</td>
<td>12</td>
</tr>
<tr>
<td>Philosophy (298, 299, 300 recommended)</td>
<td>10</td>
</tr>
<tr>
<td>Sociology (any two)</td>
<td>24</td>
</tr>
<tr>
<td>Sociology (history or political science or both)</td>
<td>24</td>
</tr>
<tr>
<td>Philosophy or Humanities 351 or 401 or any combination</td>
<td>24</td>
</tr>
</tbody>
</table>

Major Requirements (courses 300 and above)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology, Economics, Geography</td>
<td>9</td>
</tr>
<tr>
<td>History or Political Science</td>
<td>15</td>
</tr>
<tr>
<td>History or Political Science or both</td>
<td>15</td>
</tr>
<tr>
<td>Literature or Philosophy or Humanities 351 or 401 or any combination</td>
<td>24</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>30-33</td>
</tr>
</tbody>
</table>

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, 411, 412, 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 language 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 courses offered by departments in the university (each is applicable to a major in the department concerned:
MATHEMATICS

is a discipline of intrinsic beauty when considered as an independent entity; it is also a discipline of tremendous utility in the study of the physical, biological, and social sciences, and other disciplines in general. The importance and the usefulness of mathematics have never been greater than at the present time, and, accordingly, the need for well-trained, competent mathematicians has never been greater than at the present time. This is indicated, in some measure, by the emphasis placed upon mathematics education and mathematics research by various agencies of the national government. The well-prepared graduate in mathematics will find excellent opportunities for a career involving teaching and research in an academic life at the high school or university level, or for a career in applied mathematics in business, industry, or government.

The Bachelor of Arts, Master of Arts and Master of Arts for Teachers, and Doctor of Philosophy degrees are offered.

HIGH SCHOOL PREPARATION. All mathematics courses for university credit require, as prerequisite, the equivalent of two years of high school algebra. Further, it is strongly recommended that the high school preparation include plane geometry, trigonometry and analytic geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MATHEMATICS. In addition to the general requirements for graduation listed earlier in the catalog, the following requirements must be completed for the Bachelor of Arts degree with a major in Mathematics. Math 151, 152, 153, 251, 252. A foreign language (German, French, Russian, or a combination of these) and the departmental English composition requirement are required. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 253, 311, 312, 313, 314, 321, 322, 323, 351, 352, 353 and six credits in other approved Mathematics courses. An alternative for the student to present a second major in one of the schools or departments within the University. Students must select one of the following two options.

Option 2. Students preparing for secondary school teaching are required to take Mathematics 125, 301, 302, 303, and 5 credits in approved Mathematics courses numbered above 252, and 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)

101 (100) INTERMEDIATE ALGEBRA. A remedial course, of which the content is second year high school algebra. (Credit not allowed toward a degree.)

118 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination. The elementary operations, binomial theorem, inequalities, systems of linear equations, elementary theory of equations.

119 TRIGONOMETRY 5 prereq 116 or exemption by examination. Trigonometric functions and their graphs and graphing 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 116, 117, or exemption by examination. Limits, continuity, differentiation and integration of functions of one real variable, applications, the fundamental theorem of calculus.

121 ELEMENTARY FUNCTIONS 5 prereq high school trigonometry and 001 or exemption by examination. Properties of polynomials, rational, circular, and other elementary functions of one variable.

122 STATISTICS 5 prereq 001 or exemption by examination. Probability models, statistical independence, sampling, tests of statistical hypotheses.

130 THEORY OF ARITHMETIC 5 prereq 001 or exemption by examination. The mathematical meaning and background of arithmetic.

151-152 (118-251) ANALYTIC GEOMETRY AND CALCULUS I-II 5 prereq 211 or 117 or exemption by examination. Limits, continuity, differentiation, integration, differentiation and integration of elementary functions, applications.

153 ANALYTIC GEOMETRY AND CALCULUS III 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore level.

220 INTUITIVE GEOMETRY 4 prereq 130 or exemption by examination. Space, plane, line and other geometric figures as sets of points, separation properties, deduction versus induction, measurement, coordinate geometry.

231 ANALYTIC GEOMETRY AND CALCULUS IV 5 prereq 153. Partial differentiation, infinite series.

253 ANALYTIC GEOMETRY AND CALCULUS V 5 prereq 251. Multiple integrals, line and surface integrals, infinite series, improper integrals.

253 ANALYTIC GEOMETRY AND CALCULUS VI 5 prereq 251. Solution of ordinary differential equations with emphasis on linear equations, Laplace transform methods, series solutions.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq 001 and c/i. Elements of linear equations, inequalities, calculus logic and probability are presented with the aid of a digital computer. (271) Floating point programming, (272) Intuitive calculus, (273) Logic and probability theory. (Credit not allowed for this course and Computer Science 271-272-273.)

FOR UNDERGRADUATES AND GRADUATES

301 THE REAL NUMBER SYSTEM 5 prereq or coreq 251. An axiomatic treatment of the construction of the real number system, beginning with the Peano postulates for the natural numbers.

302 (300) ALGEBRA FOR TEACHERS 5 prereq or coreq 251. Recommended. The processes of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra.

303 (304) GEOMETRY FOR TEACHERS 5 prereq c/i. The subject matter of high school geometry compared with that of other geometries.

305 TOPICS IN MATHEMATICS V prereq 1 year experience in teacher's high school algebra. The main purpose of this course is to help high school teachers improve their background in Mathematics. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)


321-322-323 (311-312-314) INTRODUCTION TO ABSTRACT ALGEBRA 3 prereq 222. An introduction to modern ideas of algebraic Groups, rings, fields, vector spaces, matrix theory, and linear groups.
237-238 (315-316) MODERN ALGEBRA 5 prereq 225 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.)

341-342-343 MATHEMATICAL STATISTICS 3 prereq 232 and c/i.
Development of necessary mathematical concepts, probability, random variables and distribution functions, sampling, testing hypothesis, confidence intervals.

344-345-346 (302-303) STATISTICAL METHODS 3 prereq a course in college mathematics and c/i. Primarily intended for those who find need for statistical techniques and model for random phenomena, the foundation of statistical inference, sampling, design and analysis of experiments.

347-348 (337-338) STATISTICAL METHODS 4 prereq 232 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 frequentist interpretation of probability, the nature of statistical inference. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

351-352-353 MODERN ADVANCED CALCULUS 3 coreq 253 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.

357-358 (317-318) PRINCIPLES OF ANALYSIS 5 prereq 225 and c/i. Limits, continuity, differentiation, integration, series. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)


381 (329) EUCLIDEAN GEOMETRY 3 prereq 153. Geometry from a rigorous, axiomatic viewpoint. Hyperbolic models of axiom systems, introduction to non-Euclidean geometries.


383 DIFFERENTIAL GEOMETRY 3 prereq 233. 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.

387-388 (327-328) FOUNDATIONS OF GEOMETRY 4 prereq 232 and c/i. Axiomatic systems and selected theorems from Euclidean geometry, projective and other non-Euclidean geometries, finite geometries, introduction to topology. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission. Credit not allowed for this course and computer science 370.)

391 (328) ELEMENTARY NUMBER THEORY 5 prereq at least 20 credits in Mathematics with a grade of C or better. Congruences, Diophantine equations, properties of primes, quadratic residues, continued fractions, algebraic numbers.

399 SEMINAR V R-15 prereq c/i. Guidance in special work for advanced students.


414-415-416 ADVANCED STATISTICS 3 prereq 321, 343, 352. Multivariate distributions, characteristic functions, limit theorems, stochastic processes, design of experiments, further topics to meet the needs of the students.

445-446 APPLIED STATISTICAL INFERENCE 3 prereq 341 and coreq 342 for 445, 445 and coreq 343 for 446. Application of statistical inference. Design of experiments, least squares procedures, non-parametric statistics and other topics chosen to fill the needs of the students.

451-452-453 REAL ANALYSIS 3 prereq 353. Lebesgue measure and integration. Lp-spaces, elementary point set topology, metric spaces, and selected topics.

461-462-463 (409-411-412) COMPLEX ANALYSIS 3 prereq 353. Complex numbers and functions, analytic functions, Cauchy integral theorem and formulas, conformal mapping, theory of residues, analytic continuation, and selected topics.

471-472-473 NUMERICAL ANALYSIS 4 (3-4) prereq 233 and 249 for 471, 250 recommended; c/i for 472 and 473. Error analysis; approximation and interpolation, numerical solution of linear and non-linear equations, numerical integration of ordinary and partial differential equations, numerical solution of integral equations, and selected topics. Assigned work on the digital computer. (Credit not allowed for this course and Computer Science 471-472-473.)

FOR GRADUATES

Before beginning work on an M.A., a student should have an undergraduate major in mathematics or related division courses in mathematics. As preparation for advanced courses, he should have Math 351-352-353 and Math 321-322-323.

511-512-513 ADVANCED MATHEMATICAL METHODS 3 prereq 413 or c/i. Theory of approximate solutions to equations including steepest descent, Newton's method, and replacement of integral and differential equations by algebraic equations.

521 THEORY OF GROUPS 3 prereq 323. Sylow theorems and applications to finite groups. Series decompositions and selected topics.

522 THEORY OF FIELDS 3 prereq 323. Algebraic and transcendental extensions. Topics from Galois theory, algebraic functions, and/or ordered fields.

523 STRUCTURE OF RINGS 3 prereq 323. Radicals and the Wedderburn theorem. Group rings, tensor products, and selected topics.

524 COMMUTATIVE RINGS 3 prereq 323. Noetherian rings, integral domains, integral extensions, and related topics.

525 MODULES 3 prereq 3 credits from 521, 522, 523, or 534 or c/i. The language of categories, direct and inverse limits, projective and injective modules. Algebraic groups, group representations.

531-532-533 TOPOLOGY 3 prereq 353. Set theory, topological spaces, metrizability, continuous mappings, topological mappings, and selected topics.


561-562-563 FUNCTIONAL ANALYSIS 3 prereq 333 and c/i. Topological linear spaces, including normed spaces, Banach spaces, and Banach algebras. Interior mapping principle, principle of uniform boundedness, Hahn-Banach theorem, closed graph theorem, linear operators, continuous linear operators, elementary spectral theory.

564-565-566 SPECTRAL THEORY 3 prereq 563. Spectral representation, spectral resolution, Hilbert-Schmidt operators, Riesz operators, differential operators, invariant subspaces.

600 GRADUATE SEMINAR V prereq c/i. This course provides guidance in graduate subjects on research work.

610 GRADUATE SEMINAR IN APPLIED MATHEMATICS V prereq c/i.

620 GRADUATE SEMINAR IN ALGEBRA V prereq c/i.

630 GRADUATE SEMINAR IN TOPOLOGY V prereq c/i.

640 GRADUATE SEMINAR IN PROBABILITY AND STATISTICS V prereq c/i.

650 GRADUATE SEMINAR IN ANALYSIS V prereq c/i.

660 GRADUATE SEMINAR IN FUNCTIONAL ANALYSIS V prereq c/i.

670 GRADUATE SEMINAR IN NUMERICAL ANALYSIS V prereq c/i.

680 GRADUATE SEMINAR IN GEOMETRY V prereq c/i.

699 THESIS V R-15.

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 biology 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 the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this certification is desirable, persons
is the study of microorganisms, including the bacteria, yeasts, molds, viral diseases and 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.

Graduates 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. The opportunities for employment are currently exceptionally good.

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 include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY. In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Arts degree in Microbiology: Microbiology 200, 302, 350, 404, 411, 413, 430; Zoology 111-112-113; Chemistry 121-122-123, 245, 261-262; Math 116, 117. A minimum total of 45 credits from Microbiology courses listed above and from the following courses in required: Microbiology 306, 307, 309, 405, 418, 419, 430; Chemistry 370, 481, 482, or any other courses approved by the advisor and the chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Freshman Year

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<tr>
<th>Course</th>
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<tr>
<td>Chem 112-113-123—College Chemistry</td>
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<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
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<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
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<tr>
<td>Engi 100—Freshman Composition</td>
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<td>Group I or IV Electives</td>
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<tr>
<td>H&amp;PE—Physical Education</td>
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Sophomore Year

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<tr>
<td>Chem 261-262—Organic Chemistry</td>
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<td>Chem 245—Quantitative Analysis</td>
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<td>Physics 111-112-113—General Physics</td>
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<tr>
<td>Micro 200—Microbial Physiology</td>
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<td>Zool 202—Human Physiology</td>
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<td>Engi 200—Intermediate Composition</td>
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<td>Group III or IV Electives</td>
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Junior Year

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<tr>
<td>Micro 302—Medical Microbiology</td>
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<tr>
<td>Micro 350—Microbial Physiology</td>
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<tr>
<td>Micro 310—Immunology and Epidemiology</td>
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<tr>
<td>Zoology 304—Comparative Vertebrate Anatomy</td>
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<td>Engi 350—Advanced Composition</td>
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Senior Year

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<tr>
<td>Micro 406—Clinical Microbiology</td>
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<td>Micro 450—Epidemiology</td>
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<tr>
<td>Micro 415—Medical Mycology</td>
<td>5</td>
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<tr>
<td>Micro 420—Virology</td>
<td>5</td>
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<tr>
<td>Micro 450—Epidemiology</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Zoology 313—Vertebrate Histology</td>
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<tr>
<td>Electives</td>
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Option II

Under Option II, a student must complete a minimum of 15 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 30 credit hours toward his B.S. degree for the successful completion of the hospital internship.
BACHELOR OF MUSIC

with a major in Applied Music

with a major in Theory or Composition

BACHELOR OF ARTS

with a major in Music.

GRADUATE WORK. See Graduate School Bulletin.

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the Music Department is by certificate from the high school in which the student graduated. The faculty of the Music Department is more concerned with evidence of talent, conscientious achievement, and promise of music, provided they consider the student qualified. The faculty of the Music Department is more concerned with evidence of talent, conscientious achievement, and promise of music, provided they consider the student qualified.

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 Applied Music or in Theory or Composition, the course requirements in Curriculum B must be completed.

3. For the Bachelor of Arts degree with music as a major, the course requirements in Curriculum C must be completed.

4. All students majoring in music are required to attend recitals as specified by the department.

5. All music majors seeking a B.M., M.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 instruments in their Applied field must register for Band (or orchestra, if designated) every quarter, string majors must register for orchestra or choral union every quarter. Students registered in any major 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 with the written approval 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 117, Elementary music majors (Curriculum A) must complete 4 credits in 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 registered in Music 201 shall take a divisional jury at the end of Spring quarter. At the option of the division and instructor, a student, all others registered in Music 201 and 401 may be required to take a divisional jury at the end of spring quarter. If to be taken, it shall be taken 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 in that quarter.

9. 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 213, 239, 256, 271 (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 whose grades will 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.

APPLIED MUSIC FEES

Non-Music Majors

One half-hour lesson per week ......... $12.00
Two half-hour lessons per week ......... 24.00
Three half-hour lessons per week ......... 36.00

Music Majors

One half-hour lesson per week ......... $12.00
Two or more half-hour lessons per week ......... 20.00

For majors and non-majors who register for applied music for less than a full quarter or who withdraw before the end of the quarter, a charge per private lesson will be made. Rates are based on the number of weeks elapsed since the beginning of the quarter.

Lessons in applied music missed by the instructor will be made up within the quarter. Lessons missed by students or lessons falling on a legal holiday will not be made up.

Music Practice Fee: students enrolled in music courses involving use of practice rooms, piano, 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 teaching profession, and whose high school background includes experience in music, the University of Montana offers the degree of Bachelor of Music Education, which must be the state requirements for certification for public school teaching (see Education).

(1) with a major in Elementary Music-Training and background preparatory to teaching and directing special and general music courses in the elementary grades (K-8) and 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 in addition to general University requirements shall include the following:

English 150, 250, 350, 9 cr.; Psychology 110, 5 cr.; Psychology 220, 5 cr.; General 151, 153, 159, 9 cr.; Speech 119, 2 cr.; Group I requirements shall be satisfied by English Composition 120, 9 cr.; and French or Spanish 119, 2 cr.; Electives will be presented to total a complete of 62 credits, including requirements for Group II.

Professional courses totaling 34 credits shall include the following:

Education 200, 2 cr.; Education 202, 5 cr.; Education 340, 3 cr.; Education 404, 12 cr.; Education 407, 3 cr.; Education 347, 5 cr.; and H&P 207, 3 cr.

It is recommended that elementary teachers take Health and Physical Education 118 as part of their required work in Physical Education (6 cr.) during the freshman and sophomore years.

Suggested Freshman Program: Music 201, Theory I, Aural Perception I, Introduction to Music Literature; General 125, 126, 127; English 150; Psychology 110; H&P 100 (or 115); academic electives 6 cr.

(2) with a major in Choral and Instrumental Conducting and Music Education (K-12) and background for conducting instrumental and choral groups, and administering a Secondary School Music Department (K-12).

Music course requirements for Curriculum A-2 shall include a total of 103 credits as follows: 201 (Piano or voice), 6 cr.; 401, 1 cr.; 100 (Piano or voice), 4 cr.; 106-110 or 140, 11 cr. (divided 7 and 4 according to major and minor); Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; Voice in Class, 3 cr.; Strings in Class, 3 cr.; 128, 129, 130, 6 cr.; 125, 4 cr.; Music History, 9 cr.; 323, 324, 325, 6 cr.; 331, 332, 333, 11 cr.; 328, 329, 4 cr.; 406, 1 cr.; upper division music electives, 6 cr.

Exceptions: Students taking piano as Secondary Applied Major will complete Piano 100, 150, 250, 350, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 305, 405, 407, 24 cr.

Students taking piano as Secondary Applied Major must complete Music 230, 231, Piano Methods and Materials.

Suggested Freshman Program: Music 201, Theory I, Aural Perception I, Piano in Class, Strings in Class, Introduction to Music Literature; General 125, 126, 127; English 150; Psychology 110; H&P 100 (or 115); academic electives 16 cr.

(3) with a major in Choral Conducting-Training and background for conducting Secondary School choral groups, and assisting in General Music programs (K-12).

Major in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements:

201, 6 cr.; 401, 1 cr.; 100, 1 cr.; 106-110 or 140, 11 cr. (Piano or voice with credits for voice or piano in class included); 331, 332, 7 cr. (delete 333); 323, 324, 2 cr. (delete 328); 322, 327, 4 cr.; Instruments in Class (125-6-7 and 128-29-30) 9-6 cr.

Piano or Voice in Class may be deleted according to area of applied major and minor. An academic teaching minor is recommended.

(4) with a major in Instrumental Conducting-Training and background for conducting High School, Junior High School, and beginning instrument groups. (K-12)

Majors in this curriculum follow curriculum A-2 with the following modifications and alterations in the music course requirements:

201, 6 cr.; 401, 1 cr.; 100, 1 cr.; (If piano is major then a wind or string instrument is minor); 331, 333, 7 cr. (delete 332); 328, 329, 330, 6 cr.; Voice in Class, 1 cr. 406, 1 cr.
Piano In Class may be deleted according to area of applied major and minor. An academic teaching minor is recommended.

Double majors are possible in curriculum (A) Music Education and (B) Applied Music, Theory, or Composition, if all requirements in both curricula are completed.

B. CURRICULA FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION

The serious instrumentalist or vocalist may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music (including emphasis on piano pedagogy). Theory or Composition. Enrollment may not be completed until the student has received the recommendation of a major professor or committee of the music faculty.

MAJOR IN PIANO OR ORGAN

Students interested in piano pedagogy follow Curriculum B with the following exceptions: (1) at least six credits in Music 140 (Piano Ensemble) must be included; (2) a half recital, Music 445, 1 credit, will fulfill the senior recital requirement. Organ majors may substitute 6 credits of upper division music elective for Piano Methods.

Music course requirements for Curriculum B with Major in Piano or Organ shall include a total of 121 credits as follows: 201, 24 cr.; 401, 24 cr.; 106-110, 12 cr.; Theory I, 6 cr.

Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Music History, 6 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper Division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, 106-110 or 140; Theory I, Aural Perception I, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN VOICE

Music course requirements for Curriculum B with Major in Voice shall include a total of 121 credits as follows: 201, 24 cr.; 401, 24 cr.; 106 or 110, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Music History, 6 cr.; Piano in Class, 6 cr.; Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN ORCHESTRAL INSTRUMENT

Music course requirements for Curriculum B with a Major in an Orchestral Instrument shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 135, 4 cr.; 140, 6 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; Music History, 6 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper Division electives, 12 cr.; 140 (vocal repertoire), 6 credits.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, 106 or 107; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN 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 or 110, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; Music History, 6 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 6 cr.; 331, 3 cr.; 328, 3 cr.; 329, 3 cr.; 459, 9 cr.; 445, 2 cr.; Upper Division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory I, Aural Perception I, Piano in Class, Composition, Introduction to Music Literature; English 150; H&PE 100, 3 cr.; Academic Electives, 13 cr.

ADDITIONAL REQUIREMENTS: Students taking voice or instrument in the Music Department (not major 100 (Piano)) until a jury examination demonstrates adequate proficiency.

Theory Majors are not required to take Music 256, and Music 454.

Composition Majors: A faculty jury examination of representative work in composition must be passed at close of sophomore year. Seniors will present a recital of original music (or equivalent) for solo voice or instrument, and vocal and instrumental groups including at least one composition for large ensemble.

Suggested Freshman Program: Music 201, 106, 107-108; Theory I, Aural Perception I, Composition, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 cr.

C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop substantial background in the Arts and Sciences. This degree does not qualify a student for public school teaching in Montana but does provide groundwork for future study in the fields of musical performance and scholarship in preparation for teaching careers in colleges or private schools.

Minimum credit requirements for this degree are: 180 total credits plus 43 credits in music courses, 120 of which 120 credits in non-music courses (excluding FE) of which 95 credits must be in the College of Arts and Sciences. Maximum Music credits applicable toward this degree: Applied Music, 12 credits; Ensemble Music, 6 credits; 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.; 120, 6 cr.; 124, 6 cr.; 237-238-239, 12 cr.; Piano in Class, 6 cr.; upper division music electives, 13 cr.; English 150-350-350, 9 cr.; H&PE; 6 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 150; H&PE; Academic Electives, 21 cr.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 100—Applied Minor 1-2 prereq c/l.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide for secondary study if desired. Secondary study is designed for the beginning student certain proficiencies in order that he may use this application as a tool rather than as a medium for performance. A total of 12 credits is allowed in any one applied area.

MUSIC 201, 401 (6 quarters of each course).

Applied Major V 1-4 R-24 prereq audition and c/l. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum A must have a field which is secondary to their primary major, i.e., Music Education. A student entering in Music 201 should show evidence of the equivalent of two years' prior study. Students majoring in Applied Music (Curriculum B) must show talent for solo performance and evidence of the equivalent of four years' prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

105 SUMMER SESSION CHORUS V 1-2.
106 UNIVERSITY CHOIR 1.
107 COLLEGIATE CHORALE 1.
108 ORCHESTRA 1.
110 UNIVERSITY BAND 1.

Courses 106 through 110 are major musical organizations. Prereq c/l. 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. 111 (Basic Theory) may be waived on basis of proficiency examination. The focus is on fundamentals and nomenclature of the science of music structure including the study of music, scales, keys, intervals, chord structures, rhythm, and supplemental ear training. 112-113 prereq 111, 113 for 115. Analysis of music literature to deduce principles of music construction. Application of principles through melodic and contrapuntal writing and notation with keyboard.

114-115-116 PIANO IN CLASS 1. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Harmonization of single tunes acapella and with keyboard. 115-116 emphasis on reading and practical experience in piano literature. Non open to music majors. 116 may be waived on basis of proficiency examination.

124-125-127 STRING INSTRUMENTS IN CLASS 1. Group instruction for beginning students on violin, viola, cello, and bass, with emphasis on technical development.

134 INTRODUCTION TO CONCERT MUSIC 4 (3-2). Music in our present-day culture; illustrated lectures for the layman on forms, styles and composers of concert music. Guided listening to recorded and performed music. For music majors only.

135 INTRODUCTION TO MUSIC LITERATURE 4. The elements of musical understanding; the place of music in history with emphasis on its relation to social change and to the history of other art forms. Survey of music from the Renaissance through the Twentieth Century. Review of all periods of music history and selection of representative music. 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. Group members may have a course outlined by the instructor. The development of sight reading and acquaintance with music literature; accompanying. Students may register for more than one ensemble course in any one quarter.

159 (159-160-161) COMPOSITION 2 R-4 prereq c/l. An introduction to the basic art of music composition. (May be substituted for music selection electives for students not majoring in theory or composition.)

211-212-213 THEORY II 2 prereq 113 and 139, coreq 237-238-239. The study of music construction with emphasis on harmonic structure, the major and minor scales 2 octaves HT. Further development of harmonization, transposition, memorization, and sight-reading. Materials such as Felton Progressing Studies and Bartok Microcosms 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 origins to modern times and its relationship to general cultural development.

237-238-239 AURAL PERCEPTION II 2 prereq 113 and 139, coreq 211-212-213. A lab course in singing and dictation to supplement the study of theory and composition.

247-248-249 KEYBOARD Harmony 1 prereq or coreq 213 and c/l. Practical application of theory principles to the keyboard. Exercises in modulation, transposition, and development of extemporary playing.

259 (259-260-261) COMPOSITION 2 R-6 prereq 6 credits of minor music courses. Original work in composition. (May be substituted for upper division credit if student has studied theory or composition.)

211-312-313 THEORY III 2 prereq 213. Chromatic harmony; altered chords, foreign modulation; analysis and writing in Classic and Romantic styles, both instrumental and vocal.

519 PIANO FOR THE CLASSROOM TEACHER 2. Presenting simple piano style, vocalization, altered chords, and harmony and formal analysis correlated with keyboard application.

520-321 PIANO METHODS AND MATERIALS 3 a/y prereq Piano I, Music 114-115-116, or placement test. All major methods for teacher certification courses besides HT. Further development of harmonization, transposition, memorization, and sight-reading. Materials such as Hartman Progressing Studies and Bartok Microcosms Books I and II.

323-324-325 SCHOOL MUSIC 2 coreq 331. (323-324) Elementary music procedures and materials for supervising and teaching music in grades 1 through 6. (325) Fifth and sixth grade music and general and specialized music instruction for grades 7 through 9.

329-327 CHORAL ARRANGING 2. Practical experience in arranging for vocal groups including the specific problems of the untrained voice and changing voice.


331-332-333 CONDUCTING METHODS AND MATERIALS A 3, W 5, S, Su 3 or 4 prereq 10 credits in music including 112. (331) Fundamentals of conducting. (332) Choral conducting; choral methods and procedures; general music classes in secondary schools. (333) Instrumental conducting; materials for teaching instrumental instruction at all levels; theory classes in secondary schools.

334-335-336 ELEMENTARY MUSIC TEACHING 3. Grade music procedures, materials, and equipment. (334) Kindergarten through Grade 3. (335) Fourth through Grade 6. (336) Seventh and eighth grades. Elementary Music Education Majors only.

337 ELEMENTARY MUSIC ADMINISTRATION AND SUPERVISION 2. Administration and supervision of elementary music in the public schools, the development of curriculum in general music and related arts.

359 (359-360-361) COMPOSITION 3 R-9 prereq 213 and 6 credits of minor music compositions. Creative composition with emphasis on its relation to social change and to the history of other art forms. Concert attendance required. Open to non-majors with c/l. (Credit not allowed for both 134 and 135.)


423 MUSIC OF THE ROMANTIC PERIOD 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 3 prereq 135 and 213. Further study of minor applied fields may elect 1-2 credits.

445 SENIOR RECITAL V 1-2 coreq 401.

459 (459-460-461) COMPOSITION 3 R-9 prereq 9 credits of 359. A continuation of composition with writing in the larger forms.

FOR UNDERGRADUATES AND GRADUATES

500 WORKSHOP IN MUSIC EDUCATION V 1-3 prereq Junior standing, music education major. Special workshops and clinics in elementary and secondary public school teaching problems.

509 PEDAGOGY OF STRINGS 2 prereq c/l. Procedures and materials in class string instruction utilizing clinical demonstrations with children.

441 READINGS IN MUSIC CRITICISM 3. Comparison of selected writings of 20th century composers, including Stravinsky, Hindemith, Schoenberg, Sessions and Copland. (For the layman as well as the music student.)

FOR GRADUATES

501 APPLIED TECHNICS V 1-5 R-15. Individual instruction in the piano, violin, viola, cello, guitar, or other instrument. For students desiring further study of minor applied fields may elect 1-2 credits.

511 (411) ADVANCED CONDUCTING 3 R-12 prereq 332 (Choral majors), 333 (others), and c/l. A continuation of 331-332-333. Class and/or individual study of the art of conducting with emphasis on applied work with university performing groups.

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; Problems selected for 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 ORFF 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 childhood years.

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.

533 SCHOOL MUSIC ADMINISTRATION 3. School systems, plans for organizing and administering the music program in the elementary, junior and senior high school. For students whose principal work has been in music, or who have had an interest in the development of the music program in the elementary and secondary schools, and who wish to enter the field of music administration.

521 SYMPHONIC LITERATURE 3. A survey of orchestral music; the Mannheim composers, the Viennese classics, the Romantics, and contemporary European and American developments.

522 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 development of the harpsichord to the modern period including the suite, sonata, character pieces, etc.

534 CHAMBER MUSIC LITERATURE 3. Survey of chamber music, quartet, trio, quintet, etc., in various instrumental combinations. The literature is presented through the analysis 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.

536 CHORAL LITERATURE 3. Survey of both secular and sacred music for mixed voices with the music of the 16th century to the contemporary school.

538 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.

539 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of the evolving democratic state on the arts, the development of various centers of performing arts and the types of music performed.

541 INTRODUCTION TO MUSICOLOGY 2. Nature, scope, and goal of musicology, its methods and history. Survey of bibliography, different approaches and styles of scholarly writing. Formats and techniques of writing.

542 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

551-553-553 ADVANCED ORCHESTRATION 3 prereq 529. Styles in orchestral techniques since 1750 to the present.

554-555-556 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approach of leading composers from the polyphonic period to the present.

557 TECHNIQUES OF COMPOSITION 3. 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 requirements for courses in the University. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

559 COMPOSITION V R-12.

562 SEMINAR V 1-5 R-15. Investigation of research in fields of individual interest.

599 GRADUATE PROJECT IN MUSIC V R-6.

699 THESIS V R-15.

PHARMACY

is the science which is concerned with the study of the physical, chemical, and biological characteristics of medicinal substances. It embraces 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 other course work necessary to satisfy the general university requirements. During the final three years of the curriculum, the student devotes his time to the study of the several pharmaceutical sciences. This program of study is designed to prepare him to observe the pharmaceutical needs of the public. Areas of additional special study include pharmaceutical chemistry, pharmacognosy, pharmacology, and pharmacy administration. A program of selected electives allows the student to place emphasis upon an area of specialization best suited to his future plans in pharmacy.

In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete one year of "practical experience" or internship in a pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. Many graduates practice pharmacy in neighborhood, or "downtown" stores. Others work in hospital pharmacies, a particularly attractive field for women. Additional opportunities exist as representatives for pharmaceutical manufacturers, in government service, in manufacturing pharmacy, and in pharmaceutical journalism. Those with advanced degrees are in demand in research positions and in pharmaceutical education.

The School of Pharmacy was established in 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 pre-scribed pre-professional subjects listed below and may be taken in any accredited college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken in residence at the University of Montana. The professional curriculum offered by other accredited schools of pharmacy may be accepted in part if so indicated by the faculty. The student must pass an advanced standing examination administered by the faculty prior to registration. Such electives will be determined by the faculty of the School of Pharmacy and must be submitted for consideration by the faculty of the school prior to registration. Applicant students will then be granted full or provisional admission, or may be denied admission.

Upper class students may choose approved elective courses designed to prepare them specifically for either community pharmacy, sales and management, research and teaching in pharmaceutical institutions.

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 a Bachelor of Science degree in the professional curriculum may not have a grade point deficiency exceeding 5.0. 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 "D" or lower, the student has reduced such deficiency to 10 or less. The student must fulfill all required courses for the first four years of study before he may enter the fifth year of the program. Then he may be admitted to senior standing and may become a candidate for a degree upon the satisfactory completion of the senior year.

Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.

2. Complete not less than five full academic years of training, including both pre-pharmacy instruction and a minimum of three years of professional instruction. In order to meet the accreditation requirements of a minimum of a year and a half of professional instruction for the Bachelor of Science degree, each candidate must complete a minimum of 138 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete at least 13 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 United States citizen, and have completed a program leading to the degree of Bachelor of Science in Pharmacy. The candidate shall have completed a program of study at an accredited school of pharmacy. However, such an applicant shall not receive a license until he has completed the internship of at least one year, following graduation, in an approved pharmacy in the state of Montana.

GRADUATE WORK. See Graduate School Bulletin.
PHARMACY CURRICULUM

First year: English 350; Business Administration 201; Chemistry 480; Pharmacy 306, 320, 324, 330, 331; Zoology 340-341; electives.

Second year: Microbiology 200, 304; Pharmacy 404, 414-415-416, 425, 444, 452, 462, 463, and electives.

Third year: Microbiology 411; Pharmacy 503, 504, 506-506, 516, 517-518-519, 540, 541-542, 549, 575, 577, 578, 596, and electives.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 USE AND ABUSE OF DRUGS 2. The nature of drugs; their history, development and normal use in treatment of disease. Drug dependencies and abuse, the special classes and types of drugs involved. (Not open to pharmacy majors.)

306 (306) ORIENTATION TO PHARMACY 1 (1-0). Career opportunities, literature, history and terminology, library orientation.

320 (220) PHARMACEUTICAL CALCULATIONS 2 (2-2). Metrology, pharmaceutical mathematics, terminology and form of the prescription, practical laboratory work using apparatus for measuring and weighing.

324 (424) PHARMACOGNOSY 4 (3-3) prereq Chem 263 or c/i. Plant and Animal Products used in Pharmacy and Medicine.

320-321 PHARMACOLOGIC PRINCIPLES 3 prereq Zoology 340, 341 or Concurrent registration. Concepts of dosimetry, and other factors governing the known functional activity of prototype drugs that influence the mind or body of the organism.

361 (461) PHARMACY 5 (3-4) prereq 220 and Chem 263. Fundamental techniques of pharmacy and the various classes of pharmaceutical preparations. Throughout the course the underlying physical and chemical principles employed or responsible for any phenomena observed are studied.

377 COMPUTER APPLICATIONS TO PHARMACY 2 (2-0) prereq 400 or =. Exercises in programming with reference to inventory, finances and drug activity.

404 INTRODUCTION TO DISPENSING 2 (1-2) prereq 463. The filling of non-compounded prescriptions. Laws, references and pre­

414-415-416 MEDICINAL CHEMISTRY 414-415, 3 (3-0); 416, 5 (4-0), prereq Chem 263. Organic substances used medicinally with em­phasis on the correlation of chemical structure with therapeutic activity.

418 MEDICINAL CHEMISTRY LABORATORY 2 (0-6 to 9) R-4 prereq 414. Synthesis, identity and purity tests of organic medicinals.

425 (325) PHARMACOGNOSY 4 (3-3) prereq Chem 263 or =. Continuation of 324.

440 DRUGS OF PSYCHOPHARMACOLOGY 3 (3-0) prereq Chem 263, 340, 402, Zool 341. Drugs which influence behavior and the mental state.

442 (340) RADIOPHARMACOLOGY 2 (2-0) R-6 prereq Chem 476 or c/i. Drug metabolism and internal dosimetry.

444 APPLIED PHARMACOLOGY 5 (5-0) prereq 230, 231, Chem 481 or concurrent registration. The therapeutic and toxicologic aspects of drugs which are used as drugs. The relationship of pharmacologic principles to particular disease states.

452 DRUG ANALYSIS 4 (2-4). Special and instrumental methods used in the analysis of pharmaceutical preparations.

462-463 PHARMACY 5 (3-4) prereq 320, 361 and Chem 263. Continuation of 361.

466 MEDICINAL PLANTS AND PHARMACOGNOSTICAL TECHNIQUES 3-5 (0-9 to 15). Collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.

468 DRUG MICROSCOPY 2 (0-4) prereq junior standing in pharmacy and c/i. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

503-504 BIOLOGICAL MEDICINAL PRODUCTS 3 (3-0) prereq Micro 304. Biologicals, antibiotics, vitamins, hormones, and other medicinal products. Biological and chemical examination of the organism.

505-506 DISPENSING 4 (2-6) prereq 404. Fundamental principles of prescription compounding by means of a detailed study of the common dosage forms and special forms of medication.

516 PHARMACEUTICAL LAW 3 (3-0) prereq senior standing in pharmacy. State and federal laws pertaining to the practice of pharmacy.

517-518-519 PHARMACEUTICAL PRACTICE 1 (0-2) prereq senior standing in pharmacy. Students are assigned to the University of Montana Prescription Pharmacy in order to acquaint them with current practice.

540-541-542 PHARMACOLOGY 4 (3-3) prereq senior standing in pharmacy. The pharmacodynamics of drugs and its application to therapeutics.

545 APPLIED PHARMACOLOGY 5 prereq 444. Continuation of 444.

575 TOXICOLOGY 2 (2-0) prereq 416. The harmful effects of drugs, pesticides, insecticides and other chemical agents on the biological system. Antibodies and emergency measures used in the treatment of poisoning and the role of the pharmacist in poisoning prevention.

577-578 PHARMACY ADMINISTRATION AND FINANCIAL MANAGEMENT 3 (3-0) prereq senior standing in pharmacy. A detailed study of the administration of a pharmacy with emphasis on financial and personnel management.

FOR UNDERGRADUATES AND GRADUATES

555 ADVANCED PHARMACY V 3-5 (0-9 to 15) prereq 506 or =. The more complex problems involved in formulation and preparation of pharmaceuticals.

570 COSMETICS 3 (1-4) prereq 463. Theory and technic of cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 3 (1-6) prereq 452. The more involved methods of analysts as applied to pharmaceuticals.

582-583 HOSPITAL PHARMACY 1-3 (0-2/cr) prereq 505. In­

597 INTERNATIONAL PHARMACY 3 (3-0) prereq c/i, coreq 593. Duties and responsibilities of a pharmacist practicing in a hospital or related institution, with special emphasis on the pro­

598 SEMINAR 1 (1-0) R-6 prereq senior standing in pharmacy.

599 SPECIAL PROBLEMS IN PHARMACY V 2-5 (3-0/cr) R-10 prereq senior standing in pharmacy. Research studies by conference, library and laboratory research in pharmacy, pharmaceutical chem­

FOR GRADUATES

580 ADVANCED PHARMACEUTICAL LAW 3 (3-0) prereq c/i. Federal laws affecting the pharmaceutical industry, with em­phasis on_exemption drug laws and regulation.

581 DRUG DEVELOPMENT AND MARKETING 3 (3-0) prereq c/i. Administrative activities and decisions involved in the develop­

582 ADVANCED PHARMACY ADMINISTRATION 3 (3-0) pre­

587 CHROMATOGRAPHY 3 (1-6) R-7. The study and evaluation of the various methods currently used in the prepara­tion of bulk and industrial drugs. Technic will also be stressed on drug stability when such preparations are subjected to various sterilization procedures.

602 ADVANCED PHARMACOGNOSTICAL TECHNIQUES 3 (3-0) prereq 466. Technics used in investigative pharmacognosy.

605 CHEMISTRY OF NATURAL PRODUCTS 3 (3-0) R-9 prereq 416. The isolation, identification, and chemical properties of alcaloids, organic acids, sugars, carbohydrates, and related compounds, including methods of isolation, proof of structure, synthesis and chemistry.

608 PHARMACEUTICAL CHEMISTRY 3 (3-0) R-9 prereq 416. The organic chemistry 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 medicinals by advanced technics.

619 ADVANCED PHARMACOLOGY V 3-5 (0-9 to 15) prereq 542 or =. The more involved actions of drugs upon cells and organs.

620 PHARMACEUTICAL MANUFACTURING 3 (1-6) R-6. Principles of various pharmaceutical dosage forms in bulk and finished quantity. Emphasis is placed on such aspects as feasibility of the operation for large scale production and uniformity, durability and stability and acceptability of chemicals involved.

622 PHYSICAL PHARMACY 2 (3-0) R-6. The physico-chemical aspects of homogeneous and heterogeneous systems are examined in light of the latest concepts. Application of theory to practical pharmaceutical systems is stressed.

624 PRODUCT DEVELOPMENT AND FORMULATIONS 3 (0-9) R-6 prereq 630. The theoretical aspects of formulation and the theory of systems in developing new product formulations.

630 AEROSOLS 3 (2-3). The theory of formulation and pro­

640 RADOISOTOPES IN PHARMACY 3 (2-3) prereq chem 476. Types of radiation, methods of detection and use in pharmacy as therapeutic agents and as diagnostic and research tools.

699 THESIS V R-15.
PHILOSOPHY

is the search for wisdom by carefully reasoned reflection. Philosophical inquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge and what kinds of knowledge? Are values derived from personal feelings or from standards which may be impersonal, verifiable, unchanging? Are there significant relations among phases of experience reflected in science, art, religion, morality and politics?

Courses in philosophy acquaint the students with the views of great philosophical thinkers, past and present. Discussion and written work are largely concerned with evaluating the reasoning by which each thinker develops his point of view.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits including Philosophy 110, 210, 296, 299, 300, and three or more credits in courses numbered 300 or above. Many students are expected to complete Philosophy 296, 299, 300 by the end of their sophomore year. The foreign language requirement listed earlier in the catalog must be satisfied. A major whose writing appears deficient for work in the department will be required to take an appropriate English course.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO PHILOSOPHY 5. The main problems of metaphysics, theory of knowledge, metaphysics; the manner in which great philosophers reach their conclusions.

110 LOGIC 5. Deductive and inductive inference, kinds of definition, the detection of fallacies, and the methods of science.

120 ETHICS 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.

210 SYMBOLIC LOGIC 5. A systematic study of deductive logic using modern symbolic techniques.

296 (201) HISTORY OF ANCIENT PHILOSOPHY 5.

299 (202) HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 5 prereq 296.

FOR UNDERGRADUATES AND GRADUATES

300 (203) HISTORY OF MODERN PHILOSOPHY 5 prereq 299.

301-302-303 GREAT PHILOSOPHERS 1. (Given in the Summer for 3 cr. as 301). Enter any 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 (353) PHILOSOPHY OF SCIENCE 5 o/y prereq c/l. The metaphysical foundations of modern classical (Newtonian) science; contemporary views on the nature and limitations of scientific "explanations," theories, models and concepts.

311 (352) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/l. Structure and functions of natural and ideal languages; the relations of language to thought and to reality.

320 CONTEMPORARY ETHICAL THEORIES 5 prereq 120 and/or 300. Recent theories on the nature of moral concepts.

323 (369) POLITICAL PHILOSOPHY 3 o/y prereq 5 credits in philosophy. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to the development of political and political thought in the democratic movement of the world. Credit toward a major in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.

351 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 3 o/y prereq 10 credits in Philosophy. Major philosophical problems related to the particular arts and discussion of the nature of the arts.

PHILOSOPHY IN LITERATURE 3 prereq 10 credits in Philosophy or Literature or =. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature or =. Enter any quarter. (345) Music. (346) Visual arts. (347) Literature. (348) Film. Examination of philosophical problems related to the particular arts and discussion of the nature of the arts.

350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the source, nature, and extent of knowledge with special attention paid to the relation of perception to the physical world, and to the concept of mind.

351 METAPHYSICS 3 prereq 10 credits in Philosophy. What are the basic questions of Metaphysics? What questions does it attempt to answer? What questions is it fitted to answer? Traditional and contemporary views.

354 PHILOSOPHY OF RELIGION 5 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 3 o/y prereq 5 credits in Philosophy and c/l. Philosophical themes in some Hindu, Buddhist and Taoist literature.

357 THE PHILOSOPHY OF HISTORY 5 e/y prereq c/l. The development, structure, and functions of the speculative and analytic philosophies of history. The autonomy 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/l. Reading and interpretation of selected works.

369 ARISTOTLE 5 e/y prereq 298 or 10 credits and c/l. Reading and interpretation of selected works.

365 DESCARTES, SPINOZA, LEIBNIZ 5 e/y prereq 300 or 10 credits in Philosophy and c/l. The development of Continental Rationalism.

370 LOCKE, BERKELEY, HUME 5 o/y prereq 300 or 10 credits in Philosophy and c/l. The development of British Empiricism.

379 KANT 5 o/y prereq 300 or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

370 MAJOR PHILOSOPHERS OF THE NINETEENTH CENTURY 5 R-10 prereq 300 or 10 credits in Philosophy and c/l. Selection to be announced in the class schedule.

373 EXISTENTIALISM 5 prereq 10 credits in philosophy and c/l. Selected readings from the philosophical works of one or more existentialist thinkers.

390 PROBLEMS IN PHILOSOPHY V prereq c/l.

430 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/l.

453 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 210 and c/l.

460 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY V prereq c/l.

500 RESEARCH V R-15. Work on selected problems under direction.

699 THESIS V R-15.

PHYSICAL THERAPY

is an associated medical profession which includes the use of heat, cold, light, sound, electricity, massage, exercise, and mechanical devices as aids in the diagnosis and treatment of patients.

During the first three years the student completes 156 credits plus six in required physical education. 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 others accept only students who
plan to obtain a degree from the school offering the therapy work.)

Course work taken at the therapy school will be evaluated by the University of Montana. This evaluation must result in an accumulation of the equivalent of forty-five quarter hours of credit and sufficient grade points to meet graduation requirements of the University of Montana. Also, the student must be eligible for a certificate in physical therapy from the therapy school. When the above requirements have been satisfied, the student is eligible to become a candidate for the degree of Bachelor of Science in Physical Therapy from the University of Montana (see course listings of the physical education department for information regarding a four-year pre-physical therapy program.)

Many therapy schools specify that the applicant must not have reached his thirty-sixth birthday.

The demand for physical therapists far exceeds the supply. Therapists may be found working in general hospitals, rehabilitation centers, children's hospitals, public health centers, geriatric hospitals, private clinics, Veterans Administration hospitals, orthopedic clinics, athletic training rooms, physicians' offices and school systems.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS. In addition to the general requirements for graduation listed earlier in the catalog, fifty-five credits in physics must be earned for the Bachelor of Arts degree with a major in physics. In preparation for advanced courses, a student should take Physics 221-222-223 in the sophomore year. Required courses offered in other departments: Mathematics 118, 117, 118, 251, 252, 253; Chemistry 121-122-123. The foreign language requirement listed earlier in the catalog must be satisfied and the departmental English composition requirement must be completed.

GRADUATE WORK. See Graduate School Bulletin.

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POLITICAL SCIENCE—77

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, 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, public law and public administration as sub-fields, (2) Political Theory, (3) Comparative Government, and (4) 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 for the Bachelor of Arts degree with a major in Political Science: a minimum of 45 credits in Political Science with 30 credits from courses numbered over 300.

A student who wishes to major in Political Science should consult with a member of the Political Science staff before the end of his 6th quarter about a proposed course program which will satisfy the 45-hour minimum requirement.

Courses required of all majors in Political Science are Political Science 201, 202, 203, and 466. Majors will also present at least one additional course in each of the major fields listed above, as well as Economic 201, 202, and 203. The Economics courses will not count toward the 45 minimum requirement.

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 30 credits must be in Political Science and 20 credits in History. A minimum of 30 credits must be selected from courses numbered over 300.

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 203, 205, and 466. Economics 201, 202, 203, 300, and 311. 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 approval of the department, the student may fulfill the language requirement by completing three quarters in each of two languages. The departmental requirement in English composition must be completed.

GRADUATE WORK: See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101 INTRODUCTION TO POLITICAL SCIENCE 5. Issues and problems confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 2 prereq or coreq 101. Law as a system of social control: legal systems and law-making institutions.

201 (202) AMERICAN GOVERNMENT 5. Constitutional principles of the national government; democratic political processes, including public opinion, interest groups, political parties, and elections; 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, agriculture, conservation, welfare, national defense, foreign policy, and selected problems of public policy.

231 INTRODUCTION TO INTERNATIONAL RELATIONS 5. The national government system; theories of inter-state relations, blocs, international organizations; factors affecting stability and change in the system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICS 5 prereq 201. Structure and politics of democratic forms of government 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 321. Comparative systems: their strengths and weaknesses; altered and/or changed government-engineered changes. Special reference to underdeveloped countries.

325 POLITICS OF LATIN AMERICA 3 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 3 prereq 231. Structure of politics, government and authority in the developing area of Asia.

331 THEORIES OF INTERNATIONAL RELATIONS 3 prereq 220. Historical and theoretical approaches to international relations and their application to selected problems.

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 diplomatic, economic, and defense policies since World War II and their significance in international politics.

341 (341) POLITICAL PARTIES 4 prereq 201. Nature and organization of political parties; conduct of nominations and political campaigns; role of parties in various political systems, with special emphasis on the American system.

342 (341) POLITICAL INTEREST GROUPS 3 prereq 341 or c/l. Interest groups in the political system: interaction of interest groups with government; representatives of interest groups, legislative bodies, executives and public officials, and the courts.

343 VOTING BEHAVIOR 3 prereq 341. The electorate and the election process: attitudes and behavior of voters; the significance of election results for the political system.

351 CLASSICAL POLITICAL PHILOSOPHY 3 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Plato to Augustine.

352 EARLY MODERN POLITICAL THEORY 5 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 politics in the United States (1830-1900).

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 processes of public management. (362) 3. Problems and techniques of administration illustrated by case materials and field investigation.

365 *GOVERNMENT AND THE ECONOMIC ORDER 3 prereq 201. Structure as regulator, promoter, and participant in the economic order.

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.

381 STATE GOVERNMENT 3 prereq 202. Structure, functions, and operations of state governments; position of state governments in the federal system as an example.


397 *LEGISLATIVE PROCESS 3 prereq 381. Structure, politics, personnel and processes of national and state legislative bodies.

388-389 *LEGISLATIVE PROCESS (Offered Winter and Spring quarters of legislative years.) (388) 3 prereq 387 or c/l. Structure, processes, and politics of Montana Legislative Assembly; visits to the state legislature. (389) 2. Research topics on selected aspects of the legislative process.
385 SPECIAL STUDIES IN POLITICAL SCIENCE V 2-4 R-6 prereq one course numbered above 300 in Political Science. Selected aspects of politics, government or international relations. Offered by different instructors under various titles.

429 *COMPARATIVE MARXIST THEORY 3 prereq 12 credits in Political Science or c/l. Analysis of relevant writings of major Marxist thinkers in selected countries.

433 (333) *INTERNATIONAL LAW 3 prereq 332. The law of nations in relation to peace, war, and collective security.

471-472 THE AMERICAN CONSTITUTIONAL SYSTEM 3 prereq 201, 471. The courts, political review and the federal system.

474 *PUBLIC LAW OF MONTANA 3 prereq 471 or 381. The Montana Constitution as an instrument of government, and selected problems in its judicial interpretation.

490 SENIOR PRO-SEMINAR IN POLITICAL SCIENCE 3 open only to majors in Political Science. Selected topics.

498 METHODS AND MATERIALS 3 open to departmental majors only. A survey of the discipline of political science, emphasizing traditional and contemporary methods of research as illustrated by the works of major recent and contemporary political scientists.

FOR GRADUATES

507-589-589 *SEMINAR IN URBAN STUDIES 3. Selected topics in urban affairs. (Also listed as Soc. 507-588-588.)

560 SEMINAR IN METHODS OF INQUIRY AND RESEARCH DESIGN 3.

591 INDEPENDENT STUDY IN POLITICAL SCIENCE V 2-4 R-9. Research in fields appropriate to the needs and objectives of the individual student.

592 *SEMINAR IN COMPARATIVE GOVERNMENT AND POLITICS 3.

593 *SEMINAR IN INTERNATIONAL RELATIONS 3.

594 *SEMINAR IN POLITICAL BEHAVIOR 3.

595 *SEMINAR IN POLITICAL THEORY 3.

596 *SEMINAR IN PUBLIC ADMINISTRATION 3.

597 *SEMINAR IN PUBLIC LAW 3.

598 *SEMINAR IN STATE AND LOCAL GOVERNMENT 3.

699 THESIS V R-15.

PRE-MEDICAL SCIENCES

The Pre-medical Sciences curriculum is designed to provide the basic training required of students who plan careers in Dentistry, Medicine, Veterinary Medicine, and medically related fields. It is a four year program leading to a Bachelor of Arts degree with a major in the Pre-medical Sciences. The Pre-medical Science student should normally, however, major in an ancillary field and simultaneously satisfy the major department requirements and the Pre-medical Sciences curriculum requirements. Requirements for admission to medical and dental schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their programs at 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. If accepted by a School of Medicine the pre-med student must place high on the Medical College Aptitude Test which he ordinarily takes during his junior year. The same holds true for the pre-dent student who must do well in the American Dental Admissions Test. 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 English, 3 years of foreign language, 4 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 all entering students to have had at least two years of college chemistry, and do well in college mathematics, one year of college physics; Zoology through Organic; one year of college English, philosophy through Embryology and Genetics; a reading knowledge or 23 credits in French, German or Russian.

SUPPLEMENTARY REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENTS. In addition to the 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 201, 202, 203, 204 or 205, and two semesters of a modern foreign language, experience in Chemistry and Physics, and satisfactory performance in major approved 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 some other field than Pre-medical Sciences. A degree in a related field such as Chemistry, Mathematics, Microbiology or Zoology may be earned by fulfilling 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)
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.

PSYCHOLOGY

is the science concerned with principles of behavior of living organisms. It deals with such processes as learning, motivation, emotion, perception, problem solving, personality, intelligence and group behavior.

The Bachelor of Arts, Master of Arts, and Doctor of Philosophy degrees are offered.

Minimum preparation for professional work in psychology requires an M.A. degree, and full professional competence requires the Ph.D. degree. The fully trained student may select from a variety of positions in laboratories, clinics, hospitals, schools and colleges, business and industry, and governmental agencies. At present and in the foreseeable future, the number of jobs far exceeds the number of trained psychologists who can fill them.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in psychology: at least 45 credits in psychology, including Psychology 110, 220, 310, 311 and 411, with at least 25 credits in psychology courses numbered above 250. Including at least 2 credits in 390 in the senior year. Mathematics 125 and Zoology 111-112-113, or 111 and 202. The foreign language requirement should be fulfilled with one or two modern languages, preferably Russian, German or French. Other courses recommended for psychology majors include Philosophy 110 and 210, Mathematics 116, 344 and 345, Speech 111, Anthropology 153 and at least one course in Sociology. For many of the following graduate work in psychology, the following departmental courses are recommended in addition to those which are required: Psychology 206, 212, 260, 310, 311, 361, 380. With appropriate background, such students may take a restricted number of graduate level courses in their senior year.

RECOMMENDED COURSE SEQUENCE

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
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<tbody>
<tr>
<td>Psy 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>For Lang 101-102-103</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 111-112-113</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Soc 101</td>
<td>5</td>
<td>5</td>
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</tr>
<tr>
<td>Engl 151</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Psych 190 or electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>H&amp;PE</td>
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Sophomore Year

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<tbody>
<tr>
<td>Psych 220</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Psych 206, 212, 230, 240 (take 2)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Speech 111</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Philosophy 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 220</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Anthro 153</td>
<td>3</td>
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Junior Year

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>Psy 310, 311</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Psychology electives (206, 212, 230, 240, 312, 361, 380)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 116, 302, 303 (or electives)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Philosophy 210</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 350</td>
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Senior Year

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<tbody>
<tr>
<td>Psych 411</td>
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<tr>
<td>Psych 390</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Psychology Electives (400 level)</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

110 INTRODUCTION TO PSYCHOLOGY 5 (5-0). Introduction to the scientific study of behavior in man and animals, with emphasis on psychological processes such as sensation, perception, learning, motivation, etc.

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 c/w. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. The origins and significance of the behavior of present life forms.

212 (412) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111. Survey of basic chemical and nervous regulatory mechanisms underlying behavior.

220 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 110 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.

240 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Effects of social environment upon human behavior.

390 (490) PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/w.

FOR UNDERGRADUATES AND GRADUATES

310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 111. Concepts, principles and methods of sensory function and perceptual phenomenon.

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.
80—PSYCHOLOGY

342 PERSONNEL PSYCHOLOGY 3 (3-0) prereq 110. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prereq 110. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (5-0) prereq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.

420 (300) PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/i. Principles of motivation, frustration, conflict, and the mechanisms for defense. 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 280 and 311 or c/i. Derivation and evaluation of some of the less complex models of learning, choice behavior, and signal detection.

491 TOPICAL SEMINAR V R-6 prereq 15 credits in psychology and c/i. Topics of current interest with critical examination of the literature.

FOR GRADUATES

501-502-503 PROSEMINAR 8 prereq graduate standing in psychology. The basic science fields of psychology, designed as a foundation for advanced training in specialized areas of general and applied psychology. Required of all graduate students in psychology. ($51) Learning, motivation, and thought processes. ($50) Perception, physiological psychology, comparative psychology. ($300) Personality, psychopathology, social psychology.

505 (305-306-307) PROFESSIONAL PROBLEMS IN PSYCHOLOGY 4 (2-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search: forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

510 (410) HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0) Development of concepts, systems, and theories in psychology.

512 THEORIES OF LEARNING 4 (4-0). Critical review of current learning theories based on analysis of fundamental concepts, experimental data, and theoretical implications.

513 ADVANCED LEARNING 4 (4-0). Principles and methods pertaining to the acquisition and retention of new behaviors.

514 (414) THOUGHT PROCESSES 4 (4-0) prereq 10 credits from 310, 311, 312 and 220. Experimental and theoretical analysis of problem solving, concept formation, and other complex symbolic behavior.

515 ADVANCED MOTIVATION 4 (4-0). Drive, incentive and other affect variables as they influence performance.

516 ADVANCED COMPARATIVE 4 (4-0) Directed towards a synthesis of existing data from various life forms into universal principles of behavior.

518 LABORATORY INSTRUMENTATION 4 (2-4). Discussion and experience in the design, construction, and use of instrumentation in psychology.

521-522 (511) ADVANCED PSYCHOLOGICAL STATISTICS 4 (4-0). Application of statistical procedures to the design of experiments; assumptions underlying techniques of sampling and measures of association and significance.

530 ADVANCED CHILD PSYCHOLOGY 4 (4-0). Selected topics in learning and motivation of children, with emphasis on analysis of experiments and theoretical interpretations.

540 INTERVIEW AND CASE HISTORY TECHNIQUES 2 (1-2). Interpersonal dynamics in the gathering of personal data from individuals: types of cases handled by the clinician; techniques in evaluating the history reports in educational, industrial and clinical situations.

544 (444) ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.


560 (460) THEORIES OF PERSONALITY 4 (4-0). Current theories of personality and the experimental evidence on which they are based.

561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiology, diagnostic criteria and treatment of the major functional and organic disorders; research literature.

562 ADVANCED PERCEPTION 4 (4-0). Current literature and theoretical models of perception.

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior; electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field, types of cases handled by clinicians; techniques in evaluation and therapy; contributions in consultation and research.

586 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychotherapy.

590 INDEPENDENT RESEARCH V R.

599 THESIS V R-10.

600 TOPICAL SEMINAR V 1-3 R. Advanced treatment of highly specialized topics of current interest.

601 SEMINAR IN MEASUREMENT V 1-3 R. Selected topics from the field of measurement and quantitative methods in psychological research.

602 SEMINAR IN EXPERIMENTAL V 1-3 R. Survey of current literature dealing with selected aspects in learning motivation, sensory processes, and perception.

603 SEMINAR IN SYSTEMATIC V 1-3 R. Topics in history, systems, and theories in psychology, including theory construction.

604 SEMINAR IN CLINICAL V 1-3 R. The study of significant research investigations in psychopathology, psychotherapy and other related aspects of clinical psychology.

605 SEMINAR IN PHYSIOLOGICAL AND COMPARATIVE V 1-3 R. Selected topics in physiological and comparative psychology from the current literature. Extensive work in the original literature.

606 SEMINAR IN PERSONALITY AND SOCIAL V 1-3 R. Selected topics in personality or social psychology.

670 CLINICAL PRACTICUM 2 (6-4) R-12 prereq c/i. To be taken during first year of graduate study. Supervised practice of clinical techniques in a professional setting.

685 (689) CLINICAL INTERNSHIP 6 prereq acceptable proficiency in clinical techniques. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

686 ADVANCED PSYCHOTHERAPY 2 (2-0) R-6 prereq 430, 586, 685, coreq 572. A continuous and intensive study of the psychotherapeutic relationship and the various therapeutic techniques including supportive, client-centered, analytic, hypnotherapeutic.

699 DISSERTATION V R-30.
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-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio-television 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 College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree in Radio-Television.

University Requirements

<table>
<thead>
<tr>
<th>Course/Department</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English Composition 150, 250, 250</td>
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<tr>
<td>Physical Education 100 (3 quarters)</td>
<td>3</td>
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<tr>
<td>Groups I and II</td>
<td>15</td>
</tr>
<tr>
<td>Group III</td>
<td>12</td>
</tr>
<tr>
<td>Group IV</td>
<td>12</td>
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<td><strong>Total</strong></td>
<td><strong>51</strong></td>
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Additional Requirements:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Group III</td>
<td>13</td>
</tr>
<tr>
<td>Group IV</td>
<td>13</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>23-25 English 450</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>52-54</strong></td>
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Major Requirements:

<table>
<thead>
<tr>
<th>Course/Department</th>
<th>Credits</th>
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<tbody>
<tr>
<td>32 credits from Radio-Television 140, 341-342-343, 346, 348, 440, 441-442-443, 494, Drama 329 (345); Journalism 227</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
<tr>
<td>Drama 121, 131</td>
<td>7</td>
</tr>
<tr>
<td>Journalism 270, 397</td>
<td>6</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>45</strong></td>
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**Free Electives**

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<tbody>
<tr>
<td>47-45</td>
</tr>
<tr>
<td>195</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

140 INTRODUCTION TO RADIO AND TELEVISION 3. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.

341-342-343 (240, 242, 345) RADIO PRODUCTION 2 prereq 140 for 341; prereq 240 for 342; prereq 242 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. Planning and broadcasting of advertising campaigns. Station management and sales principles.

FOR UNDERGRADUATES AND GRADUATES

369 ADVANCED RADIO-TELEVISION PROBLEMS V prereq consent of the dean. Training and research.

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 special affairs 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

A new Department of Religious Studies is being developed under new direction and a complete description of this department will appear in the next catalog. There will be religious studies courses offered for the coming year. Consult the class schedule.
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 grade from the University results in a Reserve Commission in the U.S. Air Force. These programs are designed to provide education that will develop skills and attitudes vital to the career professional Air Force officer. Their purpose is to qualify for commissions those college men who desire to serve in the United States Air Force. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University.

The four-year program requires completion of aerospace studies, during four years of attendance at the University. Also a four-week Training Unit is required upon completion of the junior or third year of AFROTC. The two-year program encompasses Aerospace Studies during the junior and senior or last two years at the University. In addition a six-week Field Training Course is required during the summer immediately prior to enrollment in the two-year program. Completion of the appropriate summer training is a prerequisite for receiving a Reserve Commission in the United States Air Force. A monthly retainer fee (currently $50) is paid to cadets enrolled in Aerospace Studies 300 and 400 series. A number of Financial Assistant Grants are available at colleges and universities within the United States. Enlistment in the Aerospace Reserve does not affect eligibility for these grants.

FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY COURSE


ADVANCED COURSE: PROFESSIONAL OFFICER COURSE

In the four year program, completion of the Basic Course is a prerequisite for admission to the Course. Each cadet must enlist in the Air Force Reserve (this enlistment may be canceled if student withdraws from the University or for other specific reasons, pass physical examination and the Air Force Officer Qualifying Test.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 1. The development of manned flight to 1961. (302) Aerospace Power today, the future of manned flight. Attention is devoted to developing the commitment to peace by officers. There classrooom hours and one hour of Corps Training per week. Corps Training includes experience as junior officers in the Cadet Corps.

401-402-403 THE PROFESSIONAL OFFICER 3. (401) Foundations and responsibilities of the military profession and the military justice system. Foundations and responsibilities of the military justice system. (402) Air Force leadership and management. The Air Force emphasizes the roles of leadership, human relations and principles and functions of management. Three class hours and one hour Corps Training per week. (403) Leadership and management of the Air Force. Leadership and management of the Air Force. Further information may be obtained from the Professor of Aerospace Studies.
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 the Department of the Army. In lieu of the physical examination, the student is required to enlist in the U.S. Army Reserve. This enlistment may be cancelled if the student withdraws from the University or for other specific reasons.

201-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (301) Principles and techniques of the military leader with emphasis on problems of leadership and military teaching methods. Leadership, drill and command and control. The two years of the Army Reserve must be taken after completion of the Advanced Course. Following this initial summer camp, the Advanced Course is identical to the four year program. Students interested in acquiring a commission in the U.S. Army must take the Advanced Course. No credit.

303 SUMMER CAMP. No credit. Six weeks at an Army Training Center taken after completion of 303. Practical military training and tactical exercises with emphasis on the development of discipline and leadership. Student is reimbursed to and from camp for travel performed at a rate of 6¢ per mile, and receives pay of $257.60.

401-402-403 MILITARY TEAM 3 prereq 301-302-303. (401) Military administration and logistics with emphasis on duties and functions of staff officers. Leadership, drill and command to inculcate staff officers with emphasis in instructing and directing military drill of individuals and small units. (402) Army communications and radio operations, with emphasis in small unit operations. Continuation of leadership, drill and command. (403) Principles and techniques of tactical operations with emphasis on small unit operations. Continuation of leadership, drill and command.

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 the Basic ROTC program that is required for admission to and completion of the four year program. Following this initial summer camp, the Advanced Course is identical to the four year program. Students interested in acquiring a commission in the U.S. Army must take the Advanced Course. No credit.

250 SUMMER CAMP. No credit. Prerequisite for entry into Advanced Course. Six weeks at a U.S. Army facility. Training consists of leadership and military fundamentals, physical training, and U.S. Army orientation. Training experiences will be of practical application and designed to prepare the officer candidate for officer training through the two year program should consult the Professor of Military Science no later than winter quarter of their sophomore year.

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 are concerned with case records and social field work or observation in addition to regular class work. Studies in other social sciences are recommended.

Those seriously considering a career in the field should plan on the year preceding the social work practice: casework, group work, community organization, and social work administration. Special requirements for social work practice are emphasized to achieve the effectiveness needed on the job. Those desiring to qualify for graduate work will find the program designed for this purpose as well as for effective community service. Special requirements are urged to take a wide variety of courses in the social and behavioral sciences. Members of the departmental staff are prepared to help achieve the individual needs and goals of students. The departmental English composition requirement must be completed.

For Undergraduates

For Explanation see Course Descriptions (Index)

181 THE FIELD OF SOCIAL WELFARE 5. Social welfare functions, development of human social welfare and the distinctive features of the 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. A review of the four major processes in social work practice: casework, group work, community organization, and social work administration.

For Undergraduates and Graduates

171 (201) GROUP DYNAMICS IN SOCIAL WELFARE 4 prereq 200. Group work is an experiential course in the process of small group interaction. Emphasis is placed on the group as a social system and the group as one of the social settings of the individual. The course is designed to help students understand the group process as it occurs in the social setting of the individual. The course is intended to provide a foundation for the study of group dynamics and group work.

127 (482) COMMUNITY RELATIONS 4, Su 3 a/ y prereq 200. The student relates to the professional person in community relations: his responsibilities as a citizen, his philosophy and ethics, especially as they relate to the community, his contributions to community welfare and his concern for human needs and problems.

231 (488) THE HISTORY OF SOCIAL WELFARE 5 a/ y prereq 181. The growth and development of social services in the United States with special attention given to policy questions: poverty, handicaps, sickness, emotional disorders, family breakdown, delinquency, and crime, mental illness, wars, civil rights, and community development.

Social problems are viewed in a specialized setting such as child welfare, corrections, family welfare services, working with people with particular handicaps, and school social work, including, in each case, examination of requisite specialized skills and knowledge, value systems, and principles of interprofessional collaboration.

181 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 explained situations. Learning by means of the laboratory method to develop efficiency in the use of the resources of each community.

185 ADVANCED PROBLEMS V 1-2 R-6 prereq c/l.

486 COMMUNITY DEVELOPMENT 3 a/ y prereq 181. Community and area self help as procedures in achieving a vital balance between community needs and services. Effective use of community resources.

487 INTERNATIONAL SOCIAL WORK 4 a/ y prereq 181. Voluntary and public programs serving people in distressed and underdeveloped areas of the world.

497 SEMINAR V R-9 a/ y prereq 15 credits in social welfare.

499 FIELD WORK PRACTICUM V R-12 prereq 25 credits in courses above the 300 level in the major in social welfare. The course is intended to provide a foundation for the study of social work practice.
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, the following 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 151 and 152 or 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 372. The departmental English composition requirement must be completed.

COMBINED MAJOR. For the combined major leading to the degree of Bachelor of Arts in Sociology and Economics the following courses in addition to general departmental requirements must be completed: Soc 304 and at least 12 additional credits of upper division sociology; Econ 201-202-203, 311, and at least 12 additional upper division credits of economics.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

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. The methodology, techniques and instruments of measurement used in the social sciences.

204 COURTSHIP AND MARRIAGE 2. Factors in courtship and marriage and the legal and social duties towards family and children in sociology.

205 ELEMENTARY SOCIAL STATISTICS 5 prereq Math 001 or exemption by examination and 5 credits in sociology or c/i. Simple statistics 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 creation and development of social organizations and relationships.

208 (301) INDIVIDUAL AND SOCIETY 5 prereq 5 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.

204 POPULATION 4 prereq 10 credits in social sciences. A qualitative and quantitative analysis of world population; vital statistics and population change; migration and immigration.

205 (402) THE FAMILY 5 prereq 10 credits in sociology or c/i. Comparative, historical and analytical study of the family.

206 CRIMINOLOGY 5 prereq 10 credits in sociology or c/i. The causes of crime, crime prevention, and control of crimes.

207 SOCIALIZATION 3 prereq 10 cr. in Sociology including 206 or c/i. Processes and products of social learning.

208 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 208 and Anth 386.)

209 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 381) JUVENILE DELINQUENCY 5 prereq 10 credits in sociology or c/i. Nature and extent of the problem. The role of courts in prevention and treatment.

312 (306) URBAN SOCIOLOGY 4 a/y prereq 10 credits in sociology or c/i. The rise and development of cities; social organization of the city; problems of urban communities.

313 RURAL SOCIOLOGY 4 Su 3 a/y prereq 10 credits in sociology or c/i. Conditions and social relationships of rural life. Special emphasis on Montana and the Northwest.

314 FIELD OBSERVATION 3 prereq 10 credits in sociology or c/i. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.

315 HUMAN ECOLOGY 3 prereq 10 credits in sociology or c/i. The organization of population and land units through processes of social interaction. The spatial patterns of human communities.

316 SOCIOLOGY OF EDUCATION 5 prereq 10 credits in sociology or c/i. A sociological consideration of the structure and operation of the American educational system.

371 CULTURE AND PERSONALITY (See Anthropology)

400 PROBLEMS IN SOCIAL ORGANIZATION V R-15 prereq 15 credits in sociology or c/i. Theories or current interest in sociology.

401 FOUNDATIONS OF MODERN SOCIOLOGY 5 prereq 15 credits in sociology including 310 or c/i. Selected sociological problems arising from the theories of Durkheim, Weber, and contemporary writers.

402 INSTITUTIONAL DYNAMICS 3 prereq 15 credits in sociology including 207 or c/i. Interrelationships of institutions in process of change.

404 (302) COLLECTIVE BEHAVIOR 3 a/y prereq 15 credits in sociology including 206 or c/i. Theories relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

405 SOCIOLOGY OF WORK 5 prereq 15 credits in sociology or c/i. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

406 MEDICAL SOCIOLOGY 5 prereq 15 credits in sociology or c/i. The sociological analysis of medical phenomena in terms of such sociological concepts as complex organization, adult socialization, institutions, and social change.

407-408-409 SEMINAR V 2-5 R-10 prereq 15 credits in sociology or c/i. Enter any quarter.

410 PENOLOGY 5 a/y prereq 15 credits in sociology including 306 or 311 or c/i. Theory and practice of penal methods in correctional institutions. Probation and parole.

411 PERSONALITY AND SOCIAL STRUCTURE 3 prereq 15 credits in sociology or c/i. Social and sociological analysis of medical phenomena in terms of such sociological concepts as complex organization, adult socialization, institutions, and social change.

499 FIELD WORK PRACTICUM (See Social Welfare)

FOR GRADUATES

501 GRADUATE RESEARCH V R-15 prereq graduate standing in sociology or c/i.

502 ADVANCED METHODS 5 prereq 201 or = and graduate standing in sociology or c/i. Techniques of research and current methodological orientations.

503 SOCIOLOGICAL STATISTICS 5 prereq Math 125 or Soc 205 and graduate standing in sociology or c/i. Sampling; measures of association and significance; statistical methods in the design of experiments; sociometrics.

504 SOCIAL CHANGE V 2-5 prereq graduate standing in sociology or c/i. Processes and consequences of social change in urban-industrial society.

506 (411) ADVANCED GENERAL SOCIOLOGY 4 prereq 401 and graduate standing in sociology or c/i. Review and analysis of major sociological theory and research.

507-508-509 SEMINAR V R-15 prereq graduate standing in sociology or c/i.

587-588-589 SEMINAR IN URBAN STUDIES 3 prereq graduate standing in sociology or political science or c/i. Selected topics in urban affairs. (Also listed as Pol. Sci. 587-588-589.)

599 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and consent of department chairman. Supervised internship.

607-608-609 SEMINAR V R-15 prereq graduate standing in sociology or c/i.

699 THESIS OR DISSERTATION V. R-9 for M.A.; R-15 for Ph.D.

SPEECH COMMUNICATION (See Communication)
WILDLIFE BIOLOGY

is the study of wild vertebrate animals and their conservation. It is based on the natural sciences, with particular emphasis in the biological sciences. It constitutes a preparation for professional work in fish and game conservation.

Within the broad designation of Wildlife Biology, there are three optional curricula: Terrestrial Wildlife Biology, Aquatic Wildlife Biology, and Wildlife Science. As indicated below: each has the same schedule of courses for the first two years and a different curriculum for the last two years. Each leads to the Bachelor of Science in Wildlife Biology. Many graduates will continue their education through the Master's degree. The Wildlife Science curriculum is designed particularly for students with strong academic records who intend ultimately to work toward a doctorate.

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 Science option.

**CURRICULA IN WILDLIFE BIOLOGY**

<table>
<thead>
<tr>
<th>Freshman Year</th>
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<tbody>
<tr>
<td>A</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>Botany-Zooloogy 111—General Biology</td>
<td>5</td>
<td></td>
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<tr>
<td>Botany 114, 115—General Botany</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry 101, 102, 103—General Survey, Organic or Chemistry 121, 122, 123—College Chemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 150—Freshman Composition</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
<td>3</td>
<td>5</td>
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<tr>
<td>Group Requirements</td>
<td>3-5</td>
<td>0-3</td>
</tr>
<tr>
<td>H&amp;PE—Physical Education</td>
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<td>15-19</td>
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</table>

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<thead>
<tr>
<th>Sophomore Year</th>
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<tbody>
<tr>
<td>A</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>Zoology 112, 113—General Zoology</td>
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<td>5</td>
</tr>
<tr>
<td>Botany 325, 326—Plant Physiology, Systematic Botany</td>
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<td></td>
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<tr>
<td>Math 125—Statistics</td>
<td>3</td>
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<tr>
<td>English 250—Intermediate Composition</td>
<td>3</td>
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<tr>
<td>Zoology 250—Principles of Animal Ecology</td>
<td>3</td>
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<tr>
<td>Forestry 210—Elementary Soils</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Physics 111: 112 or 113—General Physics</td>
<td>3-5</td>
<td></td>
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<tr>
<td>Group Requirements</td>
<td>0</td>
<td>3-8</td>
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<tr>
<td>17</td>
<td>16</td>
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Terrestrial Option

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<thead>
<tr>
<th>Junior Year</th>
<th>W</th>
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<tbody>
<tr>
<td>Zoology 309, 310—Mammalogy, Ornithology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Botany 366, Agrostolgy</td>
<td>4</td>
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<tr>
<td>Forestry 360—General Range Management</td>
<td>5</td>
<td></td>
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<tr>
<td>English 365—Advanced Composition</td>
<td>3</td>
<td></td>
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<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group requirements and electives</td>
<td>17</td>
<td></td>
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<tr>
<td>16-18</td>
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</table>

Senior Year

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<tr>
<th>W</th>
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<th>Cr.</th>
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<tbody>
<tr>
<td>Forestry 470, 471, 472—Advanced Wildlife Management, Big Game Management, Habitat Management</td>
<td>5</td>
<td></td>
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<tr>
<td>Zoology 450—Animal Behavior</td>
<td>5</td>
<td></td>
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<tr>
<td>Group requirements and electives</td>
<td>8</td>
<td></td>
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<tr>
<td>15-15</td>
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</tbody>
</table>

Suggested electives: Any courses in Aquatic Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.

Aquatic Option

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 310, 310—Ichthyology, Field Zoology</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
<td></td>
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<tr>
<td>Zoology 365—Entomology</td>
<td>5</td>
<td></td>
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<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
<td></td>
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<tr>
<td>English 350—Advanced Composition</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group requirements and electives</td>
<td>15</td>
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<tr>
<td>16-18</td>
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Senior Year

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<tr>
<th>W</th>
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</thead>
<tbody>
<tr>
<td>Zoology 307, 413, 423—Aquatic Biology, Fisheries Science, Invertebrate Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Forestry 450—Hydrology</td>
<td>2</td>
</tr>
<tr>
<td>Botany 441—Phylogeny</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements or electives</td>
<td>10</td>
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<tr>
<td>16-18</td>
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</tbody>
</table>

One summer at the University of Montana Biological Station (or other Biological Station) enrolled in Zoology 461, Limnology, and one of the following three courses: Zoology 366, Aquatic Insects, Zoology 450. Problems in Vertebrate Ecology, or Botany 368, Aquatic Floating Plants. This summer could be taken either after the junior year or the senior year. Suggested electives: Any courses in Terrestrial Option not required in the Aquatic Option, any course from list of appropriate additional courses shown below:

Wildlife Science Option

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>W</th>
<th>S</th>
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</thead>
<tbody>
<tr>
<td>Zoology 486—Genetics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math 125, 126—Statistics, Analytical Geometry and Calculus</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group requirements from selected list</td>
<td>4-5</td>
<td></td>
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<tr>
<td>17-18</td>
<td></td>
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</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Language 211-212—French, German or Russian</td>
<td>4</td>
</tr>
<tr>
<td>Advanced courses from selected list</td>
<td>10-12</td>
</tr>
<tr>
<td>17-18</td>
<td></td>
</tr>
</tbody>
</table>

An approved series of courses from either option to be worked out with adviser. Minimum courses for students interested in Aquatic Wildlife: Zoology 206, 307, 310, 413 and for the students interested in Terrestrial Wildlife: Zoology 308, 309, Forestry 470, 471, 472.

Appropriate additional courses for Wildlife students to select in any option aside from those shown above include: Chemistry 281, 282, Botany 333, 334, 335, 361, 360, 365, 485, Economics 201, 202, Forestry 311, 312, 337, 338, Fish 301, 302, Geography 350, Geology 110, 130, 200, 451, Microbiology 200, 202, Math 344, 345, Political Science 382, Speech 111, Zoology 303, 304, 404.
**SUGGESTED CURRICULUM IN ZOOLOGY**

**Freshman Year**

**English 150—Freshman Composition**

A

Cr.

W

Cr.

S

3

**Math 111-112-113, 118—College Algebra, Trig, and Introduction to Calculus**

5

5

5

**Zoology 111, 112, 113—Introduction to Biology**

Group requirements

5

5

5

**General Zoology**

4

4-6

6

**H&P 100—Physical Education**

18

15-17

17

**Sophomore Year**

**Chem 121-122-123—College Chemistry**

5

5

5

**English 250—Intermediate Composition**

3

**Foreign Language 101-102-103—Elementary French**

5

5

5

**German, or Russian**

5

5

5

**Group requirements**

5-7

2-4

5-7

15-17

15-17

15-17

**Junior Year**

**English 350—Advanced Composition**

3

**Foreign Language 211-212—French, German, or Russian Reading**

4

4

5

**Physics 111-112-113 or 221-222-223—General Physics**

5

5

5

**Zoology Advanced Courses**

Group requirements

14-17

14-17

15-17

**Senior Year**

**Botany 114, 115—General Botany**

5

5

**Zoology 429—Biological Literature**

1

**Zoology Advanced Courses or Chem 261, 262**

5

5

5

**Electives**

9-10

5-6

7-8

14-15

16-17

17-18

**FOR UNDERGRADUATES**

For Explanation see Course Descriptions (Index)

Courses also offered at Biological Station (Courses only at Biological Station) 306, 309, *354, 369, *396, 421, 435, 434, *436, *461, *561, *561, 600, 699

111 INTRODUCTION TO BIOLOGY 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and function, excretion, irritability, locomotion, coordination, and reproduction. (Credit not allowed for both Bot 111 and Zool 111.)

112-113 GENERAL ZOOLOGY 5 (3-4) prereq 111 or Bot 111 or Zool 111.

122 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) prereq 111. Collection, identification, and preservation of animals. Field work.

250 (350) BASIC CONCEPTS OF ECOLOGY 5 (3-0) prereq one year of college biology. Introduction to ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Bot 250.)

255 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq 250. Population and community composition, distribution and relationships with environmental factors. Field work included. (Credit not allowed for this course and Bot 251.)

301 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) a/y prereq 111, 112. The comparative stages of development of selected invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

303 ANIMAL PARASITOLOGY 5 (3-4) e/y prereq Zool 112-113. Parasites and the host-parasite relationship with emphasis on the biology, adaptations and life cycles, parasites and their environment, host parasite relationships, and parasite metabolism will be emphasized.

304 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates. Weekly field trips. Students are expected to provide themselves with binoculars.

306 HERPETOLOGY 3 (2-2) a/y prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 5 (3-7) prereq 206 and Bot 250. The biota of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification, and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY 5 (3-6), Su at Biological Station, prereq 113. The structure, classification and habits of the birds. Weekly field trips. Students are expected to provide themselves with binoculars.

309 MAMMALOLOGY 5 (3-4), Su 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 distinictive features of the finfish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

315 (305) VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic animal cytology, tissue types and organology are studied. May be taken concurrently with 305.

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, acelomates and nematodes.

323 MIDDLE METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the mollusks and annelids and certain invertebrate phyla.

324 ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

326 CELLULAR PHYSIOLOGY 5 (3-4) a/y prereq two courses in Physics, Chem 225 or 220, one course in Botany, Microbiology or Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 326.

331 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.
340-341 MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three semester hours of college level physiology. Structures and functions of proplastids; blood, body fluids, and circulation; respiration and excretion. (341) Digestion, nutrition and intermediary metabolism; excitation, conduction, responses, senses; endocrine and reproduction.

364 INVERTEBRATES OF THE INTERMOUNTAIN REGION 3 (5-12) prereq 113. The ecology, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

365 ENSOTOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.

366 AQUATIC INSECTS 4 (3-12) prereq 113. The insect fauna, both immature and adult, in aquatic habitats of Western Montana.

403 BIOLOGICAL ILLUSTRATIONS 2 (4-9) prereq 1 year of biology and credit in zoology and c/i. Producing illustrative materials relevant to the biological sciences. (225 special supplies fee. Credit not allowed for this course and Bot 460.)

404 (302) VERTEBRATE EMBRYOLOGY 5 (3-4) prereq 304. The early stages of development of the vertebrates including organogenesis, with emphasis on birds (chick) and mammals (pig).

405 ANIMAL BEHAVIOR 5 (3-4) prereq 25 credits in Zoology or c/i. Normal behavior of animals under natural conditions, description, adaptiveness, and evolution. Observation and recording of animal behavior.

410 (510) ADVANCED ANIMAL ECOLOGY 5 (2-8) prereq Math 125, and 4 courses in Zoology, including 250. The influence of physical and biotic factors on population structure, density, productivity and organization of animal community. Theoretical as well as practical aspects are considered. Weekend field trips.

413 FISHERY SCIENCE 3 (3-6) prereq 307, 210. The problems involving the investigation of fisheries biology with an analysis of some actual field experience in, methods employed in attacking these problems. Field trips.

429 (326) INVERTEBRATE ECOLOGY 5 (3-4) e/y prereq 266, Bot 250, 265. Zoology and c/i. The basic organization of patterns between animals and their environment with special emphasis on the invertebrates. Saturday field trips.

429 BIOLOGICAL LITERATURE 1 (2-0) prereq 20 credits in botany or zoology. Student reports of literature of the trend of investigation and experimentation in biological fields.

431 PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY 5 (1-5) prereq 25 credits in zoology and c/i. Primarily a problems type course involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

432 PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

433 PROBLEMS IN VERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

434 PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY 5 (1-5) prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

435 PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

436 PROBLEMS IN INVERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

442 BIOLOGY OF FOREST INSECTS 3 (3-0) prereq Zool 113. Biology, zoology, and taxonomy of insects, with emphasis on classification, taxonomy, and technique of sampling insects. Structure, physiology, and genetics, leading to consideration of insect ecology. Joint listed as Forestry 432.

443 FOREST INSECT ECOLOGY 3 (3-0) prereq Zool 432. Ecological problems of insects studied in their natural forest habitat in the Pacific Northwest; factors which regulate the distribution of abundance of insects; the biometeorological and behavior aspects of population changes; rational basis of control including principles of biological control. Joint listed as Forestry 433.

450 MARINE INVERTEBRATES 3 (1-2) prereq 436, a problem in marine biology. The systematic and ecology of marine invertebrates with particular reference to habitat niche of the animals of the Pacific Coast. (A 5-day trip to coast of Oregon or Washington required.)

461 LIMNOLOGY 6 (5-25) prereq 113 and Chem 123. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biological factors which determine their biological productivity.

485 (385) GENETICS 5 (3-4) prereq 113 or Bot 225. The mechanism of heredity, involving consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and the structure and function. Credit not given for both Zool 485 and Bot 485.

486 (386) EVOLUTION. (See Botany.)

497 CYTOGENETICS 5 (3-2) prereq 485 or =. The structure and function of chromosomes of vertebrates from primitive to higher organisms. Chromosome behavior and changes and their role in development and evolution. Cross-list with Botany.

500 SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guests on current topics in Wildlife Biology. (Double-listed as Forestry 491-492-493.)

FOR GRADUATES

500 SENIOR 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 402 or c/i. Observational and experimental techniques for research 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 385 or c/i. Comparative, adaptive morphology, biometrics 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 evidence considered.

516 CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 5 (3-4) prereq 25 credits in zoology including adequate background courses in the subject and c/i. By variation of content, the course may be repeated during succeeding quarters.

523 PHOTOBIOLOGY 4 (2-4) 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 (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 Bot 524.)

531 (402) 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 119 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 ENDOCRINOLOGY V 3 (3-0) 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.

580 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Botany, Chemistry, and Forestry.)

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

699 THESIS V R-15.