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on the University of Montana

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about the university . . .

FOUNDING AND NAME . . . The University of Montana 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, 1895, 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.

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

Each of the professional schools or departments is approved by its 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 scholarships, teaching, development and research from private and other sources. The University of Montana Foundation, among others, is a tax-exempt trust, separately chartered and managed to receive, manage and distribute private contributions for University purposes.

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

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

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

FUNCTIONS AND GOALS . . . The University of Montana is responsible for providing: (1) undergraduate education in the arts and sciences, professional and advanced professional education based on a sound foundation in the 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 several liberal arts disciplines—the biological, physical and social sciences, the humanities and the fine arts, (b) requires demonstrated literacy in use of the English language and encourages competence in foreign languages, (c) provides opportunity for development of professional and technical competence in some field of endeavor, (d) reveals man’s great insights and discoveries of the past and stimulates the individual to seek new insights and discoveries, (e) 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.

EQUAL OPPORTUNITY EMPLOYER . . . The University of Montana is committed to a program of equal opportunity in faculty and staff recruiting, employment and advancement, in student admission, employment and financial assistance, without regard to race, color, religion, sex, or national origin.

facilities . . .

PROPERTY . . . The main University campus spreads over 116 acres on the east side of Missoula. There are an additional 624 acres on Mount 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 395 acres. Two major UM facilities are located outside Missoula: 20,850 acres in Lubrecht Experimental Forest, 35 miles northeast of Missoula, and 167 acres on Flathead Lake including the Biological Station, 90 miles north of Missoula at Yellow Bay.

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

THE UNIVERSITY BIOLOGICAL STATION is located at Yellow Bay on the east shore of Flathead Lake, 90 miles north of Missoula. The University controls 100 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 development of the state; and to encourage studies in the areas of economic and other social sciences which show promise of making contributions to knowledge, or to the development of methods of analysis, regardless of whether such studies are related directly to the state.
Publications include the Montana Business Quarterly and various monographs. Contributors include members of the bureau staff, the faculty, and on occasion, students.

THE FOREST AND CONSERVATION EXPERIMENT STATION of the School of Forestry operates under Revised Codes of Montana, 1947, Vol. 3, Section 28-301. The dean of the School of Forestry was designated as director. The act specifies that the purposes of the station are:

“To study the growth and the utilization of timber . . . To determine the relationship between the forest water conservation and water flow regulation; the forest and pasture for domestic livestock and wildlife; the forest and recreation and those other direct and indirect benefits that may be secured by the maintenance of or the establishment of forest or woodlands . . . To study and develop the establishment of windbreaks, shelter belts, and wind and dust control 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, the state forester and the state board of land commissioners, the state fish and game commission, the state livestock commission . . . the United States government and its branches as a land grant institution, or otherwise, in accordance with their regulations.”

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

The station is supported by funds appropriated by the congress and the State of Montana, income from the sale of forest products, grazing, mining and special leases, and by private grants. Research is concentrated on the 27,000-acre Lubrecht Experimental Forest and at appropriate locations throughout the state—either free 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 symposia on public issues and topics. It is an information clearinghouse with collections of state legislative materials and publications of governmental agencies and similar bureaus. Publications include a bimonthly series entitled the Montana Public Affairs Report and an occasional series 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 full active cooperation in the advancement, organization, and operation of wildlife education, research, extension and demonstration programs . . .”

The Montana Unit, through its graduate research fellowship program, investigates wildlife problems approved by the Unit Coordinating Committee in order to make it possible for the commission to improve management of the wildlife resources for the benefit of the citizens of Montana. At the same time, this research work carried on under the supervision of the unit leader and University faculty contributes to the training of graduate students in the fields of wildlife management and wildlife biology.

Graduate work in Wildlife leads to a Master of Science in Wildlife Biology, which ordinarily requires two years of work beyond the bachelor's degree.

The Cooperative Wildlife Research Unit allocates funds for about four graduate research fellowships for students working toward a Master of Science in Wildlife Biology, or a Ph.D. in Zoology or in Forestry and Botany. No special form is required to apply for one of these fellowships; simply apply for admission. All students admitted to the graduate program are automatically considered for fellowships.

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

THE COMMUNICATION RESEARCH CENTER has as its primary mission providing professional assistance to organizations and agencies interested in understanding and improving communication within the organization and between the organization and its clients. The Center provides facilities and personnel for research in organizations or in a laboratory setting. Additional services include consultative and training programs in communication for business and community groups.

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

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

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

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

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

FRESHMAN REQUIREMENTS . . .

RESIDENT: Graduates of any fully accredited high school who are legal residents of Montana are eligible for admission and regular standing.

NONRESIDENT: The University welcomes nonresident students so far as its educational programs and available facili-
ties and resources will permit. The University maintains the right to limit the number of nonresident students and to establish scholastic requirements which will insure a nonresident student group with high scholastic aptitude and promise of enrichment of the student life on the campus. Applicants must be in the upper 50 per cent of their high school graduating class to be eligible for consideration for admission.

If the high school does not rank its students, the results of the American College Test will be used to establish the equivalent level of competency.

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

EARLY ADMISSION: A limited number of high school students who have completed their junior year may be granted early admission. To be eligible for consideration for early admission an applicant must present a transcript of his high school record, indicating superior achievement, and a letter from his high school principal recommending early admission. The chairman of the department in which the applicant plans to pursue his degree must also approve the early admission.

TRANSFER REQUIREMENTS . . .

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

NONRESIDENT: A nonresident applicant wishing to transfer to the University of Montana must meet the general admission requirements, be eligible to return to the school from which he is transferring, and present transcripts verifying a 2.0 (check or money order, NOT CASH) average for all college and university work attempted.

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

Special students may acquire status as regular students and become candidates for degrees either (a) by taking entrance examinations or (b) by submitting sufficient credits earned in the University to make up all entrance requirements for admission to regular standing. A special student may not register for his seventh quarter of residence, including summer quarters, until all entrance units required for admission to regular standing are completed.

APPLICATION FEE . . . A nonrefundable application fee of $10.00 (check or money order, NOT CASH) must be sent with the application for undergraduate or special admission. No action will be taken on an application until this fee has been received in the Office of Admissions. If an applicant is accepted for admission and does not enroll, another $10 application fee must be submitted when the applicant reapplies.

READMISSION OF FORMER STUDENTS . . . A student previously enrolled at the University of Montana who has been temporarily enrolled at another institution of higher education must reapply as a transfer applicant and submit official transcripts from each institution attended. Former students are not required to submit the $10 application fee. Former students who have not been enrolled during the two years preceding their return to the University must submit a new Health Examination form.

HOW TO APPLY FOR ADMISSION . . .

FRESHMEN APPLICANTS:

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

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

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

TRANSFER APPLICANTS:

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

2. The applicant should complete all of the application, with the exception of the Transfer Student Confidential Check Sheet. The completed application should be sent to the Office of Admissions.

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

4. The applicant should request that an official transcript from each college or university attended be sent directly to the Office of Admissions. Although an applicant's record from several institutions may be summarized on one transcript, an application will not be considered until an official transcript from each institution has been received.

5. An official copy of the high school record is also required, even though your high school graduation may be recorded on your college transcript.

6. The $10.00 application fee should be attached to the application form.

WHEN TO APPLY FOR ADMISSION . . .

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

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

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

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

TRANSFER OF CREDIT . . . In general, transfer of credits from other accredited collegiate institutions will be accepted insofar as they meet the degree, grade, and residency requirements of the student's chosen program of studies at this institution. Credit is given for the courses in which a grade of A, B, C, or D has been earned.
A maximum of 105 quarter credits earned at a junior or community college may be accepted for transfer. That number will include any and all four-year college credits earned prior to or during the period of junior or community college enrollment. An evaluation of transfer credit accepted by the University will be sent to the student soon after the notification of acceptance.

**ADVANCED PLACEMENT** . . . Advanced placement may be granted based on achievement in college-level high school courses, provided satisfactory scores on the College Entrance Examination Board Advanced Placement Examinations have been received by the University from the Board. Credit for specific examinations is granted subject to the approval of the academic department at the University of Montana in which the course is offered.

**TESTING** . . . All new freshmen, and transfer students with less than 45 quarter credits who wish to take the AMERICAN COLLEGE TESTING PROGRAM Examination preferably in October or December of the year before entrance into the university. The test is also offered in February, April, and July. Complete information and registration forms are sent to all high school counselors and principals well in advance of each test date. If information is not available, write to the American College Testing Program, P. O. Box 168, Iowa City, Iowa 52240.

The applicant must complete the examination no later than December in order to be eligible for consideration for financial aid for the following year.

**SPECIAL NOTE:** The results of the American College Test must be submitted directly by the American College Testing Program. Results listed on the high school transcript will not be accepted. The results of the C.E.E.B. Scholastic Aptitude Test may not be substituted for the American College Test. Examination results are used for general advising purposes, to assist in identifying students with high college potential who may be seeking financial aid, and for placement in English and as a part of the information used to determine nonresident student admission.

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
Box 899
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 Office of Admissions, University of Montana, Missoula, Montana 59801.

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

**ORIENTATION** . . . Part of the first week of autumn quarter is set aside for orientation and registration. The program includes: (1) an orientation in the university—its campus, the classroom buildings and residence halls; (2) explaining the University program—the types of instruction offered and the careers for which a student may prepare at the University; (3) placement tests; (4) social gatherings at which students become acquainted with fellow 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.

**WITHDRAWAL OF COURSES** . . . 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.

Dropping courses with a grade of "W," or changing from credit to listener or vice versa, is permitted only during the first six weeks of instruction. To drop or add courses, to 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.

Dropping courses after six weeks with a "W" or a change from credit to listener status will be granted upon petition to the Graduation Committee only in exceptional cases and upon the signed approval of the student's adviser. An "F" will be assigned for a course dropped after the sixth week, unless a petition has been approved.

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

**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, juris doctor, 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 completion of a major (a concentration in a single discipline or stated interdisciplinary program) of not more than 70 quarter credits.

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.

Details regarding 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
- Astronomy
- Biology
- Botany
- Chemistry
- Classics
- Economics
- Economics-Political Science
- Economics-Sociology
- English
- French
- Geography
- Geology
- German
- Health and Physical Education
- History
- History-Political Science
- Home Economics

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

Bachelor of Science in 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, School of Fine Arts, with majors in Art, Drama or Music
Bachelor of Fine Arts with major in Art or Drama
Bachelor of Music, School of Fine Arts, with majors in Performance and Theory or Composition
Bachelor of Music Education, School of Fine Arts, with majors in Elementary Music, Choral Conducting, Instrumental Conducting, Choral and Instrumental Conducting and Music Administration
Bachelor of Science in Forestry
Bachelor of Science in Resource Conservation
Bachelor of Arts in Journalism
Bachelor of Science in Pharmacy
Bachelor of Arts in Radio-Television

ADVANCED PROFESSIONAL DEGREES

- Juris Doctor

academic policies...

MAJOR FIELD OF STUDY... 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.

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... Students will be placed on academic suspension at the end of any academic year, for failure to meet cumulative grade-point average requirements shown in the table below, on all work attempted at the University of Montana. No student will be considered for academic suspension who has completed less than two quarters of work at this University.

<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>1.6</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>
</tr>
</tbody>
</table>

After the first suspension, a student is eligible for readmission following the lapse of one academic year, upon application to the Registrar.

Readmission after the first suspension, but prior to the lapse of one academic year, may be granted only by the Dean of the college or school to be entered. A student so readmitted must achieve and maintain a grade-point average of 2.00 or better each quarter until he has reached the minimum standards required, based upon his cumulative number of hours attempted. Failure to meet these standards will subject the student to a second suspension.

Readmission after more than one suspension may be granted only by the Dean of the college or school to be entered.

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.

REPEITION OF A COURSE... When a course is repeated, only the last grade received (excluding "Incomplete") will be used in calculating the grade-point average.

INDEPENDENT WORK... Under the “University omnibus option,” credit is allowed for independent work in topics or problems that are proposed by the student and approved both by the instructor or instructors under whose supervision the work is to be done and by the chairman or chairmen of the Department(s) involved. Such independent work may be registered for at any time and require as many weeks as the instructor(s) shall stipulate. The work may be in residence or off campus, as the nature of the study requires, although prior approval of all arrangements and faculty supervision must be obtained.

All fees must be paid in advance of beginning independent work. The student may not receive a larger number of credit hours than he is registered for, although a smaller number may be completed and credit obtained with the approval of the instructor or instructors. No more than fifteen (15) credit hours may be received in a single topic or problem. A maximum of forty (40) credit hours of independent work is permitted under the University omnibus option.

For each course taken under the University omnibus option, the student’s transcript will show the departmental prefix, the level of the course, the number of credit hours, and an exact description of the topic (example: Art/Jr./3: Navajo Pottery, 1870-1890). Petition forms for independent work under this option are available in the Registrar’s office.

CREDIT BY EXAMINATION... Under certain circumstances, a student may receive credit by examination for a course in which he has not been regularly enrolled. This policy does not apply to law courses. Each school or department may determine those courses, if any, for which credit may be earned by examination. The dean of the school or chairman of the department must approve any arrangements prior to testing for such credit. A student must have a minimum cumulative grade average of 2.00, and an entering freshman must present a high school scholastic record equivalent to a 2.00 grade average in order to earn credit by examination in any course. A student who has completed equivalent material in high school (such as first-year foreign language) may not receive additional credit by examination. A maximum of 30 credit hours may be earned by examination, and not more than 20 credit hours may be earned in any one department.

COLLEGE LEVEL EXAMINATION PROGRAM SUBJECT EXAMINATIONS... Credit may be achieved in college level subjects, provided satisfactory scores on the College Entrance Examination Board College Level Examination Board Subject Examinations have been received by the University from the Board. No credit will be allowed for the General Examinations. Credit for specific subject examinations will be granted subject to the approval of the academic department at the University of Montana in which the course is offered.

CREDIT FOR EDUCATIONAL EXPERIENCES IN THE ARMED SERVICES... The University may grant elective credit for courses completed in military service schools and training programs, provided such credit is recommended by the American Council on Education in A Guide to Evaluation of Educational Experiences in the Armed Services, and only when the course work is appropriate to the programs of this University.
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, provided he completes graduation requirements within a continuous six-year period. If, after his first enrollment or after a six-year period, 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 be graduated 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 completed the entrance requirements of regular students; (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 in Official University Notices. Applications must be filed at least one quarter preceding the quarter in which requirements are to be completed.

CREDITS REQUIRED FOR A DEGREE . . . Normally credits assigned to a course are equated in the following way: one credit for each 50 minutes of lecture with two hours of preparation for the lecture expected of the student. Credit granted for laboratory work is normally one credit per two or three hours laboratory session. A total of 195 credits is required for graduation with a bachelor's degree, except that a greater number is required in art (B.F.A.) and pharmacy. Candidates for the degree of Juris Doctor must complete three years of law courses upon graduation in addition to the entrance requirements of the School of Law. Admission requirements of candidates for the degree of Juris Doctor include graduation from an approved college or university. Candidates for the Bachelor of Science in Pharmacy degree must complete a five-year course. Candidates for the bachelor of arts degree in the College of Arts and Sciences must complete 93 credits in that college, except that credits earned in art and drama may be included in that number. The normal requirement of a 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 and social welfare, the number of credits is from 40 to 70. This rule on maximum credits allowed does not apply in the Schools of Business Administration, Fine Arts, Forestry, Journalism, Law and Pharmacy. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.

CREDIT LIMITATIONS . . . Not more than 18 credits in advanced ROTC courses may be counted toward graduation. Credit in denominational religion courses is not accepted.

Except in the Department of Music, not more than 12 credits in performance 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 allowed to present more than 10 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189 and 190-191.

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

QUALITY OF WORK . . . A minimum grade-point average of "C" or 2.00 in all course work attempted, and in all work attempted in the major field, is required for graduation at the University of Montana.

REQUIREMENTS OF PARTICULAR CURRICULA . . . Candidates for a bachelor's degree must comply with any and all requirements announced under a particular curriculum, in addition to meeting the general requirements listed here under requirements for graduation.
RESIDENCE REQUIREMENTS . . . Students who transfer credits earned elsewhere and who seek a degree from the University must, in addition to meeting other requirements, earn not less than 45 credits and fulfill not less than three quarters in resident study at the University; and 35 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count toward residence requirements for undergraduate degrees, but correspondence credits do not.

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 the next six months without the necessity of taking additional courses. In case of a second failure, further opportunity will be granted at the discretion of the department or school concerned and the committee on graduation. For details, check under the alphabetically listed curricula in the catalog.

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

A student who transfers credits earned elsewhere to this University must meet these requirements on grades earned at the University of Montana as well as on his entire record. After these qualifications have been met, the candidate for honors or high honors must receive the recommendations of his major department and the faculty of the University of Montana.

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

summer session . . .

The summer session consists of two 4½ week half-sessions and a concurrent nine-week session. Students may attend either half-session or the full nine-week session. The 1972 summer session will open June 19 and close August 18; the first half-session, June 19 to July 19; the second half-session, July 20 to August 18.

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 are 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 fields.

Courses required for Montana secondary and elementary teachers certificates are offered. Graduate work includes 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 Director of Summer Session.

the graduate school . . .

For information on graduate degrees and programs offered, admission to the Graduate School, general requirements for graduate degrees and graduate courses, write to the Dean of the Graduate School.

Detailed information on requirements for particular degrees, a copy of the Graduate School Bulletin, and application forms for admission to graduate work may be secured by writing to the appropriate dean of the school or department chairman.

financial obligations . . .

PAYMENT OF FEES . . . All fees and room and board charges are due and payable in full on or before the date of registration. Students whose financial circumstances require payment of part of the charges due on a deferred basis should contact the Office of Financial Aids no less than two weeks prior to the fall and spring quarter. The Financial Aids Office will evaluate each case in relation to the availability of University funds. In no case is it possible to complete registration without paying the whole or a significant portion of the total charges due at each registration.

*STUDENT FEES*

Full-time Students (those registered for seven or more credit hours)—

The following are the fees payable each academic quarter by full-time students who qualify as residents of the State of Montana:

- **Montana Residents**—
  - Registration fee $15.00
  - Incidental fees $75.00
  - Buildings fee $20.00
  - Student Union fee $10.00
  - University Center Operations fee $8.00
  - Student Activities fee (Optional to graduate students) $15.00
  - Health Service fee $13.00

  **Total Montana resident** $157.00

For non-resident of Montana, add—

- Non-resident fee $260.00
- Buildings fee $22.50

  **Total non-resident** $439.50

Limited Registrants—

A student registered for 6 or less credit hours is a limited registrant. Fees per quarter vary in relation to the number of credit hours as follows:

- **Montana resident**—
  - One credit hour $21.00
  - Two credit hours $42.00
  - Three credit hours $63.00
  - Four, five or six credit hours $85.00
  - Activities fee (optional) $15.00

Limited registrants who are non-residents of Montana are charged per quarter, in addition to the above, a non-resident fee of $130.00 and a non-resident buildings fee of $11.25.

*The Board of Regents reserves the right to adjust any and all fees at any time.
RESIDENCE HALL FEES—

Rent for a double room in a University Residence Hall is $104.00 per academic quarter. A limited number of single rooms are available at $149.00 per quarter. Room fees are the same for either residents or non-residents of Montana. Married Student Housing fees are reflected in a separately published brochure.

UNIVERSITY FOOD SERVICE FEE—

All students residing in University Residence Halls are required to utilize the University Food Service program.

Fees for University Food Service are as follows—

<table>
<thead>
<tr>
<th></th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
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<tbody>
<tr>
<td>Rental</td>
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<td>$157.00</td>
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<tr>
<td>Rent</td>
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<td>$149.00</td>
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<tr>
<td>Board</td>
<td>$232.00</td>
<td>$205.00</td>
<td>$205.00</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>$493.00</td>
<td>$466.00</td>
<td>$466.00</td>
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</tbody>
</table>

This fee is the same for either residents or non-residents of Montana.

SUMMARY OF FEES, ROOM AND BOARD—

For Montana residents registered for seven or more credit hours:

<table>
<thead>
<tr>
<th></th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$157.00</td>
<td>$157.00</td>
<td>$157.00</td>
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<tr>
<td>Room</td>
<td>$149.00</td>
<td>$149.00</td>
<td>$149.00</td>
</tr>
<tr>
<td>Board</td>
<td>$232.00</td>
<td>$205.00</td>
<td>$205.00</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>$493.00</td>
<td>$466.00</td>
<td>$466.00</td>
</tr>
</tbody>
</table>

For non-resident of Montana, add—

<table>
<thead>
<tr>
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<th>Winter Quarter</th>
<th>Spring Quarter</th>
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</thead>
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<tr>
<td>Fees</td>
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<td>$157.00</td>
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<tr>
<td>Incidental fee</td>
<td>$493.00</td>
<td>$466.00</td>
<td>$466.00</td>
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</tbody>
</table>

For auditing courses, as opposed to enrolling for academic credit, are the same as reflected above.

LAW SCHOOL FEES—

The School of Law is conducted on a semester basis. Semester fees are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
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</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$157.00</td>
<td>$157.00</td>
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<tr>
<td>Room</td>
<td>$149.00</td>
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<tr>
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<td>$466.00</td>
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</tbody>
</table>

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<tr>
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<tr>
<td>Incidental fee</td>
<td>$493.00</td>
<td>$466.00</td>
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</tbody>
</table>

REFUND SCHEDULE FOR WITHDRAWAL FROM THE UNIVERSITY OR FROM RESIDENCE HALL OCCUPANCY

<table>
<thead>
<tr>
<th></th>
<th>Before Class Begins</th>
<th>1st week of class</th>
<th>2nd week of class</th>
<th>3rd week of class</th>
<th>4th week of class</th>
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<tbody>
<tr>
<td>Registration fee</td>
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<td>None</td>
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<td>Incidental fee</td>
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<td>Buildings fee</td>
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<td>Student Union fee</td>
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<td>U.C. Operations fee</td>
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<td>Student Activities fee</td>
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<tr>
<td>Health Service fee</td>
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<tr>
<td>Non-resident</td>
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<tr>
<td>Special purpose fees</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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<tr>
<td>Room or Board</td>
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PORTION REFUNDED FOR DROPPING FROM FULL TO LIMITED REGISTRANT

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<tr>
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<th>1st week</th>
<th>2nd week</th>
<th>3rd week</th>
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<tbody>
<tr>
<td>Registration fee</td>
<td>None</td>
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SUMMER SESSION FEES . . . Fees and Room and Board costs are contained in a separately published Summer Session brochure.

EXTENSION DIVISION FEES . . . Fees for registration in the Extension Division are contained in a separately published Extension Bulletin.

RESIDENCE STATUS . . . Residence status for tuition and fee purposes is determined at the time a student first applies to the University, in accordance with the provisions of the Revised Codes of Montana, 1947, as amended. Once determined, the status assigned does not change in the absence of written evidence to substantiate the claim for change.

In general:

(1) A resident student is a person, legally qualified to determine his own domicile, who has been domiciled in Montana for one year immediately preceding registration at any unit of the Montana University System. Attendance as a full-time student at any college, university, or other institution of higher education within the state shall not alone be sufficient to qualify for residence in Montana.

(2) The residence of a minor is that of his father; or of his mother if there is no father; or of his guardian when the court appointing the guardian certifies that the primary purpose of the appointment is not to qualify a minor as a resident of this state; or of the parent who has custody of the minor.

(3) The residence of a married woman is that of her husband, except that a resident woman student who marries a nonresident does not by that fact alone lose her resident status.

The governing statutes define a number of conditions which may qualify or make exceptions to the above general statements of qualification.

A student having questions about his status, or desiring to petition for a change in his status, may obtain a copy of the appropriate statutes and petition forms by contacting either the Registrar's office (current and former students), or the Office of Admissions (new applicants).

SPECIAL PURPOSE FEES

Late Registration . . . A student who does not complete his registration, including the payment of fees, during the scheduled registration period is assessed a late registration fee of $10 for the first late day, plus $2 for each additional late day thereafter to a maximum of $24.

Dishonored Checks . . . A charge of $2.50 will be assessed each time a personal check is dishonored by the bank upon which it is drawn. This assessment will be charged to the student’s account, and he or she will be so notified. A dishonored check at the time of registration may result in the assessment of a late registration fee.

Field Trips . . . Certain departments require field trips, the cost of which is prorated among the students participating in the course. Information concerning field trip costs may be obtained from the academic departments.

Forestry and Music Fees . . . Special purpose fees applicable to forestry and music students are listed under the departmental headings in this bulletin.

Vehicle Registration Fee . . . A vehicle registration fee of $9 for the academic year entitles the owner of a private vehicle...
to use campus parking facilities. The fee is payable in full on or before registration for the fall quarter. In the event of withdrawal, $3 is refunded for each full unused quarter. Detailed vehicle regulations are published separately.

Remedial English and Remedial Mathematics . . . A special fee of $36 is charged for enrollment in either remedial English or remedial mathematics, in addition to the regular student fees listed above. The refund schedule applicable to this fee is available at the Office of the University Treasurer.

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 . . . $25 per quarter is charged graduate students, both resident and non-resident, who are not enrolled in courses but whose activities involve the use of University resources.

WAR SERVICE EXEMPTIONS . . . Registration and incidental fees are waived for honorably discharged persons who served with the United States armed forces in any of its wars and who were bona fide residents of Montana at the time of their entry into the armed forces. This is in accordance with an act of the Legislature of 1943 as amended by the Legislature of 1945. These exemptions are not available to students who qualify for federal veterans benefits. 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 . . . Subsistence payments from the Veterans' Administration are based on the number of hours of work for which the student is registered. A minimum of 12 credit hours is required for full payment.

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

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 REGISTRATION OF STUDENT ORGANIZATIONS . . . Every student organization is required to register with the Dean of Students Office. Until such registration has been processed, 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 against 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 prescribed University policy and the regulations of the National Collegiate Athletic Association and the Big Sky Athletic Conference, of which the University is a member.

UNIVERSITY CENTER . . . The University Center (Student Union), houses a significantly expanding extracurricular-activities program for University students and faculty. The building includes student legislative chambers, offices, lounges, work areas, music listening rooms, hobbies and craft areas, art gallery, conference areas, ballroom, coffee shops, bowling lanes, billiard and ping pong areas and food services. In addition to student maximum performance academically and the use of remedial procedure where indicated; and (4) selection of appropriate vocational area.

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

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

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

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

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

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

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

Hospitalization in local hospitals is provided when necessary through the Student Health Service. The Health Service may pay for eight days hospitalization at $30 per day, and $100 may be applied to extras (medicine, X-ray and laboratory work).

THE OPTIONAL BLUE CROSS SUPPLEMENTAL HEALTH PLAN has been worked out through the Faculty-Student Health Committee to make it possible for students to obtain low-cost year-around health care protection during the four or more years they are undergraduates at the University of Montana and to allow married students health care protection for their dependents. Under this plan, which costs the single student $2.50 per quarter for the autumn, winter and spring quarters and $5.00 for the summer, the student may protect himself against the costs of illnesses that exceed 15 days per quarter of hospitalization (the limit under the Student Health Service Plan) and illness and accidents occurring between quarters and during the summer months. The married student, under this optional plan, can get health and accident protection on a per quarter or family plan with one of three optional plans ranging in cost from $22.20 to $66.00 per quarter for the autumn, winter and spring quarters and for the summer session. Details of the plan are available from Montana Blue Cross, Savings Center Building, Missoula, from the Dean of Students Office and from the University Health Service.

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

THE PLACEMENT CENTER endeavors to assist University graduates in finding positions suitable to their interests and professional training. These services are available to the graduates of any college, school or department of the University. Interview schedulings, employer information and vacancy listings are available for positions in schools, colleges, business, industry and government service. The Placement Center also aids University graduates in later years in finding new positions for which both a degree and experience are required.

STUDENT HOUSING includes eight Residence Halls, two housing areas for married students, and eight fraternity and six sorority houses.

GENERAL CONDITIONS FOR RESIDENCE . . .

A. The student agrees to pay the University as outlined in the Residence Hall flyer distributed by the Residence Halls Office.

B. The student agrees to familiarize himself with all regulations which the University and the Residence Halls have enacted or may enact, and these rules and regulations are the condition of residence in the hall. All information contained in the Residence Halls Book is applicable.

C. The student is expected to vacate and remove personal belongings from his room immediately upon withdrawal from the University.

MEN'S RESIDENCE REQUIREMENTS. All male unmarried freshman and transfer students having less than 45 credits are required to live in Residence Halls. Junior men (90 credits or 6 quarters in residence) and senior men may reside off campus. If these men move into Residence Halls they will be permitted to contract for board and room quarterly.

WOMEN'S RESIDENCE REQUIREMENTS. All unmarried freshman and sophomore women students under the age of 21 who are not living in their own homes are required to live in the Residence Halls. Junior women (90 credits or 6 quarters in residence) and senior women may reside off campus. If these women move into Residence Halls they will be permitted to contract for board and room quarterly.

RESIDENCE HALLS AND FOOD SERVICE. Application forms and detailed information may be obtained by writing the Admissions Office, University of Montana. A permit for board and room (for fall quarter only), as announced in the Residence Halls bulletin, must accompany each room application. If a room reservation is cancelled, notice in writing must be received by the Director of Residence Halls on or before September 15 for fall quarter, December 31 for winter quarter and March 20 for spring quarter. Students who live in the Residence Halls are required to board at the Food Service. See Residence Halls bulletin for board and room rates.

Residence Halls charges must be paid in advance at the beginning of the quarter or in installments as arranged with the Financial Aids Office.

Board is provided by the Food Service for the residents of all halls. Experienced dietitians provide appetizing and nutritionally adequate meals.

Social life in the halls is encouraged through Residence Halls clubs and numerous activities. Upperclass counselors assist students in making living in the halls enjoyable and beneficial. A social fee of $2 per quarter is assessed the residents in each hall.

All University food and housing operations are conducted on a self-sustaining basis. Land is acquired, buildings are built and maintenance and operation are financed out of payments for such housing or meals. When costs go up, charges for these services must go up unless the services themselves are to be 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 are available, as well as one, two, three and four bedroom apartments.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(14) Use of motor vehicles: students who bring motor vehicles to the University campus must register them with the Traffic Security Office of the University. Regulations relative to the use of motor vehicles on the campus may be obtained there. (See Student Fees)

Because the University Health plan does not cover injuries sustained in motor vehicle accidents and the optional Student Blue Cross policy (if taken) limits liability to $1,000, all students who drive cars should be adequately covered by insurance (liability, property damage, medical payments, etc.)

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

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

STUDENT CONDUCT RULES OF PROCEDURE OF UNIVERSITY OF MONTANA

1. The following procedures shall govern all cases in which the University institutes disciplinary proceedings against students for misconduct, except academic offenses which shall include but not be limited to cheating, plagiarism and grade disputes.

2. Definitions.

a) "Dean's Office" means the Dean of Students or a person authorized to act for him.

b) "Disciplinary action" may include any or all of the following:

(1) Warning: An official written reprimand.

(2) Disciplinary Probation: A probationary student status imposed for a specified period of time, during which time, the student may be denied the right to participate as a representative of the University in any University sponsored or approved extracurricular activity; the right to operate an automobile on campus; the right to hold office in any University organization (denial of the right to hold office shall include removal from any office then held in any University organization); or any combination of the above.

(3) Suspension: A termination of student status for a definite or indefinite period of time. During the period of suspension the fact of suspension will be affixed to the student's transcript.

(4) Restitution: Money payment to compensate for damaged or destroyed property; repair or replacement of damaged or destroyed property; renovation of disturbed, cluttered or contaminated areas.
(5) Parental notification: A notice to the student's parents of his probationary or suspended status. (Parental notification may be used only in the case of unmarried minors.)

3. Student Court—creation, composition, selection, and tenure. There is hereby created a Student Court. The members of the Student Court shall be selected in the following manner: two undergraduate students appointed by AS-UM; one graduate student appointed by the President of the University from a list of five graduate students submitted by AS-UM; one faculty member appointed by the Budget and Policy Committee of the Faculty Senate; and one faculty member appointed by the President of the University. A Chairman shall be selected by the Student Court from among its members. The Chairman so selected shall serve for one year. New members of the Student Court shall be selected by June 1 of each year and shall take office on September 1 of the year selected. Undergraduate and graduate students shall be appointed for one year. Faculty members shall be appointed for two years except the faculty member first appointed by the President shall serve for one year. No members shall serve more than two consecutive terms.

   a) Disciplinary proceedings shall be instituted by the Dean's Office by sending by registered mail or personal delivery a notice of charges to the student against whom disciplinary proceedings are initiated. The notice shall inform the student of the rule or regulation allegedly violated and the statement of the reported circumstances of the alleged violation.
   b) The notice of charges shall require the student to appear in the Dean's Office and shall specify the time and place for a hearing and shall inform the student that he may bring a parent, guardian, or counsel to the appearance before the Dean. The time specified shall be not less than 5 days nor more than 10 days following the mailing date or delivery of the notice. Any student may request an earlier appearance which may be granted or denied in the discretion of the Dean.
   c) The notice of charges shall further advise the student that he may elect to have the case transferred directly to the Student Court by notifying the Dean's Office of such election on or before the time specified for his appearance in the Dean's Office.

5. Failure to Respond.
   After receiving notice of charges, if the student fails or refuses to appear in the Dean's Office, and if he has not requested to have the case transferred to the Student Court, the Dean's Office may dismiss the charges, impose any disciplinary action specified by this code in Section 2(b) or transfer the case to the Student Court. The Dean's Office shall notify the student of the action taken. Such action shall not be subject to appeal. To avoid unfairness, the Dean's Office may extend, or reschedule the time to enable the student to respond to the charges.

6. Response to Charges.
   a) If the student appears in response to the notice of charges, the Dean's Office shall advise him of the facts concerning the alleged charges and the names and addresses of witnesses then known to the Dean's Office. The student shall also be advised that he is not required to make any response, that any statement made by him may be used against him, that if he remains silent, his silence will not be taken as an admission against him, and that he may advise the Dean's Office of any witnesses or evidence supporting his position. A parent, guardian, or counsel of the student may be present during the discussion between the Dean's Office and the student.
   b) After the discussion with the student and such further investigation as the Dean's Office deems necessary, the Dean's Office shall proceed as follows:
      (1) If the Dean's Office determines that the violation alleged is not supported by the evidence, the charges shall be dismissed and the student notified.
      (2) If the Dean's Office determines that the violation occurred as alleged, it may impose any disciplinary action specified by this code in Section 2(b).
         The Dean's Office shall notify the student of its determination including the disciplinary action to be imposed. The student may appeal the determination made by the Dean's Office by requesting a hearing before the Student Court. The request shall be made in writing, signed and delivered to the Dean's Office, no later than 10 days following the date on which the notice of determination and disciplinary action was received by the student, as determined by the date on the registration receipt, if mailed, or the date delivered to the student, if personally delivered. If no written request is received by the Dean's Office within ten days, the disciplinary action imposed by the Dean's Office shall become effective and such action shall be final and not subject to further hearing or appeal. If the student makes a timely request for appeal, the Dean's Office shall transfer the case for hearing.

7. Student Court Hearing.
   a) Original hearings, appeals from the Dean's Office and appeals from a living unit court shall be identical de novo hearings.
   b) Whenever a case is transferred for hearing, the Dean's Office shall notify the Student Court of the transfer and transmit to the Student Court a copy of the notice of charges. The Chairman of the Court shall promptly give notice to the student of the time, date, and place of the hearing, which shall be held not less than five days and, whenever practicable, not more than ten days after the date of such notice.
      The notice shall advise the student that if he intends to be represented by counsel he must file a statement of such intention with the Dean's Office at least 72 hours before the time scheduled for the hearing. The notice shall advise the student that the University may be represented by legal counsel.
      The notice shall advise the student that the hearing will be closed to the public unless he files with the Dean's Office a written, signed request at least 72 hours before the hearing, requesting the hearing be open to the public.
   c) Conduct of hearing. The student is entitled to be present at the hearing and to be accompanied by advisors of his choice, including legal counsel. The University shall be represented by the Dean's Office, or by counsel appointed by the Dean's Office. The University, through its authorized representative, shall state the case against the student, introduce evidence and witnesses in support thereof. The student shall have the right to present witnesses and to present witnesses and evidence in his behalf. At the hearing, the burden of proving the student guilty of the alleged violation shall be on the University. The hearing shall be closed to the public unless the student requests that the hearing be open to the public. Such request shall be made in writing, signed and delivered to the Dean's Office no later than 72 hours before the time scheduled for the hearing.
      An official verbatim record shall be made by means of tape recording or stenographic report. The Dean's Office shall keep the official record or a transcription thereof for at least one year from the date of final disposition of the case. Upon request by the student the official record shall be transcribed and a copy furnished to him. If the student requests a copy of the official record, he shall pay the cost of transcription.
      The Student Court may prescribe additional rules covering the conduct of hearings not inconsistent with this code.

Within five days after the conclusion of the hearing, the Court shall render its decision. The decision shall be based solely on matters introduced at the hearing. The decision shall be at the majority vote of the Chairman shall have a vote in all cases. The decision shall contain a finding as to guilt or innocence and a brief statement of the reasons for the decision. Upon
a finding of guilt the Court may impose any disciplinary action specified by this code in Section 2(b). Copies of the Court's findings, decision and the disciplinary action imposed, if any, shall be furnished promptly to the student, the President of the University, and the Dean's Office.

8. Failure to Appear:
A student who fails or refuses to appear at a hearing before the Student Court at the time and place scheduled shall be considered to have waived his right to be heard by the Student Court. However, the Student Court is authorized to hear the evidence from those present, to review the charges, and to make such investigation as it may deem necessary. In such cases of failure or refusal to appear, the Student Court is further authorized to decide the guilt or innocence of the student and upon a finding of guilt to impose any disciplinary action specified by this code in Section 2(b). Such decision shall not be subject to appeal. However, for good cause, the Student Court may extend the time and reschedule the hearing to enable the student to respond to the charges.

9. Living Unit Courts:
   a) Each living unit may establish a court.
   b) The members of the living unit court shall be selected according to procedures established by the living unit's constitution or by-laws.
   c) Living unit courts shall have authority to hear and decide all cases involving charges of student violation of living unit regulations. Cases may be referred to the living unit by the living unit administrative office or by the Dean of Students.
   d) If a violation of a living unit regulation is also a violation of a University regulation, the living unit court may refer the case to the Dean of Students to be handled in accordance with the procedures described in this code.
   e) Upon a finding of guilt, the living unit court may issue a written reprimand; may deny the student specified privileges within the living unit; may order termination of the student's University housing contract and require him to move out of the living unit within 30 days; or order restitution as defined in Section 2(b) (4) of this code.

   The above sanctions may be imposed by the administrative officer in charge of the living unit if the student elects to have his case handled by the living unit administrative officer.

   f) Any decision of the living unit court or the administrative officer of a living unit resulting in the denial of privileges, termination of the student's University housing contract, or an order of restitution may be appealed to the University Student Court by a written, signed request for a hearing in accordance with the procedures provided in Section 6(b)(2) of this code.

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

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

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

GRADUATE SCHOOL
SCHOOL OF BUSINESS ADMINISTRATION
Accounting
Business Education
Finance
General Business
Management
Marketing
Office Management

SCHOOL OF EDUCATION
Administration and Supervision
Elementary Education
Guidance and Counseling
Library Services
Secondary Education

THE SCHOOL OF FINE ARTS
Art
Drama
Music
Music Education
Elementary Teacher Training
Secondary Teacher Training
Music History and Literature
Music (continued)
Performance
Organ
Piano
String Instruments
Voice
Wind Instruments
Theory or Composition

SCHOOL OF FORESTRY
Forest Science
Forest Business
Forest Resources Management
Watershed
Timber
Wildlife
Range
Forest Recreation
Park Management
Products and Utilization
Natural Resource Conservation

SCHOOL OF JOURNALISM
Advertising
Magazines
News-Editorial
Radio-Television

SCHOOL OF LAW
SCHOOL OF PHARMACY
course numbering system . . .

001-099 Courses below college level. Credit not allowed toward graduation.
100-199 Freshman Courses
200-299 Sophomore courses
300-399 Junior courses
400-499 Senior courses
500-699 Graduate courses

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

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

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

course descriptions . . .

When reading course descriptions, please note the following:

**NUMBER CHANGES:** 150 (101) illustrates a course for which the number has been changed from 150 to 151. 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, prerequisites 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.).

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

**CONSENT OF INSTRUCTOR:** If required, is shown by c/l.

**EQUAL OR EQUIVALENT COURSE:** Shown by an equal sign (=).

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

courses of instruction . . .

**ANTHROPOLOGY**

is the study of man. As a social science it is concerned with people, cultures, and societies on a world-wide scale throughout time. It studies institutional arrangements within 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 and to the study 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 for the undergraduate in the catalog, 20 credits in anthropology courses or approved cognate courses listed below are required for the Bachelor of Arts degree. Credits taken in anthropology must include the following courses: Anth 119, 122, 338, 339, and 272. In addition, one course in ethnology and one course in archaeology must be taken. Not more than 25 total credits in the following variable credit courses may be counted toward the degree: Anth 353, 461, 259 and 281. The following sociology courses must be completed: Soc 101 and 205. Cognate courses that may be used to satisfy the anthropology hours requirement are English 360, Geography 335, and General 230, 231, 232 and 233. A minimum of 35 of the required 50 credits must be in anthropology courses. English 100 must be completed. The foreign language requirement may be met in any of the following ways: (1) by high school transcripts showing that the student has completed four years in one language or two years in each of two languages; (2) by taking, in the University, two quarters of one language or three quarters in each of two languages; (3) by a combination of high school and University foreign language study acceptable to the anthropology department as the equivalent of (2) above; and (4) in exceptional cases, by passing a reading examination at the level of attainment expected of a student who has passed at least five quarters of a foreign language at this university.

Linguistics is the science which investigates the structure of the languages and dialects which are in use throughout the world. Its goal is to arrive at a body of knowledge about specific languages and the nature of language, and ultimately to achieve theories of language and linguistic processes which will be used by many other disciplines and has various applications, particularly in teaching English and foreign languages. Although at present the University does not offer a degree in linguistics, a concentration in linguistics or related subjects is possible for a student who wishes to enter 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. Refer to the Departments of Anthropology, English, Foreign Languages, Speech Communication, and Speech Therapy and Audiology for course offerings in linguistics.

**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 and assimilation.

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

242 HUMAN PALEONTOLOGY 4, prereq 152. Review of the morphological development of man and his capacity for culture using paleontological evidence and modern evolutionary theory.

254 ANTHROPOLOGICAL ECOLOGY 3 prereq 152. Survey of theories, methodologies, and problems of the relationship of cultural and physical attributes of human populations.

244 INTRODUCTION TO ARCHAEOLOGY 3 prereq 152. Method and theory in archaeology: the reconstruction of past cultures.

300 PRIMITIVE TECHNOLOGY 3 prereq 182 and c/l. Technological processes used by people in preliterate societies and early civilizations.

301 COMPARATIVE SOCIAL ORGANIZATION 3 prereq 152. The social and economic organization of man--generalization of organizational patterns--economic life, religion, political forms, education and arts.

305 INTRODUCTION TO FAR EASTERN CULTURE 4 prereq 152. The society, religion, and other aspects of life in the Far East.

**FOR UNDERGRADUATES AND GRADUATES**

*Course offered every other year

308 RACE AND ETHNIC RELATIONS 3 prereq 154 and Soc 101. Racial and ethnic differentiation and its social consequences. (Credit not allowed for this course and identical Sociology 306.)

325 EDUCATIONAL ANTHROPOLOGY 3 prereq 152. Major anthropological concepts of history, prehistory, culture, and society. (For educators and social workers or others dealing with American Indians and other minority groups.)
340 *PRIMITIVE RELIGION 3 prereq 152 and 252. Theories and practices of the supernatural phenomena found among primitive peoples throughout the world.

342 PREHISTORIC CULTURES 3 prereq 182. Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.

352 *ARCHAEOLOGY OF MONTANA 3 prereq 152 or 244 or c/l. The origins and distributions of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field trips in which actual archaeological sites will be excavated and techniques demonstrated.

353 ARCHAEOLOGICAL SURVEY Any quarter in which field parties are organized. V 3-9 R-12 prereq 152, 244 and c/l. A field course in Montana archaeology.

354 *OLD WORLD ARCHAEOLOGY 4 Su 3 prereq 152 and 244 or c/l. The development of civilization from the Neolithic Age to the dawn of written history.

355 *ARCHAEOLOGY OF NORTH AMERICA 4 prereq 152 and 244 or =. The origins, backgrounds and development of pre-Columbian American cultures and cultures.

356 HISTORICAL ARCHAEOLOGY 3 prereq 152 and 244 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 and 242 or =. Primate and human evolution; human genetics; human ecology; osteology and anthropometry.

360 *INDIANS OF THE SOUTHWESTERN UNITED STATES 3 prereq 152 and 252 or =. The development of Indian cultures in southwestern United States from the most ancient evidence of man to the present.

361 INDIANS OF NORTH AMERICA 4, Su 3 prereq 152 and 252 or =. The native cultures of North America, north of the Rio Grande.

362 *INDIANS OF SOUTH AMERICA 4 prereq 152 and 252 or =. The cultures of the Indians of South America.

363 *PEOPLES OF AFRICA 4, Su 3 prereq 152 and 252 or =. The aboriginal cultures of Africa.

364 PEOPLES OF INNER ASIA 4 prereq 152 and 252 or =. The social structures, religion, and subsistence patterns of Inner Asia.

365 *INDIANS OF MONTANA 3 prereq 152 or 10 credits in social sciences, and c/l. The history and culture of the Indian tribes of Montana.

366 *PEOPLES OF THE PACIFIC 4 prereq 152 and 252 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 and 252. The prehistoric remains of high civilizations, ethnic groups, and the effects of European contact on these cultures.

371 CULTURE AND PERSONALITY 4 prereq 152 and 252 or =. The role of culture in the formation of personality.

372 CULTURE AND THEORY 4 prereq 152 and 252 and Soc. 310. The development of theory and method in cultural anthropology to the present day. Various anthropological, sociological and psycho-sociological theories in the light of historical anthropology.

375 APPLIED ANTHROPOLOGY 3 prereq 152 or c/l. 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. Relevant anthropological knowledge to native administration and the integration of tradition in the visual media with the present complex of interrelationships among the artistic disciplines which we experience in contemporary society.

376 ART (See Art 387).


400 ANTHROPOLOGY OF THIRD WORLD PEOPLES 3 prereq 152 and 252. Comparisons of "peasant" societies with pretiterate and industrial societies. Peasant movements, modernization problems and current research.

451 ADVANCED PROBLEMS V 1-2 R-6 prereq 152 or 153 or =, and c/l.

452 MODERN INDIAN LANGUAGES 3 prereq 152 and 252 or =. Sociocultural and health problems, legislation, education, and economic conditions of Indians of the United States.

453 SOCIAL ANTHROPOLOGY 3 prereq 152 and 252. The principles, theories and the social organization of Indian tribes and institutions.

454 POLITICAL ANTHROPOLOGY 3 prereq 152, 252, 453 or c/l. Comparison and analysis of political structure, leadership, legal systems and processes among selected peoples of the world.

473 *CULTURAL DYNAMICS 3 prereq 152 and 252. The processes of cultural change, acculturation and integration.

480 *LINGUISTIC METHODS 3 prereq 190 and 252 or c/l. Phonemic, morphological and semantic analysis of an unnotated language, using a native informant. (Also listed as Speech Communication 480.)
ASTRONOMY

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation earlier in the catalog, fifty-five credits in physics and astronomy courses are required for the Bachelor of Arts degree with a major in astronomy. These physics and astronomy courses should include Astronomy 131-132, 150-151, 251-252, 253-254, 351-352, 362, 363-364-365, plus additional astronomy courses of the student’s choice. In addition, the prospective astronomy major must take Physics 221-222-223 plus one of the following sequences: Physics 314-315-316, 322-323-324, 371-372-373, 446-447-448, or 450-451-452. Students planning to go on to graduate study in astronomy are urged to take as many upper-division physics and mathematics courses as possible.

Required courses offered by other departments are: Mathematics 121, 151-152-153 and 251-252-253, and Computer Science 201.

Knowledge of a modern foreign language is required. This requirement can be satisfied by either (1) taking in the University, five quarters of one language or three quarters of each of two languages, or (2) by a combination of high school and University foreign language study acceptable to the Foreign Language Department as equivalent to (1).

A total of nine credits in English including English 100 and 450 are required, except that the students scoring less than the thirty-first percentile on the English section of the ACT test are required to take English 001, and students receiving the ninety-fourth percentile or higher are exempt from English. Recommended courses in other departments include eight credits of Computer Science courses beyond CS 201, Mathematics 311-312-313, and ten credits each in the Humanities, Social Sciences, and Life Sciences groups.

FOR UNDERGRADUATES

131-132 ELEMENTARY ASTRONOMY 3 (2-2) prereq high school algebra and trigonometry. The solar system, normal and variable stars, black holes, pulsars, and galaxies.

351-352 SOLAR SYSTEM ASTRONOMY AND ASTROPHYSICS 3 (3-0) prereq Astronomy 131-132, Physics 221-222-223. Masses, shapes, albedo, albedo evolution; surface temperatures, composition, atmosphere, and interiors of the plants and satellites. Properties of asteroids, comets, and meteoroids.

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

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

363-364-365 STELLAR ASTRONOMY AND ASTROPHYSICS 3 (3-0) prereq Astronomy 131-132, Math 251-252-253. Physics 221-222-223. Detailed application of physical laws to determine the nature of stars: analysis of stellar spectra; structure of stars and their evolution; galactic structure and cosmology.

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


Biology

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

High School Preparation. In addition to the general requirements for admission to the University, the student needs 19 credits in mathematics. It is recommended that the high school preparation include a modern foreign language.

Special Requirements for the Undergraduate Degree in Biology

Option A (Biology): In addition to the general requirements listed earlier in the catalog, the following special requirements must be completed for a Bachelor of Arts Degree with a major in Biology: 55 or more credits in Biology including Botany-Zoology 111 (Introduction to Biology); Botany 114; 115 (General Botany); Zoology 200 (General Microbiology); Zoology 112, 113 (General Zoology); Zoology-Botany 330 (Cellular and Molecular Biology); Botany-Botany 485 (Genetics); 10 additional credits in 300 and 400 level courses in biological sciences (Recommended: Botany 360, 420, 425 (Microbiology), Zoology 331). Chemistry 370, 481 also recommended.

The following courses in allied sciences must be completed by students electing option A: Chemistry 121, 122, 123 (College Chemistry); Botany 251, 262 (Environmental Biology); Chemistry 261, 262 (Organic Chemistry); Physics 111, 112, 113 (General Physics); or Physics 221, 222, 223 (General Physics); Math 116 (College Algebra); Math 117 (Trigonometry), and Math 118 (Introduction to Calculus).

Option B (Environmental Biology): In addition to the general requirements listed earlier in the catalog, the following special requirements must be completed for a Bachelor of Arts Degree with a major in Biology: 55 or more credits in Biology including Botany-Zoology 111 (Introduction to Biology); Botany 114, 115 (General Botany); Zoology 112, 113 (General Zoology); Botany-Zoology 250, 251 (Concepts of Ecology); Zoology 330 (Population Ecology); or Zoology 360 (Community Ecology); Zoology 410 (Advanced Animal Ecology), or Zoology 425 (Invertebrate Ecology); Botany 325 (Plant Ecology); Zoology-Botany 485 (Genetics); and 10 additional credits in 300 and 400 level courses in biological sciences (Recommended: Zoology 301 (Aquatice Biology); Zoology 405 (Animal Behavior); Zoology 390 (Population Ecology); or Zoology 360 (Community Ecology); Zoology 461 (Limnology); Microbiology 200 (General Microbiology); Botany 265 (Local Flora); Botany 365 (Systematic Botany); Botany 370 (Forest Pathology); Botany 325 (Plant Pathology); Botany 325 (Phytoplankton); Botany 485 (Population and Ecological Genetics).

The following courses in allied sciences must be completed by students electing the Environmental Biology option: Chemistry 101, 102, 160 or Chemistry 121, 122, 123; Physics 111 and 112 or 115; Math 107, 108, 109 and 125. Recommended electives include: Geology 103; Geophysics 201; Physical Geography 324; Physical Geography 413 (Population and Resource Geography); Computer Science 201 (Fortran); Sociology 315 (Human Ecology); Forestry 210 (Forest Soils); Forestry 370 (Wildlife Management); Computer Science 201 (Microbiology); or Zoology 331. Chemistry 370, 481 also recommended.

The Life Science Curriculum Committee, representing the departments of Zoology, Microbiology, Psychology, and Botany, in cooperation with the Biological Sciences Committee recommends that Biology (Option A and B) majors should meet the following language requirement:

Completion of the following work in one of the two tracks (reading skills or active skills) in one foreign language:

Reading skills: 5 quarters in Russian (includes reading and active skills) or 4 quarters in German or 3 quarters of Italian or Spanish or French.

Active skills: At least 5 quarters of the active skills track in German, Italian, Spanish, or French.

Suggested first year program for Options A and B:

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Black Studies

See Liberal Arts page

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 the 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. Students electing option A: Chemistry 121, 122, 123 (College Chemistry-I, II, III); or Physics 221, 222, 223 (General Physics); or Physics 221, 222, 223 (General Physics); Math 116 (College Algebra); Math 117 (Trigonometry), and Math 118 (Introduction to Calculus).

Special Requirements for the Undergraduate Degree in Botany

In addition to the general requirements for admission to the University, the student needs 55 or more credits in Botany-Zoology 111 (Introduction to Biology); Botany 114, 115 (General Botany); Zoology 112, 113 (General Zoology); Botany-Zoology 250, 251 (Concepts of Ecology); Zoology 330 (Population Ecology); or Zoology 360 (Community Ecology); Zoology 410 (Advanced Animal Ecology), or Zoology 425 (Invertebrate Ecology); Botany 325 (Plant Ecology); Zoology-Botany 485 (Genetics); and 10 additional credits in 300 and 400 level courses in biological sciences (Recommended: Zoology 301 (Aquatic Biology); Zoology 405 (Animal Behavior); Zoology 390 (Population Ecology); or Zoology 360 (Community Ecology); Zoology 461 (Limnology); Microbiology 200 (General Microbiology); Botany 265 (Local Flora); Botany 365 (Systematic Botany); Botany 370 (Forest Pathology); Botany 325 (Plant Pathology); Botany 325 (Phytoplankton); Botany 485 (Population and Ecological Genetics).

The following courses in allied sciences must be completed by students electing the Botany option: Chemistry 101, 102, 160 or Chemistry 121, 122, 123; Physics 111 and 112 or 115; Math 107, 108, 109 and 125. Recommended electives include: Geology 103; Geophysics 201; Physical Geography 324; Physical Geography 413 (Population and Resource Geography); Computer Science 201 (Fortran); Sociology 315 (Human Ecology); Forestry 210 (Forest Soils); Forestry 370 (Wildlife Management); Computer Science 201 (Microbiology); or Zoology 331. Chemistry 370, 481 also recommended.

The Life Science Curriculum Committee, representing the departments of Zoology, Microbiology, Psychology, and Botany, in cooperation with the Biological Sciences Committee recommends that Biology (Option A and B) majors should meet the following language requirement:

Completion of the following work in one of the two tracks (reading skills or active skills) in one foreign language:

Reading skills: 5 quarters in Russian (includes reading and active skills) or 4 quarters in German or 3 quarters of Italian or Spanish or French.

Active skills: At least 5 quarters of the active skills track in German, Italian, Spanish, or French.

Suggested first year program for Options A and B:

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<th></th>
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For Undergraduates

For explanation see Course Descriptions (Index)

100 FIELD BOTANY 3 (0-6): The collection, preservation and identification of plants and consideration of their groups. Given only as an extension course. Credit not allowed toward degree in Botany.

111 INTRODUCTION TO BOTANY 5 (3-4): The basic principles of botany, reproduction and evolutionary relationships of the various plant groups.

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

131 INTRODUCTION TO BIOLOGICAL SCIENCE 4 (3-2): The basic principles of biology, including aspects of cytology, cellular metabolism and genetics, origin of life, and mechanics of evolution and adaptation. Credit not allowed for this course and Zoology 111.

131 INTRODUCTION TO BIOLOGICAL SCIENCE 4 (3-2): The basic principles of biology, including aspects of cytology, cellular metabolism and genetics, origin of life, and mechanics of evolution and adaptation. Credit not allowed for this course and Zoology 111. Same as Zoology 131.
123. EVOLUTION, GENETICS AND MAN 3 prereq Bot 131 or =. Evolution, especially as related to man and including evidence, mechanisms, genetics, nature of hereditary material and adaptation. Not credit toward a major in Botany, Microbiology or Zoology. Same as Zoology 132.

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

250. BASIC CONCEPTS OF ECOLOGY 3 (3-0) prereq one year of college biology and a good working knowledge of the ecology of the northern Rocky Mountains (given for 3 credits at the Biological Station). Prerequisite 1 yr. biology, Chem 160 or =.

251. ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq or coreq 250. Population and community composition, distribution, and interactions with environmental factors. Field work included. (Credit not allowed for this course and Zoology 251.)

255. PRINCIPLES OF PLANT ECOLOGY 5 (1-8) prereq 250, 251 and 325. Field and laboratory analysis of methods used in the description and interpretation of plant and environmental interrelationships.

305. FUNDAMENTALS OF SYSTEMATICS 4 (3-2), prerequisite 1 year of biology. Principles and methods of classifying the classification of organisms, with an introduction to contemporary evolutionary thought and approaches to systematics.

325. PLANT PHYSIOLOGY 5 (3-4) prereq 250, 251 and 325. The chemical and physical basis of metabolism, photosynthesis, nutrition, water relationships and growth of plants.

330. CELLULAR PHYSIOLOGY (See Zoology)

334. MICROTECHNIQUE 3 (1-4) prereq 15 cr. in Botany. Techniques of preparing cleared whole mounts, cytological squashes, woody and herbaceous woody and herbaceous sections, use of freezing, sliding and rotary microtomes.

355. PRINCIPLES OF PLANT ECOLOGY 5 (1-8) prereq 250, 251 and 325. The chemical and physical basis of metabolism, photosynthesis, nutrition, water relationships and growth of plants.

365. AMERICAN WILDLIFE CONSERVATION 3 (3-0) prereq 250, 251 and 325. Field and laboratory analysis of methods used in the description and interpretation of plant and environmental interrelationships.

369. AGROECOLOGY 3 (4-6) prereq 265 or =. Identification, classification, and ecological distribution of the higher land plants.

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

370. CHEMISTRY OF PLANT CONSTITuENTS (See Chem 390 and For 300).

403. BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and c/f. Basic principles and skills of producing illustrative materials relevant to the biological sciences. (250 special supplies fee. Credit not allowed for this course and Zool 403.)

421. MINERAL NUTRITION 5 (3-4) e/y prereq 235. The absorption, translocation and utilization of minerals by plants: mineral requirements of plants: research methods in plant tissue analysis and the isolation and identification of minerals from plant tissues.

427. PLANT VIRUSES 4 (2-4) prereq 115 or =. Micro 420. Plant viruses 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/f. 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. PROBLEMS IN PLANT PHYSIOLOGY 1-6 (0-3/cr) R-6 prereq 235 and c/f. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

433. MORPHOGENESIS 5 (4-3) o/y prereq 325 or =. The effect of internal and external factors on the growth and forms of organisms.

435. PLANT ANATOMY 5 (2-4) o/y, prereq 115 or =. The origin of organs and tissues and the anatomy of vascular plants.


439. PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1-6 (0-3/cr) R-6 prereq 435, 436 and 437 and c/f. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant anatomy and cytotogy not taken up in regular courses.

441. PHYCOLOGY 5 (2-6) e/y prereq 115 or =. Morphology, taxonomy and ecology of algae and fungi, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

443. PHYTOLOGY 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. SPERMATOPHYTE 5 (2-6) e/y prereq 115 or =. The morphology and life histories of the gymnosperms and angiosperms.

449. PROBLEMS IN PLANT MORPHOLOGY V 1-6 (0-3/cr) R-6 prereq 441, 444 and c/f. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

451. ECOLOGICAL SYSTEMS ANALYSIS 3 (3-2) prereq Math 118, 125, Computer Science 201, Botany 355 or =. Mathematical analysis of ecological models, computer simulation, optimization of systems.

455. BIOLOGICAL EFFECTS OF AIR POLLUTION 5 (2-6) c/f. Air monitoring for pollutants using selected vegetation; use of a controlled environment chamber for plant growth; and analysis of specimens collected in industrially polluted areas.

456. BOTANICAL EFFECTS OF WATER POLLUTION 5 (2-6) c/f. Analysis of water with aquatic vegetation for pesticides, heavy metals, phosphates, nitrates, etc.

457. INDIVIDUAL PROBLEMS IN POLLUTION STUDIES 1-6, prerequisits 455 or 456 and c/f. Special work in air and water pollution.

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

469. PROBLEMS IN PLANT TAXONOMY V 1-6 (0-3/cr) R-6 prereq 265 and c/f. 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. 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. PROBLEMS IN MYCOLOGY AND FOREST PATHOLOGY 1-6 (0-3/cr) R-6 prereq 265 and c/f. 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.

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

485. GENETICS. (See Zoology.)

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

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

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

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

FOR GRADUATES

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

523. PHOTOBIOLOGY 4 (2-4) prereq 330. The interaction between light intensity and duration of light and dark on photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light intensity on higher plants 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 (4-15) prereq Bachelor's degree; major preparation in Botany, Biology, or Zoology. Community concepts concepts of life. Interrelationships between plants and animals; and community development and energy relationships; introduction to population problems. Offered at the Biological Station. (Credit not allowed for this course and Zool 551.)

565. ADVANCED SYSTEMATICS. Continuation of 365 with emphasis on the morphology, chemistry, and cell structure and classification of higher plants. (Credit not allowed for this course and Zool 565.)

566. (455) 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.
BUSINESS ADMINISTRATION

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

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

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

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

Opportunity for further study at the graduate level is offered through two programs leading to the degrees of Master of Business Administration and Doctor of Philosophy 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 major. In the first two years of study the student completes courses numbered 91 or 112; Business Administration 201-202, 250 and 251. Pre-business requirements are prerequisites for all business administration courses numbered 300 and above except that Accounting Majors may take Business Administration 306, 307, and 308 in their sophomore year.

PRE-GRADUATE PROGRAM

The student may elect to pursue a program of studies leading to the degree of Master of Business Administration. Students who plan to major in Business Administration:•

ADMISSION AND GRADE POINT REQUIREMENTS

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

PASSED/NOT PASSED OPTION

Courses in the School of Business Administration are available on a Passed/Not Passed basis as follows:

For Non-Business Majors: All 100, 200, 300 and 400 level Business Administration courses are available on a Passed/Not Passed basis.

Business Majors: All courses except those in (a) the pre-business and upper division core curriculum, and (b) the courses in the student’s area of concentration are available on a Passed/Not Passed basis.

Exceptions to the above, for Business majors, may be made by the instructor with the approval of his department.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

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

a. Complete the pre-business administration requirements.

b. Complete core courses: Economics 301, Bus Ad 232, 340, 342, 357-358, 360, 370, and 446. Core courses may not be taken for graduate credit by Bus. Ad. majors. Non-business majors may arrange to earn graduate credit for core courses.

c. Select before the beginning of the third quarter of the junior year an area of concentration from the following: Accounting, Business Education, Finance—Option A, B or C, Management—Option A, B or C, Office Administration. This selection of an area of concentration is to be indicated by completing a prescribed form available in the office of the Dean of the School of Business Administration and by filing the completed form in that office.

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

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 except 101; English 450; History 473, 474.

f. Present not less than 90 credits (exclusive of Health and Physical Education) in the basic requirements of the School of Business Administration.

g. Offer at least 195 credits.

h. Attain an average grade of "C" on all credits in business administration courses for which a grade is received and on all credits in the area of concentration selected for which a grade is received.

CURRICULA OF THE AREAS OF CONCENTRATION

ACCOUNTING

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


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<td>Accounting Principles I</td>
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<tr>
<td>Bus. Ad. 202</td>
<td>Accounting Principles II</td>
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<tr>
<td>Bus. Ad. 303</td>
<td>Cost Accounting I and II</td>
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<td>Bus. Ad. 306</td>
<td>Intermediate Accounting I</td>
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<tr>
<td>Bus. Ad. 307</td>
<td>Intermediate Accounting II</td>
<td>3</td>
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<tr>
<td>Bus. Ad. 401</td>
<td>Accounting Principles III</td>
<td>3</td>
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<tr>
<td>Bus. Ad. 402</td>
<td>Income Tax I and II</td>
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<tr>
<td>Bus. Ad. 412</td>
<td>Accounting Theory</td>
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It is recommended that students preparing for the public accounting profession take the following additional courses:


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<tr>
<td>Bus. Ad. 330</td>
<td>C.P.A. Practice</td>
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<tr>
<td>Bus. Ad. 462</td>
<td>Auditing I and II</td>
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<td>Bus. Ad. 410</td>
<td>Consolidated Statements</td>
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</tr>
<tr>
<td>Bus. Ad. 418</td>
<td>C.P.A. Review</td>
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In addition to the basic requirements of the School of Business Administration, students concentrating in Business Education must include the following courses:


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<tr>
<td>Bus. Ad. 194</td>
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<tr>
<td>Bus. Ad. 202</td>
<td>Secretarial Practice</td>
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<td>Accounting Principles</td>
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</tr>
<tr>
<td>Bus. Ad. 302</td>
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<tr>
<td>Bus. Ad. 351</td>
<td>Methods of Teaching Bookkeeping and Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 303</td>
<td>Office Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 334</td>
<td>Methods of Teaching Shorthand and Typewriting</td>
<td>2</td>
</tr>
</tbody>
</table>

BUSINESS EDUCATION

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


<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 101</td>
<td>Accounting Principles I</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 203</td>
<td>Accounting Principles II</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 303</td>
<td>Accounting Principles III</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 402</td>
<td>Auditing I and II</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 410</td>
<td>Consolidated Statements</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 418</td>
<td>C.P.A. Review</td>
<td>3</td>
</tr>
</tbody>
</table>

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


<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 182</td>
<td>Production Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 194</td>
<td>Bookkeeping and Accounting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 202</td>
<td>Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 201</td>
<td>Accounting Principles</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 302</td>
<td>Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 351</td>
<td>Methods of Teaching Bookkeeping and Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 303</td>
<td>Office Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 334</td>
<td>Methods of Teaching Shorthand and Typewriting</td>
<td>2</td>
</tr>
</tbody>
</table>
BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

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

ACCOUNTING

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

201 ACCOUNTING PRINCIPLES I 3.

202 ACCOUNTING PRINCIPLES II 3 prereq 201.


FOR UNDERGRADUATES AND GRADUATES

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

301 MANAGEMENT ACCOUNTING 4 prereq 202. Open only to non-accounting majors. Accounting for management planning and control. (Credit not allowed for both Bus Ad 301 and 303-304.)

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

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

305 GOVERNMENTAL AND INSTITUTIONAL ACCOUNTING 3 prereq 202. Study of management, planning and budgeting processes in governments and in institutions.

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

307 INTERMEDIATE ACCOUNTING II 4 prereq 306.

308 SPECIAL PROBLEMS IN ACCOUNTING 3 prereq 307.

401 INCOME TAX I 3 prereq 202. The application of the federal income tax law as applied to individuals.

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

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

404 AUDITING II 3 prereq 403.

410 CONSOLIDATED STATEMENTS 3 prereq 307.

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

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


499 SEMINAR V R-4.
MEMORANDUM

To: All Employees

Re: Update on Financial Management Policies

This memorandum is to update employees on the current financial management policies in effect.

1. **Theory of Income Determination**
   - Prerequisites: Math 125, or Math 126
   - Focus: Analysis of the factors affecting income determination in corporate and public sectors.

2. **Principles of Insurance and Risk Management**
   - Prerequisites: BU 322, BU 424
   - Focus: Understanding the role of insurance in risk mitigation and management.

3. **Business Finance**
   - Prerequisites: BU 322
   - Focus: Financial planning, management of corporate finances, and investment decisions.

4. **Real Estate Law**
   - Prerequisites: BU 322, BU 325
   - Focus: Legal aspects of real estate transactions, including ownership, property rights, and legal disputes.

5. **Management of Financial Institutions**
   - Prerequisites: BU 322, BU 325
   - Focus: Operations and management strategies of financial institutions.

6. **Life and Health Insurance**
   - Prerequisites: BU 320
   - Focus: Life and health insurance policies, underwriting practices, and regulatory environments.

7. **Property and Casualty Insurance**
   - Prerequisites: BU 320
   - Focus: Property and casualty insurance principles, risk assessment, and claims management.

8. **Theory of Business Finance**
   - Prerequisites: BU 322
   - Focus: Theoretical foundations of corporate finance and investment decision-making.

9. **Investments**
   - Prerequisites: BU 322 and BU 301
   - Focus: Analysis of investments, portfolio management, and risk assessment.

10. **Security Analysis**
    - Prerequisites: BU 322, BU 522
    - Focus: Techniques for security analysis, market efficiency, and portfolio optimization.

11. **Money and Capital Markets**
    - Prerequisites: BU 322 and BU 301
    - Focus: Theories and practices of money and capital markets, including monetary policy and interest rates.

12. **Real Estate Finance**
    - Prerequisites: BU 322, BU 324
    - Focus: Financial instruments and strategies in real estate finance.

13. **Property Valuation Theory**
    - Prerequisites: BU 385
    - Focus: Theoretical frameworks for property valuation, including cost and income approaches.

14. **Property Management**
    - Prerequisites: BU 324
    - Focus: Principles and practices of property management, including leasing and property evaluation.

15. **Social Insurance**
    - Prerequisites: BU 320
    - Focus: Social insurance programs, benefits, and funding mechanisms.

16. **Analytical Methods in Finance**
    - Prerequisites: BU 322 and BU 323
    - Focus: Advanced analytical techniques for financial decision-making.

17. **Seminar**
    - Prerequisites: BU 322
    - Focus: Discussion and analysis of current financial management issues.

This update is effective immediately. Please review these policies and contact HR for any questions or concerns.

Sincerely,

[Signature]
Human Resources Department
CHEMISTRY

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

The Department of Chemistry offers Bachelor of Science and Bachelor of Arts Degrees. The requirements for the B.S. Degree meet the latest standards of the American Chemical Society for professional education in chemistry and these graduates are certified to the American Chemical Society as meeting these standards. Chemistry majors will generally choose the B.S. degree; the B.A. in Chemistry is designed to allow latitude for an interdisciplinary program. The M.S., M.S. for Teachers of Chemistry, and Ph.D. degrees are also offered (see Graduate School Bulletin).

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

A departmental honors program has been established for chemistry majors who attain a high scholastic record. This program is based upon independent study and research under the direction of individual faculty members. Students may enter this program as early as the Winter Quarter of their freshman year. In many cases financial support is available on a part-time research assistantship basis from research grants obtained by individual faculty members.

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

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is desirable that the student have taken two years of algebra, geometry, trigonometry, science courses and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Science degree with a major in Chemistry: a total of 108 credits including 20 chemistry credits to include Chem 121-122-123, 124-125-126, 245, 246, 264-265-266, 287-288-289, 341-342-343, 371-372-373, 491-492-493, 492, 493, 494, and 6 credits selected from Chem 453 and Mathematics 252 or 253, are required.

At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or three quarters of a reading course in German. With Departmental approval, a foreign language other than German can be used to satisfy this requirement. College Physics and Mathematics through 251, and Mathematics 252 or 253, are required.

Every student, unless he is in the Pre-Med Option, is required to pass a senior comprehensive examination in Chemistry. The requirements for the Bachelor of Arts degree with a major in Chemistry are the same as for the Bachelor of Science degree except for the deletion of Chemistry 474, 6 credits of advanced Chemistry, Chem 453 and Mathematics 252 or 253. For the B.A. degree, advanced mathematics and/or advanced physics courses may be substituted for Chem 431, 432 and advanced courses in Mathematics or Physics. Two or three of these credits must be chosen from Chem 455, 466 or 490; the rest of the six must be selected from the other courses listed.

CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

Freshman Year

FOR GRADUATES

583 PROBLEMS IN TEACHING TYPEWRITING 3 prereq 183 or typewriting teaching experience and c/i. Developing a course of study using the latest methods and materials.

583 PROBLEMS IN TEACHING SHORTHAND AND TRANSCRIPTION 3 prereq 188 or shorthand teaching experience and c/i. Developing a course of study using the latest methods and materials.

584 PROBLEMS IN TEACHING SHORTHAND AND TRANSCRIPTION 3 prereq 188 or shorthand teaching experience and c/i. Developing a course of study using the latest methods and materials.
**Chemistry**

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 294-295-296, and 267, 269, 299</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 211, 212, 213, and 214-218-219</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Math 151, 251</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Physics 122-122-223</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Chem 245</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 246</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Electives (0-3)</td>
<td>General Chemistry 3 (3-4)</td>
<td>0-3</td>
</tr>
<tr>
<td>Electives (0-3)</td>
<td>General Chemistry 3 (3-4)</td>
<td>0-3</td>
</tr>
</tbody>
</table>

(15-18 to 15-18 to 15-18)

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

**Junior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Math 253 (or 252)</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Chem 371-372-373</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Chem 341-342-343</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Chem 451-452-453</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>German 101-102-103 (Reading Track)</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
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</table>

(15-17 to 15-17 to 15-17)

**Senior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Chem 452</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 453</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 474</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Electives (must include 6 cr. of Advanced Chem.)</td>
<td>General Chemistry 3 (3-4)</td>
<td>15-15</td>
</tr>
<tr>
<td>Electives (must include 6 cr. of Advanced Chem.)</td>
<td>General Chemistry 3 (3-4)</td>
<td>15-15</td>
</tr>
</tbody>
</table>

(15-18 to 15-18 to 15-18)

(Recommended electives include further Mathematics, Physics, advanced Geology and French or Russian.)

**Chemistry Curriculum for the B.A. Degree (Pre-Medic Option)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</td>
<td>Cr.</td>
<td>Cr.</td>
</tr>
<tr>
<td>A</td>
<td>W</td>
<td>S</td>
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</tbody>
</table>

Chem 121-122-123 | General Chemistry 3 (3-4) | 3 |
Chem 124-125-126 | General Chemistry 3 (3-4) | 3 |
Zool 111-112, 304 | General Chemistry 3 (3-4) | 5 |
Chem 245 | General Chemistry 3 (3-4) | 5 |
Chem 246 | General Chemistry 3 (3-4) | 5 |
Psychology 110 | General Chemistry 3 (3-4) | 5 |

Junior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 221-222-223</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>German 101-102-103 (Reading Track)</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 404</td>
<td>General Chemistry 3 (3-4)</td>
<td>5</td>
</tr>
<tr>
<td>Electives (5-8)</td>
<td>General Chemistry 3 (3-4)</td>
<td>0-3</td>
</tr>
<tr>
<td>Electives (5-8)</td>
<td>General Chemistry 3 (3-4)</td>
<td>0-3</td>
</tr>
<tr>
<td>Chemistry 370</td>
<td>General Chemistry 3 (3-4)</td>
<td>2</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 342-343</td>
<td>General Chemistry 3 (3-4)</td>
<td>2</td>
</tr>
<tr>
<td>Chem 452</td>
<td>General Chemistry 3 (3-4)</td>
<td>2</td>
</tr>
<tr>
<td>Chem 481, 482</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 385</td>
<td>General Chemistry 3 (3-4)</td>
<td>3</td>
</tr>
<tr>
<td>Electives (e.g., Zool. 485)</td>
<td>General Chemistry 3 (3-4)</td>
<td>15-17</td>
</tr>
</tbody>
</table>

**Graduate Work.** See Graduate School Bulletin. 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 3 (4-0). The basic laws, properties and reactions of elements and compounds. For students desiring a one year general course only.

104-105 General Chemistry Laboratory 1 (1-2) prereq or coreq 101-102.

121-122-123 College Chemistry 3 (4-0). For science majors and those students wishing more than one year of chemistry. The principles and theories of chemistry, properties and relations of elements and inorganic compounds, including qualitative analysis. Students who have completed Chem. 101-102 may not receive credit for 121 and/or 123.

124-125-126 College Chemistry Laboratory 2 (1-4) prereq or coreq 121-122-123.

160 Survey of Organic Chemistry 3 (4-0). Normally to follow Chemistry 101-102 as the 3rd quarter of chemistry for students in non-science majors desiring a one year general course only. Chemistry 160 is also open for credit to students who have completed Chemistry 122 or 123 or an equivalent two quarters of a full one year course in general or college chemistry.

164 Survey of Organic Chemistry Laboratory 2 (1-4) prereq or coreq 160.

211-212-213 Organic Chemistry 3 (4-0) prereq 102 or 122. Credit not allowed for both Chem 160 and 211.

214-215-216 Organic Chemistry Laboratory 2 (0-4) prereq or coreq 211-212-213.

245 Quantitative Analysis 3 (3-0) prereq 123. Gravimetric, volumetric, colorimetric and electrometric methods of analysis; theory of error as applied to chemical analysis; introduction to analytical separation.

246 Quantitative Analysis Laboratory 2 (1-6) prereq or coreq 245.

264-265-266 Organic Chemistry 3 (4-0) prereq 123. Designed for chemistry majors.

267-268-269 Organic Chemistry Laboratory 2 (0-5) prereq or coreq 264-265-266.

290 Problems and Research V R-10 prereq c/f.

**For Undergraduates and Graduates**

320 Methods of Teaching High School Chemistry 3 (2-4) prereq 123 or 238. Designed to familiarize prospective high school chemistry teachers with texts, demonstrations and laboratory experiments used in newer approaches to teaching of high school chemistry (CBA and CHEMS). Credit not allowed toward bachelor's degree in chemistry.

341-342-343 Instrumental Methods and Physical Measurements 3,2,2, (1,6) (0,5) prereq 245 or equiv., Chem. 271, or c/f.

370 Survey of Physical Chemistry 4 (4-0) prereq 102 or 122, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medicine.


376 Survey of Physical Chemistry Laboratory 1 (0-4) prereq or coreq 370.

381 (384) Physiological Chemistry 3 (3-0) prereq 160, 212 or 265. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

385 Clinical Chemistry Laboratory 2 (1-3) prereq or coreq 361 or 462. Analysis of biological fluids and tissues. Factors involved in the evaluation of the clinical status of the patient. Recommended for students in pharmacy, medical technology and dietetics.

390 (361) Chemistry of Plant Constituents V 3 or 4 (3-0 or 4) prereq 190 or =. Chemistry and analysis of plant components, including sugars, glycosides, polysaccharides, lignin and extractives. (Same as Bot. 290 and For. 390).

391 (362) Chemistry of Wood Products 3 (3-0) prereq 361. The chemistry of pulp, paper, cellulose derivatives, naval stores, industrial polymers, flame retardants, modified woods, and other wood products. (Same as For. 391).

431-432-433 Seminar 1 (0-2) R-6 prereq 213 or 266, and a reading knowledge of German. Presentation and discussion of current literature of chemistry. Use of the library.

448 Advanced Instrumental Methods and Physical Measurements 3 (0-6) prereq 371 and 372.

452 Physical Inorganic Chemistry 3 (3-0) prereq 123, 215 or 266, 371 or 370.

455 Inorganic Chemistry Laboratory 2 (0-6) prereq 123, 215 or 266 and c/f.

461 Carbohydrates 3 (3-0) prereq 213 or 266, 361. Structure, reactions, derivatives and biological aspects of carbohydrate compounds.

463-464 Theoretical Organic Chemistry 3 (4-0) prereq 213.

486 Organic Qualitative Analysis V 3-8 (2-4 to 8) prereq 213 or 296. Systematic methods of identification of pure organic compounds and mixtures; general class reactions of organic chemistry.

474 Introduction to Molecular Structure 3 (3-0) prereq Math 252 or 253 and Physics 222. Quantum mechanical description of atoms and molecules. Statistical mechanics.

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

481-482 Elementary Biochemistry 3 (3-0) prereq 212 or 265. Primarily for science majors.

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

490 Problems and Research V R-10 prereq c/f.
FOR GRADUATES

528 CHEMICAL PRINCIPLES 5 (4-4) prereq a previous course in general chemistry or high school teaching experience in chemistry and/or. Designed for the M.S. in Teaching of Chemistry program. Credit not allowed toward bachelor's degree in chemistry. An introduction to the theoretical basis of chemistry, including atomic and molecular structure, bonding, reaction rates and equilibrium.

538 SEMINAR 1 (0-2) R-4 prereq a previous college course in chemistry or high school teaching experience in chemistry. Designed for the M.S. in Teaching of Chemistry program. Credit not allowed toward bachelor's degree in chemistry. Chemical equilibrium and its applications in qualitative, quantitative and instrumental methods.

549 ANALYTICAL CHEMISTRY 5 (4-4) prereq 528 or equivalent. Designed for the M.S. in Teaching of Chemistry program. Credit not allowed toward bachelor's degree in chemistry. Chemical equilibrium and its applications in qualitative, quantitative and instrumental methods.

568 STRUCTURAL ORGANIC CHEMISTRY 5 (4-4) prereq 528 or equivalent. Designed for the M.S. in Teaching of Chemistry program. Credit not allowed toward bachelor's degree in chemistry. Chemical equilibrium and its applications in qualitative, quantitative and instrumental methods.

582 ENZYMES 3 (3-0) prereq 370 or 482. The kinetics, reaction mechanisms and macromolecular organization of enzyme systems. Description of known structure-function relationships.

583 METABOLIC REGULATION 3 (3-0) prereq 482. Control and regulatory mechanisms of metabolism. Discussion of factors that modulate the activity of enzymes, such as feedback inhibition and genetic expression. Interplay and control of metabolic pathways.

600 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Bot 580, Mieb 580 and Zool 580.)

681 PROTEINS AND NUCLEIC ACIDS 3 (3-0) prereq 370 or 372 and 482. Techniques of physical chemistry applied to the investigation of macro-molecules. Molecular structure and physical characteristics of proteins and nucleic acids.

682 SPECIAL TOPICS IN INORGANIC CHEMISTRY 3 R (3-0) prereq 370 or 482. Topical topic specified in class schedule.

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

691 ADVANCED ORGANIC CHEMISTRY 3 (3-0) prereq 213 or 280.

692 ADVANCED ORGANIC CHEMISTRY 3 (3-0) prereq 213 or 280.

694-695 PHYSICAL ORGANIC CHEMISTRY 3 (3-0) prereq 484 or 485.

696 SPECIAL TOPICS IN ORGANIC CHEMISTRY 3 (3-0) R prereq 661. Topical topic specified in class schedule.

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

671 KINETICS 3 (3-0) prereq 373.

673 THERMODYNAMICS 3 (3-0) prereq 373.

675 STATISTICAL THERMODYNAMICS 3 (3-0) prereq 373.

676 MOLECULAR STRUCTURE 3 (3-0) prereq 373.

678 SPECIAL TOPICS IN PHYSICAL CHEMISTRY 3 (3-0) R prereq 372. Topical topic specified in class schedule.

685-688-689 ADVANCED MOLECULAR BIOLOGY LABORATORY I-3 (0-6 to 9) prereq 373. Modern research techniques employed in the life sciences. (Cross-listed with Bot, Mieb, Pharm, Zool.)

690 RESEARCH V.

699 THESIS V R-15.

FOR UNDERGRADUATES

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

101 INTRODUCTION TO COMPUTING 3. Digital computer organization, program flow charts, computer operations, current computer applications. (Credit not allowed for both CS 201 and 212.)

201 FORTRAN PROGRAMMING 2 prereq Math 601, CS 101 or 101. The FORTRAN programming language. Basic coding techniques, formulation of problems, computer programs. Programs will be developed by students in simulated applications.

206-207 COMPUTER USE IN THE NATURAL SCIENCES 3 prereq Math 118 or equiv. or c/I. Introduction to the use of a computer in analyzing, simulating and modeling natural science problems.

212 COBOL PROGRAMMING AND DATA PROCESSING 3 prereq Math 601, CS 101 or 101. Primarily for students in business. Computer programs will be developed using the COBOL language. (Credit not allowed for both CS 212 and BA 271.)

220 INTRODUCTION TO DISCRETE STRUCTURES 3 prereq 201. 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 COMPUTER USE AND MATHEMATICS 3 (3-4) prereq Math 118 or equiv. or c/I. Introduction to the use of a computer in analyzing, simulating and modeling natural science problems.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 118 or equiv. or c/I. (A digital computer is used.) (271) Intuitive calculus. (272) Logic and probability theory. (Credit not allowed for this course and Math 271-272-273.)

299 SEMINAR V R-5 c/I.

FOR UNDERGRADUATES AND GRADUATES


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

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

370 COMPUTER METHODS 4 (3-4) prereq Math 252 or c/I. Computer programming and elementary numerical methods. Problems of interest to secondary school teachers. (Intended primarily for students enrolled in Teacher Education Institute. Others may enroll by special permission. Credit not allowed for this course and Math 370.)

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

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

452 COMPUTER APPLICATION IN EDUCATION V R-4 c/I. The applications of computers in education, e.g., computer assisted instruction, computer assisted learning, the construction of computer programs for learning.

453 COMPUTER APPLICATIONS IN THE HUMANITIES V R-6 c/I. The applications of digital computers in Art, History, Political Science, Music, etc.
471-472-473 NUMERICAL ANALYSIS 4 (3-4) prereq Math 253 and CS 201 for CS 471; c/i for 472 and 473. ERROR APPROXIMATION AND INTERPOLATION, numerical solution of linear and nonlinear equations, numerical solution of ordinary differential equations, numerical solution of integral equations and selected topics. Assigned work on digital computer. (Credit not allowed for this course and Math 471-472-473.)

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

476-477-478 COMPUTER METHODS OF SOLUTION OF LINEAR SYSTEMS 3 (2-2-1) prereq Math 253 and CS 201 and c/i. Necessary material from linear algebra and matrix theory. Error analysis of algorithms currently used in the solution of linear simultaneous equations and in obtaining eigenvalues. Each student will complete at least one computer program. Applications to linear programming.

496 SEMINAR V R-6 Guidance in special work.

FOR GRADUATES

554 ARTIFICIAL INTELLIGENCE V R-4 prereq CS 473 or Math 473. Theorem proving by computers, heuristics and algorithms and their implementation by computers.

DRAMA

study is designed to train the student in acting, directing, design, playwriting and the technical phases of dramatic production and to give him experience in these areas; to prepare him to teach and direct in the high school theater and the college and university theater; and to relate through the study of the 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 training in the theater arts.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DRAMA. In addition to the general requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree with a major in drama: Drama 101, 121, 122-123, 131-132-133, 201-302-303, 244, 251, 301-302-303, 311, 499 (4 cr.), plus a minimum of 12 credits in Drama. Drama majors are required to enroll in Drama 200 or 300, Drama Workshop, for three years, but need not enroll for credit.

The following courses outside the drama department are required: English 100, 202 or 450, and 244.

HPER 100 (Ballet, Modern Dance, or Fencing) is strongly recommended.

A Foreign Language (especially French) is recommended for the Bachelor of Arts degree.

The nature of Drama strongly suggests that Drama majors take a wide variety of University courses during their college careers. A list of recommended courses is available at the Department office. Students are urged to consult with the Department faculty before selecting these courses.

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 the Bachelor of Arts degree except that the aggregate number of credits in the Department of Drama must be a minimum of 90 hours. Three 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 Minor. Ordinarily English should be the teaching minor chosen. Course requirements in education to meet teacher certification with a teaching major or minor in Drama are listed under Education.

Drama majors electing the teaching minor are exempted from Drama 301 and 302. Due to credit limitations, the B.A. degree is suggested.

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

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FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

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

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

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

200 BEGINNING THEATER WORKSHOP V 0-4 R-12. Laboratory production in all the arts of the theater.

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

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

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


FOR UNDERGRADUATES AND GRADUATES

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


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

307-308-309 THE DRAMA (see English)

511-512-513 (223, 422) DIRECTING 4 prereq 8 credits in drama. Directing the play. (311) Basic techniques. (312-313) Types and styles of production. Assignments in conjunction with the Theater and Opera Workshops.
ECONOMICS

is that branch of the social sciences which deals with man's efforts to satisfy his wants by utilizing the scarce resources 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. Training along with extensive work in the other liberal arts and sciences, is intended to instill breadth of interest and intellectual curiosity. 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, mathematical economics, monetary theory, international economics, public finance, labor economics, regional economics, comparative economic systems, and econometrics.

Students may major in economics leading to a Bachelor of Arts or Bachelor of Science degree or a minor in 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 earned. Within the 50 credits in economics the student must include an introductory economics sequence, Economics 111-211-212, before the senior year, and 4 credits in economics courses numbered 400 or above. As a requirement for the major and as a prerequisite for other economics courses, the introductory economics sequence may be fulfilled by any one of the following options: (1) Economics 111-112-113; (2) Economics 211-212-213; (3) Economics 111-211-212. The following courses may be counted as part of the 50 economics credits required for the undergraduate degree: Economics 360-361-362-467-468-469; American Geography 211; History 347-348-349, 375-376-375, 473-474; Mathematics 153; Political Science 365.

Non-economics courses required for the undergraduate degree are: Anthropology 121; Sociology 101; Mathematics 101 (or equivalent); History 261-262; Mathematics 125-126 or 150-151-152-153; Philosophy 110; Political Science 201. The student must pass English 100 with a grade of "C" or above, or pass an Economics Department composition examination before he has completed 150 credits. It is strongly recommended that all majors take Mathematics 151-152-153, and any student planning graduate study in economics must take these courses.

For the Bachelor of Arts degree, there is no foreign language requirement. For the Bachelor of Science degree, the student must complete Mathematics 151-152-153 and General 151-152-153; a foreign language is not required.

Economics major with a Mathematics concentration. This program is not a joint major, but a joint major in mathematics and economics. 60 credits in economics and 50 credits in mathematics are required. The student must complete Mathematics 151-152-153, and 341-342-343 or 344-345-346. It is recommended that the student also include Economics 411, 413.

COMBINED MAJOR IN ECONOMICS AND POLITICAL SCIENCE. A B.A. degree with a combined major in economics and political science may be earned with a minimum of 60 credits selected from the two disciplines plus Mathematics 153. The 60 credits in economics and political science must include an introductory economics sequence, Economics 301 or 311, 311, and at least 12 additional credits in courses numbered 300 or above: Political Science 301, 321, and 18 additional credits, of which 12 must be in courses numbered 300 or above.

GRADUATE WORK: See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Description (Index).

111 INTRODUCTION TO POLITICAL ECONOMY 4. A critical examination of the market mechanism as a social decision device to guide the use of a nation's resources. The limitations of these processes in the light of current economic problems such as the rise of the large corporation, monopoly, environmental degradation, economic discrimination, and the increasing role of the government.

112 PROBLEMS IN POLITICAL ECONOMY 4 prereq 111. An analysis of current economic problems, including problems of unemployment, inflation, economic growth, and America's relationship with underdeveloped nations.

ECONOMICS SEQUENCE. Theories of multiple equation models. Theory, and game theory models. Studies in benefit-cost analysis. Output analysis, general equilibrium and programming, utility and general equilibrium theory at a level above intermediate, and use of planning-programming-budgeting systems, benefit-cost analysis, and foreign trade and investment.

Institutional background of real property; classifications of economics, including location theory.

Supply and demand; city growth, structure and planning; land use economics, including interregional trade and development.

Capitalism, fascism, socialism, and use of planning-programming-budgeting systems, benefit-cost analysis and its relation to the theory of welfare economics, case studies in benefit-cost analysis.

Determinants of economic growth in poor and rich countries.

Regional economics, including location theory.

International economics, including interregional trade.

Comparative economic systems, 4, Su 3, prereq an introductory economics sequence. Capitalism, fascism, socialism, communism; evaluation.

The Russian economy, 4, Su 3, prereq an introductory economics sequence.

Monopoly and competition 3 prereq an introductory economics sequence. Theories of imperfect markets and workable competition models.

Contemporary economic problems 3 prereq c/i.

Land economics 3 prereq an introductory economics sequence. Economic and physical characteristics of land and the institutional background of real property; classifications of properties and markets analysis; cyclical market fluctuation; impact of supply and demand; city growth, structure and planning; land use control, and real estate investment analysis.

Public expenditure policy 3 prereq 304 and 311. Economic analysis of public policies, the role and use of planning-programming-budgeting systems, benefit-cost analysis and its relation to the theory of welfare economics, case studies in benefit-cost analysis.

Monetary theory 4 prereq 301.

Advanced microeconomics 4 prereq 25 credits in economics including 311 and 312, and Math 106 or 152. Price, welfare, and general equilibrium theory at a level above intermediate analysis.

Advanced macroeconomics 4 prereq 25 credits in economics including 311 and 312, Production, income, and employment at a level above intermediate analysis.

Mathematical economics I 4 prereq 311 and Math 106 or 152. Constrained maximization, maximization over time.

Mathematical economics II 4 prereq 451. Input-output analysis, general equilibrium and programming, utility theory, and game theory models.

Econometrics I 4 prereq Math 106 or 152. General linear regression models; markets, trade and policy models.

Econometrics II 4 prereq 460. Econometric theory and multiple equation models.

Advanced problems V 1-2 R-6 prereq 12 credits in economics and c/i.

Seminar in economics V 1-3 R-12 prereq c/i.

Graduate research V R-6.

Elements of analytical economics: the American economy, characteristics, performance; macro-economics, monetary and banking, monetary and fiscal policy; public finance; stabilization; markets, pricing of inputs and outputs, government regulation; distributional theories; property; public economy; the world economy, and the economic development. (Open only to MBA and MRA students.)


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, complete specified courses, and have demonstrated competence in student teaching before they become eligible for recommendation to the University of Montana for state certification to teach. Patterns of courses to be completed are planned in terms of the particular field of 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 specializations such as school administrator, supervisor, counselor, curriculum coordinator, research 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.

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

General certification requirements for Montana's elementary, junior and senior high schools are set forth below. In addition to satisfying course, credit, and degree requirements, an applicant for certification in Montana must be (1) a citizen of the United States (provisional certification is available for non-citizens upon request of a board of trustees), (2) at least 18 years of age, and (3) able to present a satisfactory health certificate signed by a physician. Additional information may be secured from the Dean of the School of Education.

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 Education.

All who plan on teaching should file a Declaration of Intent with the School of Education office at the earliest opportunity and receive assistance in planning a program of study which will be most relevant to their teaching objectives. All students preparing to teach must apply for admission to teacher education at the time they enroll for Education 200, and obtain an adviser in the School of Education. To be admitted to teacher education, a student must have a grade-point average of 2.00 or better.

Admission to Student Teaching. Application for student teaching must be made on forms obtained from the Director of Student Teaching.

Elementary: to qualify for this assignment, the student must (1) have a cumulative gpa of 2.3 or better, (2) have no grade below C in Education courses, (3) have the consent of the Director of Student Teaching and be registered in or have completed one or more courses in methods of elementary teaching.

Secondary: to qualify for this assignment, the student must (1) have a cumulative gpa of 2.3 or better, (2) have no grade below C in Education courses, (3) have completed at least ½ of the work in the major teaching field (and minor, if any) with a minimum gpa of 2.3 in the major teaching field (and minor, if any), (4) have the consent of the Director of Student Teaching.
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN EDUCATION:

Preparation for Teaching in the Secondary Grades: Candidates must earn a minimum of 40 credits in Education, including Education 200, 202, 208, 209, 309, 310, 311, 312, 340, 404, 407. In addition, the student will complete work in the following areas: English, 21 credits including 8 credits in English composition; Social Studies, 18 credits; Science, 10 credits; Mathematics, 6 credits; Health, Physical Education and Recreation, 8 credits; Art, 6 credits; and Music, 6-8 credits.

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

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

CURRICULUM IN ELEMENTARY EDUCATION

Freshman and Sophomore Years

Courses in Composition, Communication or Writing (e.g., Eng. 100, SC 110, SC 234, For. 220, Jour 150) Cr.

Educ. 311, Teaching Elementary School Reading 3-5
Educ. 319, Teaching Elementary School Mathematics 3
Educ. 318, Teaching Elementary School Social Studies 3
Educ. 313, Teaching Elementary School Language Arts 4
A course in Advanced Composition or Communication (e.g., Eng. 360, Eng. 371, Eng. 450, SC 353, SC 385) 3

RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATES. The University of Montana certifies its graduates who meet state certification requirements to the State Department of Public Instruction. Certain requirements must be approved by the Dean of the School of Education. Students who expect to teach in the public schools should investigate specific requirements because they differ in various teaching areas.

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. Also, one course in MATHEMATICS.

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

1. Bachelor's degree from the University of Montana or other approved institution of higher education showing that the holder has completed a four-year course of elementary school education.

2. Specific requirements in general education that have particular reference to teaching areas in the elementary grades.

Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarter periods exceeding 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.

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

Sophomore year: Educ. 200, 2 credits.

Junior year: Educ. 205, 4 credits.

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

SEQUENCE OF CERTIFICATION COURSES IN ELEMENTARY EDUCATION. Since elementary level certification for teachers of schools of under 12 grades is based solely upon the Bachelor's Degree in Elementary Education, see the sequence of 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 maximum of four years of study beyond the bachelor's degree. Students intending to qualify for this certificate are required to file with the School of Education at least two quarter periods with and receive approval from the Dean of the School of Education.

PREPARATION FOR SCHOOL LIBRARIANS. The library serv -ices of the state of Montana are required for teachers to meet the requirements of the Northwest Association of Secondary Librarians. The minimum requirement for schools of under 100 enrollment includes courses 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.
305 SECONDARY SCHOOL TEACHING PROCEDURES 3 prereq 200 and 205.
306 TEACHING ELEMENTARY SCHOOL READING 3 prereq 202.
307 TEACHING ELEMENTARY SCHOOL MATHEMATICS 3 prereq 202 and an introductory course in modern mathematics or c/i.
308 TEACHING ELEMENTARY SCHOOL SOCIAL STUDIES 3 prereq 202.
311 TEACHING ELEMENTARY SCHOOL SCIENCE 3 prereq 202.
312 TEACHING ELEMENTARY SCHOOL LANGUAGE ARTS 3 prereq 202.
323-324-325 SCHOOL MUSIC. (See Music.)
329 TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS (See Health, Physical Education and Recreation).
375 METHODS IN TEACHING HEALTH. (See Health, Physical Education and Recreation.)
402 OBSERVATION AND PARTICIPATION: ELEMENTARY V R-6 prereq or coreq an elementary methods of teaching course and c/i.
403 OBSERVATION AND PARTICIPATION: SECONDARY V R-6 prereq or coreq 305 or c/i.
404 STUDENT TEACHING: ELEMENTARY V R-15 prereq 200, 202 and consent of Director of Student Teaching.
405 STUDENT TEACHING: SECONDARY V R-10 prereq 200, 205 and consent of Director of Student Teaching.
407 PROBLEMS IN TEACHING 3 prereq c/i. Current problems and issues in teaching.

FOR UNDERGRADUATES AND GRADUATES
304 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 3 prereq c/i. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare, and the development of principles underlying improved management of the natural resources. A survey of human and cultural resources. The methods of social 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.
306 METHODS OF TEACHING EARTH SCIENCE. (See Geology.)
307 METHODS OF TEACHING SECONDARY ART. (See Art.)
313-314 ELEMENTARY SCHOOL ART. (See Art).
316 SCHOOL PUBLICATIONS AND TEACHING METHODS. (See Journalism.)
322 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 biology.
326 TEACHING OF ENVIRONMENTAL EDUCATION (K-12) 3 prereq Educ 304 and c/i.
327 PROBLEMS IN ENVIRONMENTAL EDUCATION 3 prereq c/i. Designing, selecting, and evaluation of materials for the teaching of Environmental Education.
328 METHODS OF TEACHING PHYSICS. (See Physics.)
329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY. (See Chemistry.)
331 EARLY CHILDHOOD EDUCATION 3 prereq c/i. 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/i. Diagnosis and treatment of reading difficulties at elementary, secondary and college levels. Methods and materials for specialists, classroom teachers, and administrators who wish to initiate remedial programs.
341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 4 prereq c/i. Objectives of library service, library routines and procedures, library buildings and equipment, the library's place in governmental organization, library extension work.
342 INTEGRATING MULTI-MEDIA MATERIALS IN INSTRUCTION 3.
343 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 3.
344 CATALOGING AND CLASSIFICATION 4, Su 3 prereq c/i.
345 MATERIALS SELECTION AND BIBLIOGRAPHY 4, Su 3 prereq c/i.
346 LIBRARY REFERENCE MATERIALS 4, Su 3 prereq c/i.
347 AUDIOVISUAL COMMUNICATION 3. Utilization of sound and visual teaching aids; intensive laboratory work in basic instruction of materials and procedures and special emphasis on emotional problems.
360 EDUCATIONAL SOCIOLOGY 3. Education in modern social, economic, and political life; the school as a social institution; problems of American life which affect and are affected by the work of the public schools.
370 THE TEACHER AND SCHOOL ORGANIZATION 3. The teacher's relationship to the organization, management, and financing of American public education with special emphasis on emotional problems, community relations, and organizational structure of schools.
373 THE SCHOOL HEALTH PROGRAM. (See Health, Physical Education and Recreation.)
380 METHODS OF TEACHING TYPEWRITING. (See Business Administration.)
381 METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS. (See Business Administration.)
382 METHODS OF TEACHING ENGLISH (See English.)
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.)
395 METHODS OF TEACHING FOREIGN LANGUAGES IN ELEMENTARY SCHOOLS. (See Foreign Languages.)
406 INTERNSHIP IN SPECIAL EDUCATION V R-15 c/i.
411 SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 3 prereq teaching experience and c/i. Analysis of current methods in the teaching of language arts in the elementary school.
412 SUPERVISION AND TEACHING OF READING 3 prereq teaching experience and c/i. Characteristics of good reading programs and their development to the present day understanding of children and youth.
414 SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 3 prereq teaching experience and c/i. Curriculum trends, instructional materials, research, and supervisory techniques relevant to a modern elementary school curriculum program.
415 SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience and c/i. Curriculum trends, instructional materials, research, and supervisory techniques relevant to a modern elementary school arithmetic program.
416 SUPERVISION AND TEACHING OF SCIENCE IN THE ELEMENTARY SCHOOL 3 prereq 125-126-127 or c/i., teaching experience and c/i. Curriculum trends, instructional materials, and supervisory techniques in science teaching for elementary school teachers.
420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq 205, a science minor and c/i.
421 TEACHING HOME ECONOMICS. (See Home Economics.)
422 TEACHING SPEECH IN THE SECONDARY SCHOOL. (See Speech Communication.)
423 PRINCIPLES AND PRACTICES IN TEACHING OF SECONDARY MATHEMATICS 3 prereq c/i. Course designed to give a general survey of at least 2/3 of the major or minor teaching field in mathematics.
424 METHODS OF TEACHING COMMUNICATION SKILLS (See Speech Communication.)
425 BASIC TRAFFIC SAFETY EDUCATION 3 prereq c/i. Supervised experience in teaching driving and theoretical aspects of driver education. Safety education and Driver Training courses in high schools.
426 ADVANCED TRAFFIC SAFETY EDUCATION 3 prereq a basic course in driver training or experience in teaching driver training. For those who have had experience in this field. General safety education.
427 READING IN JUNIOR AND SENIOR HIGH SCHOOL 3 prereq 206 or c/i. A program of materials, reading, testing, and content fields, research, and developments.
428 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 206 or teaching experience.
471 THE SLOW AND RETARDED LEARNERS 3 prereq 12 credits in Education. Needs, traits, identification, curriculum, teaching methods, and research.
422 THE BRIGHT AND GIFTED PUPILS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching, and evaluation.

424 REMEDIAL READING LABORATORY 3 R-9 prereq or co­req 394 and c/i. Supervised practice in diagnosis and remedial in­struction.

425 INTRODUCTION TO MENTAL RETARDATION 3, prereq 202. Historical, psychological, social, and educational aspects of mental retardation.

426 CURRICULUM FOR THE MENTALLY RETARDED 3, prereq 431 or 455 and c/i. Planning, development, and use of curriculum materials designed for the mentally retarded.

427 PRECISION TEACHING AND BEHAVIOR MODIFICATION IN THE SPECIAL CLASSROOM 3 prereq 431 or 458. Learning theory approaches to the analysis and evaluation of academic and para­academic behavior in the classroom.

438 ADMINISTRATION OF THE INTERMEDIATE SCHOOL 3 prereq 205 or teaching experience. Objectives, organization, class scheduling, and co-curricular activities in middle schools or junior high schools.

440 LIBRARY PROGRAMS IN ELEMENTARY SCHOOLS 3 prereq a course in children's literature. Functions and use of classroom collections and central libraries for curriculum enrichment experiences, reading, guidance, and teaching library skills. Responsi­bilities of classroom teachers, elementary librarians, library super­visors, elementary principals and administrators.

441 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 3 prereq 12 credits in Library Service. Methods of evaluating and improving school library services to teachers and students.

442 LIBRARY WORK WITH CHILDREN 3 prereq c/i and a course in children's literature. Work with children in public libraries, including story telling and organization of the children's depart­ment in the public library.

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

444 LIBRARY SEMINAR V R-10 prereq 12 or more hours in Library Service and consent of the Director of Library Service. In­dependent study and research. Group analysis and discussion of individual projects.

445 LIBRARY PRACTICE 3 prereq c/i. The student performs library routines in a school, public or college library under the supervision of a trained professional librarian.

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

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

449 ADMINISTRATION OF AUDIOVISUAL COMMUNIC­ATIONS PROGRAMS 3 prereq basic courses in field or c/i. Manage­ment and control of a field program, and coordination of communica­tions media for elementary or secondary school programs.

450 SECONDARY SCHOOL GUIDANCE 4 prereq 205 and c/i. Orientation to the need, organization, and methodology of guidance services in the secondary schools.

451 GUIDANCE IN THE ELEMENTARY SCHOOL 4 prereq 202 and a practicum of the need, organization, and methodology of guidance services in the elementary schools.

452 EDUCATIONAL MEASUREMENT 4 prereq 205 or teaching experience. Basic principles of measurement of educational outcomes such as achieved and required, content, and test theory; application of statistical techniques to educational data; analysis of standardized tests; construction and use of teacher-made tests.

456-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 3. Enter either quarter. (461) to 1800; (462) 1800 to present.

464 PHILOSOPHY OF EDUCATION 3 prereq c/i. Leading philosophic points of view in Educational concepts of the individual, society, the educative process, and the role of education.

466 INDEPENDENT STUDY V R-10 prereq c/i. (Admission by application only.)

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

FOR GRADUATES

505 INTERNSHIP V R-15 prereq c/i. Supervised field experi­ences in administration, counseling, special education or curriculum. (Admission by application only.)

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

531 ELEMENTARY CURRICULUM 4 prereq 520 or c/i. Major trends in course content, grade placement, organization of materials, and evaluation of outcomes.

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

533 INTERMEDIATE SCHOOL CURRICULUM 4 prereq 530 or c/i. Sociological, psychological, and philosophical foundations of the junior high schools and middle schools. Curriculum trends in the separate subject areas, organization and administration for the im­plementation of innovations.

534 CURRICULUM ISSUES 3 prereq c/i. Current issues in cur­ricula at all levels of education pertaining to planning, developing, implementing, and evaluating.

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

540 ADVANCED INSTRUCTIONAL PSYCHOLOGY 3. General behavior and learning: motivation, interference reduction, reinforce­ment, teaching for permanence and transfer. Current research in field.

541 ADVANCED CHILD DEVELOPMENT 3 prereq c/i. Physical, intellectual, social, emotional growth from birth to age 12 with special reference to the writings of Freud, Gesell, and others.

542 INDIVIDUAL APPRAISAL IN COUNSELING AND GUID­ANCE 3 prereq 460 or 461, and 452. Collecting and interpreting data concerning the individual use of such data in counseling.

543 GROUP COUNSELING AND GUIDANCE PROCEDURES 5 R-10 prereq 450 or 451 and a course in abnormal psychology or per­sonality dynamics. Group processes, interaction and practical ex­perience.

544 OCCUPATIONAL INFORMATION 3 prereq 450 or c/i. Social and cultural background, diagnosis and guidance, community resources, classification, filing system, evaluation, selection, and use of occupa­tion information.

545 THEORIES OF COUNSELING 3 prereq 450 or 451 and a course in abnormal psychology or personality dynamics. The writings of leading educational thinkers, ancient and modern, including Plato, Aristotle, Quintillian, Bacon, Pestalozzi, Herbert, Spencer, and John Dewey.

546 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq c/i. The background of education in its broadest senses as found in the related fields: economics, political, social, and cultural institutions.

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

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

549 ADVANCED COUNSELING PRACTICUM V R-10, prereq an introductory counseling practicum and c/i.

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

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

556 OCCUPATIONAL INFORMATION 3 prereq 450 or c/i. Social and cultural background, diagnosis and guidance, community resources, classification, filing system, evaluation, selection, and use of occupa­tion information.

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

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

559 ADVANCED COUNSELING PRACTICUM V R-10, prereq an introductory counseling practicum and c/i.

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

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

566 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq c/i. The background of education in its broadest senses as found in the related fields: economics, political, social, and cultural institutions.

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

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

571 ADMINISTRATIVE BEHAVIOR 3, prereq teaching experience or c/i.

572 ELEMENTARY SCHOOL ADMINISTRATION 3 prereq teaching experience.

573 SECONDARY SCHOOL ADMINISTRATION 3 prereq teaching experience.

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

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

576 SCHOOL FINANCE 4 prereq teaching experience. Sources of school revenue, costs, values, legal limitations, legal problems affecting pupils, parents, teachers, administrators, and school board members in relation to the school.

579 PERSONNEL ADMINISTRATION 3 prereq 570 and c/i. Problems of certified and non-certified personnel (not students); selection, in-service training, assignment, supervision, and welfare.
**ADULT AND CONTINUING EDUCATION** 3 prereq 554 or c/l. A comparison of current theories of vocational development.

**THE AMERICAN COMMUNITY/JUNIOR COLLEGE** 3 prereq c/l.

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

**SEMINAR V R** prereq c/l. Group analysis of problems in specific areas of education.

**EDUCATIONAL STATISTICS** 4 prereq an introductory course in statistics and c/l.

**RESEARCH V R-15** prereq c/l.

**CURRENC课程 TRENDS IN HIGHER EDUCATION** 3 prereq c/l.

**THE AMERICAN COMMUNITY/JUNIOR COLLEGE** 3 prereq c/l.

**ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION** 3 prereq c/l.

**THESIS OR PROFESSIONAL WRITING** V R-30.

**EDUCATION—33**

**BIOLOGICAL SCIENCE**

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<th>Major Field</th>
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<tr>
<td>(87-93 credits)</td>
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<tr>
<td>Micro 200—General Microbiology</td>
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<tr>
<td>Bot-Zool 111—Introduction to Biology</td>
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<tr>
<td>Bot 114—General Botany</td>
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<td>Zool 112—General Zoology</td>
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<tr>
<td>Bot 193—Local Flora (or Zool 206)</td>
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<tr>
<td>Bot 205—Basic Concepts of Ecology (or Bot 305)</td>
<td>3-5</td>
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<tr>
<td>Bot 285—Plant Physiology (or Zool 205)</td>
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<td>Bot-Zool 485—Genetics</td>
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<tr>
<td>For-Educ 304—Conservation of Natural and Human Resources</td>
<td>3</td>
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<td>Educ 115—Methods of Teaching Biology</td>
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<tr>
<td>Bot-Zool 132—Evolution, Genetics, and Man</td>
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<tr>
<td>Chem 101-2-3-4—General Chemistry and Laboratory</td>
<td>8</td>
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<tr>
<td>*Chem 180 and 184—Survey of Organic Chemistry and Laboratory</td>
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<tr>
<td>Geol 101-2-3—Introduction to and Environmental Geology (or Phys 111-2-3)</td>
<td>12-15</td>
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<tr>
<td>Math 116—College Algebra</td>
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<tr>
<td>Electives—Upper Division Biology Courses</td>
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**BUSINESS ADMINISTRATION (SECRETARIAL)**

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<th>Major Field</th>
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<td>(54-60 credits)</td>
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<td>Bus Ad 181 or —Intermediate Typewriting</td>
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<tr>
<td>Bus Ad 182 or —Advanced Typewriting</td>
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<td>Bus Ad 220—Bookkeeping &amp; Basic Business</td>
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<tr>
<td>Bus Ad 301—Office Machines Practice</td>
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<td>Bus Ad 387—Legal Environment of Business</td>
<td>3</td>
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<td>Bus Ad 390—Electronic Information Processing</td>
<td>3</td>
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<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
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<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Basic Business</td>
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<td>Bus Ad 383—Office Management</td>
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<tr>
<td>Bus Ad-Educ 384—Methods of Teaching Shorthand &amp; Transcription</td>
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<td>Bus Ad 385—Philosophy of Vocational Business Education</td>
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<tr>
<td>Econ 211—Introduction to Economic Theory</td>
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**BUSINESS ADMINISTRATION (NON-SECRETARIAL)**

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<td>Bus Ad 220—Bookkeeping &amp; Basic Business</td>
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<td>Bus Ad 301—Office Machines Practice</td>
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<td>Bus Ad 387—Legal Environment of Business</td>
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<td>Bus Ad 390—Electronic Information Processing</td>
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<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
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<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Basic Business</td>
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<td>Bus Ad 383—Office Management</td>
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<td>Bus Ad 385—Philosophy of Vocational Business Education</td>
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<tr>
<td>Bus Ad 401—Income Tax</td>
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<td>Econ 212—191—Introduction to Economic Theory I, II, III</td>
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<td>Econ 301—Money and Banking</td>
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**CHEMISTRY**

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<td>(46 credits)</td>
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<tr>
<td>Chem 121-2-3-4-5-6—College Chemistry and Laboratory</td>
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<tr>
<td>Chem 240—6—Quantitative Analysis and Laboratory</td>
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<td>Chem 267-5 and 267-8—Organic Chemistry and Laboratory</td>
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<tr>
<td>Chem-Educ 329—Methods of Teaching High School Chemistry</td>
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<tr>
<td>*Chem 325—Survey of Physical Chemistry</td>
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<td>Chem 452—Physical Inorganic Chemistry</td>
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<td>Chem 451—Elementary Biochemistry</td>
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<td>Electives—Upper Division Chemistry Courses</td>
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**EDUCATION**

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<tr>
<td>Geol 101-2-3—Introduction to and Environmental Geology (or Phys 111-2-3)</td>
<td>12-15</td>
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<td>Math 116—College Algebra</td>
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<td>Electives—Upper Division Biology Courses</td>
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**MINORS may substitute Bot 205 or For-Educ 304 or Bot-Zool 250.**

**Students presenting a minor field in Chemistry should substitute Chem 121-2-3-4-5-6.**
**COMMUNICATION SKILLS**

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<tr>
<td>SpCo 110—Introduction to Systems of Communication</td>
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<td>SpCo 112—Argumentation</td>
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<tr>
<td>SpCo 113—Oral Expression</td>
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<tr>
<td>SpCo 234—Introduction to the Process of Communication</td>
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<tr>
<td>SpCo 381—Oral Interpretation</td>
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<td>SpCo 382—Discussion and Small Groups</td>
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<tr>
<td>SpCo 383—General Semantics</td>
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<tr>
<td>SpCo 385—Message Composition</td>
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<td>SpCo 386—Speech Concerns</td>
<td>3</td>
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<td>SpCo-Educ 424—Methods of Teaching Communication</td>
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<tr>
<td>SpCo 443—Advanced Public Speaking</td>
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<tr>
<td>SpCo 444—Rhetorical Theory</td>
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<tr>
<td>Eng 100—Composition</td>
<td>3</td>
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<tr>
<td>Eng 205—Introduction to Creative Writing</td>
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<tr>
<td>Eng 240—Structure of Modern English</td>
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<td>Eng 450—Advanced Composition</td>
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<tr>
<td>Jour 260—Reporting</td>
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<tr>
<td>Jour 350—Magazine Article Writing</td>
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<tr>
<td>Jour Educ 350—School Publications and Teaching Methods</td>
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*Minors may substitute SpCo 112 for SpCo 110.

**COMPUTER SCIENCE**

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<td>CS 101—Introduction to Computing</td>
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<tr>
<td>CS 260—Fortran Programming</td>
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<td>CS 261—Pascal—Cobol</td>
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<tr>
<td>CS 271—2-3—Computing and Mathematics</td>
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<tr>
<td>CS 301—3-3—Intermediate Programming</td>
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<tr>
<td>CS 312—Systems Analysis</td>
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<tr>
<td>CS 320—Switching Theory</td>
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<tr>
<td>CS 371—Application of Digital Computers</td>
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<tr>
<td>CS 401—2-3—Advanced Programming</td>
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<tr>
<td>CS 442—Computer Applications in Education</td>
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**Prereq** = Math 601 (9 cr.)

[Prereq] = Math 116 (10 cr.)

**FRENCH**

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<td>Fr 201—2-3—Intermediate French</td>
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<td>Fr 301—Phonetics</td>
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<tr>
<td>Fr 302—Oral and Written Expression</td>
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<tr>
<td>Fr 303—French Civilization and Culture</td>
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<tr>
<td>Fr 401—Applied Linguistics</td>
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<tr>
<td>Fr 452—Advanced Composition</td>
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<tr>
<td>Fr 700—Methods of Teaching Foreign Languages</td>
<td>3</td>
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<tr>
<td>Fr 705—Any Upper Division French Courses</td>
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**Foreign Language Department recommendation re student's proficiency is prerequisite to student teaching.**

**GEOGRAPHY**

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<td>Geog 101—Physical Geography</td>
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<td>Geog 138—Introductory Meteorology (or Geog 260)</td>
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<td>Chem 101 and 101—General Chemistry</td>
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<tr>
<td>Geol 101—2—Intro to Geology</td>
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<tr>
<td>Geol 120—Field Methods (or Geol 302)</td>
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<tr>
<td>Geol 200—General Paleontology</td>
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<tr>
<td>Geol 205—Principles of Stratigraphy</td>
<td>4</td>
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<tr>
<td>Geol 210—Introduction to Rocks and Minerals</td>
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<tr>
<td>Geol Edu 260—Methods of Teaching Earth Science</td>
<td>4</td>
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<tr>
<td>Geol 301—Geomorphology (or Geog 370)</td>
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<tr>
<td>Geol 304—Conservation of Natural and Human Resources in Montana</td>
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<tr>
<td>Astr 131—2—Elementary Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>Elective—Any Course Listed Below</td>
<td>9-11</td>
</tr>
</tbody>
</table>

**Bot-Zool 250—Basic Concepts of Ecology (3 credits)**

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

**ECONOMICS**

<table>
<thead>
<tr>
<th>Major Field (63 credits)</th>
<th>Minor Field (39 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 221—2-3—Introduction to Economic Theory I, II, III</td>
<td>9</td>
</tr>
<tr>
<td>Econ 301—Money and Banking</td>
<td>4</td>
</tr>
<tr>
<td>Econ 364—Public Finance</td>
<td>4</td>
</tr>
<tr>
<td>Econ 311—2-3—Intermediate Economic Analysis I, II, III</td>
<td>12</td>
</tr>
<tr>
<td>Econ 321—Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 331—International Economics</td>
<td>3</td>
</tr>
<tr>
<td>Educ 428—Methods of Teaching Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>Educ 429—Methods of Teaching Secondary Science</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**ENGLISH**

<table>
<thead>
<tr>
<th>Major Field (60 credits)</th>
<th>Minor Field (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 101—2-3—World Literature</td>
<td>9</td>
</tr>
<tr>
<td>Eng 360—Applied Literary Criticism</td>
<td>3</td>
</tr>
<tr>
<td>Eng 211—2-3—Introduction to Major British Writers</td>
<td>3 or 6</td>
</tr>
<tr>
<td>Eng 363—Shakespeare (or 343)</td>
<td>3</td>
</tr>
<tr>
<td>Eng 212—2-3—Introduction to Major American Writers</td>
<td>3 or 6</td>
</tr>
<tr>
<td>Eng 371—The Structure of Modern English</td>
<td>3</td>
</tr>
<tr>
<td>Eng 450—Problems in Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 452—Literature for the High School Teacher</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>

**Among the elective courses there must be at least one upper division course in American literature and one upper division course in British literature. English 360 and other courses in General Literature may also be taken. Additional electives from the related fields of Speech Communication, Drama, and Journalism are strongly recommended. English 100 may not be included in the major or the minor.**

**DRAMA**

<table>
<thead>
<tr>
<th>Major Field (60 credits)</th>
<th>Minor Field (36 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr 101—Introduction to the Theater</td>
<td>3</td>
</tr>
<tr>
<td>Dr 111—2-3—Elementary Acting</td>
<td>6</td>
</tr>
<tr>
<td>Dr 112—Stagecraft</td>
<td>9</td>
</tr>
<tr>
<td>Dr 200—Beginning Theater Workshop</td>
<td>12</td>
</tr>
<tr>
<td>Dr 201—2-3—Dramatic Literature</td>
<td>3</td>
</tr>
<tr>
<td>Dr 240—Stage Make-Up</td>
<td>6</td>
</tr>
<tr>
<td>Dr 251—Stage Speech</td>
<td>3</td>
</tr>
<tr>
<td>Dr 303—History of the Theater</td>
<td>3</td>
</tr>
<tr>
<td>Dr 311—Directing</td>
<td>3</td>
</tr>
<tr>
<td>Dr 499—Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives—Any Course in Drama**

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

**Any two quarters.**

**EARTH SCIENCE**

<table>
<thead>
<tr>
<th>Major Field (62 credits)</th>
<th>Minor Field (37 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 101—Physical Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geog 300—Introductory Meteorology (or Geog 260)</td>
<td>5</td>
</tr>
<tr>
<td>Chem 101 and 101—General Chemistry</td>
<td>3-4</td>
</tr>
<tr>
<td>Geol 101—2—Intro to Geology</td>
<td>2-3</td>
</tr>
<tr>
<td>Geol 120—Field Methods (or Geol 302)</td>
<td>3</td>
</tr>
<tr>
<td>Geol 200—General Paleontology</td>
<td>4</td>
</tr>
<tr>
<td>Geol 205—Principles of Stratigraphy</td>
<td>4</td>
</tr>
<tr>
<td>Geol 210—Introduction to Rocks and Minerals</td>
<td>4</td>
</tr>
<tr>
<td>Geol Edu 260—Methods of Teaching Earth Science</td>
<td>4</td>
</tr>
<tr>
<td>Geol 301—Geomorphology (or Geog 370)</td>
<td>3</td>
</tr>
<tr>
<td>Geol 304—Conservation of Natural and Human Resources in Montana</td>
<td>3</td>
</tr>
<tr>
<td>Astr 131—2—Elementary Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>Elective—Any Course Listed Below</td>
<td>9-11</td>
</tr>
</tbody>
</table>

**Bot-Zool 250—Basic Concepts of Ecology (3 credits)**

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

**GENERAL SCIENCE**

(Major Only)

Does not qualify for teaching Chemistry or Physics

<table>
<thead>
<tr>
<th>Major Field (76 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 101—Elementary Microbiology</td>
</tr>
<tr>
<td>Bot-Zool 111—Introduction to Biology</td>
</tr>
<tr>
<td>Bot 114—General Botany</td>
</tr>
<tr>
<td>Bot 265—Local Flora</td>
</tr>
<tr>
<td>Chem 101-2 and 104—General Chemistry and Lab</td>
</tr>
<tr>
<td>Chem 160 and 164—Survey of Organic Chemistry</td>
</tr>
<tr>
<td>Edu 304—Conservation of Natural and Human Resources</td>
</tr>
<tr>
<td>Geol 101—Introduction to Geology</td>
</tr>
<tr>
<td>Adv Phys-Mech (or Geol 411-3)</td>
</tr>
<tr>
<td>Astron 131—Elementary Astronomy</td>
</tr>
<tr>
<td>Zool 112—General Zoology</td>
</tr>
<tr>
<td>Zool 206—Field Zoology</td>
</tr>
<tr>
<td>Edu 305—Methods of Teaching Secondary Science</td>
</tr>
</tbody>
</table>

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

*Prereq = Math 116-7 (10 cr.)*
### GEOGRAPHY

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>3</td>
</tr>
</tbody>
</table>

- Geog 101 - Physical Elements of Geography 8
- Geog 102 - Introductory Human Geography 8
- Geog 201 - Map Interpretation 3
- Geog 202 - Economic Geography 3
- Geog 300 - Geography of North America (5 credits)
- Geog 311 - Cultural Geography 3
- Geog 312 - Urban Geography 3
- Geog 370 - Landform Analysis 3
- Geog 378 - Population and Resource Geography 3

- Electives - Methods of Teaching Secondary Science 3

#### HISTORICAL-POLITICAL SCIENCE

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

- Hist 104-5-6 - European Civilization 12
- Hist 105-2 - United States History 6
- Pol Sci 201-2 - American Government 10
- Pol Sci 201 - Introductory to International Relations 5

- Edc 240 - Methods of Teaching Social Studies in Secondary Schools 3

#### FOREIGN LANGUAGES

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

- Ger 201-2-3 - Intermediate German 6
  - Electives - Courses in History 15

- Must include at least 15 credits of upper division courses.

### HEALTH, PHYSICAL EDUCATION

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>61-62</td>
<td>40-41</td>
</tr>
</tbody>
</table>

- HPER 105 - Concepts in Physical Education 1
- HPER 115-119 - Professional Activities 4
- HPER 120 - First Aid (or 399) 2 or 3
- HPER 200 - History and Principles of Physical Education 3
- HPER 120 - 130 or 215-220 - Professional Activities 2
- HPER 240 - Care and Prevention of Athletic Injuries 3
- HPER 290 - Human Anatomy 3
- HPER 301 - Methods of Teaching Physical Education Secondary School 3
- HPER 305 - Problems in Physical Education 1
- HPER 306 - Teaching Physical Education in Elementary Schools 3
- HPER 308 - The High School Intramural Program 2
- HPER 365 - Organization and Administration of Physical Education 3
- HPER 373 - The School Health Program 3
- HPER 375 - Methods in Teaching Health 3
- HPER 381 - Applied Anatomy and Kinesiology 5
- HPER 385 - Preventive and Corrective Physical Education 3
- HPER 405 - Senior Seminar 1
- HPER 465 - Measurement and Evaluation in Physical Education 3
- HPER 478 - Physiology of Exercise 3

For Women:
- HPER 228 - Officiating Basketball 2
- HPER 229 - Introductory Teaching P.E. Secondary Level (or 302) 2
- HPER 234 - Dance Methods 5

For Men:
- HPER 324 - Dance Methods 3
- Electives - 2 Coaching Courses 6

*Qualifies for K-12 certification endorsement.

### ECONOMICS

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>48</td>
</tr>
</tbody>
</table>

- Electives - Courses in History 15

### JOURNALISM

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>30</td>
</tr>
</tbody>
</table>

- Jour 100 - Social Role of Mass Media 3
- Jour 104 - Current Affairs 3
- Jour 227 - Elementary Photography 3
- Jour 270 - Reporting 3
- Jour 291 - History and Principles of Journalism 3

### HOME ECONOMICS

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>48</td>
</tr>
</tbody>
</table>

- H Ec 102 - Personal and Family Living 3
- H Ec 106 - Home Management in Theory and Practice 3
- H Ec 156 - 201 - 2 - American Civilization 3
- H Ec 157 - Introductory Clothing Problems 3
- H Ec 158 - Clothing Problems Laboratory (or 258) 2
- H Ec 210 - Household Equipment 3
- H Ec 241 - Principles of Food Preparation 3
- H Ec 242 - Food Preparation Laboratory 3

### ITALIAN

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>46</td>
</tr>
</tbody>
</table>

- Ital 101-2-3 - Elementary Italian 15
- Ital 201-2-3 - Intermediate Italian 12
- Ital 301-2 - Oral and Written Expression 6
- Ital 303 - Italian Civilization and Culture 3
- Ital 311-3-3 - Survey of Italian Literature 6
- Ital 401 - Applied Linguistics 3
- Ital 402 - Advanced Composition 3

### ZOOLOGY

<table>
<thead>
<tr>
<th>Major Field Credit</th>
<th>Minor Field Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>33</td>
</tr>
</tbody>
</table>

- Zool 102 - Introductory Zoology 6
- Zool 201-2-3 - Intermediate Zoology 12
- Zool 301 - Comparative Zoology 6
- Zool 401 - Applied Zoology 5
- Zool 402 - Advanced Zoology 3

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

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lat 101-2-3—Elementary Latin</strong></td>
<td><strong>Lat 101-2-3—Latin Readings</strong></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td><strong>Major Latin Writers</strong></td>
<td><strong>Minor Latin Writers</strong></td>
</tr>
<tr>
<td>22</td>
<td>10</td>
</tr>
</tbody>
</table>

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

**Credits will be allowed for exempted courses.*

**LIBRARY SERVICE**

*Minor Only*

<table>
<thead>
<tr>
<th>Educ 343—Organization and Administration of the School Library</th>
<th>Educ 344—Cataloging and Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 345—Materials Selection and Bibliography</td>
<td></td>
</tr>
<tr>
<td>Educ 346—Library Reference Materials</td>
<td></td>
</tr>
<tr>
<td>Educ 347—Audiovisual Communication</td>
<td></td>
</tr>
<tr>
<td>Educ 448—Library Practice Mathematics</td>
<td></td>
</tr>
</tbody>
</table>

**Prerequisites—From Courses Listed Below**

- Educ 441—Eval. Sch. Lib. Serv.—2 cr.
- Educ 445—Libr. Work with Children—3 cr.
- Educ 444—Library Seminar—5-10 cr.
- Educ 446—Libr. Work with Adults—3 cr.
- Educ 448—Admin. AV Commun. Prog.—3 cr.
- Eng 482—Lit. for High Sch. Teach.—3 cr.

**MATHMATICS**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Math 130 or —Theory of Arithmetic</strong></td>
<td><strong>Math 152—Calculus I and II</strong></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Math 153—Linear Algebra</strong></td>
<td><strong>Math 290 or —Introductory Geometry</strong></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Math 251—Calculus III and IV</strong></td>
<td><strong>Math 324—Introduction to Algebraic Structures</strong></td>
</tr>
<tr>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td><strong>Math 301-2-3—Mathematics for Teachers</strong></td>
<td><strong>Math 324—Introduction to Algebraic Structures</strong></td>
</tr>
<tr>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td><strong>Math 344—Principles in Teaching of Secondary Mathematics</strong></td>
<td><strong>Math 348—Introduction to Algebraic Structures</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Electives—Selected from Math 281, 282, 287</strong></td>
<td><strong>Electives—Selected from Math 125, 281, 282, 287</strong></td>
</tr>
<tr>
<td>3-5</td>
<td>3-5</td>
</tr>
<tr>
<td><strong>Prerequisites for Mathematics</strong></td>
<td><strong>Prerequisites for Mathematics</strong></td>
</tr>
<tr>
<td>Math courses numbered over 222</td>
<td>Math courses numbered over 222</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

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

**MUSIC**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mus 100—Performance Minor</strong></td>
<td><strong>Mus 111-2-3—Theory</strong></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td><strong>Mus 133—Introduction to Music Literature</strong></td>
<td><strong>Mus 138—Aural Perception I</strong></td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>Mus 201, 400—Performance Major</strong></td>
<td><strong>Mus 211—2-3—Theory II</strong></td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td><strong>Mus 227—Aural Perception II</strong></td>
<td><strong>Mus 236—Music</strong></td>
</tr>
<tr>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>Mus 331—Conducting Methods and Materials</strong></td>
<td><strong>Mus 332—School Music</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Electives—From Courses Listed Below</strong></td>
<td><strong>Mus 320—Piano Meth. &amp; Mater.—3 cr.</strong></td>
</tr>
<tr>
<td>14</td>
<td>(Major only)</td>
</tr>
<tr>
<td>Mus 114-8-6—Piano in Class—3 cr.</td>
<td>Mus 320—Piano Meth. &amp; Mater.—3 cr. (Major only)</td>
</tr>
<tr>
<td>Mus 117-8-9—Voice in Class—3 cr.</td>
<td>Mus-Ed 323-4-5—School Music—2-6 cr.</td>
</tr>
<tr>
<td>Mus 125-6-7—String Inst. Class—3 cr.</td>
<td><strong>Mus 126-9-30—Woodwind, Brass, Percussion and Band—2-4 cr. (Minor only)</strong></td>
</tr>
<tr>
<td>Mus 128-9-30—Woodwind, Brass, Percussion and Band—2-4 cr.</td>
<td><strong>Mus 320—Piano Meth. &amp; Mater.—3 cr.</strong></td>
</tr>
<tr>
<td><strong>Mus 320—Piano Meth. &amp; Mater.—3 cr.</strong></td>
<td><strong>Mus 320—Piano Meth. &amp; Mater.—3 cr.</strong></td>
</tr>
</tbody>
</table>

*All students preparing Major and Minor teaching fields in Music must demonstrate piano ability equivalent to 3 quarters of piano study (private or in class). Music courses may be substituted with the approval of the Chairman of the Music Department.*

**The required credits in Music 100 should all be in one instrumental area or all in voice.*

*Qualifies for K-12 certification endorsement.*

**PHYSICS**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phys 221—2-3—General Physics</strong></td>
<td><strong>Phys 301—Vector Analysis</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Phys 322—Electricity</strong></td>
<td><strong>Phys 322—3—Light</strong></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Phys Educ 336—Methods of Teaching Physics</strong></td>
<td><strong>Phys 341—Fundamentals of Modern Physics</strong></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Phys 371—Mechanics</strong></td>
<td><strong>Phys 441—Advanced Laboratory</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Electives—Any Courses in Physics and Astronomy</strong></td>
<td><strong>Electives—Any Courses in Physics and Astronomy</strong></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

*Qualifies approximately 45 credits in Mathematics courses

**PSYCHOLOGY**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psych 110—Introduction to Psychology</strong></td>
<td><strong>Psych 111—Introduction to Experimental Psychology</strong></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Psych 210—Learning</strong></td>
<td><strong>Psych 230—Child and Adolescent Psychology</strong></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Psych 340—Social Psychology</strong></td>
<td><strong>Psych 350—Sensory Processes and Perception</strong></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Psych 361—Abnormal Psychology</strong></td>
<td><strong>Electives—Any Courses in Psychology</strong></td>
</tr>
<tr>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

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

**RUSSIAN**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Russ 101—2-3—Elementary Russian</strong></td>
<td><strong>Russ 102—Intermediate Russian</strong></td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td><strong>Russ 201—Applied Linguistics</strong></td>
<td><strong>Russ 301—Survey of Russian Literature</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**SOCIAL SCIENCES—BROAD FIELDS**

<table>
<thead>
<tr>
<th>Major Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not qualify for teaching Economics, Geography, or Sociology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Econ 211-212-213—Introduction to Economic Theory I, II, III</strong></td>
<td><strong>Geog 301—Political Geography</strong></td>
</tr>
<tr>
<td>75 credits</td>
<td>3</td>
</tr>
<tr>
<td><strong>Hist 104-105—European Civilization</strong></td>
<td><strong>Hist 106-107—American Civilization</strong></td>
</tr>
<tr>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td><strong>Pol Sci 201-2—American Government</strong></td>
<td><strong>Pol Sci 202—Organizations</strong></td>
</tr>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td><strong>Soc 101—Introduction to Sociology</strong></td>
<td><strong>Soc 201—Sociology</strong></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**SOCIOLOGY**

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
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<tr>
<td><strong>Anth 152—Man and His Culture</strong></td>
<td><strong>Soc 101—Introductory Sociology</strong></td>
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<td><strong>Soc 200—American Society</strong></td>
<td><strong>Soc 201—Social Science Methods</strong></td>
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<td><strong>Soc 202—Social Psychology</strong></td>
<td><strong>Soc 203—Socialization</strong></td>
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<td><strong>Soc 204—Survey of Social Change</strong></td>
<td><strong>Soc 308—Introduction to Complex Organizations</strong></td>
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<td><strong>Soc 216—Methods of Teaching Social Studies in Secondary Schools</strong></td>
<td><strong>Soc 320—Development of Social Thought</strong></td>
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*Electives—Upper Division Courses in Anthropology, Economics, Geography, History, Political Science, Sociology |

**SPANISH**

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<tr>
<th>Major Field</th>
<th>Minor Field</th>
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<tr>
<td><strong>Span 101—2-3—Elementary Spanish</strong></td>
<td><strong>Span 201—2-3—Intermediate Spanish</strong></td>
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<td>15</td>
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<td><strong>Span 301—Oral and Written Expression</strong></td>
<td><strong>Span 305—Contemporary Hispanic Culture and Civilization</strong></td>
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<tr>
<td><strong>Span 311—Survey of Spanish Literature</strong></td>
<td><strong>Span 311—Survey of Spanish Literature</strong> (or 351-2-3)</td>
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<td>6</td>
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<tr>
<td><strong>Span 401—Applied Linguistics</strong></td>
<td><strong>Span 402—Advanced Composition</strong></td>
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<tr>
<td><strong>Span 405—Methods of Teaching Foreign Languages</strong></td>
<td><strong>Electives—Any Upper Division Spanish Courses</strong></td>
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*Foreign Language Department recommendation re student's proficiency is prerequisite to student teaching.*

*Must be taken prior to the professional quarter.*

*Minor may substitute Span 402.*
ENGLISH—37

SPEECH

Major Field (60 credits) Minor Field (34 credits)

SpCo 110—Introduction to Systems of Communication 5 -
SpCo 111—Introduction to Public Speaking 3 -
SpCo 112—Argumentation 3 -
SpCo 118—English Studies. Schedules A, B, and C presume such a core curriculum as needed 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 does not offer a degree in linguistics, a concentration in linguistics subjects would prepare a student to enter graduate work in linguistics and would provide him with a background to work with government and foundation supported language programs in the U.S. and abroad. Refer to the Departments of Anthropology, English, Foreign Languages, Speech Communication, and Speech Pathology and Audiology for course offerings in linguistics.

Comparative literature is the study of literature beyond the confines of one national literature. It is especially concerned with the similarities and differences which can be observed in the literary productions in different languages. It makes comparisons from various points of view, studying, for example, movements, periods, genres, and themes. Certain types of comparative literature studies can be highly useful to students in such fields as psychology, philosophy, anthropology, and history, as well as to majors in English and foreign languages. Some of the courses in comparative literature require a reading knowledge of one foreign language. Students interested in working toward a degree in comparative literature (not offered by the University) should bear in mind that a reading knowledge of at least two foreign languages is necessary for advanced work. Refer to the listings under the Departments of Foreign Languages and English for course descriptions.

GRADUATE WORK. See Graduate School Bulletin.

COMPOSITION

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

English 100 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 take English 100 Remedial Expository Writing, and receive a "pass" grade before they may enroll in English 100.

001 REMEDIAL EXPOSITORY WRITING 3. (Credit not allowed toward any degree.) Emphasis on problems of basic mechanics (usage, punctuation, spelling, etc.), sentence structure, and simple organization. A special fee of $8.00 will be charged for this course.

SCHEDULE A: LITERATURE

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

English 481 (Chaucer); 3 credits from 491–492–493. The remaining credits required for completion of the minimum 50 may be selected from courses in General Literature, English, and American Literature numbered above 300. The maximum of courses up to 66 credits may include 401–402–403; 440, and 441.

SCHEDULE B: CREATIVE WRITING

Students whose major interest is the writing of fiction and poetry 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: 9 credits from 401, 402, 403, 413, 414, 415; 3 credits from 440, 441, 442; 3 credits from 491, 492, 493. The additional credits allowed up to a maximum of 66 may be taken from courses in General literature; and English and American literature and writing numbered above 300.

SCHEDULE C: TEACHING

(For teacher certification requirements, see Education)

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

Option 1

English 371, 372, 482; Speech 111.

Option 2

(Extended major for single endorsement)

English 371, 372, 482; Speech 111. Sixty credits in English are required. The program is designed for Montana state teaching certification in English only. A teaching minor is not required.

Linguistics is the science which investigates the structure of the languages and dialects which are in use, or have been in use, throughout the world. Its goal is to arrive at a body of knowledge about specific languages and about the nature of language, and ultimately to create theories of language. Linguistics has implications for many other disciplines and has various applications, particularly in teaching English and foreign languages. Although at present the University does not offer a degree in linguistics, a concentration in linguistics subjects would prepare a student to enter graduate work in linguistics and would provide him with a background to work with government and foundation supported language programs in the U.S. and abroad. Refer to the Departments of Anthropology, English, Foreign Languages, Speech Communication, and Speech Pathology and Audiology for course offerings in linguistics.

Comparative literature is the study of literature beyond the confines of one national literature. It is especially concerned with the similarities and differences which can be observed in the literary productions in different languages. It makes comparisons from various points of view, studying, for example, movements, periods, genres, and themes. Certain types of comparative literature studies can be highly useful to students in such fields as psychology, philosophy, anthropology, and history, as well as to majors in English and foreign languages. Some of the courses in comparative literature require a reading knowledge of one foreign language. Students interested in working toward a degree in comparative literature (not offered by the University) should bear in mind that a reading knowledge of at least two foreign languages is necessary for advanced work. Refer to the listings under the Departments of Foreign Languages and English for course descriptions.

GRADUATE WORK. See Graduate School Bulletin.

CORE CURRICULUM

I. English majors must satisfy the departmental composition requirement. All prospective English majors are expected to take English 101, 102, 163—World Literature.

II. All students are expected to take, in addition English 200 in the sophomore year: two quarters in one course and one in the following: English 218–219, 281–283, 345; 3 credits from English 360 or 371 or 372.

III. The departmental foreign language requirement must be satisfied. For a degree in English a student is also expected to follow a balanced program of courses in the Fine Arts, in the Humanities (other than English), in the Social Sciences, and in the Natural Sciences.
38—ENGLISH

100 COMPOSITION 3 R-6. Prerequisite acceptable scores on the English section of the ACT examination or a “pass” grade in English 991. Designed to help students learn to write accurately and logically about subjects they already understand. May be repeated for credit with the consent of the Director of Composition.

450 PROBLEMS IN COMPOSITION 3. Prerequisite consent of instructor. Designed for seniors who plan on or are engaged in advanced work in a professional area. Analysis and solution of individual problems in writing—especially problems of structure, development, and style.

CREATIVE WRITING FOR UNDERGRADUATES

202 INTRODUCTION TO CREATIVE WRITING 3 prereq c/i. Practice in creative writing at the introductory level.

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

306 THE WRITING OF DRAMA. (See Drama.)

313-314-315 CREATIVE WRITING: POETRY 3 prereq 202 or c/i. Enter any quarter.

FOR GRADUATES AND UNDERGRADUATES

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

413-414-415 ADVANCED CREATIVE WRITING: POETRY 3 prereq 313-314-315 and c/i. Enter any quarter.

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

441 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.)

485 INDEPENDENT STUDIES 3 R-6. Special projects in particular areas of literature and creative writing.

FOR GRADUATES

510 FICTION WORKSHOP V R-15 c/i

511 POETRY WORKSHOP V R-15 c/i

512 DRAMA WORKSHOP. (See Drama 511.)

599 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. Phonological and grammatical structure from a modern linguistic point of view.

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

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


496 THE TEACHING OF ENGLISH AS A FOREIGN LANGUAGE 3 prereq English 360 or 371 or c/i. The application of principles of modern linguistics to the problems of teaching English as a foreign language. Will include a contrastive study of English and at least one other language.

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

TEACHER TRAINING FOR UNDERGRADUATES

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

FOR GRADUATES AND UNDERGRADUATES

382 METHODS OF TEACHING ENGLISH 3. Juniors are expected to take this course 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 schedules A and B. Credit is not allowed for this course and the identical course Edu 382.

FOR GRADUATES

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

LITERATURE FOR UNDERGRADUATES

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


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


FOR UNDERGRADUATES AND GRADUATES


334 THE SHORT STORY 3.

341 TUDOR AND JACOBEAN DRAMA 3 prereq 9 credits of Literature. Representative plays from Everyday 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. (345) Extensive reading of Shakespeare’s plays.

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

375 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 "new" poetry of Spenser, Sidney, Marlowe, and the nondramatic poetry of Shakespeare.

388 BRITISH LITERATURE: SEVENTEENTH CENTURY. POETRY 3 prereq 12 credits of Literature. The metaphysical poets, physical poetry beginning with Donne, and classical poetry beginning with Jonson, and their interrelationship as seen in poets like Carew and Darrell.

398 BRITISH LITERATURE: RESTORATION 3 prereq 9 credits of literature. The major writers from 1660 to 1700 with emphasis upon Dryden.

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

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

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

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

395-396 BRITISH LITERATURE: TWENTIETH CENTURY 3 prereq 12 credits of literature. Enter either quarter. Major figures in prose and verse.

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

400 ADVANCED LITERARY STUDIES 3 R-9 prereq 12 credits in Literature and c/i. Varies by quarter. (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.

431 PROBLEMS IN AMERICAN LITERATURE 3 R-8 prereq 12 credits in Literature. Special genres, figures, and intellectual currents studied in depth.
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 thought 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 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 undergraduate majors in Classics, French, German, Italian, Latin, Russian and Spanish. The Master of Arts degree is offered in French, German and Spanish.

HIGH SCHOOL PREPARATION. A student who has received credit for a modern foreign language in high school (not in a college or university) and who wishes to continue that foreign language at this university should enroll as follows:

A) Active skills: four years of a language in high school, courses numbered 300 and above; three years in high school, 202; two years in high school, 201; one year in high school, 102; or if some time has intervened, 101.

B) Reading skill course: three years in high school, 211; two years in high school, 102; one year in high school, 102.

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 for language credit. The minimum number of credits is limited by the number of volunteer faculty advisors available to guide undergraduate students.

Each student's program will be individually designed in consultation with his graduate committee. His research leading to a thesis will usually be in the area of his B.S. degree. Course work will be chosen to acquaint the student with involvement of areas other than the natural sciences in environmental issues.

Nearly 100 courses are offered by several departments which complement the Environmental Studies program, many of which are recommended to EVST graduates, depending upon their background and interests.

FOR GRADUATES

ENVIRONMENTAL STUDIES is a new graduate* program designed to provide students with a broad background of course work and experience required to deal effectively with environmental issues. By combining lectures, seminars, discussions, and small team, problem-oriented projects with traditional courses, we hope to expose students to three basic phases of education—familiarity with the subject matter, skills in problem analysis and solution, and direct involvement or confrontation with complex issues.

The current offerings lead to a Master of Science degree in Environmental Studies, but include input from the Humanities and the Social Sciences, particularly those social and cultural aspects necessary to define what kind of environment we need and want.

The requirements for admission follow the general University graduate requirements, but in addition the student must be accepted into the Environmental Studies degree program. A special faculty committee passes on applications. At present the number admitted is limited by the number of volunteer faculty advisors available to guide undergraduate students.

Each student's program will be individually designed in consultation with his graduate committee. His research leading to a thesis will usually be in the area of his B.S. degree. Course work will be chosen to acquaint the student with involvement of areas other than the natural sciences in environmental issues.

Nearly 100 courses are offered by several departments which complement the Environmental Studies program, many of which are recommended to EVST graduates, depending upon their background and interests.

FOR GRADUATES

The Department of Foreign Languages strongly recommends that all foreign language majors take, as early as possible in their college career, the courses entitled Introduction to the Humanities (Humanities 151-152-153) and Classical Mythology (Humanities 160). All majors in Romance Languages are strongly urged to take the course, Introduction to Romance Philology, R Ph 366, as part of their upper division work.

Linguistics is the science which investigates the structure of the languages and dialects which are in use, or have been in use, throughout the world. Its goal is to arrive at a body of knowledge about specific languages and about the nature of language, and ultimately to create theories of language. Linguistics has implications for many disciplines; it may be of direct relevance to foreign language teaching in teaching English and foreign languages. Although at present the University does not offer 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. Refer to the Departments of Anthropology, English, Foreign Languages, Speech Communication, and Speech Pathology and Audiology for course offerings in linguistics.

Comparative literature is the study of literature beyond the confines of one national literature. It is especially concerned with the similarities and differences which may be observed in the productions in different languages. It makes comparisons from various points of view, studying, for example, movements, periods, genres, and themes. Certain types of comparative literature studies can be highly useful to students in such fields as psychology, philosophy, anthropology, and history, even without a major in foreign languages. Some of the courses in comparative literature require a readiness knowledge of at least two foreign languages. Students interested in working toward a degree in comparative literature (not offered at this University) are advised to develop knowledge of at least two foreign languages is necessary for advancement to graduate work. See the listings under the departments of Foreign Languages and English for course descriptions.

GRADUATE WORK. See Graduate School Bulletin.
CLASSICS

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

1. Latin 101-213 inclusive or =.
2. At least 9 credits of Latin 300 (490) and 9 credits of Greek 300.
3. Also recommended for majors are: History 302, 303 and 304, or 201 and 202; General 151, 152, 153; Humanities 160; Philosophy 296.

GREEK

No major is given in Greek.

FOR UNDERGRADUATES

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

FOR UNDERGRADUATES AND GRADUATES

300 MAJOR GREEK WRITERS V 2-3 R-18 prereq 213.

LATIN

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

1. Latin 101-213 inclusive or =.
2. At least 22 credits of Latin 300 (490) (Greek 101-102 may be substituted for 4 credits of Latin 490.)
3. History 302 and 304 are also recommended for majors.

FOR UNDERGRADUATES

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

FOR UNDERGRADUATES AND GRADUATES

300 (490) MAJOR LATIN WRITERS V 2-3 R-30 prereq 213.

FRENCH

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

1. French 101 to 203 inclusive, or equivalent.
2. At least 33 credits of upper division work in French, which (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division French).
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 311, 312, 313, 314, 315, 327, 328, 329. French 303 may be substituted for one quarter of history, but if so, it may not also be counted as a French course.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101-102-103 Elementary French 5.

Students may elect either the audio-lingual track or the reading skill track. The reading skill track, three quarters in length, is designed for students who wish a reading knowledge but do not plan to continue to Intermediate French 201-202-203.

201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =.
201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =.

Audio-lingual emphasis. For students who plan to obtain a major or minor in French, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

211-212 (213-215) FRENCH READINGS 4 prereq 103 or =. For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

FOR UNDERGRADUATES AND GRADUATES

301 PHONETICS 3 prereq 203.
302 ORAL AND WRITTEN EXPRESSION 3 prereq 301 or c/l.
303 FRENCH CIVILIZATION AND CULTURE 3 prereq 302 or c/l.
321 (421) MEDIEVAL FRENCH LITERATURE 3 prereq 203.
322 (422) FRENCH RENAISSANCE 3 prereq 203.
323 (423) 17TH CENTURY FRENCH LITERATURE 3 prereq 203.
331 (431) 18TH CENTURY FRENCH LITERATURE 3 prereq 203.
332 (432) 19TH CENTURY FRENCH LITERATURE 3 prereq 203.
333 (433) CONTEMPORARY FRENCH LITERATURE 3 prereq 203.
400 GENRE STUDIES IN MEDIEVAL FRENCH LITERATURE 3 prereq 303.
401 APPLIED LINGUISTICS 3 prereq 302 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
402 ADVANCED COMPOSITION 3 prereq 302 or c/l. Intensive practice in writing on different levels of usage and style.
405 ADVANCED CONVERSATION 3, prereq 303 or c/l.
410 THE SHORT STORY IN FRENCH LITERATURE 3 prereq 303.
420 TRENDS AND CURRENTS IN 17TH CENTURY FRENCH LITERATURE 3 prereq 303.
430 THE 18TH CENTURY FRENCH "PHILOSOPHES" 3 prereq 303.
440 THE 19TH CENTURY FRENCH NOVEL 3 prereq 303.
450 CONTEMPORARY FRENCH POETRY 3 prereq 303.
460 HISTORY OF THE FRENCH LANGUAGE 3 prereq 303.
490 (491) SEMINAR 3 R-18 prereq 203. Studies in major authors, periods, or genres.

FOR GRADUATES

111-112 FRENCH FOR GRADUATE STUDENTS 4. Intensive reading course to prepare students to pass the reading examination required for advanced degrees. Does not carry graduate credit.
500 DIRECTED READINGS V 1-3 R-9. Prereq undergraduate major in French.
590 GRADUATE SEMINAR 3 R-9.

GERMAN

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

1. German 101 to 203, or equivalent.
2. At least 33 credits of upper division work in German, which must include 211-212-213. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division German).
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.

Students may elect either the audio-lingual track or the reading skill track. The reading skill track, four quarters in length, with an emphasis on scientific German in the fourth quarter, is designed for students who wish a reading knowledge but do not plan to continue to Intermediate German 201-202-203.

201-202-203 INTERMEDIATE GERMAN 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in German, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

211-212 (213-215) GERMAN READINGS 4 prereq 103 or =. For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

FOR UNDERGRADUATES AND GRADUATES

301 ORAL AND WRITTEN EXPRESSION I 3 prereq 203. Emphasis on pronunciation and phonetics.
302 (300) ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c/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 302 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
ADVERTISING COMPOSITION 3 prereq 302 or c/l. Intensive practice in writing on different levels of usage and style.

THE AGE OF GOETHE 3 prereq 311-312-313, or concurrent registration and c/l.

FAUST 3 prereq 311-312-313, or concurrent registration and c/l.

19TH CENTURY REALISM 3 prereq 311-312-313, or concurrent registration and c/l.

THE NOVELLE 3 prereq 311-312-313, or concurrent registration and c/l.

20TH CENTURY GERMAN LITERATURE 3 prereq 311-312-313, or concurrent registration and c/l.

HISTORY OF THE GERMAN LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/l.

SEMINARY 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES

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.

DIRECTED READINGS 1-3 R-9 prereq undergraduate major in German.

GRADUATE SEMINAR 3 R-9.

THESES V R 9-15.

HUMANITIES

CLASSICAL MYTHOLOGY 2. Deities and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.

FOREIGN LITERATURES IN TRANSLATION 2. Periods and literatures vary from quarter to quarter. No knowledge of foreign language necessary.

ITALIAN

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

1. Italian 101 to 303 inclusive, or equivalent.

2. At least 33 credits of upper division work in Italian, which must include 311-312-315. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division Italian.)

3. Five quarters, or equivalent, of another foreign language.

4. Two quarters in history of Europe, chosen from the following: History 215, 216, 305, 324, 355, 330.

FOR UNDERGRADUATES

ELEMENTARY ITALIAN 5.

Students may elect either the audio-lingual track or the reading skill track. The reading skill track, three quarters in length, is designed for students who wish a reading knowledge but do not plan to continue to Intermediate Italian 201-202-203.

201-202-203 INTERMEDIATE ITALIAN 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in Italian, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

211-212 ITALIAN READINGS 4 prereq 103 or =. For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

FOR UNDERGRADUATES AND GRADUATES

ORAL AND WRITTEN EXPRESSION 1 3 prereq 203. Emphasis on pronunciation and phonetics.

ITALIAN CIVILIZATION AND CULTURE 3 prereq 302 or c/l. Emphasis on active use of Italian.

SURVEY OF ITALIAN LITERATURE 2 prereq 203.

APPLIED LINGUISTICS 3 prereq 302 or c/l. Specific problems in contrastive phonology, morphology, and syntax.

ADVANCED COMPOSITION 3 prereq 302 or c/l. Intensive practice in writing on different levels of usage and style.

DANTE'S DIVINA COMMedia 3 prereq 311-312-313, or coreq and c/l.
SPANISH

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

1. Spanish 101 to 203 inclusive, or equivalent.

2. At least 33 credits of upper division work in Spanish, which must include 311-312-313 and 321-322-323. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division Spanish).

3. Five quarters, or equivalent, of another foreign language.

4. Spanish majors are advised to take at least one quarter of Hispanic American History (History 285-286-287) when this course is offered.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY SPANISH 5.

Students may elect either the audio-lingual track or the reading skill track. The reading skill track, three quarters in length, is designed for students who wish a reading knowledge but do not plan to continue to Intermediate Spanish 201-202-203.

201-202-203 INTERMEDIATE SPANISH 4 prereq 103 or c/i. Audio-lingual emphasis. For students who plan to obtain a major or minor in Spanish, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.

311-312-313 (212-213) SPANISH READING 4 prereq 103 or c/i. 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 301-303.

FOR UNDERGRADUATES AND GRADUATES

301 ORAL AND WRITTEN EXPRESSION I 3 prereq 203. Emphasis on pronunciation and phonetics.

302 ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c/i. Emphasis on active use of Spanish.

303 CONTEMPORARY HISPANIC CIVILIZATION AND CULTURE 3 prereq 302 or c/i.

311-312-313 (301-302-303) SURVEY OF SPANISH LITERATURE 2 prereq 203. Enter any quarter.


401 APPLIED LINGUISTICS 3 prereq 302 or c/i. Specific problems in contrastive phonology, morphology, and syntax.

402 ADVANCED COMPOSITION 3 prereq 302 or c/i. Intensive practice in writing on different levels of usage and style.

405 ADVANCED CONVERSATION 3 prereq 303 or c/i.

421 (325) SPANISH NOVEL TO 1800 3 prereq 311-312-313, or concurrent registration and c/i.

422 (351) 19TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/i.

423 (363) 20TH CENTURY SPANISH NOVEL 3 prereq 311-312-313, or concurrent registration and c/i.

431 (333) SPANISH DRAMA TO 1800 3 prereq 311-312-313, or concurrent registration and c/i.

432 (353) 19TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/i.

433 (361) 20TH CENTURY SPANISH DRAMA 3 prereq 311-312-313, or concurrent registration and c/i.

441 (381) SPANISH POETRY OF THE GOLDEN AGE 3 prereq 311-312-313, or concurrent registration and c/i.

442 NINETEENTH CENTURY SPANISH POETRY 3 prereq 311, 312, 313 or coreq and c/i.

443 TWENTIETH CENTURY SPANISH POETRY 3 prereq 311, 312, 313 or coreq and c/i.

450 SPANISH AMERICAN DRAMA 3 prereq 311, 312, 313 or coreq and c/i.

451 SPANISH AMERICAN ESSAY 3 prereq 311, 312, 313 or coreq and c/i.

452 SPANISH AMERICAN NOVEL 3 prereq 311, 312, 313 or coreq and c/i.

453 SPANISH AMERICAN POETRY 3 prereq 311, 312, 313 or coreq and c/i.

460 HISTORY OF THE SPANISH LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/i.

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 course to prepare graduate students to pass the examination required for advanced degree. (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 203 or equivalent. Fundamental concepts, objectives, and techniques in the teaching of modern foreign languages. Separate sections in individual languages whenever practicable.

395 METHODS OF TEACHING FOREIGN LANGUAGES IN ELEMENTARY SCHOOLS 3 prereq FL 203 or c/i. Fundamental concepts and techniques in the teaching of foreign languages in elementary schools. 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. Credits may be applied toward a graduate degree in either languages or Education.

FORESTRY

The School of Forestry offers a wide variety of programs concerned with natural resources and the human environment. The planning, development, and administration of environmental programs require specialists with many talents. There is a need for specialists as well as for broadly trained generalists, all of whom understand the complex interrelationships of environmental forces and man.

Increasing concern for the wise use and maintenance of our quality environment in Montana and throughout the world is extending areas of employment for professional resource managers and conservationists. Graduates of the School of Forestry are employed by government agencies, private companies, private conservation organizations, research organizations, consulting firms, and educational institutions.

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.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. Each candidate must complete a curriculum satisfactory to the staff of the School of Forestry. This curriculum must include a minimum of: 45 quarter credits in forestry courses; three courses in natural sciences; three courses in mathematics, statistics, and computer science. The student's degree program and curriculum will be worked out with his adviser according to guidelines set forth in the School of Forestry bulletin. Each student will be expected to select his area of emphasis during the first year. To continue course work in the School of Forestry beyond the freshman year the student 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 RESOURCE CONSERVATION

This degree program accommodates a broad and often diverse array of student interests in the human environment. Consultation with faculty advisors, a BSRC student designs a program of study unique and appropriate for him. This program may be career oriented or may be of a more reflective nature, focusing, for ex-
ample, on the role of conservation and environmental quality in the great problems of the time. The emphasis in the BSRC program is on the student. His needs, aspirations, and motivation are essential in designing a program of study that can and typically does draw heavily on the courses and educational facilities of the entire University.

Areas of professional emphasis under the Bachelor of Science in Resource Conservation include:
- Land-use Planning
- Parks and Recreation Resource Administration
- Conservation Information and Education
- Range Conservation

BACHELOR OF SCIENCE IN FORESTRY

The emphasis of this degree is toward meeting the professional requirements for a career in forestry and related land management fields. The program allows the student considerable freedom in the selection of courses within established professional standards.

Areas of emphasis under the Bachelor of Science in Forestry degree are:
- Forest Resources Management
- Forest Business
- Range Management

MAJOR IN FOREST SCIENCE

This major is for students who wish to prepare for graduate study in a specific area of natural resources. Students enrolled in the BSRC or BSF degree programs who have high academic standing may enter the Forest Science program with the approval of the Dean of the School of Forestry.

Coursework for the Forest Science major is designed to meet the needs and desires of the individual student. A curriculum is developed by the student under the direction of his adviser and other faculty members. Programs may emphasize various aspects of natural resources, including the biological, physical, and social sciences, planning, management and administration, and similar fields.

BACHELOR OF SCIENCE IN WILDLIFE BIOLOGY

The School of Forestry participates with the Departments of Botany and Zoology in a degree program in Wildlife Biology. For specific information refer to the Wildlife Biology listing in this catalog.

GRADUATE PROGRAMS

Graduate degrees offered by the School of Forestry include:
- Master of Science in Resource Conservation
- Master of Science in Forestry
- Master of Forestry
- Master of Resource Administration
- Master of Science in Wildlife Biology (cooperative program with Botany and Zoology)
- Doctor of Philosophy

For further information on these programs see the Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Description Index

170 SURVEY OF WILDLIFE CAREERS 1 (1-0). (Also listed as Bot 170 and Zool 170).

190 SURVEY OF FORESTRY 2 (2-0). The field and subject matter of the forestry profession.


199 FORESTRY PROBLEMS V prereq c/l.

210 INTRODUCTORY SOILS 4 (3-2) prereq Chem 101-102, 104-105 or . The chemical, physical, biological, and morphological characteristics of soils.

220 PRINCIPLES OF TECHNICAL EXPRESSION 2 (2-0). The criteria of good technical expression—clarity, directness, logical order, and terseness.

250 FOREST INSTRUMENTS 1 (0-3). The use, care and adjustment of instruments used in forest surveying and the field practices of forestry.

252 LAND SURVEY SYSTEMS AND GRAPHICS 4 (2-3) prereq 250, c/l. The history and subdivision of public lands; measurements and legal aspects of property boundary lines and corners. Drafting techniques for maps, charts, contours and plans.

290-291 DENDROLOGY 2 (1-3), 3 (2-3) prereq Bot 114, 115 or c/l. Identification, classification, silvical characteristics, range and economic importance of the principal forest trees of the United States and Canada. (290) The conifers. (291) The broadleaf trees.
411 SOIL CHEMISTRY 2 (2-0) prereq 210.

412 SOIL PHYSICS 2 (2-0) prereq 210.

413 FOREST REGIONS OF NORTH AMERICA 3 (3-0) prereq 410-511 or c/i. The ecological development of forest regions; current silvicultural problems and practices.

415—SEMINAR IN FOREST ECOLOGY 3 (3-4) prereq two of the following: 310, 362, Bot 385, 390, 395, 396. An in-depth study of an area of relevance and current interest in ecology. Studies may include productivity, ecosystem stability and energy relations. Each student will present a seminar critically appraising the research done on some aspect of the study area.

416 ANALYSIS OF FORESTED ECOSYSTEMS 8 (6-10) prereq c/i. Discussion and criticism of recent ecosystem studies. Preparation of a comprehensive research study plan for analyzing a Northern Rocky Mountain forest.

421 FOREST ECONOMICS 5 (5-0) prereq Econ 202 or c/i.

422 ECONOMICS OF WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq Econ 202 and c/i.

424 FOREST TAXATION SYSTEMS 3 (3-0) prereq 421 or c/i.

425 INDUSTRIAL FORESTRY 3 (3-2 labs by arrangement) prereq 421 and 480 or c/i.

430 FOREST METEOROLOGY 4 (4-0).

440 MECHANICALLY DERIVED WOOD PRODUCTS 3 (3-0) prereq junior standing.

441 SAWMILLING AND LUMBERING 3 (2-4) prereq junior standing in the School of Forestry.

442 WOOD SEASONING AND PRESERVATION 3 (3-0) prereq junior standing in the School of Forestry.

443 WOOD UTILIZATION FIELD TRIPS 3 prereq junior standing in the School of Forestry.

450 ADVANCED AERIAL PHOTOGRAMMETRY 3 (2-2) prereq 351 and c/i.

451 AERIAL REMOTE SENSING 3 (3-0) prereq 351 and c/i.

452 TIMBER HARVESTING 3 (3-0) prereq Econ 202.

453 GROWTH-QUALITY RELATIONSHIPS OF WOOD 3 (1-4) prereq 311, 340 or c/i.

456 RANGE ANALYSIS AND SURVEY TECHNIQUES 4 (2-6) prereq 360 and c/i.

461 LIVESTOCK NUTRITION 3 (2-3) prereq 360 and c/i.

463 ECONOMICS 3 (3-0) prereq 360, Econ 201 and c/i.

464 RANGE ADMINISTRATION 2 (2-0) prereq 360 and c/i.

465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and c/i.

470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq Zool 308, 309 or c/i.

471 BIG GAME CONSERVATION 3 (2-field trips) prereq 360 or c/i.

472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/i.

480-481-482 INTEGRATED FOREST RESOURCE MANAGEMENT 3 (3-0). (480) prereq senior standing. (481) prereq 480 or c/i. (482) prereq 481 or c/i.

483 PARK MANAGEMENT 3 (3-0) prereq 383, 384 and c/i.

486 WATERSHED MANAGEMENT 3 (2-4) prereq 385.

496 HYDROLOGY SEMINAR 2 (2-0) o/y prereq c/i. Regional, national, and international problems of water supply, transfer and quality.

497 WATER USE AND DEVELOPMENT 2 (2-0) o/y. History of water use and policy development.

499 SOIL AND WATER CONSERVATION 4 (3-4) prereq c/i.

491-492-493 SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. See Zoology 491-492-493 and Botany 491-492-493.

495 FOREST ECOLOGY OF THE NON-TEMPERATE ZONES 2 (2-0) prereq c/i.

496 FORESTRY AND ECONOMIC DEVELOPMENT 2 (2-0) prereq c/i.

497 WORLD RESOURCE PROBLEMS 2 (2-0) prereq c/i.

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

FOR GRADUATES

500 ADVANCED FOREST MANAGEMENT 3 prereq 401, 421 and 480.
GEOGRAPHY

is concerned with understanding the earth and man. An interest in the place-to-place variations of both men and their terrestrial environments is basic, but the overriding objective of the study of Geography is an understanding of the physical and social processes that influence our use of the world.

Geographers investigate the processes of human use and change of the earth. Such research requires knowledge of climates, vegetative cover, soils and landforms as a fundamental background, which, combined with studies in the disciplines of the Social Sciences, may be used to understand comparative cultural histories, economic changes, resource use patterns, or other areal differentiations of earth-using systems. Such studies fall under the broad category of human geography. Interests in the strictly environmental aspects of the surface processes operating on the earth, such as in geomorphology, meteorology, climatology, and biogeography, are considered physical geography.

The undergraduate major in Geography offers the student an opportunity to receive a broad liberal education designed to develop a spatial perspective on the human occupation of the earth and an awareness of the diversity of man and environment in an evolving world. Although undergraduate training in Geography does not provide a set of standardized, highly marketable skills, challenging opportunities for employment exist in industry, government, and the teaching professions at all levels.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. A major in geography consists of 75 credits distributed as follows: (1) Geology in Geography (maximum 65), including geography 101 and 102, two courses in physical geography, two courses in cultural geography, one regional course, one field course, and cartography. At least 27 credits in science and social science, including 9 and 18, or 18 and 9 respectively selected from a department in each of these two major areas: anthropology, economics, history, political science, or sociology (social science) and the biological sciences, mathematics, or physics and astronomy (science). Course sequences in other areas may be arranged with the consent of the department; (3) English composition, 3 credits. (Majors with obvious deficiencies in composition, apparent from written work handed in, will be required to pass an additional course in English composition or its equivalent.)

In addition to the above, majors are required to demonstrate a proficiency in a foreign language. This requirement may be met by passing the ETS graduate foreign language reading examination with a score above the fiftieth percentile. The requirement may also be met by passing five quarters of an "active skills track" in any single modern foreign language.

Although reading or other foreign language experience is considered vital to the major program, the department will consider the substitution of a set of mathematically-statistical skills.

Other courses deemed relevant or cognate may be accepted toward the major by departmental consent.

Although the department does not encourage the selection of a major until a student has had at least 60 credits of university work, prospective majors and declared majors are strongly urged to select a departmental faculty advisor and consult with him in the planning of a program.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 PHYSICAL ELEMENTS OF GEOGRAPHY 5. The earth: maps, climates, vegetation, and landforms.

102 INTRODUCTORY HUMAN GEOGRAPHY 5. Cultural features of the world's landscapes in relation to human occupation of the earth.

103-104-105 WORLD GEOGRAPHY 2. Enter any quarter. Place-to-place differences in the quality of human life and landscape. (103) The Americas; (104) Africa; (105) Asia, Australia, and Oceania. Credit is not applicable to the major.

201 MAP INTERPRETATION 3 prereq 101 and c/l. Map, chart and aerial photo evaluation. Distributions of human and physical features. Coverage and quality of thematic mapping.

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

280 CARTOGRAPHY 5 prereq c/l. The interpretation, construction, and uses of important map projections. Cartographic techniques utilized in the presentation of data.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =. Cultural areas of Canada and the United States with emphasis on different regional characteristics.


305 EUROPE 3 prereq 101 or =.

310 SOUTH AMERICA 3 prereq 101 or =.

311 CENTRAL AMERICA, MEXICO AND THE CARIBBEAN 3 prereq 101 or =.

312 AFRICA 3 prereq 101 or =.

315 THE FAR EAST 3 prereq 101 or =.

318 THE U.S.S.R. 3 prereq 101 or =.

319 MONTANA 3.

320 THE PACIFIC NORTHWEST 3 prereq 101 or =.


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

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

345 URBAN GEOGRAPHY 5 prereq 101 or =. The growth, morphology, and functions of towns and cities. Examination of the contemporary urban scene.

350 INTRODUCTORY METEOROLOGY 3 prereq c/l. Dynamics of atmospheric circulations and weather patterns, world weather systems.

360 CLIMATOLOGY 4 prereq 101 or =. Elements and controls of climate. Classification and distribution of climatic types.

365 GEOGRAPHY OF ECOSYSTEMS 3 prereq 101 or =. Geographical study of ecosystems. Major attributes, modification by man's activities, spatial arrangement, cartographic representation, usefulness in planning and land management.

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


390 FIELD GEOGRAPHY V R-12 prereq c/l. Titles vary.

400 HISTORICAL GEOGRAPHY 3 c/l. Geography of past periods with the aim of understanding geographical patterns and processes past and present.

401 ADVANCED PHYSICAL GEOGRAPHY 3 prereq c/l. Specialized aspects of Physical Geography.

405 THE HISTORY OF GEOGRAPHY 3 prereq 12 credits in Geography or =. Herodotus to the nineteenth century.

410 PROBLEMS IN GEOGRAPHY 3 prereq 12 credits in Geography.

413 POPULATION AND RESOURCE GEOGRAPHY 5 prereq c/l. Geographic aspects of problems arising from the relationships between human populations and their resource use.

415 ADVANCED REGIONAL GEOGRAPHY 3 prereq c/l. Topics vary.

420 ADVANCED CULTURAL GEOGRAPHY 3 prereq c/l. Topics vary.

450 SEMINAR IN GEOGRAPHY V R-12. Topics vary.

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 3. Geographic concepts, approaches, and techniques developed in the twentieth century.

550 SEMINAR IN CULTURAL GEOGRAPHY 3 R-9 prereq c/l. Concepts, methodology, and research in cultural aspects of Geography. Topics vary.

570 SEMINAR IN PHYSICAL GEOGRAPHY 3 R-9 prereq c/l. 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.
GEOLoGY

Geologists study the earth, interpreting the processes and events which have made it what it is. They apply the results of all other scientific fields to this effort. Insights recently gained have brought geology to a state of scientific revolution fully comparable to that brought to physics years ago by the discovery of radioactivity. Geologists concern themselves with problems as diverse as origin of ocean basins, movement of continents, earthquakes, activity of volcanoes, composition of the moon, crystal structure of minerals, behaviour of streams, evolution of life, finding petroleum and ore deposits, and quality of the environment. The variety of geological techniques includes X-ray microscopy, aerial photography, geologic mapping, and seismographic work as well as the classic hammer and compass. Geologists find employment in a wide variety of occupations including university teaching, agricultural exploration, exploration for oil and gas, government geological surveys, water and other environmental resource problems, and petroleum and mining exploration and development.

The Department of Geology offers bachelors, masters and doctoral degrees as well as a bachelors degree in education with a major in earth science. All degree programs in the department involve a core of some common work and a combination of applied and theoretical approaches requiring a sound general background in other sciences. The department strongly recommends that persons wishing to enter professional employment in geology plan to get a graduate degree.

HIGH SCHOOL PREPARATION. In addition to the general requirements for University admission, it is recommended that high school preparation include as much mathematics and science as possible.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the department requires the following courses for an undergraduate degree in geology: Geology 101, 102, 130, 200, 202, 215, 216, 325, 330, 331, 429.

Also required are 60 credit hours in allied sciences, to be selected by the student in consultation with his advisor, from courses in the fields of mathematics, chemistry, physics, computer science, and biological sciences. Science courses listed under General Courses of Study are not designed for education majors but may be counted towards the departmental science requirements. Most graduate schools and professional employment require college preparatory mathematics, physics, chemistry, and biology. Students are therefore strongly advised to take a full year of courses in each of these subject areas.

The department also requires three quarters of Foreign Language or equivalent preparation: English 100 and two other courses given by the English Department in which composition will form a major part of the work. English 450 may be substituted for one of the composition options. English 450 is strongly recommended.

The grade of “P” or “F” is given for all work in Geology 590, 695, 696, and 699. Geology majors, with the consent of the instructor, take Geology courses on a Pass/No Pass basis, provided that the course is not required for the major.

FIELD TRIP EXPENSES. Students should go to the Department of Geology office for a statement of expenses connected with field trips. Geology 429, Field Geology.

SOME SUGGESTIONS FOR PLANNING A PROGRAM IN GEOLOGY

A student majoring in geology should complete the science, English, and foreign language requirements as early as possible in his college career, preferably during the freshman and sophomore years.

Introduction to Geology (101-102) and Field Methods (120) should be taken during the freshman and sophomore years. Field Geology (429) should be taken during the sophomore year. The paleontology sequence (318-319) and the mineralogy-petrology sequence (215-216), should be taken during the sophomore or junior years. Structural Geology and Geotectonics (330-331) should be taken during the junior or senior years.

SUMMARY OF REQUIREMENTS

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>1. Geology course requirements (including Geology 429, Field Geology)</td>
<td>81</td>
</tr>
<tr>
<td>2. Allied science requirements</td>
<td>60</td>
</tr>
<tr>
<td>3. English and Foreign Language requirements</td>
<td>24</td>
</tr>
<tr>
<td>4. Electives</td>
<td>67</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>192</td>
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GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For explanation see Course Description (Index)

*Courses offered alternate years.

101-102 INTRODUCTION TO GEOLOGY 4 (3-2). Geologic activity of Structures, waves, wind, and Their relations to landscape; formation of sediments and sedimentary rocks; stratigraphic time and measurement of geologic time; growth, movement and composition of coastline; differentiation of igneous and metamorphic rocks; earthquakes; deformation of rocks; mineral deposits; and economic geology. Prereq 101 and Geol 4 to 102.

103 ENVIRONMENTAL GEOLOGY 4 (3-3). Geology as related to quality of man's environment.

110 PHYSICAL GEOLOGY Su 5 (3-4). Minerals, rocks, and structure of the earth's crust; the dynamic processes, volcanism, earthquake, and the mountains. Near one of the compositions which shape the earth landscape. Credit not allowed for 110 and 101-102.

130 FIELD METHODS 3 (1.5 all day Saturday field trips). Prereq 102 or 110. Problems covering wide range of geologic topics; techniques of field work. No credit for freshmen and sophomores.

200 GENERAL PALEONTOLOGY 4 (3-2) primarily for science majors. General principles of paleontology, evolution, and history of plants and animals.

202 PRINCIPLES OF STRATIGRAPHY 5 (3-4) Prereq or coreq 102. Processes of sedimentation and methods of analyzing stratigraphic records, including correlation, sedimentary rock description and interpretation.

210 INTRODUCTION TO ROCKS AND MINERALS 4 (3-4) Prereq 102 or 110. Common rock-forming and economic minerals. Various rock types, their texture, mineralogy, origin, occurrence, and physical and chemical properties. Laboratory mainly hand specimen study. (Credit not allowed toward a geology degree.)

215 INTRODUCTORY MINERALOLOGY 5 (3-4) Prereq one quarter of college chemistry or equivalent. Study of crystal structure and crystal symmetry. Systematic mineralogy of about 80 rock forming and economically important minerals.

216 (315) PETROLOGY 4 (3-4) Prereq 215. Identification, description, and origin of igneous and metamorphic rocks.

250 (360) 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.

310 GEOMORPHOLOGY 3 (2-2) Prereq 102 or 110. Landforms in terms of processes which create them. Basic processes of physical geology. Emphasis on modern concepts.

325 PROBLEMS V Prereq 30 cr. in Geology or = c/l. Supervised investigation in any phase of geologic study in which the student has sufficient background to contribute original thought.


439 FIELD GEOLOGY Su V 9-10 Prereq 130 and c/l. Given by Indiana University, Purdue University. Departmen near Whitehall, Montana. Detailed and regional geologic studies in field. Includes mapping on aerial photographs and topographic base maps, interpretation of generalized and specific geology; field work near Black Hills to Yellowstone Park, and from Whitehall to Glacier Park. Open only to academic year continuing students. Registration must be completed by April 1.

FOR UNDERGRADUATES AND GRADUATES

480 INTRODUCTION TO VERTEBRATE PALEONTOLOGY 4 (2-4) Prereq 200 or c/l. Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals and birds.

410, 412 INVERTEBRATE PALEONTOLOGY 4 (2-4) Prereq 102 or 112. Geol 300 or Zool 111, 112. Principles of biostatigraphy with examples taken chiefly from the arthropod and echinoderms. Geol 315. Principles of paleo­

eology with examples taken chiefly from the mollusks and echinoderm. Labs include paleontologic techniques.

412 (411) PALEONTOLOGY 3 (2-2) Prereq 200 or Zool 111. Morphology, classification and biostatigraphic associations of major animal and plant groups and interpretation of single crystal photo­


425 PETHROLOGY/PETROLOGY 4 (2-4) Prereq 216. (245) Description and interpretive study in thin section of igneous minerals and rocks. (426) Similarly treats metamorphic rocks. Advanced petrologic considerations included in both quarters.
HEALTH, 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, prepare, and to participate in formal and informal competition, in such activities as archery, badminton, basketball, bowling, golf, horses, sking, 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; Master 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. Also available is an area of emphasis for athletic trainers. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation and practice in group leadership, training in crafts and 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 and coaching professions. Some choose to continue graduate studies with specialization in physical education, administration of physical education and athletics, the dance, physical therapy, or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. 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 DEGREES IN HEALTH AND PHYSICAL EDUCATION

Two degrees are offered in this Department: Bachelor of Arts degree Majors requirement is 15 crs. in foreign language or 3 quarters in each of two foreign languages; or a combination thereof with two disciplines Gen (Humanities), Hist, Lit, Philos, Rel; or Prof. 3 crs. from 101, 121, 371, 374 or 377; 5 crs. Econ. Geog or Poli Sci: Educ 256, 347; Eng 250. For 350, 384; Gen 250; 6 crs. with at least 3 in each of 3 following disciplines Gen (Humanities), Hist, Lit, Philos, Rel; or Prof. 3 crs. from 115-130 and/or 215-220, 291, 301, 324, 339, 350, 352, 356, 364 (8 crs.), 290, 440, 446, 445, 491 (8 crs.), maximum of 12 HPER crs. may be elected.

For UNDERGRADUATES

For explanation see Course Descriptions (Index)

100 PHYSICAL EDUCATION ACTIVITIES—Non-Majors in health, physical education, and recreation may include up to but not more than 3 crs. in physical education 100-level activity courses in the total number of credits required for graduation. Beginning level in activity courses may not be repeated for credit. Students may elect to be graded on pass-fail basis.

100 CONCEPTS OF PHYSICAL EDUCATION 1.

115-130 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS 1. All students required to meet proficiency entrance standards set by instructor.

Graduate work. See Graduate School Bulletin.

English 100 is required. Students failing to demonstrate an acceptable college standard (score of 17 on the ACT English examination) must successfully complete English 091. Those who score above 90 on the ACT will be exempt from English 100.

Required Subjects: Out of Department (94 crs.), Art elect 2 crs. from 123, 129, 160, or 403; 3 crs. Astr. Geol, Physics or Chem; Bot 4 crs. from 101, 121, 371, 374 or 377; 5 crs. Econ. Geog or Poli Sci; Educ 256, 347; Eng 250. For 350, 384; Gen 250; 6 crs. with at least 3 in each of 3 following disciplines Gen (Humanities), Hist, Lit, Philos, Rel; or Prof. 3 crs. from 115-130 and/or 215-220, 291, 301, 324, 339, 350, 352, 356, 364 (8 crs.), 290, 440, 446, 445, 491 (8 crs.), maximum of 12 HPER crs. may be elected.

A HISTORY OF PHYSICAL EDUCATION 3.

200 ADVANCED COACHING TECHNIQUES 1.

210 COACHING OF FOOTBALL 3.

211, 212 THEOREY OF OFFICIATING FOOTBALL 1.

213 COACHING GYMNASTICS 3 prereq 117 (Men), 118 (Women), and c/l.

214 COACHING OF WRESTLING 3 prereq c/l.

215-220 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS 1-6. All students required to meet proficiency standards set by instructor.


199 FIRST AID 2. Red Cross Standard and Advanced courses and Medical Self-Help. Certification secured upon completion of course.
HEALTH, PHYSICAL EDUCATION AND RECREATION—49

305 PROBLEMS IN PHYSICAL EDUCATION 1.
310 COACHING OF BASKETBALL (MEN) 3.
311 (311, 312) THEORY OF OFFICiATING BASKETBALL (MEN) 1.
321 (321, 322) COACHING OF TRACK 3.
322 COACHING OF COMPETITIVE SWIMMING 3 prereq c/i.
324 METHODS AND MATERIALS IN BALLOOM, FOLK AND SQUARE DANCE 3 prereq 119.
325 METHODS OF TEACHING MODERN DANCE 2 prereq Modern Dance or =.
327 CREATIVE MOVEMENT FOR CHILDREN 2 prereq Modern Dance background or age. Experience in planning, observing and directing children’s dance.
336 AQUATIC PROGRAM MANAGEMENT 3 prereq Senior Life Saving or =. Methods of teaching swimming for various age groups. Swimming as a physical, mental and public relations function. 339 TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS 3 prereq PE majors and minors, junior standing, PE 200 and 6 credits in 115-120; elementary education majors, junior standing and Educ 202. Principles and foundations of elementary school physical education, theory and practice in selecting and teaching activities for children in grades one through six.
350 PROGRAMMING IN RECREATION 3 prereq 261. Principles of program planning for organized offerings in recreation. Selection, adaptation and evaluation of activities.
362 RECREATION LEADERSHIP (SOCIAL RECREATION) 3 prereq HPER 261 and Soc 101. Principles and practice in group leadership, program skills for various age groups and for special groups, how to develop the leadership training program.
365 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION 3 prereq 200.
375 (373, 375) METHODS IN TEACHING HEALTH 3.
388 INTRODUCTION TO PHYSICAL THERAPY 3 prereq or coreq 386. Theory and practice of massage. The treatment of defects which come within the field of physical education.
390 CLINICAL TRAINING IN PHYSICAL THERAPY V I-4 R-4 prereq 386 and c/i. Practical experience in local physical therapy centers.
398 INSTRUCTOR’S FIRST AID 2 prereq 199. Also open to anyone holding a current advanced First Aid card. Offered summer school only.
399 INSTRUCTORS FIRST AID 3. Red Cross Standard, advanced and Instructors course and medical self-help. Certification as Instructor level upon completion of course. Credit not allowed for both 199 and 399.
405 SENIOR SEMINAR 1.

FOR UNDERGRADUATES AND GRADUATES
329 ADVANCED TECHNIQUES IN MODERN DANCE 2 prereq Modern Dance 1 and 11.
358 THE HIGH SCHOOL INTRAMURAL PROGRAM 2.
373 THE SCHOOL HEALTH PROGRAM 3. Appraisal, prevention and remedial aspects of school health program.
384 (380-385) APPLIED ANATOMY AND KINESIOLOGY 5 prereq 290.
386 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 3 prereq 380. Prevention and detection of common physical defects frequently encountered by the physical educator; follow-up programs possible under medical supervision.
387 MASSAGE 3 prereq Zool 202, HPER 384.
388 AMBULATORY TECHNIQUES FOR THE ORTHOPEDICALLY DISABLED 2 prereq 384.
401 DANCE COMPOSITION AND IMPROVISATION 3 prereq Modern Dance I, II.
402 DANCE PRODUCTION 3 prereq 401. Choreography, staging, lighting, makeup, costuming and other problems of dance in planning and performance in concert dance and dance demonstrations. Performance in dance concert required.
410 ADVANCED TECHNIQUES IN ATHLETIC TRAINING 3 prereq HPER 240, 384, Zool 202, Chem 101-102, and Chem 160 or Physics 111.
411 PRACTICUM IN ATHLETIC TRAINING 3 R-9 prereq HPER 387, 389, 410 or concurrent registration, and 460, section 18.
440 RECREATIONAL AREAS AND FACILITIES 3. The planning, construction and maintenance of urban oriented recreation areas and facilities as they relate to organized activities in public and private parks, playgrounds, play areas, all-purpose and specific use parks and day camps. Methods and techniques for financing Tax programs and possibilities.
460 SEMINAR V 1-3 R-12.
461 ORGANIZATION AND ADMINISTRATION OF RECREATION 3 prereq 261 or c/i. Personnel, finance, facilities, programs and public relations. Coordination with youth-serving institutional and municipal agencies.
465 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION 3. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures.
466 (366) CURRICULUM CONSTRUCTION 3. Classification and analysis of physical education activities; criteria for selecting activities; construction of program for specific situations.
470 PHYSICAL EDUCATION AND RECREATION FOR THE SPECIAL STUDENT 3 prereq 389. Includes leadership, group work, organizing and leading groups, adapted recreation, leading groups in special student classes.
478 (378) PHYSIOLOGY OF EXERCISE 3 prereq Zool 202. The physiological effects of the different types of exercise on the functions of the human body.
488 ADVANCED CORRECTIVE PHYSICAL EDUCATION PROCEEDURES 3 prereq 387, 389, 398 and 405 or concurrent registration. Orthopedic and orthopaedic specialties in the field. Special problems. 491 PRACTICUM IN RECREATION V R-4 prereq 464 and c/i.

FOR GRADUATES
501 RESEARCH METHODS 3 prereq or coreq 503 or =. Instruction in developing individual studies.
502 RESEARCH IN RECREATION 3.
503 STATISTICAL MEASUREMENTS IN PHYSICAL EDUCATION 4 prereq 465 or =. Specific tests for evaluation of organic, nervous, and muscular systems and their relation to performance outcomes. Practice in construction and application of tests, and interpretation of results.
521 ADVANCED PHYSIOLOGY OF EXERCISE 3 prereq HPER 394, 478 or =.
522 PSYCHOLOGY OF SPORT 3.
523 PHILOSOPHICAL-HISTORICAL BASES FOR PHYSICAL EDUCATION 3.
524 SOCIOLOGY OF SPORT 2.
531 ADVANCED ADMINISTRATION OF PHYSICAL EDUCATION AND ATHLETICS 3 prereq 385 or = and c/i.
532 (466) SUPERVISION IN PHYSICAL EDUCATION 3 prereq 365 or =. Roles and responsibilities of supervisors in exerting effective leadership.
533 PHILOSOPHY OF LEISURE AND RECREATION 3 prereq 464 and c/i. Exploration of philosophical foundations for recreation in a dynamic society. Challenge of increased leisure and role of recreation in present and predicted environments.
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. Law, systems and recreation as they relate to organized recreation.
536 SEMINAR IN THE ADMINISTRATION OF RECREATION 3.
537 CURRENT TRENDS IN RECREATION 2. Sociological trends, present patterns of living and their implications in the development of new programs and practices in recreation.
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 improved medical care and long life expectancy.
575 SPORTS MEDICINE 2 (2-1) prereq 385, 478. The medical aspects of sports and physical training. The etiology and management of injuries, drug use and therapy, nutrition, fatigue, problems arising from aging and other medical problems associated with participation in sports.
585 ADVANCED KINESIOLOGY 3 prereq 384. Analysis of complex movements, special skills, and motor coordination in terms of the mechanics of skeletal and muscular movement.
600 PRACTICUM IN COLLEGE PHYSICAL EDUCATION 2.
601 INDEPENDENT STUDY V R-5 prereq c/i.
699 THESIS V R-9.
HISTORY

is the study of man over the time span of the past, both as an individual and as a member of a group. For the student in search of a broad basis of education rather than in training for some particular occupation, the department offers a program of instruction designed to provide a knowledge and understanding of the background and ramifications of the present local, national, and world affairs. Many students combine the fields of History and Political Science.

The department helps to prepare men and women occupationally for either the domestic or the foreign service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and business men with the background and training for the pursuit of their chosen profession, but also furnishes knowledge and perspective for intelligent leadership in community affairs.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in History. A minimum of 60 credits in History is required with 40 credits from courses numbered over 300 and including History 301. History majors must elect a minimum of 20 credits in American and 20 credits in European History plus 5 credits in another area (Asia, Canada, Latin America, Africa). The departmental English composition requirement (English 100) must be completed.

The Department of History requires a foreign language: 3 quarters of a reading sequence in French, Italian, or Spanish; 4 quarters in German; 5 quarters in Russian, Latin, or Greek; or 5 quarters of native skill in another language.

A student may offer a combined major in History and Political Science (20) with 60 credits which must be in History and 20 credits in Political Science. A minimum of 30 credits must be selected from courses numbered over 300. The departmental English composition requirement must be completed.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

00-105-106 EUROPEAN CIVILIZATION 4. Enter any quarter. (104) Classical Antiquity to 1450. (105) 1450-1618. (106) 1618 to present. (Credit not allowed for 104 and former 201-202, nor for 105-106 and former 101-102-103.)


261-262-263-264 UNITED STATES HISTORY 3. Enter either quarter. (261) The American nation from its colonial beginnings to the end of the Civil War. (262) Continuation to the present.


FOR UNDERGRADUATES AND GRADUATES

300 METHODOLOGY 3. Training in the art of researching and writing history.

301 ANCIENT NEAR EAST 3. Pre-Greek civilizations of Mesopotamia, Asia Minor and Egypt.

302 (303) ANCIENT GREECE 3. Greek culture during the period of the city-states and the Age of Alexander the Great.

303 THE HELLENISTIC AGE 3. The Ptolemaic, Antigonal, Seleucid and lesser states. Development of the Mediterranean and their social, political and economic development to the time of their absorption by Rome.

304 (305) ANCIENT ROME 3. Early Etruscan civilization; Rome as part of Hellenistic culture. The Republic, the Principate and the Empire.

305 BYZANTINE HISTORY 3. Origins and development of the civilizing force of the Eastern Roman Empire to 1453. Relations with Persians, Arabs, Slavs and Turks; cultural and political influence upon the West.

306 THE EXPANSION OF EUROPE 3. Exploration and colonization of the non-European world in the sixteenth, seventeenth, and eighteenth centuries by the western European nations.

309 THE RENAISSANCE 3. The idea of the Renaissance applied to economic, political and cultural developments in Western Europe from the 14th to 1600; the impact of humanism.

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 growth of political, economic and social development of Europe from 1450 to 1599. (312) 1599 to 1648. (313) 1648 to 1789.

314-315 FRENCH REVOLUTION AND NAPOLEONIC ERA 3 prereq 314 or 312. Enter any quarter. (314) The French Revolution to 1804. (315) Bonaparte to 1815.


319 CONTEMPORARY EUROPEAN HISTORY 4 prereq 316. The internal affairs and the external relationships of the principal European states since 1918.

320 MEDIEVAL GERMANY 101-150 3. The Frankish experiment: the rise of Germany under Carolingian, 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.

323 SLAVIC WORLD TO 1613 3. Ancient and medieval history of the Slavic Empire, Asia Minor, and the Slavic states as it affects Russia.

324-325-326 HISTORY OF RUSSIA 3. (324) The beginnings of Russia to 1613. (325) Russia from 1613 to 1825. (326) Russia in revolution (1825 to present).

327-328-329 MODERN FRANCE 3. Enter any quarter. (327) The political, economic, and social development of France from 1815 to 1870. (328) 1871 to 1914. (329) 20th century.


333 MODERN WAR AND WESTERN SOCIETY 3 prereq a college course in modern European history. A history of warfare from the French Revolution. Emphasis is placed upon relationships of government and military command, upon problems of strategy, and upon theories of war.

335 THE BRITISH EMPIRE 4 prereq 101 or 242. English exploration and colonization. The First British Empire. Developments in the nineteenth and twentieth centuries. The Empire today.

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. (337) From 900 to 1100. (338) Continuation from the 10th through the 12th centuries, with the impact of Islam and Byzantium. (339) The Western Empire, 1000 to 1500. (340) The Middle Ages, 1500 to 1914. (341) The new scientific movement; the decline of the empire in 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; the growth of the Canadian West.

345 ENGLISH CONSTITUTIONAL HISTORY 3 prereq 242-243. English constitutional theory and practice from Anglo-Saxon times to the present. Institutional, legal and philosophical changes occasioned by internal and external influence.


347-348-349 (353, 348) ECONOMIC HISTORY OF EUROPE 3 prereq 241-242. Economic development of the countries of Europe from the 18th century to the present. Institutional, legal and philosophical changes occasioned by internal and external influence.

351-352-353 COLONIAL AMERICA 3. (351) The transfer of English civilization to America in the seventeenth century, with attention to Virginia, Maryland, Pennsylvania, and the colonies of the Southern seaboard. (352) American civilization from 1689 to the end of the Seven Years' War, with focus upon the political, social and economic maturing that prepared the colonies for the revolutionary era.


369 RECENT UNITED STATES 1000 TO PRESENT. 3. The Great Depression and New Deal; World War II; the Cold War and after.


Application of theories and concepts through state and national legislation. The impact of civilization upon the American environment: biological and technological (mineral, water, wildlife, etc.). Modes and methods of determining state and national policy.


367 (367-368) MONTANA AND THE WEST 3. Political, social, economic, and cultural development of Montana, and its relations with the American west.

368 THE TWENTIETH CENTURY WEST 3. A regional history of the trans-Mississippi West since the end of the frontier period.

369-371-372 (370-371) DIPLOMATIC HISTORY OF THE UNITED STATES 3 prereq 261. National period: Federalists and the uses of power; Jeffersonians and democracy; organization of state governments; the Confederation period, Glorious Revolution; the emergence of political parties.

373-374-375 (374) AMERICAN ECONOMIC HISTORY 3 prereq 6 credits in Economics. Enter any quarter. (373) To 1815: colonial origins of the American economy; the economic structure of the British Empire; the economics of independence and pre-industrial years; economic theories. (374) 1815-1890: frontier and factory years; economic consequences of the Civil War; rise of Big Business; economic theories. (375) Since 1890: the challenge of a frontierless economy; welfare economics; economic theories.


379-380-381 THE FAR EAST 4. (379) China, Japan, and Mongolia from earliest times to 1180. (380) Continuation to 1838: the decline of the Ching Dynasty. (381) The impact of the West, 1838 to the present.

382-383 AMERICAN NEGRO HISTORY 3. Enter either quarter. (382) The Negro and the Great Depression; race: slaves and free Negroes in the New World; the abolitionist movement: emancipation. (383) The Negro in Reconstruction: development of the Negro; migration to the cities; the "Second Reconstruction."

392-393-394 HISTORY OF SCIENCE 3. Enter any quarter (392) Scientific thought from pre-Classical times to the age of Thomas Aquinas; investigating the development of scientific ideas within their cultural context; special emphasis upon the transfer of the rationalist doctrines from the early Greeks to the civilization of Western Europe. (393) Scientific thought from the Renaissance through the French and American Revolutions; particular attention to the advent of the new scientific methods of the 17th century. (394) The history of the scientific revolution from the Renaissance to the present, and to the appearance of the new fields of scientific endeavor. (395) The evolution of scientific thought from the Renaissance to the present, and to the development of the technological revolution of the 19th century; the relation of science to the religious and political communities; the growth of the new internationalism of the scientific world.

400 HISTORIOGRAPHY 3. The history and philosophy of History.

406 MEDIEVAL INSTITUTIONS 3. Typical institutions—the Christian Church, feudalism, Roman law, the twelfth-century renaissance, the papal-imperial struggle.

415-416 NINETEENTH CENTURY EUROPE 3 prereq 103. Not open to students who have had 215-216. (415) The internal developments and external relationships of the chief European powers, 1815-1870. (416) Continuation to 1900.


431-432-433 INTELLLECTUAL HISTORY OF EUROPE 3 prereq 101-102-103. Enter any quarter. (431) The main currents of Western thought from classical times to the close of the Middle Ages. (432) Continuation to the end of the sixteenth century. (433) The nineteenth and twentieth centuries.

441 TUDOR ENGLAND 3 prereq 242. English social and political institutions from the Wars of the Roses through the Reformation and the Glorious Revolution; the Elizabethan Settlement; war with Spain; the Elizabethan political and social structure.

442 STUART ENGLAND 3 prereq 242 or 441. Social and political institutions from the Wars of the Roses through the Reformation and the Glorious Revolution; the Restoration settlement; Oliver Cromwell and the Commonwealth; the Glorious Revolution; the emergence of political parties.

444 EIGHTEENTH CENTURY BRITAIN, 1714-1815 3. The era of Parliamentary supremacy.

453 VICTORIAN ENGLAND, 1815-1914 3. The making of the modern British state.

454 (354) THE AMERICAN REVOLUTION 3. Causes and development of the American Revolution; independence; organization of state governments; the Confederation period, western lands, finance, commerce; The Constitutional Convention.

455 (355) THE AGE OF JEFFERSON 1789-1815 3. The early national period: Federalists and the uses of power; Jeffersonians and the limits of power; the first American party system; The War of 1812.
HOME ECONOMICS

curricula are designed to provide a well rounded educational program which will not only prepare the individual for a more effective living in the home and community but also for a professional career. The program assures each student an opportunity for a basic liberal education in addition to meeting professional requirements.

Opportunities for graduates are many and varied. Home Economics at the University of Montana prepares students for positions in the areas of education, extension, dietetics and institution administration, research, business, government and community services, and industry.

There are general plans available to the undergraduate major. Plan 1 provides a secondary school teaching certification including the Montana Vocational Education requirements. Plan 2 prepares one for work in the area of Foods & Nutrition, including institutional management and meets the American Dietetic Association’s requirements for Dietetic Internship. Plan 3 prepares one for Nursery School teaching. Plan 4 is a program in general Home Economics and the student may option to emphasize either Clothing & Textiles or Family Relations. The general major may be combined with other offerings on the campus such as Business, Radio and TV, Psychology, Social Welfare and others. A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in Home Economics.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 50 credits in Home Economics selected as follows:

Required for all majors: Home Economics 109, 155, 241, 246, 285, 309; one English composition and one speech communication course.

The following additional courses are required according to the plan selected by the student.

1. Preparation for Teaching: Home Economics 102, 197, 138 (or 258), 210, 342 (or 342), 303, 306, 310, 307, 308, 421, 490 (or 421 may be taken in either Education or Home Economics); Art 125; Chemistry 101; Microbiology 100, 101, 306; requirements in education to meet certification with a teaching major or minor in home economics are listed under education.

2. Foods and Nutrition and Dietetic Internship: Home Economics 210, 209, 221, 242, 246, 297, 422, 423, 446; Chemistry 121, 122, 261, 262, 481; Microbiology 200, 306; Zoology 202; Education 205. For further requirements consult advisor.

3. Teaching in the Nursery School: Home Economics 102, 249, 302, 304, 305, 303, 304, 303, 304, 490. Students select option (a) or (b) according to their interests.

(a) Cooking and Textiles emphasis: Home Economics 246, 282, 358, 359, 360, 458; Art 125, 200, 201, 302; Chemistry 101. Students should satisfy the foreign language requirement. Those planning a career in retailing should take Economics 261, 202, 203; Business Administration 360, 362.

(b) Family Relations emphasis: General Home Economics requirements plus Home Economics 310, 346, 367, 490; Anthropology 153; Chemistry 101; Sociology 206, 304, 305; 6 credits of Social Welfare; Psychology 230, 240.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102 PERSONAL AND FAMILY LIVING 3 (3-0). Personal development and family adjustment and techniques of economic, entrepreneurial, and business history. (See also Bus. Ad. 561)

105 GENERAL HOME ECONOMICS 1 (0-2). Selected subjects in Home Economics. Offered by various instructors under different titles.

109 HOME MANAGEMENT IN THEORY AND PRACTICE 2 (2-0). Resources are applied to planning and making garments. Designed for the student who is lacking in experience in clothing construction.

141 ELEMENTARY FOODS 3 (3-2). The selection, storage, preparation, and service of food. Non-majors and non-minors only.

146 ELEMENTARY NUTRITION 3 (3-0). Fundamental principles of adequate human nutrition. Non-majors and non-minors only.

158 CLOTHING LABORATORY 3 (4-6) preq coreq 157. Basic principles applied to planning and making garments. Designed for the student who is lacking in experience in clothing construction.

241 FOOD PREPARATION LAB 2 (0-4) preq coreq 241. Basic principles applied to food preparation. (For the student who is lacking in experience in food preparation.)

246 NUTRITION 3 (0-0) preq Chem 101. Nutrition given in the light of the chemistry and physiology of digestion.

258 EXPERIMENTAL CLOTHING 2 (0-4) preq 157. Working with new fabrics using a variety of construction and fitting techniques.

264 WEAVING 2 (0-4) preq Art 125. Basic weaving techniques with emphasis on creativity.

265 CHILD DEVELOPMENT I 3 (3-0) preq Psych 110. Prenatal through age 8.

266 CHILD DEVELOPMENT II 3 (3-0) preq Psych 110. The child from 4-14 years.

302 HOME PLANNING 3 (2-2) preq 210 and Art 125. Physical and aesthetic considerations in planning and selecting a home.

303 INTERIOR DESIGN AND FURNISHINGS 5 (4-2) preq 302. Art principles applied to Interior Decoration to create attractive, efficient backgrounds for living. A study of outstanding period styles and contemporary design and designers, plus qualities to consider in selecting home furnishings.

304 FAMILY HOUSING 3 (3-0) open to non-majors. Housing in relation to needs of various types of families and to the family life cycle.

305 MEAL MANAGEMENT 3 (3-2) preq 109, 210, 241, 246. Nutritional and social aspects of family meals, with emphasis on time, energy, money, and equipment management.

309 FAMILY FINANCE 5 (5-0) open to non-majors. Individual and family finance with emphasis upon financial planning, savings, insurance, investments, and use of credit.

310 HOME LIVING CENTER 3 preq 109, 210, 241, 246, 305, 309. Residence in the home living center for unmarried students; special problems of managing the home for married students.

331 (451) QUANTITY FOOD PRODUCTION V 2-4 (1-4) preq 210, 241. Application of principles of food preparation and food management to institutional situations. Menu planning for institutions.
HUMANITIES, INDIAN STUDIES, JOURNALISM—53

Many graduates obtain positions on newspapers in Montana and other states. Some are foreign correspondents. Several are editors and publishers. Others hold positions with news services, radio-television stations, technical magazines, public relations firms, advertising agencies and government departments. Several are distinguished scholars, authors and teachers.

A Master of Arts in Journalism is offered (see Graduate School).

Course requirements in Education to meet teacher certification with a teaching major or minor in Journalism are listed under Education in this catalog.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, study of a foreign language and typing is recommended.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. The candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 32 hours, plus the requirements of his sequence, plus upper-class electives for a minimum of 48 hours in Journalism. The core curriculum in Journalism, required of all majors, consists of Journalism 100, 150, 270, 290, 360, 361, 371, 372, 350, 351, 349. Three quarters of a foreign language are required.

CURRICULUM IN JOURNALISM

Freshman Year

<table>
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<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>Journ 100 — Social Role of Mass Media</td>
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<tr>
<td>Electives and courses in allied fields</td>
<td>39-46</td>
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<tr>
<td>Total recommended hours in Journalism</td>
<td>45-52</td>
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Sophomore Year

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<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>Journ 270 — Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Journ 290 — History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Electives and courses in allied fields</td>
<td>39-50</td>
</tr>
<tr>
<td>Total recommended hours in Journalism</td>
<td>45-56</td>
</tr>
</tbody>
</table>

Junior and Senior Years

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ 360 — Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Journ 381 — Advertising Sales</td>
<td>2</td>
</tr>
<tr>
<td>Journ 371 — Advanced Reporting</td>
<td>2</td>
</tr>
<tr>
<td>Journ 373 — Specialized Reporting</td>
<td>2</td>
</tr>
<tr>
<td>Journ 390 — News Editing</td>
<td>3</td>
</tr>
<tr>
<td>Journ 381 — Advanced News Editing</td>
<td>2</td>
</tr>
<tr>
<td>Journ Electives (including sequence requirements)</td>
<td>15-30</td>
</tr>
<tr>
<td>Additional electives and courses in allied fields</td>
<td>67-20</td>
</tr>
<tr>
<td>Total recommended hours in Journalism</td>
<td>168</td>
</tr>
<tr>
<td>Total recommended hours in General Education</td>
<td>147</td>
</tr>
<tr>
<td>Total recommended hours in Journalism</td>
<td>195</td>
</tr>
</tbody>
</table>

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 257, 230, 297, 470, 495.

ADVERTISING SEQUENCE: Additional 9 hours required to be chosen from Radio-Television 348; Journalism 362, 363, 364.

MAGAZINE SEQUENCE: Additional 9 hours required to be chosen from Journalism 257, 258, 259, 346.

RADIO-TELEVISION SEQUENCE: Additional 9 hours required to be chosen from Radio-Television 341-342-343, 346, 441-442-443.

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The School of Journalism also offers a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 SOCIAL ROLE OF MASS MEDIA 3. Open to non-majors.
150 ELEMENTS OF WRITING 3.
196 CURRENT AFFAIRS 1. Open to non-majors.
227 ELEMENTARY PHOTOGRAPHY 3 prereq c/l. Open to non-majors.
270 REPORTING 3. Open to non-majors.
290 HISTORY AND PRINCIPLES OF JOURNALISM 3. Open to non-majors.
327 NEWS PHOTOGRAPHY 3 prereq 227.
332 MAGAZINE MAKEUP AND EDITING 3 prereq c/l. Open to non-majors.
333 MAGAZINE ARTICLE WRITING 3 prereq c/l. Open to non-majors.

FOR GRADUATES

699 THESIS V R-15.

HUMANITIES

See Liberal Arts page

INDIAN STUDIES

See Liberal Arts page

JOURNALISM

courses examine the news media—emphasizing their history, privileges and responsibilities—and provide instruction in skills required for careers with newspapers, radio and television stations, magazines, public relations departments, news services and related agencies. About one-fourth of the work for the B.A. in journalism is taken in the School of Journalism. Three-fourths of the total credits required for graduation provide a background in the liberal arts, stressing history, government, economics, philosophy, literature, foreign languages, psychology and sociology.

Undergraduates specialize in one of four sequences: news-editorial, radio-television, advertising or magazines.

FOR UNDERGRADUATES AND GRADUATES

342 EXPERIMENTAL FOODS 3 (1-4) prereq 241. Foods from the experimental point of view. Special problems are assigned for individual investigation.
346 FAMILY NUTRITION 3 (3-0) prereq 246 or c/l, non-majors c/l. The science of nutrition as it applies to the growth, development, and maintenance of health in all age groups.
352 HISTORY OF CLOTHING AND TEXTILES 3 (3-0). Historic costumes and textiles and their influences on modern dress and fabrics.
358 ADVANCED CLOTHING 3 (1-4) prereq 157 or c/l. Modern principles used in the construction of tailored garments. Experimentation with a variety of techniques and fabrics.
359 CLOTHING DESIGN 3 (2-2) prereq 157 and Art 125. Art principles applied to designing clothing. Original designs created through flat pattern and draping methods.
360. RECENT DEVELOPMENTS IN TEXTILES 3 (2-2) prereq 153. Developments in fibers and finishes, legislation, and standardization. Comparison and evaluation of textiles.
367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 365. Participation in the laboratory.
370 TEACHING IN THE NURSERY SCHOOL 5 (0-10) prereq 365. (Primarily for nursery school teaching majors.)
405 NUTRITION IN DISEASE 3 (3-0) prereq 246. The symptoms of diseases, prophyaxis and feeding in disease.
421 TEACHING HOME ECONOMICS 5 (4-2). Preparation for teaching Home Economics in secondary schools. (Home Economics majors may take this course as Edu 421.)
430 LARGE QUANTITY BUYING 3 (3-0) prereq 331. Selection, purchase and storage of foods for institutions.
433 INSTITUTION ORGANIZATION AND MANAGEMENT 3 (3-0) prereq 432. Efficient organization and administration of food service units, employment procedures, personnel schedules, records, food cost, and maintenance.
446 ADVANCED NUTRITION 3 prereq Chem 431 or concurrent enrollment. Readings and discussion of nutritional research.
458 READINGS IN CLOTHING 3 (3-0). The social and psychological aspects of clothing.
490 (501) SEMINAR IN HOME ECONOMICS V 1-3 R-12.
499 PROBLEMS IN HOME ECONOMICS V R-12. Qualified students may select for study special problems in any of the major fields in Home Economics. Offered by various instructors under different titles.
334 TRADE AND TECHNICAL JOURNALISM 3 prereq c/l. Open to non-majors.

335 PROMOTION AND PUBLIC RELATIONS 3 prereq c/l. Open to non-majors.

349 RADIO-TELEVISION PUBLIC AFFAIRS 3.

360 PRINCIPLES OF ADVERTISING 3. Open to non-majors.

361 ADVISING SALES 2 prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

383 ADVISING MEDIA 3 prereq c/l. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.

382 ADVISING LAYOUT AND COPY 3 prereq 360. Open to non-majors.

396 RETAIL STORE ADVERTISING 3 prereq 360. Open to non-majors.

371 ADVANCED REPORTING 2 prereq 270.

372 SPECIALIZED REPORTING 2 prereq 371. Specialization in fields of depth reporting.

380 NEWS EDITING 3 prereq 270.

381 ADVANCED NEWS EDITING 2 prereq 380.

FOR UNDERGRADUATES AND GRADUATES

316 SCHOOL PUBLICATIONS AND TEACHING METHODS 3 e/y 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 Su 3 prereq B.A. degree or teaching experience. For school administrators and teachers.

390 PUBLIC OPINION 3. Open to non-majors.

379 LAW OF JOURNALISM 3.

399 ADVANCED JOURNALISM PROBLEMS V prereq consent of the dean.

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.

401-402 SENIOR SEMINARS 2 prereq senior standing in journalism. Investigative methods of editing, study of several aspects of American society which constitute the background for many news stories, and practice in research methods.

495 EDITORIAL WRITING AND INTERPRETATION 3.

496 MASS MEDIA IN MODERN SOCIETY 3. Interrelationships between media of mass communication and diverse facets of modern society.

497 INTERNATIONAL COMMUNICATIONS 3. Media of information in other countries, with emphasis on newspapers.

FOR GRADUATES

590 THEORIES OF COMMUNICATION 3 prereq consent of the dean.

599 METHODS OF JOURNALISM RESEARCH 3 prereq consent of the dean.

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 devised and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and 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 the law school examinations (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. There are a few graduates in the ranks of advising practitioners in many large cities of the United States.

CALENDAR

FALL SEMESTER 1971

September 20, Monday ........ REGISTRATION

September 20-21, Monday-Tuesday ........ Orientation of new students

September 22, Wednesday ........ Classes begin at 8 a.m. October 2, Monday ........ Columbus Day, no classes

October 5, Tuesday ........ Veterans Day, no classes

November 23, Tuesday ........ Thanksgiving vacation begins after last class

November 29, Monday ........ Classes resume at 8 a.m. December 16, Saturday ........ Christmas vacation begins after last class

January 3, 1972, Monday ........ Classes resume at 8 a.m.

January 20, Thursday ........ Last day of classes

January 24-25, Monday-Saturday ........ Semester examinations

SPRING SEMESTER 1972

February 8, Tuesday ........ REGISTRATION

February 9, Wednesday ........ Classes begin at 8 a.m.

February 15, Tuesday ........ Lincoln's birthday, no classes

February 21, Monday ........ Washington's Birthday, no classes

March 31, Monday ........ Spring vacation begins after last class

March 31, Monday ........ Classes resume at 8 a.m.

May 28, Thursday ........ Last day of classes

May 29-30, Monday-Saturday ........ Semester examinations

June 1, Monday ........ 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 general and specific course requirements, and for a directory of compatible 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. Non-theory courses are not acceptable except for required courses in physical education to the extent of ten percent of the total credits offered for admission.

Applicants with undergraduate degrees from the University of Montana must have taken English 450 (Advanced English Composition) and received a grade of "C" or better. Applicants having degrees from other institutions must have completed, with a grade of "C" or better, an equivalent course or must achieve a satisfactory score on an examination required by the Law School in the proficient use of English. All the examination may be admitted on probation, but must take English 450 during the first semester of the Law School and achieve a grade of "C" or better as a condition to being permitted to register for the second semester. The Law School faculty reserves the right to require any student to take further work in English Composition at any time that he evidences a deficiency.

College credit in the principles of financial accounting is also required for admission. Normally two quarters or two semesters of accounting are necessary to fulfill this requirement.

The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the year preceding the one for which admission is sought. Information concerning the test and application forms may be obtained from the School of Law or from the Educational Testing Service, P.O. Box 944, Princeton, New Jersey 08540.

Special students are not admitted to the Law School. Students otherwise qualified for admission may register 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 submitted before June 1 of the year in which entrance is contemplated. In addition to the credentials required by the Registrar of the University, the applicant must submit to the Law School (a) an official transcript of all college and law school work previously undertaken; (b) a verified questionnaire, on a form prescribed by the Law School, dealing with the moral character and fitness of the applicant as a prospective member of the legal profession; (c) a report of his grade on the Law School Admission Test.

A fee of $20.00 must be paid at the time of making application. No refunds will be made, but upon matriculation, the student enters the semester indicated on the application for admission and this fee will be credited as the law student activity fee.

ADMISSION TO ADVANCED STANDING: Applicants for admission to the Law School with advanced standing must satisfy the requirements for admission to the Law School and show: (1) that the law work previously undertaken has been in an approved law school;
(2) that the average in all law work for which the student has registered and received a grade is equivalent to that required for graduation from the institution attended; (3) that the applicant is in good standing with the law school to which he is transferring; and (4) that the applicant is eligible to continue in this Law School in accordance with generally accepted standards for admission to the programs and by regular class attendance.

BASIS FOR EXCLUSION: (1) Failures: A student who has failed more than 10 credits shall be excluded from the Law School. Any student who has completed two semesters of law study but thereafter fails two courses in any semester shall be excluded from the Law School. (2) Weighted Average: A student whose law school record is deficient more than five (5) grade points at the end of his second or third semester shall be excluded. A student who fails to obtain an index of 2.0 at the end of his fourth semester of law study in all law courses for which he has registered and received a grade, or fails to maintain such an index thereafter shall be excluded from the Law School.

Any required course in which a student has received an F grade shall be repeated. No other course may be repeated. The grade received in a repeated course will not replace the prior grade. Both grades will be included in calculating the student's grade point index for all purposes.

A student excluded on the basis of substandard academic performance shall not be readmitted, except in extraordinary cases when a satisfactory showing is made to the faculty, by written petition, that the substandard performance was the result of unusual circumstances beyond the control of the student, that such circumstances no longer exist, and that the student has the capability and desire to perform satisfactory work.

REQUIREMENTS FOR GRADUATION: Candidates for the degree of Juris Doctor (J.D.) must: (1) be graduates of an approved college or university; (2) complete the six semesters in residence at an approved law school, the last two of which must be at the University of Montana; (3) complete ninety semester hours of law with an index of 2.0, in law courses for which the student has registered and received a grade, and (4) complete the following required courses: Constitutional Law, Federal Practice, Legal Aid, and two Seminar courses each semester. Credit is earned by the successful writing of a final examination except in practical skills programs. Failure to attend classes regularly may result in failure to complete the requirements.

A candidate for graduation with honors must achieve an index of 3.1 (honors) or 3.5 (high honors) on law credits attempted and received. Candidates for graduation with honors must complete the six semesters in residence at an approved law school, the last two of which must be at the University of Montana. A student who transfers credits earned elsewhere to this University must meet the indicated scholarship requirements. Candidates must be enrolled at the University of Montana and on law grades earned elsewhere.

A candidate for the degree of Juris Doctor who has fulfilled the requirements for graduation that will not be recommended for the degree if, in the opinion of the majority of the law faculty, he is unqualified in accordance with generally accepted standards for admission to the bar.

A student may not register nor receive credit for more than 16 hours of law in a semester.

LIBERAL ARTS

Courses are offered as surveys or introductions to broad fields of learning and are primarily interdisciplinary in scope. Included are courses in Humanities, Black Studies, and Indian Studies.

HUMANITIES

FOR UNDERGRADUATES

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

401 SEMINAR IN THE HUMANITIES 3 Prereq 230. 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.

LIBRARY Studies

FOR UNDERGRADUATES


366 THE BLACK REnaissance 3 Prereq any two of the 200 level courses. A study of the artistic and cultural renaissance in the 1920's; selected topics on Indians conducted under the guidance of a staff member. Term papers may be required.
LIBERAL ARTS DEGREE PROGRAM

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. A faculty committee, chaired by the Dean of the College of Arts and Sciences, will advise those students who elect to major in Liberal Arts.

This program permits the student to work in a combination of the above areas, rather than concentrating in any one field, with a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences.

Students must have completed, or be eligible for, English 100 in order to major in this program. Upperclassmen transferring into this program should have had English 100, or an equivalent, at the college level. (Not offered toward a major in mathematics.)

The liberal arts curriculum is not designed for the student who is undecided as to his major.

 Majors in Liberal Arts may not take any of their major courses on a Passed/Not Passed basis.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

MAJOR REQUIREMENTS (courses under 300)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English 100</td>
<td>3</td>
</tr>
<tr>
<td>2. Foreign Languages</td>
<td>15 minimum</td>
</tr>
<tr>
<td>3. Art 200-291-381</td>
<td>9</td>
</tr>
<tr>
<td>4. Humanities 151-152-153</td>
<td>9</td>
</tr>
<tr>
<td>5. Anthropology, Economics, Geography, Psychology, Sociology (any two)</td>
<td>9</td>
</tr>
<tr>
<td>6. History or Political Science or both (History 101-102 or 105 recommended)</td>
<td>15</td>
</tr>
<tr>
<td>7. Literature (English 211-212-213 and 231-232-233 recommended)</td>
<td>12</td>
</tr>
<tr>
<td>8. Philosophy (Philosophy 298-299-300 recommended)</td>
<td>10</td>
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MAJOR REQUIREMENTS (courses 300 and above)

In two of the following three fields the student elects upper division courses equal to the number of credits indicated for those fields:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Anthropology, Economics, Geography, Psychology, Sociology (any two)</td>
<td>24</td>
</tr>
<tr>
<td>10. History or Political Science or both</td>
<td>24</td>
</tr>
<tr>
<td>11. Literature or Philosophy or Humanities 381 and 101-102-103</td>
<td>48</td>
</tr>
<tr>
<td>Elective credits to bring the total to 195</td>
<td>195</td>
</tr>
</tbody>
</table>

MATHMATICS

is a discipline 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 is enhanced by the fact that it is being used more widely than ever before. Mathematicians 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 part, 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 a 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 above, the student in mathematics must complete the following requirements in addition to the mathematics courses numbered above 300. The student must present 33 credits in at most three sciences selected from Botany, Chemistry, Geology, Microbiology, Physics, Zoology, and Mathematical Statistics (i.e., Mathematics 311, 411, 441, 442, 443). An alternative is for the student to present 15 credits of each of two of these, provided that the language substituted is not one offered to satisfy the language requirement listed earlier in the catalog. A second alternative is for the student to present 3 credits of each of two of the following: 200, 201, 231, 232, 241, 242, 341, 342, 343, 344, 347, and 457; and six additional credits in mathematics numbered above 322. The student must complete certification requirements for teaching in the secondary schools.

GRADUATE WORK. See Graduate School Bulletin and Mathematics Department Bulletin—Graduate Work in Mathematics. Additional information may be obtained from the Chairman of the Mathematics Department.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100-101 INTERMEDIATE ALGEBRA 5. A remedial course, of variable length, for students scoring at or below the 33rd percentile on the ACT English test must pass English 301, 381, 387; a statistics course selected from 125, 341, 344, and 347; and six additional credits in mathematics enumerated above 322. The student must complete certification requirements for teaching in the secondary schools.

104-105-106 MATHEMATICS FOR SOCIAL SCIENCES 3 prereq 101-102 examination or two years of high school algebra. Ideas of elementary functions, linear algebra, sequences, series, probability, and continuity are developed and applied, with emphasis on the concept of mathematical models, to examples from various social sciences and business.

107-108-109 MATHEMATICS FOR BIOLOGICAL SCIENCES 5 prereq 101-102 examination or two years of high school algebra. Study of properties of elementary functions-polynomials, exponential functions, logarithms, trigonometric functions, and circular functions—is followed by consideration of probability and an introduction to the calculus. Emphasis throughout is on the principle that mathematics is guided by applicability to problems in the biological sciences.

116 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination or two years of high school algebra. The number system, algebraic operations, binomial theorem, exponential and logarithmic functions, solutions of equations, elementary theory of equations. (Not offered after 1971-72 academic year.)

117 TRIGONOMETRY 5 prereq 116 or exemption by examination or two years of high school algebra. Trigonometric functions and their graphs, Pythagorean identities, addition formulas, laws of sines, cosines, and tangents, exponential and logarithmic functions and their graphs, solution or triangles. (Not offered after 1971-72 academic year.)

118 INTRODUCTION TO CALCULUS 5 prereq 117, or exemption by examination or two years of high school algebra including trigonometry. Limits, continuity, differentiation and integration; applications of derivatives and antiderivatives; fundamental theorem of calculus. (Credit not allowed for this course if Math 201 was previously taken.) (Not offered after 1971-72 academic year.)

121 ELEMENTARY FUNCTIONS 5 prereq 001 or exemption by examination and high school trigonometry or three years of college preparatory mathematics including trigonometry. Properties of polynomial, rational, circular, and other elementary functions of one variable.

125 STATISTICS 5 prereq 001 or exemption by examination or two years of high school algebra. Probability models, statistical independence, sampling, tests of statistical hypotheses.

130 THEORY OF ARITHMETIC 5 prereq 001 or exemption by examination or two years of high school algebra. The mathematical meaning and background of arithmetic. (For education majors.)

151-152 CALCULUS I-II 5 prereq 121 or 117 or exemption by examination or four years of college preparatory mathematics including trigonometry. Limits, continuity, differentiation, integration, applications of elementary functions, infinite series, Taylor series, applications.

153 LINEAR ALGEBRA 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore levels.

220 INTUITIVE GEOMETRY 4 prereq 130 or c/l. Axiom systems, essentials of Euclidean plane geometry, and selected topics. (For education majors.)

251 CALCULUS III 5 prereq 251. Partial differentiation, multiple integrals, line and surface integrals, series of functions, improper integrals, applications to geometry.

252 CALCULUS IV 5 prereq 251. Development of concepts of limit, continuity, convergence, differentiation, and integration.
FOR UNDERGRADUATES AND GRADUATES

301-302-303 MATHEMATICS FOR TEACHERS 3 prereq 153. An axiomatic treatment of a construction of the real number system. The theory of algebraic equations with consideration for the secondary school teacher. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 001 and c/i. The elements of linear equations, inequalities, calculus, probability, statistics, and computer programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Computer Science 271-272-273.)


307 FOUNDATIONS OF MATHEMATICS 4 prereq 20 credits in mathematics. Axiom systems, logic, set theory, cardinal numbers, propositions equivalent to the axiom of choice, paradoxes and the avoidance of paradoxes in mathematics. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)

299 SEMINAR V R-15 prereq c/i. Guidance in special work for advanced students.


324-325 INTRODUCTION TO ALGEBRAIC STRUCTURES 3 prereq 272. Mathematical proofs, sets, mappings, and algebraic systems.

327-328 (315-316) MODERN ALGEBRA 5 prereq 272 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.)

329 TOPICS IN ALGEBRA 4 prereq 272. A topic in advanced algebra is studied in appropriate depth. Possible topics may be chosen from the theory of groups, rings, fields, or commutative rings. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

338 INTRODUCTION TO GENERAL TOPOLOGY 4 prereq 253 or c/i. Topological structures, continuity, connectedness, convergence, separation axioms, metric spaces. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

339-342-343 MATHEMATICAL STATISTICS 3 prereq 272 and c/i. Development of necessary mathematical concepts, probability, random variables and distribution functions, sampling, testing hypotheses, confidence intervals.

344-345-346 (302-303) STATISTICAL METHODS 3 prereq 272 and c/i. Probability theory as a model for random phenomena, the foundation of statistical inference, sampling, design and analysis of experiments.

347-348 (337-338) STATISTICAL METHODS 4 prereq 272 and c/i. Probability theory as a model of random phenomena, the foundation of statistical inference, sampling, design and analysis of experiments. (Coffender)

357-358 (317-318) PRINCIPLES OF ANALYSIS 5 prereq 253 and c/i. Limits, continuity, differentiation, integration, series. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

359 TOPICS IN REAL ANALYSIS 4 prereq 338. A topic in advanced analysis is studied in appropriate depth. Possible topics include infinite series, Fourier series, metric spaces, and multidimensional calculus. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

367 COMPLEX ANALYSIS 4 prereq 338. Complex numbers, analytic functions, Cauchy integral theorem and functions, the theory of residues, conformal mapping, applications to partial differential equations, selected topics. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

370 COMPUTER METHODS 4 (3-2) prereq 252. Computer programming and survey of numerical methods. Problems of interest to secondary school teachers. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

551-552-553 REAL ANALYSIS 3 prereq 433. Lebesgue measure and integration, Lp spaces, general measure and integration, elementary point set topology, metric spaces, and selected topics.

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 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 receiving the B. S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratories as technicians. Medical Technologists are in demand in hospital laboratories, in physicians' offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the first three years. It is possible then to take three years of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of Microbiology. Option I consists of four years of general studies at the University, leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 31/4 years of academic studies at the University and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include algebra, geometry, trigonometry, chemistry, physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 111, 200, 201, 202, 310, 416, 415, 420; Physics 111-112-113; Zoology 111-112-113; Chemistry 121-122-123, 124-125-126, 245-246, 211-212, 214-216; Mathematics 107-108-109; English 100 and 450. A minimum total of 45 credits from Microbiology courses listed above and from the following courses is required: Microbiology 306, 307, 404, 405, 407, 419, 410, 430; Chemistry 481-482, 485-486, 370-378 are recommended. Substitutions may be approved by the chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Option I Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>A. W. S.</td>
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<tr>
<td>Physics 111-112-113-General Physics</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 302-General Microbiology</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Zoology 201-General Zoology</td>
<td>3</td>
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<tr>
<td>Electives</td>
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Junior Year

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<td>Physics 211-212-213-College Chemistry</td>
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<tr>
<td>Microbiology 214-215-Laboratory</td>
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<tr>
<td>Electives</td>
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Senior Year

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<tr>
<th>Course</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>Microbiology 406-407-Clinical Microbiology</td>
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<tr>
<td>Microbiology 408-Molecular Genetics</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<td>Microbiology 409-Virology</td>
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<tr>
<td>Electives</td>
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<td>Total</td>
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</table>

Option II

Under Option II, a student must complete a minimum of 15 elective credits in the senior year. Successful completion of the hospital training in a hospital approved by the American Society for Microbiology, 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 12-month hospital internship. In order to be eligible to receive the 30 credit hours the student must successfully complete the National Examination of the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists.

MICROBIOLOGY

is the study of microorganisms, including the bacteria, yeasts, molds, rickettsiae, viruses and protozoa. Special emphasis is placed on their structure, function, interactions, and relationships with man. Subtopics within the field of microbiology are listed under courses offered.

A Bachelor of Arts degree is granted upon successful completion of the curriculum in microbiology. The initial work in this curriculum is intended to provide the student with a working knowledge of the basic principles of the physical and biological sciences and mathematics. The remaining study is devoted to a more intense and broadened training in Microbiology and ancillary fields, and may include independent study. This latter experience provides the student with an opportunity to prepare adequately for graduate studies.
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.

Highly capable graduates often continue their education in Microbiology at the graduate level. The Department of Microbiology offers the Master of Arts, Master of Science, and Doctor of Philosophy degrees. These degrees require an independent research project culminating in a thesis. Opportunities for persons holding graduate degrees in Microbiology are numerous and varied. The Department of Microbiology has available, for qualified graduate students, a number of teaching and research assistantships. (For general requirements of all graduate students and for information regarding graduate study in Microbiology, see Graduate School Bulletin.)

**HIGH SCHOOL PREPARATION.** In addition to the general requirements for admission to the University, it is recommended that high school preparation includes Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

### SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY

In addition to the general requirements listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 111, 200, 201, 302, 310, 360, 404, 455, 411, 415, 420; Zoology 111-112-113; Chemistry 121-122-123, 124-125-126, 245-246, 211-212, 214-215; Physics 111-112-113; Mathematics 107-108-109; English 100 and 450. Chemistry 451-452, 472 are recommended. A minimum of 45 credits in the major field is required to receive a bachelor's degree. This requirement may be satisfied by successful completion of Microbiology courses listed above and any of the following courses: Microbiology 306, 307, 406, 407, 418, 419, 430 or any other courses approved by the chairman of the Department of Microbiology. Substitutions may be approved by the chairman of the Department of Microbiology.

Candidates for the Bachelor of Arts degree in Microbiology must demonstrate a working knowledge in a single foreign language. This working knowledge should be equivalent to at least one year of college-level foreign language study. There are several different ways to fulfill this requirement. Students contemplating graduate work are advised to take an additional foreign language.

#### SUGGESTED CURRICULUM

<table>
<thead>
<tr>
<th>Freshman Year</th>
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<tr>
<td><strong>A</strong></td>
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<tr>
<td>Chem 121-122-123-College Chemistry</td>
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<td>Chem 124-132-College Chemistry Laboratory</td>
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<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
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<td>Micb 111—Survey of Microbiology</td>
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<td>Math 107-108-109—Mathematics for Biological Sciences</td>
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<td>Chem 211-212—Organic Chemistry</td>
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<td>Chem 214-215—Organic Chemistry Laboratory</td>
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<tr>
<td>Chem 240—Quantitative Analysis</td>
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<td>Chem 246—Quantitative Analysis Laboratory</td>
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<tr>
<td>Micro 250—General Microbiology</td>
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<td>Micro 251—General Microbiology Laboratory</td>
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<td>English 100—Composition</td>
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<td>Foreign Language</td>
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<td>Physics 111-112-113—General Physics</td>
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<td>Micro 300—Microbial Physiology</td>
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<tr>
<td>Micro 302—Medical Microbiology</td>
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<td>Micro 310—Immunology and Serology</td>
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<td>Comp Sci 205-206-207—Computer use in the Natural Sciences</td>
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<td>Electives</td>
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<tr>
<td><strong>A</strong></td>
<td><strong>W</strong></td>
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<tr>
<td>Micro 415—Medical Mycology</td>
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<td>Micro 441—Epidemiology</td>
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<td>Micro 445—Specialized Genetics</td>
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<td>Chem 481-482—Elementary Biochemistry</td>
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<td>Chem 483-484—Elementary Biochemistry Laboratory</td>
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<td>Chem 470—Survey of Physical Chemistry</td>
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<td>Chem 378—Survey of Physical Chemistry Laboratory</td>
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<td>Zoology 321—Protozoology</td>
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<td><strong>Total</strong></td>
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### FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 **ELEMENTARY MICROBIOLOGY 3 (2-0)**. The structure, function, and classification of bacteria, molds, yeasts, rickettsiae, and viruses, and their practical application to agriculture, food, drug, fermentation and other industries. (Not allowed toward a major in microbiology.) (Students enrolling in Microb 100 are strongly urged to enroll concurrently in Microb 101—Elementary Microbiology Laboratory—which will strengthen their understanding of microbiological concepts.)

101 **ELEMENTARY MICROBIOLOGY LABORATORY 2 (0-4)**. prereq or coreq 100. Microbiological examination of foods, water, soil and air and experiments with microorganisms of medical importance. (Not allowed toward a major in microbiology.)

102 **ELEMENTARY MEDICAL MICROBIOLOGY 3 (3-0)**. Infectious diseases, including concepts of virulence, resistance, prevention, and control of microbial diseases in the individual and in the community. (Not allowed toward a major in microbiology.)

111 **SURVEY OF MICROBIOLOGY 1 (1-0) R-3**. The field and subject matter of Microbiology. (Not applicable to Group I requirements.) (Required of all Microbiology and Medical Technology freshmen.)

200 **GENERAL MICROBIOLOGY 5 (3-4)**. prereq Chem 123 or 102. Bacterial taxonomy, morphology, physiology, and ecology; effect of environmental factors on bacteria; microbiology of soil, water, milk and foods; and industrial microbiology. (Credit not allowed for both 100 and 200.)

### FOR UNDERGRADUATES AND GRADUATES

300 **MICROBIOLOGY FOR TEACHERS 5 (3-4)**. Introduction to Microbiology for high school science teachers. Not open to micro­biology majors. (Credit not allowed toward a major in microbiology.)

302 **MEDICAL MICROBIOLOGY 5 (3-4)**. prereq 200 or . The pathogenic microorganisms; clinical, therapeutic and diagnostic aspects of the diseases they produce in man.

306 **APPLIED MICROBIOLOGY 5 (3-4)**. prereq 200 or 100, 101. The fundamental principles of food, water, sewage, soil and industrial microbiology.

307 **ENVIRONMENTAL HEALTH 3 (3-0)**. Environmental health as related to public health; living and working environments; food, water, and air sanitation; and sanitary disposal of liquid and solid wastes.

310 **IMMUNOLOGY AND SEROLOGY 5 (2-4)**. prereq 302.

350 **MICROBIAL PHYSIOLOGY 5 (3-4)**. prereq 200.

404 **MOLECULAR GENETICS 5 (3-4)**. preq senior standing in one of the biological sciences and c/l. Biochemical mechanisms of mutation. DNA replication; nature of the genetic code, genetic recombination, genetic transcription and translation.

405 **SEMINAR 1 (1-0) R-4**. preq 200, 302. Recent literature in microbiology and related subjects.


407 **CLINICAL MICROBIOLOGY LABORATORY 2 (0-4)**. preq or coreq 406 or Chem 384 or 481 or Zool 340. Clinical diagnostic methods.

411 **EPIDEMIOLOGY 3 (3-0)**. preq 302. Distribution and frequency of disease; factors affecting its spread and control.

415 **MEDICAL MYCOLOGY 5 (3-4)**. preq 302. Morphology, physiology, infectivity and immunogenicity of fungi pathogenic for man.

418 **YEASTS 3 (3-0)** a/y prereq 350. The classification, cytology, composition, genetics, metabolism, growth and significance of yeasts.

419 **MYCOPLASMA AND L-FORMS 2 (2-0) a/y prereq 302. Physiology, immunology, pathogenesis, taxonomy, and interrelationships of mycoplasmas lacking cell walls, including Mycoplasma (PPLO and IFPLO), bacterial, fungal and other L-forms, and bacterial protoplasts and spheroplasts.

420 **VIROLOGY 3-5 (3-4)**. preq 200. Properties, characteristics and infectious nature of bacteriophages, animal viruses and rickettsiae.

430 **SPECIAL PROBLEMS IN MICROBIOLOGY V 1-5 R-15**. prereq 200, 303 and 3.0 average in biological sciences, independent research.

458 **POPULATION AND ECOLOGICAL GENETICS 5 (5-0)**. prereq 265 or equivalent. Genetic structure of populations. Dynamics of natural selection and adaptation. Same as Botany and Zoology 458.

### FOR GRADUATES

500 **ADVANCED TOPICS IN MICROBIOLOGY 2 (2-0) R-10**.

501 **SEMINAR 1 (1-0) R-9**.

502 **ADVANCED IMMUNOLOGY 3 (3-0)** a/y prereq 310.

505 **MICROBIOLOGY LITERATURE 1 (1-0) R-9**.

507 MICROBIAL CYTOLOGY 3 (3-0) 0/7. Ultrastructure and function of microbial cells; methodology for study of the cytology of the cell.


509 ADVANCED ViroLOGY V 3-5 (3-5) prereq 420 or Bot 237. Relationships of animal viruses to infectious diseases; tumor induction by viruses; molecular level of viral replication.

510 ADVANCED MICROBIOLOGICAL PHYSIOLOGY V 3-5 (3-5) 0/7 prereq 250 and 310. The various metabolic pathways found in microorganisms, with special emphasis on the isolation, structure, function, synthesis, and control of macromolecules.

511 IMMUNOCHEMISTRY 5 (2-6) prereq 310, Chem 481-492, 485-486. Chemistry of antibodies and their reactions. Laboratory emphasizes independent studies on selected aspects of immunohistochemistry.

520 MOLECULAR BIOLOGY LABORATORY I 1-2 prereq 483 or c/i. Modern bio-chemically oriented research techniques. Cross listed as Botany, Chemistry, Pharmacy and Zoology.

699 THESIS V R-15.

**MUSIC**

The Music Department offers to students who have demonstrated talent in music, the opportunity to continue further study of music either for a profession or an avocation, and to acquire at the same time a broad general education. Complete sequences of courses are given to prepare a student for (a) a career as teacher or supervisor of music in the public schools, or for (b) a career directed toward composition, private teaching, and concert work, or for (c) thorough training in music within the structure of a broad liberal arts curriculum.

The Music Department is a member of the National Association of Schools of Music.

The following undergraduate degrees in music are offered by the Music Department:

- Bachelor of Music Education
- Bachelor of Music
- Bachelor of Arts

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

**REQUIREMENTS FOR ADMISSION.** In general, admission as a freshman in the Music Department is by certificate from the high school from which the student graduates. The faculty of the Music Department is more concerned with evidence of talent, conspicuous achievement in music, promise of development, and in scholarship in general, than it is in the precise content of the program which the prospective music student has followed prior to admission to college. The Music Department welcomes the opportunity to advise with students and parents during the high school period by correspondence or by interviews on the campus. Every student who wishes to become a music major must audition for placement during Orientation Week.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN MUSIC.** In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed:

1. For the Bachelor of Music Education, the course requirements in Curriculum A must be completed.
2. For the Bachelor of Music with a major in Performance or in Theory or Composition, the course requirements in Curriculum B must be completed.
3. For the Bachelor of Arts degree with music as a major, the course requirements in Curriculum C must be completed.
4. All students majoring in music are required to attend recitals as specified by the department.
5. All music majors seeking a B.M., B.M.E., or B.A. degree are required to participate in Band, Orchestra or a Choral Group each quarter of residence of the regular school year (with the exception of the major in Elementary music). Students who are wind instrument majors and whose performance field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter, voice majors must register for choir or collegiate choral every quarter. Students registered in any group must participate in that group for the remainder of the academic year. Waivers and other options are filled this requirement by the election of Music 140 or 106-110. Exceptions to this requirement may be granted only by the Music faculty.
6. All candidates for the Bachelor of Music or Music Education degree must satisfactorily demonstrate, through examination by the piano staff, functional knowledge of the piano normally achieved through completion of Piano in Class 217 or equivalent. Elementary Music majors (Curriculum A-1) must complete 4 credits of Piano 100.

7. Outstanding seniors in Curriculum A or C may give one-half recital only. Students whose curriculum requires a full recital (Curriculum B) may satisfy this requirement by giving two half recitals.

8. All candidates for the B.M.E., B.M., or B.A. degree enrolled in Music 201 or 401 or 600 for the Fall or Winter quarters. All freshmen registered in Music 201 shall take a divisional jury at the end of the second quarter. At the option of the division and/or instructor concerned, all other students registered in Music 201 and 401 may be required to take a divisional jury at the end of the fourth quarter. If to be exercised, said option to be noted at the beginning of the spring quarter. Students may be excused from divisional juries for the following reasons: (a) graduating in that quarter or (b) they have played a half or full recital in that quarter.

All students seeking upper-division standing shall take a full divisional jury in the spring quarter. The jury will include:

(a) Performance
(b) Sight-reading on performing instrument
(c) Evaluation of academic record for satisfactory completion of: 201, 239 (including proficiency examination), 236, 217 (including piano functional examination), and sixth quarter of 201 (or the equivalent).

Failure to pass the jury will bar students from admission to music courses numbered 300 or above with the following exception: Transfer students who shall be admitted to 300 or above courses with the stipulation that they will have completed all lower division requirements within their first three quarters of residence.

**STUDIO FEES**

**Non-Music Majors**

- One half-hour lesson per week...
- Two half-hour lessons per week...
- Three half-hour lessons per week...

**Music Majors**

- One half-hour lesson per week...
- Two or more half-hour lessons per week...

For majors and non-majors who register for studio instruction for less than a full quarter or who withdraw before the end of the quarter, a charge of $1.75 per lesson will be made. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Lessons missed by the instructor will be made up within the quarter. Lessons missed by students or lessons falling on a legal holiday will not be made up.

**Music Practice Fee:** Students enrolled in music courses involving use of practice rooms, pianos, and other university instruments, pay a fee of $8.00 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 with music organizations, the University of Montana offers the degree of Bachelor of Music Education, which meets the state requirements for certification for public school teaching (see Education). (1) with a major in Elementary Music; training and background preparatory to teaching and directing special and general music classes in the elementary grades (K-8).

Music course requirements for Curriculum A (Elementary) shall include a total of 201 (Piano or voice), 6 cr. 401, 1 cr.; 100 (Piano or voice), 4 cr.; 103, 2 cr.; 106-110 or 160 (with faculty approval), 3 cr. (including S&H Exam.), 251 (Piano Functional Examination), 252 (Aural Perception I, 8 cr.; Aural Perception II, 6 cr.; 125, 1 cr.; 129 or 129, 2 cr.; 135, 4 cr.; 303, 2 cr.; 401, 3 cr.; 286 and 286, 6 cr.; 334, 336, 338, 337, 11 cr.; 230, 3 cr.

In cases of a demonstrated proficiency in piano or voice other study may be substituted with the approval of the music faculty.
Non-music requirements shall include the following: English, 9 cr (to include English 100, 6 cr); Psychology 110, 5 cr; General 121-2-3; Special 339; Art 125; Drama 101, 3 cr; Mathematics 120 and 220, 9 cr; General 125-6-7, 15 cr. Electives will be presented to complete a total of 82 credits.

Professional courses totaling 34 credits shall include the following: Education 200, 2 cr; Education 302, 5 cr; English 100, 3 cr; English 449, 3 cr; Education 407, 3 cr; Education 347, 3 cr; and HPER 237, 6 cr.

It is recommended that elementary teachers take HPER 116, Modern Dance, 1 cr; and HPER 327 Children’s Dance Laboratory, 2 cr.

Suggested Freshman Program: Music 201; Theory 1, Aural Perception I, Introduction to Music Literature; English 100; Academic Electives, 13 credits.

(2) with a major in Choral and Instrumental Conducting and Music Administration; training and background for conducting instrumental and chorale groups, and administering a Secondary School Music Department (K-12).

Music course requirements for Curriculum A-2 shall include a total of 121 credits as follows: English, 9 cr; Keyboard Harmony, 3 cr; Piano Methods, 6 cr; 331, 4 cr; 401, 24 cr; Education 407, 3 cr; Education 347, 3 cr; and HPER 237, 6 cr.

Electives: Students taking piano as Performance Major will not take the 6 credits of Piano in Class and those with Voice as Performance Major will not take the 2 credits of Voice in Class, reducing the required music credits accordingly. Students are to complete an academic teaching minor need not complete the 6 credits in upper division music electives.

Non-music requirements include a minimum of 77 credits including: English, 9 cr; English 106; English 107; Psychology 110, 5 cr; Education 200, 205, 405, 407, 24 cr.

Students taking piano as Performance Major must complete Music 320, 321, Piano Method and Materials and HPER 116, Modern Dance, 1 cr.

Suggested Freshman Program: Music 201, 100-110; Theory 1, Aural Perception I, Introduction to Music Literature; English 100; 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).

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements: 301, 6 cr.; 401, 6 cr.; Piano or Voice in Class may be deleted according to area of Performance Major and minor. An academic teaching minor is recommended.

(4) with a major in Instrumental Conducting; training and background for conducting Secondary School School, Junior High School, and beginning Instrumental groups (K-12).

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements: 401, 6 cr.; Piano or Voice in Class may be deleted according to area of Performance Major and minor. An academic teaching minor is recommended.

Double majors are possible in curriculum (A) Music Education and (B) Performance, Theory, or Composition, if all requirements in both curricula are completed.

B. CURRICULUM FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN PERFORMANCE, IN THEORY, OR COMPOSITION

The serious instrumentalist or vocalist may enroll for training leading to a Bachelor of Music degree with major emphasis in Performance (including emphasis on piano pedagogy), Theory, or Composition. Emphasis may be culminated with the student having received the recommendation of a major professor or a committee of the music faculty. This degree does not qualify a student for public school teaching in Montana.

MAJOR IN PIANO OR ORGAN

Music course requirements for Curriculum B with Major in Piano or Organ include a total of 121 credits as follows: Piano 140, 12 cr; 141, 6 cr; 142, 6 cr; 241, 24 cr; 242, 24 cr; 106-110 or 140, 12 cr; Theory 1, 6 cr; Theory 2, 6 cr; Aural Perception I, 6 cr; Aural Perception II, 6 cr; 128, 129, 130, 131, 135, 136, 4 cr; Music History, 9 cr; Piano in Class, 3 cr; Piano Methods and Materials, 6 cr; 331, 3 cr; 445, 2 cr; Upper division electives, 12 cr.

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.

Non-music requirements include a minimum of 59 credits, including 9 cr. in English, to include English 100.

Suggested Freshman Program: Music 201; 106-110 or 107; Theory 1, Aural Perception I, Introduction to Music Literature; English 100; 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: Piano 140, 12 cr; 141, 6 cr; 142, 6 cr; 241, 24 cr; 242, 24 cr; 106 or 107, 15 cr; Theory 1, 6 cr; Theory 2, 6 cr; Aural Perception I, 6 cr; Aural Perception II, 6 cr; 128, 129, 135, 136, 4 cr; Music History, 9 cr; Piano in Class, 3 cr; 331, 3 cr; 445, 2 cr; Upper division electives, 12 cr and 140 (vocal repertoire), 6 credits.

Non-music requirements include a minimum of 59 credits, including 9 cr. in English to include English 100 and Foreign Language, 12 cr. (Active skills).

Suggested Freshman Program: Music 201, 106 or 107; Theory 1, Aural Perception I, Piano in Class, Introduction to Music Literature; English 100; 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: Piano 140, 12 cr; 141, 6 cr; 142, 6 cr; 241, 24 cr; 242, 24 cr; Theory 1, 6 cr; Theory 2, 6 cr; Aural Perception I, 6 cr; Aural Perception II, 6 cr; Piano in Class, 3 cr; 331, 3 cr; 445, 2 cr; Upper division electives, 12 cr.

Non-music requirements include a minimum of 59 credits, including 9 cr. in English, to include English 100.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory 1, Aural Perception I, Piano in Class, Introduction to Music Literature; English 100; Academic Electives, 13 cr.

MAJOR IN COMPOSITION OR THEORY

Music course requirements for Curriculum B with Major in Composition or Theory shall include a total of 120 credits as follows: Piano 140, 12 cr; 141, 6 cr; 142, 6 cr; 241, 24 cr; 242, 24 cr; Theory 1, 6 cr; Theory 2, 6 cr; Aural Perception I, 6 cr; Aural Perception II, 6 cr; Piano in Class, 3 cr; 128, 129, 135, 136, 4 cr; Music History, 9 cr; 140, 6 cr; 331, 3 cr; Upper division electives, 12 cr.

Non-music requirements include a minimum of 60 credits, including 9 cr. in English.

ADDITIONAL REQUIREMENTS: Students taking voice or instrument in the Music 201-401 series, must take Music 100 (Piano) until a jury examination demonstrates adequate proficiency.

Theory Majors are not required to take Music 359, and Music 459.

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 9 cr. in English. (An equivalent course for large ensemble.

Suggested Freshman Program: Music 201, 100, 106-110; Theory 1, Aural Perception I, Composition, Introduction to Music Literature; English 100; Academic Electives, 13 credits.

C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in performance may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop an adequate musical background in the Arts and Sciences. This degree does not qualify a student for public school teaching in Montana but does provide a groundwork for graduate study in the fields of music, music education, performance and scholarship in preparation for teaching careers in colleges or private schools.

Minimum credit requirements for this degree are: a minimum of 57 credits in Music and a minimum of 120 credits in non-music courses of which 93 credits must be in the College of Arts and Sciences. This curriculum is applicable toward this degree: Performance, 12 cr.; Ensemble Music, 6 cr. (however, Music Department requires participation in at least one composition for large ensemble).

Course requirements for Curriculum C shall include: Music 201, 6 cr.; 401, 6 cr.; Music 106-110, 6 cr.; Theory 1, 6 cr.; Aural Perception I, 6 cr.; Theory II, 6 cr.; Aural Perception II, 6 cr.; Music Literature, 4 cr.; Music History, 9 cr.; Piano Literature, 9 cr.; Piano Methods, 6 cr.; General Music-61 (vocal repertoire), 6 credits.

Suggested Freshman Program: Music 201, 106-110; Theory 1, Aural Perception I, Introduction to Music Literature; English 100; Academic Electives, 21 cr.

CO U RSES OF STUDY

Upon entrance into any performance study 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—Performance Minor 1-2 prereq c/l.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide for study in a performance minor. This study is designed to give the beginning
PHARMACY—53

558 PEDAGOGY OF THEORY 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of statistical methods, teaching philosophy, techniques, and organization of the teaching of theory in secondary schools and in colleges.

559 COMPOSITION V R-12.

632 SEMINAR V 1-5 R-15. Investigation of research in fields of individual interest.

599 GRADUATE PROJECT IN MUSIC V R-4.

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 a knowledge of medicines, the art of compounding and dispensing them, their uses, and their action; and is the science which is concerned with the study of the several pharmaceutical sciences. This program of study is designed to prepare him to serve the pharmaceutical needs of the public. Areas of additional special study include pharmaceutical chemistry, pharmacognosy, pharmacology, and pharmacy administration. A program of selected electives allows the student to place emphasis upon an area of specialization best suited to his future plans in pharmacy.

In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete "practical experience" or internship 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 prescribed pre-professional subjects listed below and may be taken in any accredited college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken in residence at the University of Montana, although students transferring from other accredited schools of pharmacy may be admitted to an advanced standing determined on the basis of credits presented, providing that they are in good academic standing. Transfer credit for required professional courses taken at other institutions will not be accepted from students who previously received the grade of F on those courses at the University of Montana.

Upper class students may choose approved elective courses designed to prepare them specifically for either community pharmacy, sales and management, research and teaching, or for hospital and institutional pharmacy. Such elective courses will be determined by the area of specialization chosen by the student, and must be approved by the faculty advisor.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that the high school preparation include algebra, trigonometry, biology, and chemistry or physics.
382 DRUG ANALYSIS 4 (2-6). Special and instrumental meth­ods used in the analysis of pharmaceutical preparations.

377 COMPUTER APPLICATIONS TO PHARMACY 2 (2-0) prereq CS 201 or 472. Exercises in programming with reference to inventory, finances and drug activity.

404 INTRODUCTION TO DISPENSING 2 (1-2) prereq 463.

414-415-416 MEDICINAL CHEMISTRY 414-415, 3 (3-0); 416, 5 (5-0), prereq Chem 213 and 216. Organic substances used medicinally.

418 MEDICINAL CHEMISTRY LABORATORY 2 (8-6 to 9) R-4 prereq 414. Synthesis, identity and purity tests of organic medicinals.

425 (325) PHARMACOGNOSY 4 (3-3) Majors V 1-3 (1 cr./o), Non-majors c/i. prereq Chem 462 or c/. Continuation of 324.

440 DRUGS OF PSYCHOPHARMACOLOGY 3 (3-0) prereq Chem 213, 216 and 462, Zool 341. Drugs which influence behavior.

444 APPLIED PHARMACOLOGY 5 (0-0) prereq 330, 331, Chem 482. Therapeutic and toxicologic aspects of chemical agents used as drugs.

461-462-463 PHARMACY 5 (3-4) prereq 320 and Chem 213 and 216. Fundamental techniques of pharmacy and the various classes of pharmaceutical preparations.

466 MEDICINAL PL A NTS AND PHARMACOGNOSTICAL TECHNIQUES V 1-5 (0-3/cr) R-10 prereq 425. Collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.

468 DRUG MICROSCOPI Y V 1-4 (0-3/cr) R-8 prereq Bot 115 or =. Microscopic and micro-chemical examination of drugs, foods and spices. The detection and identification of plant and animal products.

503-504 BIOLOGICAL MEDICINAL PRODUCTS 3 (3-0) prereq Microb 302. Biologies, antibiotics, vitamins, hormones, and other medicinal products of biological origin.

505-506 DISPENSING 4 (2-6) prereq 404.

516 PHARMACEUTICAL LAW 3 (3-0) prereq senior standing in pharmacy.

517-518-519 PHARMACEUTICAL PRACTICE 1 (0-2) prereq senior standing in pharmacy.

545 APPLIED PHARMACOLOGY 5 prereq 444. Continuation of 444.

575 TOXICOLOGY 2 (2-0) prereq 416. The role of the pharmacist in poisoning prevention and emergency treatment.

577-578 PHARMACY ADMINISTRATION AND FINANCIAL MANAGEMENT 3 (3-0) prereq senior standing in pharmacy.

FOR UNDERGRADUATES AND GRADUATES

442 (340) RADIOPHARMACOLOGY 2 (2-0) R-6 prereq Chem 476 or c/. Drug metabolism and internal dosimetry.

445 PHARMACODYNAMICS LABORATORY 1 2 R-6, prereq 444. Laboratory designed to give the interested and qualified student an opportunity to study some basic principles and methodology useful in determining drug effect.

546 PHARMACODYNAMICS LABORATORY II 2 R-6, prereq 458. The student is required to perform investigation as well as study various aspects of drug dosage forms but also for those who understand the use of drugs to facilitate study and research in their specific discipline.

555 ADVANCED PHARMACY V 3-5 (3-5 to 15) prereq 506 or =. Problems involved in formulation and preparation of pharmaceuticals.

570 COSMETICS 3 (1-8) prereq 463. Cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 3 (1-4) prereq 382.

592-593 HOSPITAL PHARMACY 1-3 (0-2/cr) prereq 505. Introduction and participation in the routine of a hospital pharmacy.

594 INSTITUTIONAL PHARMACY 3 (3-0) prereq c/1, coreq 593. Duties and responsibilities of a pharmacist practicing in a hospital or related institution.

596 SEMINAR 1 (1-0) R-6 prereq senior standing in pharmacy.

599 SPECIAL PROBLEMS IN PHARMACY V 1-5 (0-3/cr) R-15 prereq senior standing in pharmacy or c/. Research studies by conference, library and laboratory research in pharmacy, pharmaceutical chemistry, pharmacognosy, pharmacy administration or pharmacology.

FOR GRADUATES

580 ADVANCED PHARMACEUTICAL LAW 3 (3-0) prereq c/. Federal laws affecting the pharmaceutical industry.

581 DRUG DEVELOPMENT AND MARKETING 3 (3-0) prereq c/1. Administrative activities and decisions involved in the development and distribution of new pharmaceutical products.

582 ADVANCED PHARMACY ADMINISTRATION 3 (3-0) prereq c/. Analysis of the pharmaceutical industry.

586 PARENTERAL PREPARATIONS 3 (2-6) a/y. Evaluation of the various methods currently used in the preparation of bulk and individual dosage unit sterilized products.
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 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 general requirements must be met by 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 400 or above. Normally students are expected to complete Philosophy 296, 299, 300 by the end of their sophomore year. All students, upon becoming Philosophy majors, must have a departmental advisor assigned by the chairman of the department. Foreign language and any other departmental requirement (in addition to those indicated above) are to be determined in consultation with this advisor. If a student is judged to be deficient in his 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 3. The main problems of metaphysics, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

110 LOGIC 5. Deductive and inductive inference, kinds of definitions, 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.

290 (201) HISTORY OF ANCIENT PHILOSOPHY 5.

299 (202) HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 5 prereq 298.

FOR UNDERGRADUATES AND GRADUATES

300 (203) HISTORY OF MODERN PHILOSOPHY 5 prereq 299.

301-302-303 GREAT PHILOSOPHERS 1. (Given in the Summer for 3 cr. as 304). Enter any quarter. (301) Greek, Roman and early Chinese 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 e/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.

315 (352) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/l. Structural and functional properties of the 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 and principles which underlie the political theories and programs of the Western world. Special attention will be given to Democratic forms of government and to the balance of liberal and conservative elements in them.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.

331 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 5 credits in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology.

340 AESTHETICS 3 prereq 3 credits in Philosophy. The nature of aesthetic experience, the standards of art criticism, and of the kinds of knowledge communicated by art. Readings from philosophy, literature and art.

341 PHILOSOPHY IN LITERATURE 3 prereq 10 credits in Philosophy or Literature or -. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS 3 prereq 5 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 aesthetic experience and art.

350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the source, nature, and content of knowledge which bear upon the relation of perception to the physical world, and to the concept of knowledge.

351 METAPHYSICS 3 prereq 10 credits in Philosophy. What are the basic questions of Metaphysics? Can metaphysics attempt to answer? What questions is it fitted to answer? Traditional and contemporary pursuits of these questions.

354 PHILOSOPHY OF RELIGION 5 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 4 o/y prereq 5 credits in Philosophy and c/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 and their relation to 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.

361 ARISTOTLE 5 e/y prereq 298 or 10 credits and c/l. Reading and interpretation of selected works.

365 DESCARTES, SPINOZA, LEIBNIZ 5 e/y prereq 300 or 10 credits in Philosophy and c/l. The development of Continental Rationalism.

366 LOCKE, BERKELEY, HUME 5 o/y prereq 300 or 10 credits in Philosophy, and c/l. The development of British Empiricism.

367 KANT 5 o/y prereq 300 or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

370 MAJOR PHILOSOPHERS OF THE NINETEENTH CENTURY 5 R-6 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.
PHYSICS

is the science that has as its objective the formulation and verification of laws or relationships among the different physical quantities. Some of the most important of these quantities are mass, time, length, force, velocity, momentum, electric charge, electric field strength, entropy, wave length. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biophysics, meteorology and geophysics. In addition the subject of philosophy is profoundly influenced both by the methods and development of physics.

The Bachelor of Arts and Master of Arts degrees are offered.

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

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 110-112-221, in the freshman year, and Physics 222-223, in the sophomore year. In addition the subject of philosophy is required. In other departments: Mathematics 121, 151, 152, 251, 252, 253. Knowledge of a modern foreign language is required. The requirement may be satisfied by either (1) taking, in the University, five quarters of one language or three quarters in each of two languages or (2) by a combination of high school and University foreign language study acceptable to the foreign language department as equivalent to (1). A total of 9 credits in English including English 100 and 450 are required except that students scoring less than the 51st percentile on the English section of the SAT exam are required to take English 101 and students receiving 94th percentile or higher are exempt from English. Recommended courses in other departments include: 10 credits of Computer Science courses above 390, Mathematics 311, 312, 313, and 10 credits in each of the groups of Humanities, Social Sciences, and Life Sciences.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

699 THESIS V R-15.

230 PROBLEMS IN PHILOSOPHY V prereq c/l.
240 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/l.
250 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 210 and c/l.
260 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY V prereq c/l.

FOR GRADUATES

500 RESEARCH V R-15. Work on selected problems under direction.

699 THESIS V R-15.
A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.

Either the completion of three quarters of a foreign language or two years of a high school language with grades of C or better is required.

POLITICAL SCIENCE—67

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.

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A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300.
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 Science 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, dental, and veterinary schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their programs carefully 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. To be considered by a School of Medicine the student must have placed high on the Medical College Aptitude Test which he ordinarily takes during his junior year. The same holds true for the pre-dent student who must do well in the American Dental Aptitude Test. Scholarships are 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 5-4 years of mathematics and 5-3 years of a modern foreign language and considerable background in literature and social science. Students who have completed 5 years of mathematics and have taken both a physical science and a modern foreign language are strongly urged to continue with the study of a modern foreign language and science. A high placement on the ACT or SAT exams is a plus.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives a Bachelor of Science degree is of interest to the schools, but it is not considered as important as a general liberal education.

Applicants for entrance to Schools of Medicine exceed the number that are admitted so that only well motivated, well qualified, and competent students are admitted to Schools of Medicine. Well qualified students from the University are usually accepted into Medical Schools.

For Graduates

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choosing but make sure that he can satisfy within the time available (1) the University requirements for graduation, (2) the minimum pre-medical science requirements listed below, and (3) the major requirements for his chosen major field. The student should consult with the pre-medical sciences adviser and the major adviser for the AMA requirements with the pre-medical sciences adviser and both the pre-medical sciences adviser and the major adviser beginning not later than the sophomore year in residence.

The Western Interstate Commission for Higher Education was designated to provide financial aid to Pre-medical, Dental, Veterinary Medicine, and other professional students attending Western professional schools.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT

English 6-9 credits; Humanities 12-15 credits; Social Sciences 12-15 credits; a reading knowledge of a modern foreign language or 25 credits in French, German, or Russian; Chemistry through Organic, Quantitative, and Survey of Physical; one year of college mathematics; one year of college physics; Zoology through Vertebrate Embryology, and Psychology 5-10 credits; and 3-4 credits are recommended in HPER.

It is possible for the Pre-medical Sciences students who have satisfied the course requirements specified above to earn a Bachelor's degree in an ancillary field. A degree in a related field such as Chemistry, Microbiology, Physics, psychology, or Zoology may be earned by completing course work as selected. See Chemistry and Zoology for degrees in those areas with the Pre-med Option.

PRE-MEDICAL SCIENCES CURRICULUM

(Dentistry, Medicine, Veterinary Medicine)

Freshman Year

<table>
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<th>Course</th>
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<td>English 100</td>
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<td>Mathematics 116, 117, 118</td>
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<td>Chemistry 121, 125, 123</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>

| Total Credits | 17 |

The majority of pre-medical sciences students are advised to major in a field that complements the medical sciences. A strong background in the life sciences is recommended.
Sophomore Year

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<tr>
<th>Course</th>
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<td>English 100</td>
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<td>Zoology 111, 112 or 113, 304</td>
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<td>Foreign Language 101, 102</td>
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<td>Electives</td>
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Junior Year

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<td>Chemistry 245, 461 and 482 recommended</td>
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<td>Physics 111, 112, 113 or 220, 225</td>
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<tr>
<td>Foreign Language</td>
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<td>Electives</td>
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Senior Year

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<th>Cr.</th>
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<td>English 480</td>
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PRE-NURSING

The School of Nursing at Montana State University, Bozeman, accepts transfer students from the University of Montana who have completed the Pre-Nursing Program listed below. Students who desire admission to the School of Nursing, Montana State University, should transfer at the beginning of Autumn Quarter of the sophomore year. Applications for Admission to Montana State University should be completed during the summer previous to entrance. Students with sophomore standing wishing admission to a school of nursing other than Montana State University should consult the catalog of the school of their choice for the selection of a freshman program.

Art 200—The Ancient World or Art 125—Design—Survey of Western Art                3
Chem 101, 102—General Chemistry                                                  4.4
Home Ec. 146—Elementary Nutrition                                               3
HPER 230—Human Anatomy                                                          3
Micro 100—Elementary Microbiology                                                3
Micro 101—Elementary Microbiology Lab                                             1
Micro 102—Elementary Medical Microbiology                                        3
Soc 101—Introduction Sociology                                                   3
Zool 202—Human Physiology                                                       3

*May take a 3 credit elective to substitute for 100 level Pre-Considerations Seminar 3

Electives: Total of 9 credits:
Engl 100—Lower Division Composition or Pharm 110—Use and Abuse of Drugs         3
Home Ec 102—Personal & Family Living                                            3
Speech Communication 111—Introduction to Public Speaking                        3

Total: 39

PSYCHOLOGY

is the science of the behavior of man and other animals. The psychologist, using scientific methods, seeks to understand the causes and purposes of behavior. Psychologists serve important functions in most organizations, be they academic, business, government, health, military, or social service.

The Department offers the Bachelor of Arts, Master of Arts and Doctor of Philosophy degrees. Although employment is available for those with a B.A. degree in psychology, a career as a Psychologist requires graduate training.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, a psychology major must complete at least 45 credits in psychology including Psychology 110, 111, 220; two laboratory courses selected from 210, 215, or 310 and two laboratory courses selected from 240, 315, or 320; a minimum of three credits of 390 during the junior or senior year, and 411. Twenty-five of the 45 credits must be in courses numbered 300 or above. At least one English composition course, Mathematics 125 and Zoology 111-113-115 or 111 and 302 are required. The major is strongly advised to take Mathematics 344-345-346, all other mathe-

matics courses that time and talent allow, work in anthropology, literature, philosophy, sociology and additional work in zoology. The major preparing for graduate work in psychology is advised to take Psychology 420 and 491. Those students with sufficient preparation and who show promise are encouraged to take some graduate courses during their senior year.

The Department recommends that majors in Psychology attain proficiency in at least one foreign language.

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) prerequisite. General psychology. Experimental and quantitative methods employed in laboratory approaches to the scientific study of behavior.

190 PSYCHOLOGICAL INVESTIGATION V 1-3 R-5 prerequisite. 110 and c/i. Supervised investigation of psychological problems.

210 (311) LEARNING 5 (4-2) prerequisite. Principles of behavior change.

215 (312) MOTIVATION 5 (4-2) prerequisite. Conditions which influence basic drives, incentives, and the development of complex motives.

230 PSYCHOLOGICAL STATISTICS 5 (4-2) prerequisite. Application of statistics to psychological data.

230 (312) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prerequisite. Course(s) in zoology recommended. Basic neural regulatory mechanisms underlying behavior.

342 PERSONNEL PSYCHOLOGY 3 (3-0) prerequisite. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prerequisite. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (5-0) prerequisite. Description and classification of abnormal orientations, with emphasis on their psychological dynamics.

290 PROBLEMS IN PSYCHOLOGY V R-9 prerequisite. 15 credits in Psychology and c/i.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prerequisite. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.

412 PERSONALITY DYNAMICS 4 (4-0) prerequisite. Graduated standing or senior with c/i. Comparative, perceptual, motivational, frustration, conflict, and defense mechanisms. Major emphasis on psychoanalytic dynamics.

451 INDIVIDUAL DIFFERENCES 3 (3-0) prerequisite. Nature and extent of individual and group differences.

480 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prerequisite 220 and 311 or c/i. Derivation and evaluation of some of the more complex models of learning, choice behavior, and signal detection.

491 TOPICAL SEMINAR V R-6 prerequisite. 15 credits in Psychology and c/i. Topics of current interest with critical examination of the literature.

FOR GRADUATES


505 PROFESSIONAL PROBLEMS IN PSYCHOLOGY 2 (2-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search: forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

510 HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0). Development of concepts, systems, and theories in psychology.
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 School of Journalism offers the following curriculum leading to a Bachelor of Arts degree in Radio-Television.

**FOR UNDERGRADUATES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>140 INTRODUCTION TO RADIO AND TELEVISION 3</td>
<td>Open</td>
</tr>
<tr>
<td>341-342-343 (240, 242, 345) RADIO PRODUCTION 2 prereq 140</td>
<td>364, 365, 440, 441-442-443, 494, Drama 529 (342);</td>
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<tr>
<td>141 Drama 121, 131</td>
<td>4</td>
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<tr>
<td>Journalism 150, 270, 397</td>
<td>9</td>
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<tr>
<td>Free Electives</td>
<td>132</td>
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<td>195</td>
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**FOR UNDERGRADUATES AND GRADUATES**

<table>
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<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>399 ADVANCED RADIO-TELEVISION PROBLEMS V prereq consent of the chairman</td>
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<tr>
<td>440 CINEMATOGRAPHY (see Journalism)</td>
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<tr>
<td>441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses</td>
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<tr>
<td>494 RADIO-TELEVISION SEMINAR 3 prereq or coreq 441</td>
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<tr>
<td>Radio and television and their effective use with emphasis on responsibilities of the broadcasting industry</td>
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RELIGIOUS STUDIES

The proper sphere for the academic study of religions is understood to be coextensive with the broad field of human learning in which the question of the humanity of man lies closest to the surface. It is intended that the study of religions in the University will therefore be taken up in closest conjunction with the humanities, arts, letters, and the natural, social and life sciences. Radial relations are planned with the neighboring departments in these areas, with regard both to curriculum and faculty.

In the course offerings of the Department two emphases are expected to prevail: first, the scholarly analysis and transmission of the enormous body of literature of the world's religions and second, the sensitization of the student to the pertinence of religious studies for a critical and appreciative stance toward his political and social existence. Relate courses are designed to illuminate the religious traditions that inform modern western and non-western cultures generally, and the American cultural situation in particular. The anticipated result will be liberating in the fundamental sense of the "liberal arts." the student of religion will be afforded critical distance on his own religious tradition and at the same time liberated to appreciate the faith of his fathers and alien faiths on a new and richer plane.

Inaugurated in 1969, the Department is still in process of formation; thus a major in the Department and an analogous departmental major in the College have not yet been fully formulated. The following list of courses is by no means complete and will be revised with the addition of faculty.

101-102 INTRODUCTION TO THE STUDY OF RELIGION 3. Enter any quarter. Religion as a humanistic discipline: the phenomenon of religion in relation to other aspects of culture and in relation to root human questions.

112 JEWISH AND CHRISTIAN LITERATURE OF LATE ANTIQUITY 3. The phenomenon of the Jewish and Christian traditions, including both canonical and non-canonical materials.

130 RELIGION IN AMERICA 3. Religious life and thought in the United States as viewed in the context of and as a dimension of the development of American culture.

201-202 HISTORY OF RELIGION IN THE ANCIENT NEAR EAST 3. Enter either quarter 1 or 2. (Part I) To 333 B.C. The political, cultural and religious history of the Near East from the neolithic period to the time of Alexander the Great (196) From 333 B.C. To A.D. 325. The impact of Hellenistic civilization with special emphasis on the problem of cultural syncretism.


212 THE LEGACY OF PAUL 3. The life and letters of Paul; the structure and role of the Church as understood, and the legacy of Paul in Reformation and post-Reformation Christianity.

226 THE RISE OF HISTORICAL CONSCIOUSNESS IN THE ANCIENT NEAR EAST 3. preq History 201 or R.S. 201. Mythology, mythography, ethnography and rude historiography and their influence on the Western understanding of history.

248 CHRISTIANITY AND MARXISM 3. Enter any quarter. Preq 5 credits of Political Science or c/i. Intellectual, social, and political engagement between representative forms of Christianity and Marxism, primarily in the west.

249 RELIGIOUS ETHICS 3. A study of the ethics of a representative variety of major religious movements and figures (e.g., Mysticism east and west, modern Islam, Baha Gikakai, Hasidic Judaism, American social gospel movement, Puritanism, Gandhi, Luther, Tolstoy, John XXIII).

250 CONTEMPORARY THEOLOGY 3. Enter any quarter. Preq 3 credits in Philosophy or R.S. The thought of major Christian figures, Protestant and Roman Catholic, in the 20th Century.

311 THE BIBLE IN THE AMERICAN TRADITION 3. preq History 261 and 262 or c/i. Primary documents in the history of American Biblical interpretation; the relation of biblical interpretation to theological issues and broader cultural phenomena.

312 CONTEMPORARY BIBLICAL INTERPRETATION 3. c/i. Major biblical interpreters in the twentieth century.

327-328-329-330 RELIGION IN THE HELLENISTIC PERIOD 3. preq History 201 and 202, or R.S. 201 and 202. Enter any quarter. The major religious traditions of late Antiquity, including an analysis of the relationship of these traditions to those of the early Hellenistic context (327) Christianity (328) Judaism. (329) Gnosticism. (330) Graeco-Roman religions.

331 RHETORIC IN CLASSICAL GREEK AND SEMITIC LITERATURE 3. Enter any quarter. Preq R.S. or Greek 211 and c/i. This course courses Gorgias and the Hebrew homily through Paul.

346 RELIGION AND SOCIAL REALITY 3. preq 5 credits in sociology or c/i. Cult and society from the standpoints afforded by various religious traditions.

347 HUMAN SPIRIT AND TECHNOLOGY 3. preq 10 credits in physical sciences or c/i. The relationship of science and "production" in human society. Some classical and medieval sources will be used, but the emphasis will fall on modern industrial society.

348 GOD-LANGUAGE IN NINETEENTH CENTURY THOUGHT 3. preq 10 credits in Philosophy or c/i. Theories of deity (especially the origins of the "death of God" idea) in 19th century Europe, especially in Hegel, Nietzsche, Feuerbach, Stirner, Marx, and Kierkegaard.

349 PHILOSOPHY OF RELIGION 5. preq 5 credits in Philosophy and 5 credits in Religious Studies, or c/i. Philosophical dimensions of the phenomenon of religious experience in modern society. The investigation of types of religious sensibility. (Same as Philosophy 354.)

350 RELIGION IN CONTEMPORARY SOCIETY 3-5. A critical study of religious issues as expressed in selected works from contemporary letters, arts (visual, plastic, musical), and social commentary.

358 RELIGION AND POLITICAL IMAGINATION 5 cr. cr. 3 credits of 350. The study of the role of religion in the political and social life of the nation-state, within its international context, on the part of the student to develop skills and attitudes vital to the career professional Air Force officer. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University results in a Reserve Commission in the United States Air Force. Pursuance of either program is on an elective basis. Students interested in careers in the Air Force or Army should consult the Professor of Aerospace Studies or the Professor of Military Science.

495 PROBLEMS IN RELIGIOUS STUDIES 3 R 5-15. prereq 30 credits in Liberal Arts and c/i. Study or research in topics selected according to the needs and objectives of the individual student.

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. These programs are designed to provide education that will develop skills and attitudes vital to the career professional Air Force officer. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University.

FOUR-YEAR PROGRAM

The four-year program requires completion of the General Military Course and the Professional Officer Course during four years of attendance at the university. Field Training is also required. A monthly retainer fee (currently $50) is paid to all students enrolled in the Professional Officer Course. Scholarships (full tuition, fees, book allowances) are available to a number of students enrolled in either the General Military or the Professional Officer Course. Further information may be obtained from the Department of Aerospace Studies.

GENERAL MILITARY COURSE

101-102-103 WORLD MILITARY SYSTEMS 2. Enter any quarter. The doctrine, mission, and organization of the United States Air Force. The strategic offensive and defensive functions of the United States' national policies: the element, function and employment of nuclear weapons; civil defense; aerospace defense; U.S. general purpose and aerospace support forces; the role of resources in the development and use of space; special attention to limited war. One hour classroom and one hour Corps Training each week.

201-202-203 WORLD MILITARY SYSTEMS 2. Enter any quarter. Preq 101-102-103. Defense policies; nature and context of war; military policies and strategies of major world powers; the role of alliances in U.S. defense policy; relations with the Soviet Union; decision-making; organization and function of the Department of Defense, role of the military in the United States' national policies: the element, and process of defense decision-making. One hour classroom and one hour Corps Training each week.

PROFESSIONAL OFFICER COURSE

Completion of the General Military Course (Field Training for the Two-Year Program) is a prerequisite for admission into the Professional Officer Course. In addition the student must enlist in the Air Force Reserve (this enlistment may be cancelled if student withdraws from the University or for other specific reasons), pass a physical examination and the Air Force Officer Qualifying Test.
301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER
(301) History and development of manned flight to 1910. (302) History and development of manned flight to 1950, with emphasis on the use of military and other governmental agency maps. Introduction to small unit tactics with emphasis on leadership skills. Principles of American military history from pre-Colonial period to the Civil War, emphasis on international diplomatic issues. Small unit tactics and principles of war and development of the military in an emerging United States. (303) History of American military history from the Civil War to the present with emphasis on the leadership aspect of selected campaigns and the factors which lead to tactics utilized by our military leadership. Three hours of classroom theory and four hours of leadership laboratory each week. Leadership laboratory consists of preparing a presentation, critique, and practical exercise. The leadership and operational aspects of cold weather survival are included and survival training include military cross-country skiing is emphasized during the winter quarter.

201-202-203 APPLIED LEADERSHIP AND MANAGEMENT 2
Prerequisites: 200-200 series. (201) Leadership in the Air Force, emphasis on the use of military and other governmental agency maps. Introduction to small unit tactics with emphasis on leadership skills. Principles of American military history from pre-Colonial period to the Civil War, emphasis on international diplomatic issues. Small unit tactics and principles of war and development of the military in an emerging United States. (202) History of American military history from the Civil War to the present with emphasis on the leadership aspect of selected campaigns and the factors which lead to tactics utilized by our military leadership. Three hours of classroom theory and four hours of leadership laboratory each week. Leadership laboratory consists of preparing a presentation, critique, and practical exercise. The leadership and operational aspects of cold weather survival are included and survival training include military cross-country skiing is emphasized during the winter quarter.

ADVANCED COURSE: OFFICER TRAINING
In the four year program, completion of the Basic Course is a prerequisite for admission to the Advanced Course. Applicants must pass a physical examination and the aptitude test prescribed by Department of the Army; and they must be recommended by both a local unit commander and the Professor of Military Science. This enlistment may be cancelled if the student withdraws from the University or for other specified reasons.

301-302-303 ADVANCED LEADERSHIP AND MANAGEMENT 3.
(301) Leadership development series of courses presented in small unit operations. Army communications systems and their application in tactical and strategic operations. Principles and techniques of tactical operations with emphasis on the preparation of the commanders estimates, decisions, guidance to staff and supervision of the execution of missions. Three hours of classroom theory and four hours of leadership laboratory each week. Leadership laboratory consists of practical work in instructing and directing small unit operations and other exercises designed to develop the junior officer. 404 FLIGHT TRAINING. No credit. This elective is offered at no cost to students who are flying cadets entering the four year program. Students are reimbursed for travel at a maximum of $4 per mile and receives pay of $315.42 per month for the complete camp period.

401-402-403 THEORY AND DYNAMICS OF THE MILITARY TEAM 3 prereq: 301-302-303. (401) Military administration and logistics with emphasis on duties and functions of staff officers and specialists. Introduction to principles of Military Law. (402) Advanced advanced administrative and logistical training with emphasis on duties and functions of the senior officer. Staff elements, em-phasis and logistics. Principles and techniques of tactical operations with emphasis on the preparation of the commanders estimates, recommendations and planning. (403) Advanced tactical training with emphasis on the preparation of the commanders estimates, decisions, guidance to staff and supervision of the execution of missions. Three hours of classroom theory and one hour of leadership laboratory each week. Leadership laboratory consists of practical application in instructing and directing small units and other exercises designed to develop the junior officer.

405 FLIGHT INSTRUCTION 3. (300-400 series) Basic flying maneuvers, cross country flying and advanced flying techniques for a total of 360 hours dual instruction, 15 hours in practical solo application and eligible for FAA private pilot written examinations. 15 hours in practical solo application and eligible for FAA examination. Instruction is given by arrangement.

ARMY ROTC
The Department of Military Science offers a two and a four year program leading to a commission in the United States Army. The commission is earned upon completion of a four year course (Army Science and Education) and University requirements for a baccalaureate degree.

The two-year program requires the student to pass a physical examination, the Air Force Officer Qualifying Test; attend Six Week Field Training and complete the Professional Officer Course. A monthly retainer fee (currently $50) is paid to all students enrolled on this program. Private Pilot license is available for a candidate who is able to students in the Two Year Program. Students interested in this program should consult with the Department of Aerospace Studies in their sophomore year.

250 FIELD TRAINING 6.0. Six weeks of training conducted on an Air Force base in the summer, prior to entry into the Professional Officer Course. Skills developed by this three week course are: channel: fundamental knowledge of the Aerospace Forces of the United States. Organizes, directs and assists in the development of small unit operations. Army communications systems and their application in tactical and strategic operations. Principles and techniques of tactical operations with emphasis on the preparation of the commanders estimates, decisions, guidance to staff and supervision of the execution of missions.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (Same as for the four year program.)
401-402-403 THE PROFESSIONAL OFFICER 3. (Same as for the four year program.)

FLIGHT INSTRUCTION PROGRAM
The Flight Instruction Program is offered to all pilot qualified cadets. Flight instruction consists of classroom and practical application as instructed as follows:

401-402-403 THE MILITARY TEAM 3 prereq: 301-302-303. (401) Leadership and management in the Air Force emphasis on logistics. Principles and techniques of tactical operations with emphasis on the preparation of the commanders estimates, recommendations and planning. (402) Advanced tactical training with emphasis on the preparation of the commanders estimates, decisions, guidance to staff and supervision of the execution of missions. Three hours of classroom theory and one hour of leadership laboratory each week. Leadership laboratory consists of practical application in instructing and directing small units and other exercises designed to develop the junior officer.

403 ADVANCED CAMP No credit. Six weeks at an Army Training Center taken after completion of 303. This camp supplements campus instruction by providing the cadet practical experience and instruction in tactics and technical subjects with emphasis on leadership development. Student is reimbursed for travel to and from camp at the rate of 25 cents per mile and receives pay of $150.42 for the complete camp period.

FLIGHT TRAINING. No credit. This elective is offered at no cost to students who are flying cadets entering the four year program. Students are reimbursed for travel at a maximum of $4 per mile and receives pay of $315.42 per month for the complete camp period.

404 FLIGHT TRAINING. No credit. This elective is offered at no cost to students who are flying cadets entering the four year program. Students are reimbursed for travel at a maximum of $4 per mile and receives pay of $315.42 per month for the complete camp period.

ARMY ROTC
The Department of Military Science offers a two and a four year program leading to a commission in the United States Army. The commission is earned upon completion of a four year course (Army Science and Education) and University requirements for a baccalaureate degree.

The four year program requires completion of Military Science courses during four years of attendance at the University. In addition, a six-week summer camp is required upon completion of the third year of ROTC. The two year program is a competitive program and encompasses the on-campus portion of the last two years of the four year program, and the six-week advanced summer camp. However, as a prerequisite to beginning this course, the student must attend a special six-week basic camp. A monthly subsistence allowance (currently $50) is paid to all cadets in the Advanced Summer Course. (300) The flight training program for qualified cadets is offered during the last year of ROTC training. The basic cadet training is scheduled for twelve weeks during the summer quarter. One hundred hours of flight instruction are required by the student each summer quarter. Additional hours of flight instruction may be obtained from the Professor of Military Science.

FOUR YEAR PROGRAM
GENERAL COURSE: BASIC MILITARY EDUCATION
The Basic Course is open to all registered University students. No military training obligation or service commitment is incurred as a result of enrollment.

101-102-103 FUNDAMENTALS OF MILITARY LEADERSHIP AND MANAGEMENT 3, 2. Enter any quarter. (101) An introduction to the organization, functions, and missions of the Department of Defense and the Armed Forces. Emphasis in understanding the role of the U.S. Army in our nation's defense. (102) Continuing National Security considerations with emphasis on the U.S. Army's role as part of the National Defense team. (103) Continuation of National Security considerations as applied to the U.S. Army. One hour classroom theory and one hour leadership laboratory each week. Leadership laboratory consists of practical application of military leadership training taught by practical exercise. The leadership and operational aspects of cold weather, mountain survival training to include military cross country skiing is emphasized during the winter quarter.
SOCIAL WELFARE

is a broad field of study. As a liberal arts discipline it is concerned with the study of the network of human helping services, including their development, organization, and operation in society.

The profession of social work is only one of a large range of professions that fall within the social welfare network. Social work undertakes to facilitate human development through personally satisfying and socially sanctioned life experiences. Social workers are expected to develop a range of skills and knowledge for use in intervening in the lives of individuals, small groups, and complex organizations. The degree of Bachelor of Arts is offered in social welfare. In addition, students planning a career in social work should complete the Social Work Certification Sequence.

The undergraduate major in social welfare is available for those who wish to: 1) prepare for employment in the social services; 2) prepare for entry into a graduate school of social work; 3) prepare for graduate education in other helping service professions; 4) prepare for intelligent and informed citizen participation in the solution of social problems.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general graduation requirement listed earlier in the catalog, 45 credits in social welfare courses are required for the Bachelor of Arts degree with a major in social work. The following courses must be taken: SW 181, 200, and 344. In addition, Soc 101 and 201, or an acceptable equivalent in the area of social welfare, must be taken. Students must pass all courses with a grade of B or above in the core, and at least 12 upper division credits in the social and behavioral sciences.

The requirements for the Certificate, students must attain at least a grade of B in the following courses: SW 181, 200, and 344, or an acceptable equivalent in the area of social welfare. Students scoring at or above the 93rd percentile on the ACT English examination will be exempt from this requirement. Students must pass SW 340, 341, 342, and 499. The core requirements of the Certificate program are designed for students who wish a degree in social welfare. It is an optional sequence available to social welfare majors and other students majoring in the behavioral and social sciences. Two quarters of English composition, and at least 12 additional credits in upper division credits of economics. The degree of Bachelor of Arts in Sociology and Economics the following courses in addition to general departmental requirements must be taken: Soc 101, 201, 207 or 208, 311, and at least 12 additional credits in upper division credits of economics.

483 SOCIAL WORK LABORATORY V 2-4 R-12 prereq 181. A program of self-help project experiences in dealing with community needs and resources. Theoretical analysis of experienced situations. Learning by means of the laboratory method.

485 INDEPENDENT STUDY V 1-2 R-6 prereq c/i.

490 SEMINAR V R-9 a/y prereq 15 credits in social welfare.

499 FIELD WORK PRACTICUM V 12-20, 200, and either previous completion or concurrent enrollment in 340, 341, or 342: concurrent enrollment in 489. The Practicum Seminar is also required. Field work or internship, under supervision, in public and private agencies and institutions.

502 ADVANCED RESEARCH METHODS (see Sociology)

520 ADVANCED SOCIAL WORK THEORY 4 prereq graduate standing.

540 THE SUPERVISORY PROCESS IN SOCIAL WORK 4 prereq experience in social welfare work and graduate standing.

550 BEHAVIORAL AND SOCIAL SCIENCE CONCEPTS FOR SOCIAL WORK 4 prereq graduate standing.

590 TOOLS OF SOCIAL WELFARE PLANNING 4 prereq graduate standing.

599 FIELD WORK PRACTICUM (see Sociology).

SOCIOLOGY

is a social science concerned with relationships which link man with his institutions and his society. Sociology is also a profession which offers various services to business, governmental, and other agencies seeking help in developing desired relationships among their members. The degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy are offered in sociology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general graduation requirement listed earlier in the catalog, 45 credits in sociology courses are required for the Bachelor of Arts degree. The 45 credits in sociology must include the following courses: Soc 101, 201, 207 or 208, 311, and at least 12 additional credits in upper division anthropology course must be taken. Students planning to undertake graduate work should also take Sociology 205 and 314 and Anthropology 153. Two quarters of English composition. The sociology major requirement for graduation is also required. Field work or internship, under supervision, in public and private agencies and institutions.

580 TOOLS OF SOCIAL WELFARE PLANNING 4 prereq graduate standing.

590 FIELD WORK PRACTICUM (see Sociology).

COMBINED MAJOR. For the combined major leading to the degree of Bachelor of Arts in Sociology and Economics the following courses in addition to the general graduation requirements must be completed: Soc 304 and at least 12 additional credits of upper division sociology: Econ 211-212, 311, and at least 12 additional upper division credits of economics.

GRADUATE WORK. See Graduate School Bulletin.
404 COLLECTIVE BEHAVIOR 3 a/y prereq 15 credits in sociol­
ogy including 206 or works on the sociology of 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. Pro­
blems 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 socializa­
tion, institutions, and social change.

467-408-409 SEMINAR V 2-3-5 R-10 prereq 15 credits in sociology
or c/i. Enter any quarter. (Topics vary.)

410 PENOLOGY 5 a/y prereq 15 credits in sociology including
306 or 311 or c/i. Theory and practice of penal methods in correc­
tional institutions. Probation and parole.

411 PERSONALITY AND SOCIAL STRUCTURE 3 prereq 15
credits in sociology including 206, or c/i. The major theoretical
links between structural features of society and the concept of per­
sonality, and the implications of such connections for other societal
and individual processes.

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 RESEARCH METHODS 5 prereq 201 or = and
graduate standing in sociology or c/i. The criteria for social science
investigation and current methodological orientations.

503 SOCIOLOGICAL STATISTICS 5 prereq Math 125 or Soc 205
and graduate standing in sociology or c/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 sociol­
ogy 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 sociol­
y or c/i. (Topics vary.)

507-587-589 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 intern­
ship.

607-608-609 SEMINAR V R-15 prereq graduate standing in sociol­
y or c/i. (Topics vary.)

612 ISSUES IN SOCIOLOGICAL THEORY 3 prereq graduate
standing in sociology or c/i.

613 ISSUES IN SOCIOLOGICAL RESEARCH 3 prereq graduate
standing in sociology or c/i.

699 THESIS OR DISSERTATION V. R-4 for M.A.; R-15 for Ph.D.

SPEECH COMMUNICATION

is that branch of the behavioral sciences concerned directly
with human message systems. Courses in speech communica­
tion emphasize theoretical conceptions of the nature, produc­
tion, use, and role of messages in life and society, and applications of
these conceptions to interpersonal, public, and organizational communication.

Undergraduates are awarded the Bachelor of Arts degree in Speech
Communication, but may select one of several emphases, depending upon
their interests. Students interested in teaching may select either the Teach­
ing Communication Skills emphasis or the Teaching Speech Communica­
tion Education emphasis; students inter­
ested in entering business, indus­
try, government or graduate school, and/or desiring a liberal arts background, may select the Communication emphasis.

Graduate students are awarded a Master of Arts degree or a Master of Speech Communication degree (see Graduate Bulletin).
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. A major in this department must complete a minimum of 45 credits and not more than 70 credits in speech communication.

COMMUNICATION EMPHASIS
In addition to the general requirements for graduation listed earlier in the catalog, a major with an emphasis in communication must complete a core curriculum as follows: SpCo 110, 111, 112, 118, 234, 314, 353, 355, 444, and 445 or 446; Anth 152 or 153; 5 credits in English; 5 credits in Psychology; 5 credits in Sociology. Additional requirements are listed below:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SpCo 110—Introduction to Interpersonal Communication</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 112—Introduction to Philosophy</td>
<td>5</td>
<td>5*</td>
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<tr>
<td>Sophomore</td>
<td>Major Credits</td>
<td>Minor Credits</td>
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<tr>
<td>SpCo 115—Oral Expression</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 234—Introduction to the Process of Communication</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>SpCo 353—General Semantics</td>
<td>3</td>
<td>3</td>
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<tr>
<td>SpCo 355—Message Composition</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 361—Oral Interpretation</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

TEACHING SPEECH COMMUNICATION EMPHASIS
In addition to any general requirements for graduation listed earlier in the catalog and course requirements listed in the catalog and the professional, a major with an emphasis in teaching speech communication must complete the following:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Major Credits</th>
<th>Minor Credits</th>
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</thead>
<tbody>
<tr>
<td>SpCo 110—Introduction to Interpersonal Communication</td>
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<td>3</td>
</tr>
<tr>
<td>SpCo 111—Introduction to Public Speaking</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 112—Introduction to Communication</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Sophomore</td>
<td>Major Credits</td>
<td>Minor Credits</td>
</tr>
<tr>
<td>SpCo 314—Discussion and Small Groups</td>
<td>3</td>
<td>3</td>
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<tr>
<td>SpCo 335—Message Composition</td>
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<td>3</td>
</tr>
<tr>
<td>SpCo 361—Oral Interpretation</td>
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<td>3</td>
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Junior

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<thead>
<tr>
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<tbody>
<tr>
<td>SpCo 234—Introduction to the Process of Communication</td>
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<tr>
<td>Engle 100—Lower Division Composition</td>
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<tr>
<td>SpCo 110—Introduction to Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 112—Argumentation</td>
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<td>SpCo 118—Oral Expression</td>
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Senior

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<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>SpCo 314—Discussion and Small Groups</td>
<td>3</td>
</tr>
<tr>
<td>Jour 270—Report Writing</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 361—Oral Interpretation</td>
<td>3</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES
For explanation see Course Descriptions (Index)

110 INTRODUCTION TO SYSTEMS OF COMMUNICATION 5.
Theory and evidence relevant to interpersonal and intrapersonal systems of communication.

111 INTRODUCTION TO PUBLIC SPEAKING 3.
Theories and principles of public speaking. Practice in preparation, delivery and criticism of speeches.

112 ARGUMENTATION 5.
The principles by which belief and conduct are influenced through appeals to logical reasoning. Evidence, analysis, logic fallacies, refutation, rebuttal and their application to current economic, social and political problems.

115 PERSUASIVE COMMUNICATION 4.
Attitude and behavior modification primarily by oral communication.

118 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) prerequisite 111.
Practice in composition, delivery and criticism.

225 INTRODUCTION TO THE PROCESS OF COMMUNICATION 5 (4-5).
Major concepts and principles relevant to the nature and use of signs and symbols in the total process of communication.

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

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

313 CONFERENCE LEADERSHIP 2.
Methods and procedures of conducting meetings, including the use of parliamentary procedure.

314 (214) DISCUSSION AND SMALL GROUPS 3.
The processes involved in informal small-group interaction, includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4.
Theory and research on questions of intragorganizational communication problems.

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

335 MESSAGE COMPOSITION 3.
Preparation of oral messages, with emphasis on organization and language choice.
FOR UNDERGRADUATES AND GRADUATES

422 (421) TEACHING SPEECH IN THE SECONDARY SCHOOL 3 prereq 15 credits in Speech Communication. Planning the speech curriculum and its relationship to other school subjects; instructional methods and methods of teaching speech. Same as Educ 442.

424 METHODS OF TEACHING COMMUNICATION SKILLS 3 prereq c/i. Same as Education 424.

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.

444 (344) RHETORICAL THEORY 3. The historical development and current status of rhetorical theory.

445 HISTORY OF AMERICAN PUBLIC ADDRESS 3 prereq c/i. Critical analyses of speeches of historically prominent American speakers and issues with which they were identified.

446 CONTEMPORARY PUBLIC ADDRESS 3. Critical analysis of techniques of recent speakers and the issues with which they are identified.

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

455 DIRECTING THE FORENSIC PROGRAM 3. Philosophy, organization, and administration of competitive speech activities.

469 (369) ADVANCED ORAL INTERPRETATION 3 prereq 361 or c/i.

475 NONVERBAL HUMAN COMMUNICATION 3, prereq c/i. Codes and message systems classified as nonverbal, including kinesics, cultural, spatial, time.

480 LINGUISTIC METHODS 3. (See Anthropology.)

490 PROBLEMS V R-6.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 15 credits of junior and senior level Speech Communication or c/i. The basic approaches to graduate and professional activities.

FOR GRADUATES

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

512 ORGANIZATIONAL COMMUNICATION 3 prereq c/i.

514 SMALL GROUP COMMUNICATION 3 prereq c/i.

519 SEMINAR: COMMUNICATION MEASUREMENT 3 prereq Statistics.

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

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

533 SEMINAR: LANGUAGE BEHAVIOR 3, R-6, prereq c/i.

541 PERSUASION 3 prereq c/i. Theories and research concerned with the processes by which behavioral and attitudinal change are produced primarily by communication.

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

551 CONTINUING MESSAGE STRATEGIES 3 a/y prereq c/i.

553 SEMINAR: RHETORIC AND PUBLIC COMMUNICATION 3 a/y prereq c/i.

571 SOCIODRAMA 3 a/y c/i.

588 COMMUNICATION PRACTICES 3. (See Business Administration.)

597 RESEARCH METHODS AND MATERIALS 3 prereq Statistics. Principles and techniques of quantification and design in communication research. Practice in the techniques of professional writing.

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

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.
University does not offer a degree in linguistics, a concentration in linguistics is offered to students to fulfill 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. Refer to the Departments of Anthropology, English, Foreign Languages, Philosophy, Communication, and Speech Pathology and Audiology for course offerings in linguistics.

GRADUATE WORK. See Graduate Bulletin.

FOR UNDERGRADUATES

100 ORIENTATION TO SPEECH PATHOLOGY AND AUDIOLOGY I 1 (1-1) prereq c/i. Orientation to history and current development of field of Speech Pathology and Audiology with supervised observations in University Speech and Hearing Clinic.

101 ORIENTATION TO SPEECH PATHOLOGY AND AUDIOLOGY II 1 R-3 (1-1) prereq SPA 100. Principles of observation and reporting along with participation in clinical activities as assistant to clinicians.

119 PHONETICS 2 (2-1). Transcription (International Phonetic Alphabet) and standards of pronunciation and dialect.

232 INTRODUCTION TO COMMUNICATION 5 (4-2). Physiological, psychological, sociological, and cultural determinants of the production and reception of signs in human communication.

235 COMMUNICATION DISORDERS I 5 (5-1) prereq 119, 225. Theories, research and selected remedial procedures relating to receptive and expressive aspects of disorders of articulation and voice.

236 COMMUNICATION DISORDERS II 5 (5-1) prereq 235. Theories, research and selected remedial procedures relating to disorders of language, rhythm and fluency.

330 INTRODUCTION TO SPEECH PATHOLOGY 3 (3-1). For non-majors. Speech and language problems commonly encountered in the classroom. (Non-majors may take for graduate credit.)

337 COMMUNICATION DISORDERS III 3 (3-1). Psychosocial problems of communication including those language problems associated with infantile autism, psychotic conditions, and socio-cultural differences between speakers and listeners.

338 CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS 3 (3-1) prereq 236 or c/i. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

341 DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS I 3 (3-1) prereq SPA 119, 225. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

342 DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS II 2 (4-0) prereq 941. Supervised clinical practice in the outpatient clinic.

351 DEVELOPMENTAL SEMIOLOGY 3 prereq SPA 119, 225. Characteristics and determinants of the sign process associated with the main stages in human development through the life span.

380 CLINICAL AUDIOLOGY 3 (3-1) prereq 222. Fundamental principles related to the measurement of hearing. Psychosocial problems and clinical techniques employed with the handicapped.

FOR UNDERGRADUATES AND GRADUATES

419 ADVANCED PHONOLOGY 3 a/y. Intonational and phonological systems of language.

420 MOTOR AND PERCEPTUAL PHONETICS 4 (3-2) a/y. Analysis and synthesis of voice, speech and hearing mechanisms.

423 CLINICAL PRACTICUM 1-3 (0-2) R-4 prereq 338 and 341. Twenty clock hours per credit of supervised clinical practice in the Speech and Hearing Clinic.

431 STUTTERING 3 (3-1) prereq 236. Stuttering as learned behavior: emphasis on prevention and habilitation.

432 ORGANIC DISORDERS OF COMMUNICATION I 3 (3-1) prereq 236 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical and physiological systems.

433 ORGANIC DISORDERS OF COMMUNICATION II 3 (3-1) prereq 236 and 341. Theories, research and therapeutic procedures for problems of communication associated with neurological disorders.

434 ARTICULATION: ACQUISITION AND DISORDERS 4, prereq 235. Acquisition of articulatory behavior in children's language; types, causes, and remediation of disorders.

435 METHODS OF SPEECH AND HEARING THERAPY IN THE SCHOOL 2 prereq 338. Methods and policies related to establishing and conducting a speech and hearing program in a school system with emphasis at the elementary level.

436 VOCAL BEHAVIOR AND DISORDERS 3 prereq 235. Functional and organic therapeutic techniques aimed at remediation for efficient use.

437 LANGUAGE DISORDERS IN CHILDHOOD 4 (3-2). Evaluative techniques, etiology, symptomatology, and therapeutic approaches to deviant language behavior in children.

450 BIOLOGICAL ASPECTS OF COMMUNICATION 5 prereq 222. Anatomical, physiological, neurological aspects of communication and their relation to perception, motivation, and learning.

451 PSYCHOLINGUISTICS 3 a/y prereq SpCo 234 and Engl 360. Recent theories and evidence concerned with the empirical analysis of linguistic behavior. (Credit not allowed for both SPA and SpCo 451.)

471 COMPARATIVE SEMIOLOGY 3 a/y prereq Zool 111-112-113 or c/i. The sign process based on evidence and observation at selected levels of the phyletic scale.

481 DIAGNOSTIC AUDIOLOGY 3 (3-1) prereq 380. Special audiometric procedures used in otological diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.

482 REHABILITATION OF THE HEARING HANDICAPPED 3 (3-1) prereq 380. Speech reading, auditory training, hearing aid fitting and evaluation, speech habilitation and conservation in children and adults; relationships with education and vocational counseling.

490 PROBLEMS V R-4 prereq c/i.

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 3 prereq 15 credits of junior and senior level Speech Pathology and Audiology or c/i. The basic approaches to graduate and professional activities.

FOR GRADUATES

500 RESEARCH V R-10 prereq c/i.

513 PSYCHOACOUSTICS 3 a/y prereq c/i. Current research relating to the basic physical variables of speech and hearing and to the processes of speech and analysis and synthesis.

515 SEMINAR: LABORATORY AND CLINICAL INSTRUMENTATION 3 prereq c/i.

523 ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS V (6-2) R-6 prereq 4 credits of 425.

538 PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY IV (6-0) R-9 prereq 435.

537 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/i.

538 SEMINAR: ANATOMICAL DEFECTS OF SPEECH 3 prereq c/i.

539 SEMINAR: NEUROMUSCULAR DEFECTS OF SPEECH 3 prereq c/i.

541 SEMINAR: TEST ADMINISTRATION AND INTERPRETATION FOR COMMUNICATION PATHOLOGIES 3 c/i.

542 ADVANCED DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS 2 (1-3) R-6. Supervised practicum in diagnostic clinics.

547 SEMINAR: LANGUAGE DISORDERS 3 prereq c/i.

559 SEMINAR: MEDICAL ASPECTS OF COMMUNICATION DISORDERS 3 c/i. Discussion of the medical aspects of communication disorders with participation of a number of medical specialists.

583 ADVANCED CLINICAL AUDIOLOGY 3 (3-1) prereq 481. Noise measurement, exposure, and control; hearing conservation in industry; architectural acoustics survey; experimental clinical procedures, administrative aspects of audiological services.

584 INSTRUMENTATION FOR AUDITORY REHABILITATION 3 (3-1) prereq 462. Recent research relating to experimental uses of amplification. Theory and practice in the design, construction, and application of hearing aids, portable amplifiers, auditory training units, and institutional audiovisual instrumentation.

585 SEMINAR: MEASUREMENT OF HEARING 3 (3-1) prereq c/i.

586 SEMINAR: REHABILITATION OF THE HEARING IMPAIRED 3 (3-0) prereq c/i.

587 SEMINAR: HEARING CONSERVATION PROGRAMS 3 prereq c/i.

597 (399) TOPICAL SEMINAR V R-9 prereq c/i.

599 Thesis V R-12.
WILDLIFE BIOLOGY

is the study of wild vertebrate animals, their habitats, and their conservation. The undergraduate curriculum described herein, constitute preprofessional training for future employment in fish and game conservation, and provides an excellent background in general ecology.

Very few employment opportunities exist in wildlife management or research for holders of the Bachelor's degree. Wildlife Biology students should plan to continue their education, at least through the Master's degree, in order to qualify for most state and federal wildlife management and/or research positions.

There are three optional curricula in the Wildlife Biology program: Terrestrial, Aquatic, and Honors. The Terrestrial and Aquatic options follow the same schedule of courses for the freshman and most of the sophomore year, and then pursue different curricula for the next two years. Each leads to the Bachelor of Science in Wildlife Biology. The Wildlife Honors curriculum is designed particularly for students with strong academic records who intend graduate work. Entrance into this option is open only to students at the beginning of their junior year who have a 3.0 G.P.A. and who petition the staff for entrance.

This university is particularly well suited for instruction in Wildlife Biology because of the excellent opportunities for field instruction and research, and the presence of such facilities as the Biological Station, Montana Forest and Conservation Station, and the Montana Cooperative Wildlife Research Unit.

HIGHSCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student should elect four years of mathematics in high school, and at least one year each of biology and chemistry.

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. A basic knowledge of a modern foreign language may be required for Honors students electing preparation for graduate work leading to a doctorate. Candidates for all options should use at least 30 of the elective credits provided for in the curriculum for coursework other than science or mathematics.

WILDLIFE BIOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Bot-Zool 111—General Biology</td>
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<td>Botany 114, 115—General Botany</td>
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<tr>
<td>*Chem 101, 102, 103—General, Survey, Organic</td>
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<tr>
<td>Chem 104, 105, 106—Lab</td>
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<tr>
<td>**Math 107, 108—Math for Biological Sciences</td>
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<tr>
<td>Zool-Bot-For 170—Survey of Wildlife Careers</td>
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<td>Engl 100—Lower Division Composition</td>
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<tr>
<td>Electives</td>
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TERRESTRIAL OPTION

Sophomore Year

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<td>Zoology 113, 112—General Zoology</td>
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<tr>
<td>Botany 235, 240—Plant Physiology, Local Flora</td>
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</tr>
<tr>
<td>SPCO 111—Introduction to Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Bot-Zool 250—Basic Concepts of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Bot-Zool 251—Ecology Lab</td>
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<td>Phys 111, and 112 or 113—General Physics</td>
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<td>Electives</td>
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Junior Year

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<tbody>
<tr>
<td>Zool 309, 308—Mammalogy, Ornithology</td>
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<tr>
<td>Zool 330, 331—Cellular Phys. Comp. Phys.</td>
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<tr>
<td>Forestry 360—Range Management</td>
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<tr>
<td>Math 125 or Math 244, 345—Statistical Methods</td>
<td>3-6</td>
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<tr>
<td>Forestry 250 or Jour 354—Technical Writing</td>
<td>3-6</td>
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<td>Electives</td>
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Senior Year

<table>
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<tr>
<td>For 470, 471, 472—Adv. W.L., Big Game, Habitat</td>
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<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Zoology—Population Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 300—Community Ecology (Recommended)</td>
<td>5</td>
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<tr>
<td>Zool 469—Animal Behavior</td>
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<tr>
<td>Zool-Bot-For 491, 492, 493—Senior Wildlife Sem.</td>
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<td>Electives</td>
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AQUATIC OPTION

Sophomore Year

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<td>Zool 113, 112—General Zoology</td>
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<tr>
<td>Botany 235—Plant Physiology</td>
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<td>SPCO 111—Introduction to Public Speaking</td>
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<tr>
<td>Bot-Zool 250—Basic Concepts of Ecology</td>
<td>3</td>
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<tr>
<td>Bot-Zool 251—Ecology Lab</td>
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<tr>
<td>Math 125 or Math 344-345</td>
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<td>Physics 111 and 112 or 113</td>
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Junior Year

<table>
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<tr>
<td>Zool 310—Ichthyology</td>
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<tr>
<td>Botany 369, 370—Cellular Phys. Comp. Phys.</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry 245, 246—Quantitative Analysis, Lab</td>
<td>5</td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 265—Local Flora</td>
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<tr>
<td>Forestry 385—Hydrologic Principles</td>
<td>3</td>
</tr>
<tr>
<td>For 330 or Jour 334—Technical Writing</td>
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<td>Electives</td>
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</table>

WILDLIFE HONORS OPTION

Honors students must complete either For 470, 471, 472 or Zool 310, Zool 461, and Zool 412, and Bot-Zool-For 491, 492, 493. Honors students may enroll in Bot-Zool-For 494, Senior Thesis. The balance of the coursework for the junior and senior years will be developed in consultation with the Honors student's faculty sponsor.

All students in the Honors Option are required to meet with their faculty sponsors prior to fall registration of their Junior and Senior years to work out their course schedules.

Appropriate courses for Aquatic and Terrestrial Wildlife students to select from in addition to those above include: Bot 366, 370, 428; Comp Sci 301, 302, Econ 211, 212; For 310, 310, 320, 361, 361, 380, 460, 460, 461, 462, 465; Geog 360, 370; Geol 101, 102, 120, 290; Micro 200; Math 346, 349; Pol Sci 362; Zool 303, 304, 404.

*Students desiring more thorough preparation in Chemistry should elect Chem 121, 122, 250, 261, 361.

**Students desiring more thorough preparation in mathematics should elect Math 121, 131, 132, 133, 153.

ZOOGY

is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.

In addition to the Bachelor's degree, the Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and public welfare agencies. Many, with further training, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed by the senior year with a major in Zoology: at least 45 credits including the following—Zoo 111, 112, 113, 229, and 330 or 331; 404 or 405; 306, 308, 309, or 310; 355 or 366; 350 or 360; 405; and 465.

In addition, the following must be completed: Botany 114, 115; Chemistry 101, 160, 104, 156, 154, or 121, 122, 123, and 124, 125, 126; Mathematics 107, 108, 109; Physics 111, 112, 113, or 112, 121, 122.

Zoology majors must acquire a reading knowledge of a modern foreign language. This would normally be French, German, or Russian. Students should consult the section of the catalog under Foreign Languages to learn the ways by which this requirement can be met.

Zoology majors should consult the department's advisors for help in planning a program that will contain appropriate courses in the humanities and social sciences as well as in the major.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 33 credits in Zoology or related fields as follows: Zoology 111, 113, 264, 310, 329, 330, 360, 365, 366, 461; any one course from Microbiology or from Botany or one course from Zool 203, 304, 305, 333, 329, 340, 341.

Senior examinations are given only to candidates for honors.

GRADUATE WORK. See Graduate School Bulletin.

SUGGESTED CURRICULUM IN ZOOLOGY

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<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English 100—Lower Division Composition</td>
<td>3</td>
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<td>A</td>
<td>W</td>
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<tr>
<td>Cr.</td>
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<tr>
<td>Math 107, 108, 109—Mathematics for Biological Sciences</td>
<td>5</td>
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<tr>
<td>Zoology 111, 112—Introduction to Biology, General Zoology</td>
<td>5</td>
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<tr>
<td>Social Sciences, or Humanities, or Physical Education</td>
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<td>6 or 7</td>
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<td>Chem 101-102-103—General Chemistry</td>
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<tr>
<td>104-105-106</td>
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<td>Chem 121-122—College Chemistry</td>
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<tr>
<td>Forensic Language 101-R, 102-R, 103-R</td>
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<tr>
<td>Electives 296—365</td>
<td>5-8</td>
</tr>
<tr>
<td>Electives 366—461</td>
<td>5-8</td>
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<tr>
<td>Electives 251—Elementary Zoology Laboratory</td>
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<tr>
<td>Botany 114, 115—General Botany</td>
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<td>Cr.</td>
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<td>Cr.</td>
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<tr>
<td>Advanced Zoology Courses</td>
<td>4</td>
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FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

Courses also offered at Biological Station (*Courses only at Biological Station*: 350, 360, 365, 366, 321, 342, 343, 344, 346, 461, 500, 508)

111 INTRODUCTION TO BIOLOGY 5 (3-4). Basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanisms of evolution and adaptation. (Credit not allowed for both Bot 111 and Zoology 111.)

112-113 GENERAL ZOOLOGY 5 (3-4) prereq 111 or Bot 111 or =. A comparison of structure, function, and life histories of selected invertebrates and vertebrates. (Generally taken as a sequence including 111, 112, 113.)

131 INTRODUCTION TO BIOLOGICAL SCIENCE 4 (3-2). The basic principles of biology, including aspects of cytology, cellular metabolism and genetics. Primarily for students not majoring in Botany, Microbiology or Zoology. Credit not allowed for this course and Botany or Zoology 111.

112 EVOLUTION, GENETICS AND MAN 3 prereq Gen 101 or =. Evolution, especially as related to man and including evidence, mechanisms, genetics, nature of hereditary material and adaptation. Not counted toward a major in Botany, Microbiology or Zoology.

170 SURVEY OF WILDLIFE CAREERS 1 (1-0) (same as Forestry and Zoology 170).

202 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) prereq 113. Collection, identification and preservation of animals. Field work.

250 (350) BASIC CONCEPTS OF ECOLOGY 3 (5-2-0) prereq 235, 339. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

253 ANIMAL PARASITOLOGY 5 (3-4) o/y prereq Zool 112-113. Parasitism as a biological phenomenon, origin of parasitism, adaptations and life cycles, parasites and their environment, host-parasite interrelationship, and parasite metabolism will be emphasized.

254 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates.

260 ANIMAL MICROTECHNIQUE 5 (2-6) prereq 113, 114. Preparation of tissues and squashed cell mounts, staining, mounting, paraffin sectioning, frozen sections with clinical and histological techniques, and cryostat microtome, polyester embedding and histochemical methods. A basic introduction to tissue types will be given at the start of the course. May be taken concurrently with 313.

266 HERPETOLOGY 3 (2-2) o/y prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

275 AQUATIC ZOOLOGY 5 (3-7) prereq 206 or 365 and Bot 265. The study of fresh water fauna, with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chain and habitats of aquatic vertebrates. Knowledge of aquatic communities and the position of aquatic organisms below vertebrates.

285 ORNITHOLOGY 5 (3-6), Su 6 at Biological Station, prereq 113. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

290 MAMMALOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. Scheduled field trips.

310 Ichthyology 5 (3-4) prereq 113. The systematic and distribution of the more important orders of fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

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.

325 INVERTEBRATE ZOOLOGY I 5 (3-4) prereq 112. Structure, function, and phylogeny, and general biology of the lower invertebrates.

336 INVERTEBRATE ZOOLOGY II 5 (3-4) prereq 112. Structure, function, phylogeny and general biology of the higher invertebrates.

329 BIOLOGICAL LITERATURE 1 (2-0) prereq 20 credits in Zoology. Student reports of literature of the trend in investigation and experimentation in biological fields.

330 CELLULAR PHYSIOLOGY 5 (3-4) prereq two courses in Physics, Chem 212, 215, or 169, 164, one course in Botany, Microbiology, Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 330.

331 COMPARATIVE PHYSIOLOGY 5 (3-4) prereq 330. 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 quarters of college chemistry, including labs. (346) General physiological properties of protoplasm; blood, kidney function, mechanisms of circulation; respiration and excretion. (341) Digestion, nutrition and intermediary metabolism; excretion, conduction, response, senses, endocrine and reproductive.

350 POPULATION ECOLOGY 5 (3-4) prereq 111, 112, 113, 250, College Calculus, Statistics. The dynamics of animal populations including techniques for studying population, patterns of population change and population models.

360 COMMUNITY ECOLOGY 5 (3-4) prereq 111, 112, 113, 250, College Calculus, Statistics. The structure and function of community and ecosystems including production, food webs, nutrient cycling, diversity and stability.

365 ENTOMOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.
400 BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and c/i. Basic principles and skills of producing illustrative materials relevant to the biological sciences. ($25 special supplies fee. Credit not allowed for this course and Bot 405.)

402 VERTEBRATE EMBRYOLOGY 5 (2-4) 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.

412 FISHERY SCIENCE 3 (3-0) prereq 307, 310. The problems involved in investigating and managing fisheries biology with an analysis of, and some actual field experience in, methods employed in attacking these problems. Field trips.

431 PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject 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. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

435 PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

436 PROBLEMS IN VERTEBRATE ECOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

437 CYTOLOGY 5 (3-4) prereq one year Biology, Chem 160, 104. Same as Botany 437.

442 BIOLOGY OF FOREST INSECTS 3 (3-0) prereq Zool 113. Biology and biomimesis of insects, including structure, function, systems, physiology, and genetics, leading to consideration of insect ecology.

443 FOREST INSECT ECOLOGY 3 (3-0) prereq Zool 432. Ecological role of insects significant in the total forest ecosystem; factors which regulate the distribution and abundance of insects; the biomimesis and biotic and abiotic factors which determine their ecological productivity.

450 MARINE INVERTEBRATES 3 (1-5) prereq 436, a problems type course in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

461 LIMNOLOGY 0 (5-25) prereq 113 and Chem 123, 126. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biotic factors which determine their biological productivity.

485 (355) 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 their relationship to structure and function. Credit not given for both Zool 485 and Bot 485.

486 (386) EVOLUTION. (See Botany.

487 CYTOGENETICS 5 (3-2) prereq 485 or c/i. The structure and design of chromosomes from bacteria to higher organisms. Chromosomal behaviour and changes, and their role in development and evolution. Same as Botany 487.

488 POPULATION AND ECLOGICAL GENETICS 5 (5-0) prereq 485 or c/i. Genetic structure of populations. Dynamics of natural selection and adaptation. Same as Botany 488 and Microbiology 488.

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

491-492-493 SENIOR WILDLIFE SEMINAR 1 prereq senior standing in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guest speakers on current topics in Wildlife Biology. (Same as Forestry 491-492-493.)

FOR GRADUATES

500 SEMINAR 1 prereq graduate standing in a biological science.

501 AREAS AND CONCEPTS OF ZOOLOGY 1 prereq graduate standing in Zoology or in Wildlife Biology. An orientation course for all new graduate students in zoology.

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


504 ADVANCED ANIMAL BEHAVIOR 5 (2-4) prereq 405 or c/i. The causation and function of normal behavior with emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior.

515 ZOOGEOGRAPHY 4 (3-1) prereq 2 courses in advanced vertebrate zoology. Past and present distribution of animals, with special emphasis on vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidences considered.

518 CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 3 (3-0) o/y prereq 25 hours in zoology including 250 and 485. Selected topics relating to evolution, speculation and the various philosophies influencing systematic zoology.

520 ECOLOGICAL THEORY 4 (4-0) prereq 350, 360, 488, and associated prerequisites. An examination of selected current hypotheses and theories and the methods used to test them.

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-INVETEBRATE 5 (3-4) prereq Physics 113 or 223. Chem 212, 215 and one animal physiology course. Physiological process of the organ systems of the major invertebrate phyla in relation to environment.

533 (402) COMPARATIVE PHYSIOLOGY-VERTEBRATE 5 (3-4) prereq Physics 113 or 223. Chem 212, 215 and one animal physiology course. Physiological process of the organ systems of the five vertebrate classes in relation to environment.

533 (333) ENDOCRINOLOGY 5 (3-4) prereq Zool 113 and one animal physiology course. The physiology of the glands of internal secretion of the vertebrates with a survey of those of the invertebrates.

590 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Botany, Chemistry, and Microbiology.)

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

685-698-687 ADVANCED MOLECULAR BIOLOGY LABORATORY 1-3 prereq. Molecular biology or c/i. Advanced molecular oriented research techniques. (Same as Botany, Chemistry, Microbiology and Pharmacy.)

699 THESIS V R-15.
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