1971-1972 Course Catalog

University of Montana--Missoula. Office of the Registrar

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university of montana bulletin

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calendar 1971-1972...

The two calendar days preceding the final week of the quarter is a "no class" or study period.

FALL QUARTER 1971
September 19-20 (Sunday-Monday) Orientation
September 21-22 (Tuesday-Wednesday) Registration
September 23 (Thursday) Instruction Begins
October 11 (Monday) Columbus Day, Holiday
October 25 (Monday) Veterans' Day, Holiday
November 22-23 (Monday-Friday) Thanksgiving Vacation
December 9-10 (Thursday-Friday) No Class Days
December 11-17 (Saturday-Friday) Final Week of the Quarter
December 17 (Friday) Fall Quarter Ends

WINTER QUARTER 1972
January 3 (Monday) Registration
January 4 (Tuesday) Instruction Begins
February 12 (Saturday) Lincoln's Birthday, Holiday
February 21 (Monday) Washington's Birthday, Holiday
March 9-10 (Thursday-Friday) No Class Days
March 11-17 (Saturday-Friday) Final Week of the Quarter
March 17 (Friday) Winter Quarter Ends

SPRING QUARTER 1972
March 27 (Monday) Registration
March 28 (Tuesday) Instruction Begins
May 29 (Monday) Memorial Day, Holiday
June 1-2 (Thursday-Friday) No Class Days
June 3-9 (Saturday-Friday) Final Week of the Quarter
June 9 (Friday) Spring Quarter Ends
June 11 (Sunday) Commencement

SUMMER SESSION 1972
June 19 (Monday) Instruction Begins
July 4 (Monday) Independence Day, Holiday
July 19 (Wednesday) First Half Session Ends
July 20 (Thursday) Second Half Session Begins
August 18 (Friday) Summer Session Ends

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about the university . . .

FOUNDING AND NAME . . . The University of Mont­
ana was chartered February 17, 1893, by the Third Legisla­tive Assembly. Later legislation changed the name to the State University of Montana and Montana State University. On July 1, 1965, it again became the University of Montana.

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

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 Ac­
creditation of Teacher Education, National Association of
Schools of Music, Society of American Foresters, American
Council on Education for Journalism. Association of Ameri­
can Law Schools and the American Council on Pharmaeu­
tical 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 appro­
priations 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 educa­
tion are vested in the twelve-member State Board of Educa­
tion, 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 regula­
tions of the University at any time, including those relating
to admission, instruction and graduation. The right to with­
draw curricula and specific courses and to impose or increase
fees similarly is reserved. All such changes are effective at
such times as the proper authorities determine and apply not
only to prospective students but also to those who already
are enrolled in the University.

FUNCTIONS AND GOALS . . . The University of Mon­
tana is responsible for providing: (1) undergraduate educa­
tion in the arts and sciences, professional and advanced
professioonal 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 capaci­
ties for continued learning and to deepen his awareness of
ethical 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 Univer­
sity of Montana is committed to a program of equal oppor­
tunity in faculty and staff recruiting, employment and advan­
cement, 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 ad­
nitional 624 acres on Mt. Sentinel. A few blocks south of the
main campus is a 154-acre site with 394 married student
housing units and a nine-hole golf course. Approximately
six miles southwest of the main campus is Fort Missoula
where the University owns a parcel of 995 acres. Two major
UM facilities are located outside Missoula: 20,850 acres in
Lubrecht Experimental Forest, 35 miles northeast of Mis­
soula, and 167 acres on Flathead Lake including the Biologi­
cal 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 re­
gional 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, in­
cluding two islands, and has permission to carry on investi­
gation 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 Labor­
atory, dedicated in August 1967, enable a year-round pro­
gram 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 oppor­
tunity 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 RE­
SEARCH of the School of Business Administration is set up
to provide Montana businessmen with the types of statistics
useful to them in conducting their businesses; to disseminate
information of general interest on the economic and social
aspects of the state; and to engage in studies in the areas of
economic and other social sciences which show promise
of making contributions to knowledge, or to the development
of methods of analysis, regardless of whether such studies
are related directly to the state.
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 Wildlif.e 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 admission 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 or better average for all college and university work attempted to be eligible for consideration for admission.

SPECIAL STUDENTS . . . An applicant 21 years or older who does not meet the minimum requirements for regular admission as a freshman or an applicant who does not wish to work toward a degree may apply for consideration for admission as a special student. Examples of applicants generally considered for admission as special students are: (1) students who have earned a bachelor's degree and wish to take refresher courses or courses for their personal 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 officially 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: 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: 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 have a record which would assure his continuance or reinstatement at the University of Montana had he been one of its students.

APPLICATION FEES . . . 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 rejection approximately two weeks from when their completed credentials have been received in the Office of Admissions. If there is some question regarding the acceptability of some credit this decision may be delayed.

TRANSFER OF CREDIT . . . In general, transfer of credits from other accredited collegiate institutions will be accepted insofar as they meet the degree, and residence 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 earned, are required to take the AMERICAN COLLEGE TESTING PROGRAM examination preferably in October or December of the year before entrance into the university. The test 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 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 CEEB 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.

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

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

**REPETITION 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 assured.

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 arrangement 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.
GRADERS . . . The class work of the student will be rated as follows: A—work of the best grade; B—work better than average; C—average work; D—work below average, but barely passing; F—failure; X—not pass (no credit allowed, not counted in grade-point average); P—pass without défining letter grades; (2) Pass/Fail—applies only to (a) non-credit courses and (b) certain seminars and other courses in the 500-600 series stressing independent work, which are designated by the department or school and announced in advance. F or A must appear to all regis­ trants in the course; (3) Pass/Not Pass—in order to encour­ age students to venture into courses where they might other­ wise hesitate because of uncertainty regarding their aptitude or preparation they may enroll in certain courses on a Pass/ Not Pass basis. Any student may enroll on a Pass/Not Pass basis in Health, Physical Education and Recreation 100 courses. A freshman or sophomore with a grade-point aver­ age of 2.0 or better may, in addition, take no more than one resi­ dence credit course on a Pass/Not Pass basis. Juniors and seniors may take more than one Pass/Not Pass course per quarter. No more than sixty Pass/ Not Pass credits can be counted toward graduation. This privilege does not extend to courses required for the stu­ dent’s major, except at the discretion of the department con­ cerned or to courses excluded by the instructor or the de­ partment concerned. The grades of Pass or Not Pass are not formally defined in terms of their relationship to the traditional grades of A, B, C, D, or F; a “P” is given for work considered to be passing and therefore deserving credit, and an “X” for work not passed. All undergraduate courses offered on a Pass/Not Pass basis will also be offered on a letter grade. A student who elects to take Pass/Not Pass option will not be computed in a student’s grade­ point average, but credits earned in courses graded Pass con­ stitute degree credit up to the sixty-credit maximum. All courses taken and the grades received under the Pass/Not Pass option will be recorded on the student’s permanent rec­ ord. Election of the Pass/Not Pass option must be indicated at registration time on the official program request card. After registration, but prior to the end of the sixth week of instruction, an undergraduate student may, upon request to the Registrar, change a Pass/Not Pass enrollment to an en­ rollment under the A-F grade system, but he may not do the reverse. Courses offered for a letter grade (A-F) only will be indicated on the Schedule of Classes.

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

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

FOREIGN LANGUAGE REQUIREMENT . . . Depart­ ments, Schools and Programs may specify foreign language requirements (if any) for their majors and the ways in which those requirements will be met. Requirements are established by Departments, Schools and Programs in con­ sultation with the Department of Foreign Languages.

PLACEMENT IN FOREIGN LANGUAGES . . . A stu­ dent 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, 103; one year in high school, 102.

CATALOG GOVERNING GRADUATION . . . A stu­ dent 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 a student delays his attendance for a year or more, he must graduate under the catalog in effect at the time of readmission. A change of major requires the student to change only to major course requirements in effect at that time. A student may be graduated under a later catalog than that under which he entered.

CANDIDACY FOR A DEGREE . . . Students at the Uni­ versity who are admitted as candidates for a degree must have satisfied the following conditions: (a) they must have fulfilled the entrance requirements of regular students; (b) they must complete the general University requirements shown in the following paragraphs. Students who are can­ didates for degrees or certificates must file formal applica­ tions with the registrar on the date specified on Official University Notices. Applications must be filed at least one quarter preceding the quarter in which requirements are to be completed.

CREDITS REQUIRED FOR A DEGREE . . . Normally credits assigned to a course are equated in the following way: one credit for each 50 minutes of lecture with two hours of preparation for the lecture expected of the student. Credit granted for laboratory work is normally one credit 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 before the end 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 uni­ versity. 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 traditional degree of 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 num­ ber of credits is from 40 to 70. This rule on maximum credits allows does not apply in the Schools of Business Adminis­ tration, 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 ac­ cepted.

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 Busi­ ness Administration 180-181-182, 183, 194-185-186, 197-198- 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 aver­ age of “C” or 2.00 in all course work attempted, and in all work attempted in the major field, is required for gradu­ ation 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 4 1/2 week half-sessions and a concurrent nine-week session. Students may attend either half-session or the full nine-week session. The 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 registration. 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**—

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee</td>
<td>$15.00</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>75.00</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>20.00</td>
</tr>
<tr>
<td>Student Union fee</td>
<td>10.00</td>
</tr>
<tr>
<td>University Center Operations fee</td>
<td>8.00</td>
</tr>
<tr>
<td>Student Activities fee (Optional to graduate students)</td>
<td>15.00</td>
</tr>
<tr>
<td>Health Service fee</td>
<td>13.00</td>
</tr>
</tbody>
</table>

Total Montana resident $157.00

For non-resident of Montana, add—

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-resident fee</td>
<td>$260.00</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>22.50</td>
</tr>
</tbody>
</table>

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**—

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>One credit hour</td>
<td>$21.00</td>
</tr>
<tr>
<td>Two credit hours</td>
<td>42.00</td>
</tr>
<tr>
<td>Three credit hours</td>
<td>63.00</td>
</tr>
<tr>
<td>Four, five or six credit hours</td>
<td>85.00</td>
</tr>
<tr>
<td>Activities fee (optional)</td>
<td>15.00</td>
</tr>
</tbody>
</table>

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>Semester</th>
<th>Room (double)</th>
<th>Board</th>
<th>Total, Montana resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Quarter</td>
<td>104.00</td>
<td>205.00</td>
<td>$493.00</td>
</tr>
<tr>
<td>Winter Quarter</td>
<td>104.00</td>
<td>205.00</td>
<td>$466.00</td>
</tr>
<tr>
<td>Spring Quarter</td>
<td>104.00</td>
<td>205.00</td>
<td>$466.00</td>
</tr>
</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>Semester</th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$157.00</td>
<td>$157.00</td>
<td>$157.00</td>
<td>$471.00</td>
</tr>
<tr>
<td>Room (double)</td>
<td>104.00</td>
<td>104.00</td>
<td>104.00</td>
<td>312.00</td>
</tr>
<tr>
<td>Board</td>
<td>232.00</td>
<td>205.00</td>
<td>205.00</td>
<td>642.00</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Montana resident</th>
<th>Full-time</th>
<th>Limited Student Registrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee</td>
<td>$22.50</td>
<td>$22.50</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>112.50</td>
<td>56.25</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>20.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Student Union fee</td>
<td>15.00</td>
<td>7.50</td>
</tr>
<tr>
<td>University Center</td>
<td>13.50</td>
<td>6.75</td>
</tr>
<tr>
<td>Health Service fee</td>
<td>19.50</td>
<td>9.80</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Montana resident</th>
<th>Full-time</th>
<th>Limited Student Registrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee</td>
<td>$22.50</td>
<td>$22.50</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>112.50</td>
<td>56.25</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>20.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Student Union fee</td>
<td>15.00</td>
<td>7.50</td>
</tr>
<tr>
<td>University Center</td>
<td>13.50</td>
<td>6.75</td>
</tr>
<tr>
<td>Health Service fee</td>
<td>19.50</td>
<td>9.80</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Portion Refunded for Withdrawal</th>
<th>1st Week Before Begin Begins</th>
<th>2nd Week of</th>
<th>3rd Week of</th>
<th>4th Week of</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>100%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
<td>None</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>100%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
<td>None</td>
</tr>
<tr>
<td>Student Union fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>U.C. Operations fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Student Activities fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Health Service fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Non-resident</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Special purpose fees</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Room or Board</td>
<td>pro-rata</td>
<td>pro-rata</td>
<td>pro-rata</td>
<td>pro-rata</td>
<td>pro-rata</td>
</tr>
</tbody>
</table>

### PORTION REFUNDED FOR DROPPING FROM FULL TO LIMITED REGISTRANT

<table>
<thead>
<tr>
<th>Portion Refunded for Dropping from Full to Limited Registrant</th>
<th>1st Class Begins</th>
<th>2nd Week of</th>
<th>3rd Week of</th>
<th>4th Week of</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Incidental fee</td>
<td>100%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
<td>None</td>
</tr>
<tr>
<td>Buildings fee</td>
<td>100%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
<td>None</td>
</tr>
<tr>
<td>Student Union fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>U.C. Operations fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Student Activities fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Health Service fee</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Non-resident</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Special purpose fees</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### 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 Code of Montana, 1972. 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.

TERMIAL GRADUATE STUDENT FEE... A fee of $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 or 815... Subsistence payments from the Veterans' Administration are based on the number of hours of work for which the student is registered. A minimum of 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 behind any group whose right to adhere to this principle is questioned.

OBLIGATIONS OF STUDENT ORGANIZATIONS... The State Board of Education has made the following rule:

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

ATHLETICS... Athletics, including intercollegiate athletics, are a useful and valuable part of the University program for the development and growth of interested students. Facilities are provided for participation in some form of athletics by every student. Aid to students participating in athletics may be given only in conformity with 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 students have access to a nine-hole University golf course and a large modern swimming pool.

student services...

THE COUNSELING AND TESTING CENTER has a general function of giving guidance and assistance to students in the following areas: (1) selection of appropriate area of major study; (2) assessment of abilities and the most efficient, effective application of those abilities to allow for maximum learning in college; (3) diagnoses of difficulties leading to less than maximum performance academically and 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 regu­
lations or due to use of alcohol or drugs are not covered.
Injuries resulting from automobile accidents are not covered;
therefore, it is advised that automobile insurance be ade­quate
to take care of medical costs.
Hospitalization in local hospitals is provided when necessary
through the Student Health Service. The Health Service may
pay for 15 days hospitalization at $15 per day, and $100
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 Uni­
versity of Montana and to allow married students health
care protection for their dependents. Under this plan, which
costs the single student $3.50 per quarter for the autumn,
winter and spring quarters and $5.00 for the summer, the stu­
dent 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 ac­
cidents occurring between quarters and during the sum­
mer months. The married student, under this optional plan,
can gain health protection and protection from accidents
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 Build­
ing, 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 Univer­
sity 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 regu­
lations 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 per­
sonal belongings from his room immediately upon with­
drawal from the University.

MEN’S RESIDENCE REQUIREMENTS. All male un­
married freshman and transfer students having less than 45
credits are required to live in Residence Halls their freshman
year. Exceptions are granted to freshman who are 21 years
of age upon entering college or whose parents reside in
Missoula. Accommodations in University Residence Halls
will be provided for all freshman men and upperclass men
in order of application. Upperclass men who move into Resi­
dence Halls will be permitted to contract for board and room
quarterly.

WOMEN’S RESIDENCE REQUIREMENTS. All unmar­
rried 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. Applica­
tion forms and detailed information may be obtained by
writing to the Admissions Office, University of Montana. A
prepayment 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,
in writing must be received by the Director of Resi­
dence 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 re­
quired 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 making living in the halls enjoyable and benefi­
cial. 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 na­
tional fraternities and six national sororities maintain their
own residences under University supervision. Membership
in fraternities and sororities is by invitation, but eligibility
for membership is based on satisfactory academic achieve­
ment in high school or the college previously attended.
Eligibility for initiation is based on satisfactory academic
performance in the University. Sorority houses are under
the immediate supervision of resident housemothers who are
appointed with the approval of the associate dean of stu­
dents.

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
Loan, College Work-Study Programs and Veterans Bene­
fits; (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 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, methamphetamine, speed, and depressants are made illegal under both federal and state laws. The punishment for violating these laws is very severe with conviction often resulting in long-term imprisonment. This is the law. Every student should be fully aware of the risks involved in violating the drug laws.
9. Violation of University regulations governing students who live in University-owned or controlled property, or in fraternities, sororities, and cooperative houses.
10. Disorderly conduct or lewd, indecent, or obscene conduct or expression on University-owned or controlled property, or on the property of fraternities, sororities, and cooperative houses, or at University sponsored or supervised functions.
11. Failure to comply with directions of University officials acting in the performance of their duties.
12. Freedom of expression: "The Faculty Senate reaffirms that a fundamental right in the University is the freedom of expression and that it must be upheld. Freedom of expression includes peaceful assemblage and demonstration which does not interfere with the normal operation of the University." Demonstrations which do not involve 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 charges 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. Failure to Respond.

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 ASUM; one graduate student appointed by the President of the University from a list of five graduate students submitted by ASUM; 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. Notice of charges shall be served for one year. Notice of charges shall be served 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 to the student's last reported address or personally delivering a notice of charges to the student against whom disciplinary proceedings are initiated. The notice shall inform the student of the rule or regulation charged to have been violated and stated the reported circumstances of the alleged violation.

b) The notice of charges shall request the student to appear in the Dean's Office and shall specify the time and place for the appearance 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 notice shall be served on or before the time specified for his appearance in the Dean's Office.

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 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 for an earlier appearance before the Dean, the Dean 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 also 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 and may present evidence and witnesses in support thereof. The student shall have the right to present his own evidence and 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 concerning 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 a majority vote and 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 procedure 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. 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
Biography
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

Home Economics
Indian Studies
Liberal Arts
Mathematics
Medical Technology
Microbiology
Philosophy
Physical Therapy
Physics and Astronomy
Political Science
Pre-Medical Sciences
Psychology
Religious Studies
Reserve Officers Training
Corps (No majors)
Aerospace Studies
Military Science
Sociology and Social Welfare
Speech Communication
Speech Pathology and Audiology
Wildlife Biology
Zoology

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 Service
Secondary Education

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 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 study 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 101 to 150. Numbers formerly used are shown in parenthesis.

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.)

VARIOUS 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 with 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, pre­­requ­­uis­­ites, followed by numbers, indicates the courses necessary before taking this course. Unless otherwise stated, the numbers are courses in the same department as the course listed.

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

CONSENT OF INSTRUCTOR: If required, is shown by c/1.

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

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

courses of instruction . . .

ANTHROPOLOGY

is the study of man. As a social science it is concerned with people, cultures, and societies on a world-wide scale throughout time. It studies institutional arrangements under which people live, their psychological adjustments to different cultures, and their languages. Emphasis is on primitive or preliterate societies, but the field also includes human evolution, archaeology, and the application of anthropological principles to an understanding of complex civilizational and ethnic patterns. Bachelor of Arts and Master of Arts degrees are offered in anthropology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE: In addition to the general requirements for graduation as stated in the catalog, 50 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, 152, 359, 359, 383, 383, 372. 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 351, 359, 359, and 351. 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 355, 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 four years of high school training showing that the student has completed four years in one language or two years in each of two languages; (2) by taking, in college, one or two quarters in 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 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 utilized for comparative, theoretical, and descriptive purposes. Linguistics is not a discipline in itself but is rather a base for other disciplines. Linguistics has applications to many other disciplines and has various applications, particularly in teaching English and foreign languages. Although the University does not offer a degree in linguistics, a concentration in linguistics projects aims to produce a student who is proficient in one or more languages and who can 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 Technology and Audiology for course offerings in linguistics.

GRADUATE WORK. See Graduate School Bulletin.

ANTHROPOLOGY

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., acculturative adjustment.

153 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.

253 ANTHROPOLOGICAL ECOLOGY 3 prereq 152. Survey of theories, ethnographic and theoretical orientations of the discipline of anthropological ecology, including adjustment to different cultures, and the processes involved in culture change, e.g., acculturative adjustment.

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

255 PRIMITIVE TECHNOLOGY 3 prereq 152 and c/l. Technological processes used by people in preliterate societies and early civilizations.

256 COMPARATIVE SOCIAL ORGANIZATION 4 prereq 152. The social organization of man—general aspects, including statuses—economic life, religion, political forms, education and arts.

257 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 is allowed for this course and Identical Sociology 258.)

355 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 phenoma found among primitive peoples throughout the world.

345 CULTURES 3 prereq 152. Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.

352 HARVEST 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-15 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 c/l. The origins, backgrounds and development of pre-Columbian American cultures and civilizations.

356 HISTORICAL ARCHAEOLOGY 3 prereq 152 and 244 or c/l. 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 c/l. Primate and human evolution; human genetics; human ecology; osteology and anthropometry.

360 INDIANS OF THE SOUTHWESTERN UNITED STATES 3 prereq 152 and 252 or c/l. The development of Indian cultures in southwestern United States from the most ancient native culture to the present.

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

362 INDIANS OF SOUTH AMERICA 4 prereq 152 and 252 or c/l. The peoples and culture of the Indians of South America.

363 PEOPLES OF AFRICA 4, Su 3 prereq 152 and 252 or c/l. The aboriginal cultures of Africa.

364 PEOPLES OF INNER ASIA 4 prereq 152 and 252 or c/l. The structural, religious, 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 c/l. The peoples who inhabit the islands of the Pacific Ocean, including Polynesia, Micronesia, Melanesia and Australia.

367 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 c/l. 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. 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. Relevance of anthropological knowledge to native administration.

378 LANGUAGE AND CULTURE 3 prereq 119 and c/l. Analysis of relationships between languages and cultures of the world. (Also listed as Soc. 378.)

379 PEOPLE OF THE FAR EAST 4 prereq 152 and 252 or c/l. The peoples and culture of China, Japan, Korea, Southern Asia, and adjacent areas.

380 PEOPLE OF WESTERN ASIA 4 prereq 152 and 252 or c/l. The peoples and culture of the area from the Mediterranean Near East to India.

387 PRIMITIVE ART (See Art 387).


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

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

420 MODERN INDIAN LANGUAGES 3 prereq 152 and 252 or c/l. Sociolinguistic and health problems, legislation, education, and economic conditions of Indians of the United States.

435 SOCIAL ANTHROPOLOGY 3 prereq 152 and 252. Principles of theory and social organization and institutions.

454 POLITICAL ANTHROPOLOGY 3 prereq 152, 252, 453 or c/l. Comparison and analysis of political structure, leadership, legal system, 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 383 and c/l. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant. (Also listed as Speech Communication 480.)

481 AMERICAN INDIAN LANGUAGES 3 prereq 119, 383. Analysis and characteristics of American Indian languages in historical perspective.

482 ANTHROPOLOGICAL RESEARCH METHODS 5 prereq 152, 252, 453. Field methods, research techniques, controlled comparisons and cross-cultural methodology.

485 CHINESE SOCIAL CHANGE 4 prereq 152 and 252. Emphasis on recent revolutionary periods in mainland China and Taiwan.

496 PROBLEMS IN ASIAN ETHNOLOGY V 1-3 prereq 152, 252, 386, 455 and c/l. Independent research and seminar discussion.

490 HUMAN VARIATION I 3 prereq 152, 242, 358. First quarter in a one year sequence (490, 491, 492) devoted to genetic, development, and environmental bases of human variation and physiological adaptation. Emphasis in 490 upon mechanism and processes of variation and adaptation.

492 HUMAN VARIATION II 3 prereq 490. Second quarter of 490, 491, 492 sequence. Emphasis upon types and distribution of variation.

493 HUMAN VARIATION III 3 prereq 491, 492, 493 sequence. Emphasis on current research, method and theory.

494 HISTORY OF PHYSICAL ANTHROPOLOGY 4 prereq 242, 358. A review of historical development of the several approaches to the study of biological man: evolution, paleontology and taxonomy, anthropometry and somatology, primatology, ethnology, genetics, physiological variation, ecology, epidemiology, and research.

FOR GRADUATES

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

551 RESEARCH V.


699 THESIS V R-6.

ART

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. The following requirements must be completed for the Bachelor of Arts degree with a major in Art: 70 credits in Art: First Year Studio 15 cr.; second year, Art History 9 cr., Photography 3 cr., Ceramics 2 cr., Sculpture 3 cr., Painting 3 cr.; third and fourth year, Adv. Art History 6 cr., and Art electives 25 cr. One quarter of English composition must be completed.

The Bachelor of Fine Arts is a professional degree requiring 110 credits in Art, distributed as follows: First Year Studio 15 cr.; second year, Art History 9 cr., Photography 3 cr., Ceramics 2 cr., Sculpture 3 cr., Painting 3 cr.; third and fourth year, Adv. Drawing 6 cr., and Art electives 40 cr. One quarter of English composition must be completed.

A student may elect either the B.A. or the B.F.A. program. Course requirements for a degree in education with a teaching major or minor in art are listed under Education.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

123 FIRST YEAR STUDIO 5 R-15.

129 CERAMICS 2 R-4 prereq 10 credits 123. Offered for one credit by extension.

150 LAYOUT AND LETTERING 2 R-6.

200 SURVEY OF WESTERN ART: THE ANCIENT WORLD 3.

201 SURVEY OF WESTERN ART: EARLY CHRISTIAN TO MANIERISM 3.

202 SURVEY OF WESTERN ART: MANIERISM TO PRESENT 3.
STUDIO HUMANITIES 3. Studio experience for non-art majors.

PHOTOGRAPHY 3 R-6 prereq 15 credits 123.

CRAFTS/DESIGN 2 R-4 prereq 15 credits 123.

INTERMEDIATE CERAMICS 2 prereq 4 credits of 129 or 15 credits 123.

PRINTMAKING 2 R-6 prereq 15 credits 123 or c/l.

SCULPTURE 3 R-9 prereq 15 credits 123 or c/l.

WATERCOLOR 3 R-6 prereq 15 credits 123 or c/l.

Offered by extension for 1 credit.

PAINTING 3 R-9 prereq 15 credits 123 or c/l. Summer c/l. Variable credit by extension.

FOR UNDERGRADUATES AND GRADUATES

INTRODUCTION TO ART EDUCATION 2.

METHODS OF TEACHING SECONDARY ART 3.

ELEMEHTARY SCHOOL ART 3. Variable credit by extension. (For art majors only.)


PHOTOGRAPHY V 2-6 R-6 prereq 6 credits 215 or c/l.

ADVANCED DRAWING 2 R-6 prereq 15 credits 123 or c/l. Figure drawing and special problems.

ADVANCED DESIGN V 2-6 R-6 prereq 15 credits 123 or c/l. Individual special problems.

CRAFTS/DESIGN V 2-6 R-6, prereq 4 credits 227 or c/l.

ADVANCED CERAMICS V 2-6 R-6 prereq 6 credits of c/l. (For art majors only.)

ADVANCED PRINTMAKING V 2-6 R-6 prereq 6 credits of 233 or c/l.

ADVANCED SCULPTURE V 2-6 R-6 prereq complete 237 or c/l.

ADVANCED PAINTING V 2-6 R-6 prereq 9 credits of 240, or c/l.

EARLY RENAISSANCE 3 prereq c/l.

HIGH RENAISSANCE 3 prereq c/l.

BAROQUE AND ROCOCO ART 3 prereq c/l.

EUROPEAN ART 1750-1800 3 prereq c/l.

PRIMITIVE ART 3 c/l. Art of primitive peoples.

ART OF THE NORTH AMERICAN INDIANS 3.

MODERN ART 1900-present 3 prereq c/l.

AMERICAN ART TO 1800 3 prereq c/l.

AMERICAN ART TO PRESENT 3 c/l.

ART IN SPECIAL EDUCATION 2.

INDEPENDENT WORK IN PHOTOGRAPHY V 2-6 R-15 prereq 6 credits of 315.

INDEPENDENT WORK IN DRAWING 2 R-15 prereq 4 credits of 225.

INDEPENDENT WORK IN DESIGN V 2-6 R-15 prereq 6 credits of 235 or 227.

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

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

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

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

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

FOR GRADUATES

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

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

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

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

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

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

THESIS AND TERMINAL PROJECT V R-15.

ASTRONOMY—17

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 fifty-five credits should include some of the following: Physics 131-132, Math 251-252-253, Math 464-467-468, 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, 330-331-332, or 340-341-342. 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, 151-162-153 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

ELEMENTARY ASTRONOMY 3 (2-2-2) prereq high school algebra and trigonometry. The solar system, normal and variable stars, clusters, nebulae, and galaxies.

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

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 the planets, comets, and asteroids; applications to earth satellites and interplanetary space missions.

OBSERVATIONAL ASTRONOMY 3 (3-2-1) Astronomy 131-132, Physics 221-222-233. Telescopes and instrumentation for the determination of the positions, brightnesses, colors, motions, and properties of stars; particular attention to photometric photometry. Includes observational and computational problems.

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

INDEPENDENT WORK IN ASTRONOMY 1-5 R-10 prereq 18 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, A and B, are provided in this program. Option A is 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 three years of 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); Microbiology 200 (General Microbiology); Zoology 112, 113 (General Zoology); Zoology-Botany 320 (Cellular Biology); Zoology-Botany 483 (Genetics) and 10 additional credits in 200 and 400 level courses in biological sciences. (Recommended: Botany 350, 404; Zoology 351). 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, 252 (Introduction to Biology (General Physics); or Physics 221, 222, 223 (General Physics); Math 116 (College Algebra); Math 117 (Trigonometry), and Math 118 (Introduction to Calculus)

Option B (Environmental Biology): In addition to the general requirements listed earlier in the catalog, the following special requirements must be completed for a Bachelor of Arts Degree with a major in Biology (Environmental Option): 65 or more credits in Biology including Botany-Zoology 111 (Introduction to Biology): Botany 114, 115 (General Botany); Zoology 112, 113 (General Zoology); Botany-Zoology 250, 251 (Concepts of Ecology); Botany-Zoology 350 (Population Ecology); or Zoology 390 (Community Ecology); Zoology 410 (Advanced Animal Ecology), or Zoology 420 (Invertebrate Ecology); Botany 355 (Plant Ecology); Zoology-Botany 483 (Genetics); and 10 additional credits in 300 and 400 level courses in biological sciences. (Recommended: Zoology 201 (Aquatic Biology); Zoology 405 (Animal Behavior); Zoology 390 (Population Ecology); or Zoology 360 (Community Ecology); Zoology 461 (Limnology); Microbiology 200 (General Microbiology); Botany 256 (Local Flora); Botany 265 (Systematic Botany); Botany 370 (Forest Pathology); Botany 325 (Plant Geography); Botany 320 (General Botany); Botany 451 (Phylogeny); Zoology 483 (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 112, 122, 123; Physics 111 and 112 or 115; Math 107, 108, 109 and 125. Recommended electives include: Geology 103; Geography 241 (Physical Geography); Geography 413 (Population and Resource Geography); Computer Science 201 (Fortran); Sociology 315 (Human Ecology); Forestry 210 (Forest Soils); Forestry 370 (Wildlife Conservation).

The Life Science Curriculum Committee, representing the departments of Zoology, Microbiology, Psychology, and Botany, in cooperation with the Biology 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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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 growth. Given only as an extension course. Credit not allowed toward degree in Botany.

111 INTRODUCTION TO BIOLOGY 5 (3-4). 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.

114 (113) GENERAL BOTANY 5 (3-4) prerequisite 111 or 112. The morphology, reproduction and evolutionary relationships of the various plant groups.

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

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 Botany or Zoology 111. Same as Zoology 131.
EQUATION 1-6

1. EVOLUTION, GENETICS AND MAN 3 prerequisite Bot 131 or . Evolution, especially as related to man and including evidence, mechanisms, genetics, nature of hereditary material and adaptation. Not considered 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) prerequisite one year of college biology and laboratory with emphasis on the ecosystem. (Credit not allowed for this course and Zool. 250.)

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


FOR UNDERGRADUATES AND GRADUATES

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

330. CELLULAR PHYSIOLOGY (see Zoology)

334. MICROTECHNIQUE 3 (1-4) prerequisite 15 cr. in Botany. Techniques of preparing cleared whole mounts, cytological squashes, wood and cork-stain microscopy, wood maceration of wood; use of freezing, sliding and rotary microtomes.

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

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

390. AGROLOGY 5 (2-4) prerequisite 265 or =. Identification, classification, and economic uses of grasses, sedges, and rushes. (Given for 3 cr. at the Biological Station).

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

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

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

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

421. MINERAL NUTRITION 5 (3-4) prerequisite 255. The absorption, translocation and utilization of minerals by plants: mineral requirements of plants: research methods in plant tissue analysis and their application for the study of plant nutrition.

427. PLANT VIRUSES 4 (2-4) prerequisite 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) prerequisite 265, 441 or c/l. Comparative and ultrastructure, physiology, biochemistry, and ecology of the photosynthetic bacteria and algae with special emphasis on the algae and their relationships to both the bacteria and higher plants.

429 (329). PROBLEMS IN PLANT PHYSIOLOGY V 1-6 (0-3/cr) prerequisite 255 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

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

435 (325). PLANT ANATOMY 5 (2-4) prerequisite 115 or =. The origin of organs and tissues and the anatomy of vascular plants.

437. CYTOLOGY 5 (3-4). Fine structure of cells and its relationship to function. Introduction to light, phase, and electron microscopy. Prerequisite 1 yr. biology, Chem 160 or c/l.

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

441 (361). PHYCOLOGY 5 (2-6) prerequisite 115 or =. Morphology, taxonomy and ecology of the phycytes, especially of the northern Rocky Mountains (given for 6 credits at the Biological Station).

442 (363). BRYOLOGY 5 (2-6) prerequisite 115 or =. The morphology, taxonomy and ecology of the bryophytes, especially of the northern Rocky Mountains (given for 3 credits at the Biological Station).

445 (345). SPERMATOZYPES 5 (2-6) prerequisite 115 or =. The morphology and life histories of the gymnosperms and angiosperms.

449 (349). PROBLEMS IN PLANT MORPHOLOGY V 1-6 (0-3/cr) prerequisite 250 or 444. 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) prerequisite Mathe­ matics 116, 125, Computer Science 201. Botany 355 or =. Mathematical analysis of ecological problems; mathematics models, computer simulation, optimization of systems.

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

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

457. INDIVIDUAL PROBLEMS IN POLLUTION STUDIES 1-6, prerequisite 455 or 465 and c/l. Special work in air and water pollution problems.

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

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

470 (375) MYCOLOGY 5 (3-4) prerequisite 265 or =. The morphology, taxonomy and ecology of the fungi, especially of the northern Rocky Mountains (given for 6 cr. at the Biological Station).

479 (379). PROBLEMS IN MYCOLOGY AND FOREST PATHOLOG­ Y 5 (3-2) prerequisite 478 or =. 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.

480. PALEOBOTANY 5 (3-4) prerequisite 115 or =. An introduction to the study of fossil plants.

484. PALYNOLOGY 3 (2-2) prerequisite senior standing in a natural science and c/l. Fossil and recent pollen and spore identification, methods of collection, processing, identification and the application of palynological data in botanical and non-botanical disciplines.

485 (385). GENETICS. (See Zoology.)

486 (386). EVOLUTION 3 (2-6) prerequisite 265, 485; Zool 113. The nature of and processes by which evolution occurs. (Credit not allowed for this course and Zool 486.)

487. CYTOGENETICS 4 (3-2) prerequisite 485 or =. The structure and design of chromosomes from bacteria to higher organisms. Chromosome behavior and chromosome rearrangements and evolution. (Credit not allowed for this course and Zoology 487.)

488. POPULATION AND ECOLOGICAL GENETICS 5 (3-4) prerequisite 485 or =. Genetic structure of populations. Dynamics of natural selection and adaptation. Same as Micro 488 and Zool 488.

489. PROBLEMS IN PALEOBOTANY V 1-6 (0-3 per credit) prerequisite 255 and c/l.

490. SEMINAR IN BIOLOGY 1 (2-0) prerequisite 350 and c/l. (Credit not allowed for this course and Zool 490.)

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

495. BOTANICAL LITERATURE 1 (0-2) prerequisite 265 or =. Student reports on current botanical literature.

FOR GRADUATES

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

523. PHOTOBIOLOGY 4 (2-4) prerequisite 330. The interaction between two conflicting radiation and light and its effect on photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light on both plants and microorganisms. (Credit not allowed for this course and Zoology 523.)

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

551. GENERAL ECOLOGY 6 (6-15) prerequisite Bachelor's degree major preparation in Botany, Biology, or Zoology. Community concepts including some aspects of population ecology and energy re­ lationships, 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 methods of modern taxonomic work, and the application of cytology, chemistry and other modern approaches to systematics.

565. PHYTOPHYSIOGRAPHY 4 (4-0) prerequisite 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 Master of Science in Business Administration (with concentrations in accounting, business education, computer systems, finance, management, or marketing). The MBA program is particularly suited to those students whose undergraduate training has been in areas other than business administration. Further details may be obtained from the Graduate Studies Bulletin or by specific inquiries directed to: Director of Graduate Studies, School of Business Administration.

PRE-BUSINESS PROGRAM

Upon entering the University as a freshman, a student who desires to major in Business Administration registers as a pre-business administration major. In the first two years of study the student completes courses in the sequence: 112 or 111: Business Administration 101, 102, and 203 in their freshman year.

Pre-business administration requirements include: English 100; Mathematics 116, Economics 211, 212, and 213; School of Business Administration 201, 202, 250, and 281. Pre-business requirements are prerequisites for all business administration courses numbered 300 and above except that Accounting Majors may take Business Administration 306, 307, and 308 in their sophomore year.

ADMISSION AND GRADE POINT REQUIREMENTS

Admission to the School of Business Administration requires junior standing, completion of the pre-business requirements, and a minimum of a "C" average on all credits attempted. To continue work 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 major 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 322, 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) of work taken in departments and schools other than 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:

Bus. Ad. 203—Accounting Principles I.......................... 3
Bus. Ad. 303—Cost Accounting I and II.......................... 6
Bus. Ad. 306—Intermediate Accounting I and II.................. 8
Bus. Ad. 340—Special Problems in Accounting A.................. 3
Bus. Ad. 401—Income Tax I and II.............................. 6
Bus. Ad. 412—Accounting Theory................................. 3

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

Bus. Ad. 354—Governmental Accounting.......................... 3
Bus. Ad. 355—CA P.A. Review ...................................... 3
Bus. Ad. 402—Audi­ting I and II.................................. 6
Bus. Ad. 416—Consolidated Statements........................... 3
Bus. Ad. 418—CP A Review......................................... 3

BUSINESS EDUCATION

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

Bus. Ad. 182—Production Typewriting............................ 2
Bus. Ad. 192—Beginning Typewriting.............................. 2
Bus. Ad. 194—Records Management............................... 3
Bus. Ad. 203—Office Management................................. 3
Bus. Ad. 252—Office Machines Practice........................... 3
Bus. Ad. 281—Methods of Teaching Bookkeeping and Transcribing............................... 3
Bus. Ad. 355—CA P.A. Review......................................... 3
Bus. Ad. 384—Methods of Teaching Shorthand and Transcribing............................... 2

BUSINESS ADMINISTRATION

(see Chemistry 580, Microbiology 580 and Zoology 580).

GER) 1-3 prereq grade standing in biological sciences. Cross listed with chemistry, microbiology, pharmacy and zoology.

THESIS V R-15.

COURSES OFFERED AT THE BIOLOGICAL STATION

Many of the courses listed are offered during the summer session at the Biological Station on Flathead Lake. In the past, these have traditionally been Bot 365, 366, 368, 685-686-687 ADVANCED MOLECULAR BIOLOGY LABORATORY V 1-3 prereq Chemistry 482 or c/l. Develop familiarity with modern biochemically oriented research, techniques. Cross listed with chemistry, microbiology, pharmacy and zoology.
*Business Education students are not required to take Speech 111 or 112, Bus Ad 322, 340, 342, 350 or 446.

**FINANCE**

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

Option A. Financial Management

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

- Bus. Ad. 301—Management Accounting 4
- Bus. Ad. 323—Commercial Banking 3
- Bus. Ad. 420—Investments 3
- Bus. Ad. 329—Theory of Business Finance 3
- Bus. Ad. 422—Problems in Finance 3
- Bus. Ad. 429—Analytical Methods in Finance 3
- Econ 414—Intermediate Econ. Analysis 4

*Bus. Ad. 447—Managerial Economics 4

$27

*Students are advised to take Econ 311 before BA 447.

Option B. Insurance

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

- Bus. Ad. 320—Principles of Insurance and Risk Management 3
- Bus. Ad. 329—Life and Health Insurance 3
- Bus. Ad. 327—Property and Casualty Insurance 3
- Bus. Ad. 324—Real Estate Law 3
- Bus. Ad. 325—Management of Financial Institutions 3
- Bus. Ad. 401—402—Income Tax I and II 6
- Bus. Ad. 428—Social Insurance 3

$24

Option C. Real Estate

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

- Bus. Ad. 324—Real Estate Law 3
- Bus. Ad. 420—Money and Capital Markets 3
- Bus. Ad. 423—Real Estate Finance 3
- Bus. Ad. 426—Property Valuation Theory 3
- Bus. Ad. 427—Property Management 3
- Econ 385—Land Economics 3
- Soc 587—588—589—Seminar in Urban Studies (anyone of the three) 3

$21

**MANAGEMENT**

This curriculum is designed to equip the student with the analytical, integrative, and interpretive skills necessary to enable him to assume a managerial role in a wide variety of production, marketing, finance, and government organizations. In addition to the basic requirements of the School of Business Administration, students concentrating in management must include the following courses:

- BA 301—Management Accounting 4-6
- or
- BA 203—Accounting Principles III and one additional course in accounting 4
- BA 302—Analysis of Consumer Behavior 3
- or
- BA 303—Analysis of Marketing Communication 4
- BA 423—Problems in Finance 4
- BA 441—Personnel Administration 4
- BA 447—Managerial Economics 4

19-21

The student would also select at least 9 additional hours from one of the following groups, and at least one additional course from each of the other groups:

**A. Personnel and Industrial Administration**

- BA 442—Personnel Management 4
- BA 444—Regulation of Industry 4
- Econ 321—2—Labor Economics 6
- Econ 424—Industrial Relations 3
- Engl 450—Problems in Composition 3
- Psych 342—Personnel Psychology 3
- Psych 343—Industrial Psychology 3

**B. Marketing**

- BA 302—Analysis of Consumer Behavior 3
- BA 303—Analysis of Marketing Communication 3
- BA 366—Marketing Research 3
- BA 444—Regulation of Industry 4
- BA 460—461—Marketing Management 6
- BA 465—Pricing Policies and Practices 4
- Engl 450—Problems in Composition 3

**C. Computer Systems**

- BA 371—Introduction to Cobol Programming 2-3
- CS 212—Cobol 3
- BA 470—Analysis and Design of Business Systems 3
- BA 475—Computer Simulation of Business Systems 3
- CS 301—Programming 3
- CS 374—Application of Digital Computers 4

**OFFICE ADMINISTRATION**

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

- Bus. Ad. 183—Production Typewriting 3
- Bus. Ad. 184—185—186—Stenography 15
- Bus. Ad. 187—188—Production Stenography 10
- Bus. Ad. 190—191—Advanced Shorthand Transcription 2
- Bus. Ad. 193—Beginning Secretarial Practice 3
- Bus. Ad. 194—Records Management 3
- Bus. Ad. 203—Elementary Accounting 3
- Bus. Ad. 232—Office Practices 3
- Bus. Ad. 382—Advanced Secretarial Practice 5
- Bus. Ad. 385—Office Management 5
- Bus. Ad. 447—Managerial Economics 4

*Office Administration students are not required to take Speech Communication 111 or 112, Bus. Ad. 322, 340, 342, 390 or 446.

**BACHELOR OF ARTS IN BUSINESS ADMINISTRATION**

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

**ACCOUNTING**

**FOR UNDERGRADUATES**

For explanation see Course Descriptions (Index)

**201 ACCOUNTING PRINCIPLES I 3.**

**202 ACCOUNTING PRINCIPLES II 3 prereq 201.**

**203 ACCOUNTING PRINCIPLES III 3 prereq 202.** Application of theory and techniques required to classify, record and report accounting data.

**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 202.** 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 302.** Auditing, cost accounting, and budgeting in governmental and in institutions.

**306 INTERMEDIATE ACCOUNTING I 4 prereq 303.** 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 302.** The application of the federal income tax law as applied to individuals.

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

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

**404 AUDITING II 3 prereq 403.**

**410 CONSOLIDATED STATEMENTS 3 prereq 307.**

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

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

**418 C.P.A. REVIEW I 4 prereq 304, 308, 404, 410, 412 and c/l. Comprehensive review of accounting theory, practice, and auditing. Primarily for students preparing to take the uniform CPA examination.**

**490 SEMINAR V R-4.**
FOR GRADUATES

503 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 3 prereq 412. A critical analysis of the development of accounting thought since 1900 and the social significance.

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

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

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

599 RESEARCH V R-6. Special research problems.

503 ADMINISTRATIVE ACCOUNTING CONTROLS 3 prereq 506. The study of the functions of the controller in providing an effective information system for over-all financial planning and control.

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

697 PROFESSIONAL PAPER V R-6. A professional paper written in the area of the student's major interest based on either primary or secondary research. Subject matter must be approved by graduate advisor.

699 THESIS V R-9.

FINANCE

FOR UNDERGRADUATES AND GRADUATES

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

322 BUSINESS FINANCE 3. Theory and practice in managing the financial affairs of a business enterprise.

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

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

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

328 LIFE AND HEALTH INSURANCE 3 prereq 320. Analysis of individual and group life, health, and accident contracts, pensions and annuity programs.

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

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

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

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

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

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

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

425 REAL ESTATE FINANCE 3 prereq 322, 424. Sources and uses of funds related to financing the industrial, commercial, and residential segments of the real estate market.

426 (EC 387) PROPERTY VALUATION THEORY 3 prereq Econ 385. Determination of the various theoretical bases for the determination of real estate values.

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

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

439 (459) ANALYTICAL METHODS IN FINANCE 3 prereq 322 and 323.

490 SEMINAR V R-4.
444 REGULATION OF INDUSTRY 4 prereq 340, 360, and Econ 361. Economic concentration and maintaining competition. Changing relationships between utilities and the public; the regulatory process; the impact of regulatory legislation, administrative agencies, national policies and social values on utilities.

448 ADMINISTRATION AND BUSINESS POLICIES 4 prereq 340, 360, and Econ 361. (May only be taken in one of last two quarters before graduation.) Top-management oriented to develop interpersonal and organizational skills; emphasis on student’s role in modern analytical tools involved in problem solving and in coordination.

447 (347) MANAGERIAL ECONOMICS 4 prereq 340. The application of economic analysis to the operation of a business. Demand and supply analysis; principles of output, price, and profit; and investment and capital budgeting. Laboratory simulation and systems. 

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

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

470 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS 3 prereq 350, 370, and CS 301 or -. Techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, decision tables, data matrices, theoretical and practical aspects of various data processing systems and judging the feasibility of computer processing.

475 COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prereq 350 or = and CS 301 or -. Modeling business information and control system behavior; emphasis on implementation in inventory control, planning, forecasting and budgeting.

499 SEMINAR V R-4.

FOR GRADUATES

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

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

543 MANAGEMENT OF ENTERPRISE 3. Management as an art and science. Descriptive and analytical tools and methods of managing business firms; principles of organizing, directing, coordinating, communicating, decision making, and determining objectives, policies, and procedures. An integrative approach to diagnosing situations, processing information for decision making, and incorporating current interdisciplinary research techniques in understanding human behavior in industrial systems and judging the feasibility of computer processing.

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

557 LEGAL ENVIRONMENT 3. Includes classification of the law, the judicial process, the attorney-client relationship, available remedies, settlement of disputes, government administrative agencies and judicial procedures. Emphasis on classifying the law, legal aims, policies and procedures for undergraduates and graduates. Special topics may consist of formal seminar, or may consist of selected topics. May be conducted as a formal seminar, or may consist of selected projects conducted with the consent of the instructor. 

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

570 ELECTRONIC INFORMATION PROCESSING 3. Electronic data processing and information systems for business management. Emphasis is placed on the nature and application of electronic digital computers in management information systems. Laboratory sessions would concentrate on computer programming, 3 credits (2 hours lecture, 2 hours laboratory).

599 RESEARCH V R-6. Special research problems.

646 ADVANCED MANAGEMENT PROBLEMS 3. Interdisciplinary approach to the analysis of problems encountered by senior administrators. Determination of objectives; development of policies to achieve objectives; organization of executive personnel to implement policies; coordination and control; measurement of efficiency and effectiveness; practical applications to decision-making in modern management.

647 MANAGERIAL ECONOMICS 3. The use of various analytical tools in the decision-making process of business managers: discussion of selected topics (solution of mathematical programming, decision theory, statistical methods) with application to dynamic and non-linear real-world situations.

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

650 BUSINESS AND ITS ENVIRONMENT 3. Institutional and cultural factors, both national and international, which influence industrial leaders in their enterprise and community relations roles.

The social-economic setting: the impacts and significance of population growth, economic-geographic influences, and technological development on the relationships between education and scientific progress, technological development, innovation and the socio-managerial implications of cultural, traditional, and economic conditions.

685 INTERNATIONAL ASPECTS OF BUSINESS 3. Trends and contemporary problems in international operations management, business relations and services, economic policies, and related sub-systems. Analysis of significant problems originating from institutions of different countries.

590-691-692 GRADUATE SEMINAR 3. Enter any quarter. Selected topics. May be conducted as a formal seminar, or may consist of selected individual programs of study conducted with the consent of the instructor.

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

699 THESIS V R-9.

MARKETING

FOR UNDERGRADUATES AND GRADUATES

390 MARKETING 3. prereq all pre-business requirements. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation.

361 INDUSTRIAL MARKETING 4 prereq 360. Economic factors affecting marketing policy are analyzed. Deals with buying behavior of customers, industrial distributors, price, marketing research.

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

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

366 (466) MARKETING RESEARCH 3 prereq 360. Research techniques and methods of collecting and interpreting quantitative, experimental, and simulation. Survey of current research practices in marketing and participation in class field project.

368 INTERNATIONAL MARKETING 4 prereq 360 (prereq waived for seniors majors in political science). Theories, principles and methods of international trade.

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

461 MARKETING MANAGEMENT II 3 prereq 362, 363. Individual and class analysis of case studies in marketing management.

462 PRICING POLICIES AND PRACTICES 4 prereq 360. The roles of pricing strategy and competition in marketing decision making. Administrative marketing problems related to elasticity of demand and price curves, marginal analysis and competitive behavior. Marketing policies and strategies as they relate to competition.

468 MARKET ANALYSIS AND PLANNING 3 prereq 366. Utilization of statistical and accounting techniques in analyzing past and planning future marketing performance.

499 SEMINAR V R-4.

FOR GRADUATES

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

563 COMMUNICATION PRACTICES 3. Spoken communication in the business and professional world. How to organize, present and handle public speaking and small-group interaction, with emphasis in the latter area.

569 RESEARCH V R-6. Special research problems.

590-591-692 GRADUATE SEMINAR 3. Enter any quarter. Selected topics. May be conducted as a formal seminar, or may consist of individual programs of study conducted with the consent of the instructor.

697 PROFESSIONAL PAPER V R-5. A professional paper written in the area of the student's major interest based on either a thesis or secondary research. Subject matter must be approved by gradu- advisor.

699 THESIS V R-9.

BUSINESS EDUCATION AND OFFICE ADMINISTRATION

Not more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189, and 190-191 may be applied toward graduation by students not majoring in Business Administration or earning a teaching major or minor in Business Administration. To register for any course in stenography or secretarial practice a student must have passed the English entrance examination, completed English 100 or its equivalent, or be concurrently registered in English 100.
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.

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 100 credits including 30 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, 431-432-433, 452, 453, 455, 466, and 6 units selected from Chem 441-442, 471-472, 486, 496, 498, or with the consent of the department, from graduate courses in Chemistry. Geol 427, Geol 428, Geol 448, Geol 528, and advanced courses in Mathematics or Physics. Two or three of these credits must be chosen from Chem 455, 466 or 498; the rest of the six must be selected from the other courses listed.

At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or 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 471, 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 471 in the above requirement. See also the catalog for the Pre-Med Sciences option which follows.

CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Cr.</th>
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<th>Cr.</th>
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<tbody>
<tr>
<td>Chem 121-122-123</td>
<td>5</td>
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<tr>
<td>Chem 124-125-126</td>
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<td>5</td>
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<tr>
<td>Math 151-152</td>
<td>5</td>
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<tr>
<td>English 100</td>
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<td>5</td>
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<tr>
<td>Electives</td>
<td>3-4</td>
<td>6-7</td>
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(Beginning Math course actually dependent on placement test)
Sophomore Year

Chem 294-295-296, and 267, 269, 299 3 3 3
Chem 211, 212, 213, and 214-218-218 3 3 3
Math 151, 251 5 5 5
Physics 111-122-223 5 5 5
Chem 245 3 3 3
Chem 246 3 3 3
Electives 0-3 0-3 0-3
15-18 15-18 15-18

(For undergraduates who wish to graduate in two years; if can defer Physics 223 to spring quarter Junior year and replace by 5 cr. elective.)

Junior Year

Math 253 (or 232) 5 5 5
Chem 371-372-373 5 5 5
Chem 341-342-343 3 3 3
Chem 451-452-453 5 5 5
German 101-102-103 (Reading Track) 5 5 5
Electives 0-1 0-1 0-1
17-18 17-18 17-18

Senior Year

Chem 452 3
Chem 453 3
Chem 474 3
Electives (must include 6 cr. of Advanced Chem.) 13-15 13-15 13-15

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

CHEMISTRY CURRICULUM FOR THE B.A. DEGREE

Freshman Year

Cr. Cr. Cr.
Chem 121-122-123 3 3 3
Chem 124-125-126 3 2 2
Math 121, 151, 152 5 5 5
English 100 5
Electives 3-4 5-7 5-7

Sophomore Year

Chem 211-212-213 (or Chem 264, 265, 266) 3 3 3
Chem 214-215-216 (or Chem 267-268-269) 3 2 2
Zool 111-112, 304 5 5 5
Chem 245 3 3 3
Chem 246 3 3 3
Psychology 110 5
Electives 2-3

Junior Year

Physics 221-222-223 5 5 5
German 101-102-103 (Reading Track) 5 5 5
Zool. 404 5
Electives 5-8 0-3 0-3
Chem 370 2
Chem 378 2

Senior Year

Chem 342-243 2 2
Chem 452 3
Chem 481, 482 3 3 3
Chem 385 3
Electives (e.g., Zool 485) 9-14 5-3 15-17

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 3 (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 (1-4) 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/l.

FOR UNDERGRADUATES AND GRADUATES

329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY 3 (2-4) prereq 123 or 226. 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) (0.6) (0.6) prereq 245 or equiv., Chem. 371, or c/l.

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.


378 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 (391) CHEMISTRY OF PLANT CONSTITUENTS V 3 or 4 (3-0 or 4) prereq 190 or =. Chemistry and analysis of plant components, including sugars, glycoids, polysaccharides, lignin and extractives. (Same as Bot. 290 and For. 390).

391 (392) 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 Forel. 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 5 (0-6) prereq 371 and 372.

452 PHYSICAL INORGANIC CHEMISTRY 3 (3-0) prereq 123, 215 or 266, 371 or 370.

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

455 INORGANIC CHEMISTRY LABORATORY 2 (0-6) prereq 123, 215 or 266 and c/l.

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 215.

468 ORGANIC QUALITATIVE ANALYSIS V 3-5 (2-4 to 8) prereq 213 or 290. 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/l.
FOR GRADUATES

528 CHEMICAL PRINCIPLES 5 (3-4) prereq a previous course in general chemistry or high school teaching experience in chemistry and c/i. Designed for 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.

558 STRUCTURAL ORGANIC CHEMISTRY 5 (5-4) prereq 528 or equivalent. Designed for M.S. in Teaching of Chemistry program. Credit not allowed toward bachelor's degree in chemistry. Electronic structures and bonding. Functional groups and reaction mechanisms. Laboratory includes some organic qualitative analysis.

571-572-573-574-575 QUANTUM CHEMISTRY I-IV 3 (3-0) prereq 474 or c/i.

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

581 PROTEINS AND NUCLEIC ACIDS 3 (2-0) 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.

582 ENZYMES 3 (3-0) prereq 370 or 372 and 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. Designed for the M.S. in Teaching of Chemistry program. Discussion of factors that modulate the activity of enzymes, such as feedback inhibition and genetic expression. Interplay and control of metabolic pathways.

590 SEMINAR 1 R.

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

651 SPECIAL TOPICS IN INORGANIC CHEMISTRY 3 R (3-0) prereq 373 and 452. Topic specified in class schedule.

654 CHEMISTRY OF THE TRANSITION ELEMENTS 3 (3-0) prereq 372 and 482.

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

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

661 ADVANCED ORGANIC CHEMISTRY 3 (3-0) prereq 213 or 262.

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

664-665 PHYSICAL ORGANIC CHEMISTRY 3 (3-0) prereq 373 and 494 or 466.

666 STEREOCHEMISTRY 3 (3-0) prereq 663.

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

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

671 KINETICS 3 (3-0) prereq 372.

673 THERMODYNAMICS 3 (3-0) prereq 373.

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

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

678 SPECIAL TOPICS IN PHYSICAL CHEMISTRY 3 (3-0) R prereq 672. Topic specified in class schedule.

685-688-697 ADVANCED MOLECULAR BIOLOGY LABORATORY V I-3 (0-6 to 9) prereq c/i. Modern research techniques employed in the life sciences. (Cross-listed with Bot, Mibc, Pharm, Zool.)

690 RESEARCH V.

699 THESIS V R-15.

COMPUTER SCIENCE

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN COMPUTER SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following courses are required for the Bachelor of Science Degree in Computer Science.

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

205-206-207 COMPUTER USE IN THE NATURAL SCIENCES 3 prereq Math 116 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 c/i. 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 212. The algebra of structures including semi-groups and groups as well as the theory of graphs. Applications of these structures to computer science.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 601 and c/i. (A digital computer is used.) (271) Linear equations and inequalities, linear programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Math 271-272-273.)

299 SEMINAR V R-8 c/i.

FOR UNDERGRADUATES

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

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

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

205-206-207 COMPUTER USE IN THE NATURAL SCIENCES 3 prereq Math 116 or equiv. or c/i. Introduction to the use of a computer in analyzing, simulating and modeling natural science problems.

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271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 601 and c/i. (A digital computer is used.) (271) Linear equations and inequalities, linear programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Math 271-272-273.)

299 SEMINAR V R-8 c/i.

FOR GRADUATES

301-302-303 INTERMEDIATE PROGRAMMING 3 (3-2) prereq Math 116, 117 and CS 201. Structural use of the FORTRAN programming language, algorithms for the solution of logical and numerical problems. Computer structure, the logic of computer arithmetic and the machine representation of information. Machine and assembly languages.

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

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

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

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

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

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) prerequisite Math 253 and CS 301 for CS 471; c/f for 472 and 473. Error analysis, approximation and interpolation, numerical solution of linear and nonlinear equations, numerical solution of ordinary and partial differential equations, numerical solution of integral equations and selected topics. Assigned work on digital computer. (Credit not allowed for this course and Math 471-472-473.)

475 COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prerequisite BA 250 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 (2-4) prerequisite Math 253 and CS 301 and c/f. 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.

469 SEMINAR V R-6 Guidance in special work.

FOR GRADUATES

554 ARTIFICIAL INTELLIGENCE V R-4 prerequisite 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: major in Drama 121, 122-123, 131-132-133, 244, 251, 301, 302-303-303, 311, 499 (4 cr.), plus a minimum of 6 credits in Drama. All 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 150, 262 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 undergraduate careers. A list of recommended courses is available at the Department office. Students are urged to consult with the Department faculty before selecting their 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. The specific additional courses will depend upon the student’s area of emphasis. A foreign language is not required for this degree.

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

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

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

Freshman Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
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</table>
Drama 101 | | | 3 |
Drama 121-122-123 | 3 | 3 | 3 |
Drama 131-132-133 | 4 | 4 | 4 |
Drama 200 | 2 | 2 | 2 |
Drama 251 | 3 | 3 | 3 |
English 100 | 3 | 3 | 3 |
Non-Drama Electives or Language | 5 | 5 | 5 |
HPER 100 (Ballet, Modern Dance or Fencing) | 1 | 1 | 1 |

Sophomore Year

<table>
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<tr>
<th>Quarter</th>
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<th>W</th>
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</table>
* Drama 200 | 2 | 2 | 2 |
Drama 201, 202, 203 | 3 | 3 | 3 |
Drama 244 | 3 | 3 | 3 |
English 202 or 450 | 3 | 3 | 3 |
* Non-Drama Electives or Language | 5 | 5 | 5 |

Senior Year

<table>
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<tr>
<th>Quarter</th>
<th>A</th>
<th>W</th>
<th>S</th>
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</table>
Drama 499 | 2 | 2 | 2 |
Electives | | | |

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

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

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

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

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

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

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 to the present.

221-222-223 INTERMEDIATE ACTING 3 prerequisite 121-122-123, 251 or c/l. 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 prerequisite previous work in theater or drama courses. Advanced laboratory production in all the arts of the theater.


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

307-308-309 THE DRAMA (see English)

511-512-513 (223, 422) DIRECTING 4 prerequisite 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 means provided by nature. The department considers its teaching goals to be three fold: (1) To present to students the basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them as civic leaders. (2) To introduce students majoring in economics to the various special fields of study within economics. This training along with extensive work in the other liberal arts and sciences, is intended to instill breadth of intellectual interests, 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 specialization of economics and political science. Graduate work leading to a Master of Arts degree with a major in economics is given.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in economics must be earned. Within the 50 credits in economics the student must include an introductory economics sequence, Economics 311-312-313, 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: (401-402-403) THEATER PROJECTS V 2-4 R prereq 121. Theory and practice of play production 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.

ECONOMICS

111 INTRODUCTION TO POLITICAL ECONOMY 4. A critical examination of the market mechanism as a social decision making 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 issues in economics including problems of government, unemployment, inflation, economic growth, and America's relationship with underdeveloped nations.

221 (393) INTRODUCTION TO ECONOMIC THEORY I 3. Nature of the American economy, markets, value and price determination.
212 (201) INTRODUCTION TO ECONOMIC THEORY II 3 prereq
106. National income determination, money and its use, economic instability.

213 (203) INTRODUCTION TO ECONOMIC THEORY III 3 prereq 212. Distribution of income; selected economic topics.

FOR UNDERGRADUATES AND GRADUATES

301 MONEY AND BANKING 4, Su 3, prereq an introductory economics sequence. Money and banks as suppliers of money; the Federal Reserve System as a regulator of money; monetary theories, history, and policy.

304 PUBLIC FINANCE 4, Su 3, prereq an introductory economics sequence. Principles and problems of governmental expenditures and revenues.

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

311 INTERMEDIATE ECONOMIC ANALYSIS I 4, Su 3, prereq an introductory economics sequence, Math 106 or equivalent. Theory of the firm.

312 INTERMEDIATE ECONOMIC ANALYSIS II 4, Su 3, prereq 311. Input analysis and welfare conditions.

313 INTERMEDIATE ECONOMIC ANALYSIS III 4, Su 3, prereq an introductory economics sequence and Math 106 or equivalent. Macroeconomic analysis.

315 DEVELOPMENT OF ECONOMIC THEORY I 4, Su 3, prereq an introductory economics sequence. Economic ideas from early times to 1690.

316 DEVELOPMENT OF ECONOMIC THEORY II 2 prereq an introductory economics sequence. Economic theories from 1890 to the present.

321 LABOR ECONOMICS I 3 prereq an introductory economics sequence. Institutional legal background of labor markets.

322 LABOR ECONOMICS II 3 prereq 321. Economics of labor markets.

324 INDUSTRIAL RELATIONS 3 prereq 321. Problems and public policy in labor-management relations.

331 INTERNATIONAL ECONOMICS I 3 prereq 331. Pure theory of international trade.

332 INTERNATIONAL ECONOMICS II 3 prereq 331. International monetary relations.

336 INTERNATIONAL ECONOMIC RELATIONS 3 prereq 112 or 212 or c/l. International economic institutions, including the International Monetary Fund, Common Market, trade and commodity agreements, and foreign trade and investment.

345 ECONOMIC DEVELOPMENT 4, Su 3, prereq 112 or 212 or c/l. Determinants of economic growth in poor and rich countries.

372 REGIONAL ECONOMICS I 4 prereq 311. Micro-regional economics, including location theory.

373 REGIONAL ECONOMICS II 4 prereq 372. Macro-regional economics, including regional development.

374 COMPARATIVE ECONOMIC SYSTEMS 4, Su 3, prereq an introductory economics sequence. Capitalism, fascism, socialism, communism; evaluation.

375 THE RUSSIAN ECONOMY 4, Su 3, prereq. an introductory economics sequence.

376 MONOPOLY AND COMPETITION 3 prereq an introductory economics sequence. Theories of imperfect markets and workable competition models.

382 CONTEMPORARY ECONOMIC PROBLEMS 3 prereq c/l.

385 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.

396 (306) PUBLIC EXPENDITURE POLICY 3 prereq 304 and 311. Economic analysis of the public expenditure process, the use 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.

406 MONETARY THEORY 4 prereq 301.

411 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.

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

451 MATHEMATICAL ECONOMICS I 4 prereq 311 and Math 106 or 152. Constrained maximization, maximization over time.

452 MATHEMATICAL ECONOMICS II 4 prereq 451. Input-output analysis, general equilibrium and programming, utility theory, and game theory models.

460 ECONOMETRICS I 4 prereq Math 106 or 152. General linear regression models, markets, trade, and multiple equation models.

461 ECONOMETRICS II 4 prereq 460. Econometric theory and multiple equation models.

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

495 SEMINAR IN ECONOMICS V 1-3 R-12 prereq c/l.

FOR GRADUATES

501 GRADUATE RESEARCH V R-6.

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

699 THESIS V R-15.

EDUCATION

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

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

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

General certification requirements for Montana's elementary, junior and senior high schools are set forth below. In addition to satisfying course, credit, and degree requirements, an applicant for certification in Montana must be (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 advisor 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 4 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 340, 343, 344, and 345. At least one course in each of the following areas: (a) educational sociology or history or philosophy of education; (b) audiovisual, multi-media, or library service; (c) counseling, guidance, remedial or special education; and (d) special methods in a major teaching field. Students wishing to qualify for standard elementary teacher certification are required to earn 45 or more credits in a major teaching field and 30 or more credits in a minor teaching field or to earn 60 or more credits in an extended major teaching field. Requirements for major and minor teaching fields may be found in the latest pages of the Education section of the catalog.

CURRICULUM IN SECONDARY EDUCATION
Freshman and Sophomore Years

Courses in Composition, Communication or Writing (e.g., Eng. 100, SC 110, SC 234, For. 220, Jour. 150) ........................................... 3-5

Ed. 200, Major and/or Minor Teaching Fields .................................. 30-50

Ed. 204, Orientation to Education ......................................................... 2

Ed. 205, Educational Psychology .......................................................... 40-43

Electives ................................................................................. 90-105

Junior and Senior Years

A course in Advanced Composition or Communication (e.g., Eng. 360, Eng. 371, Eng. 450, SC 253, SC 385) .................................................. 3

Ed. 402, Educational Measurement .......................................................... 4

Ed. Required Courses from Options Allowed (40 credits) ................. 12-40

Ed. 308, Elementary School Social Studies ......................................... 3

Ed. 405, Student Teaching: Secondary ...................................................... 10

Ed. 407, Problems in Teaching ................................................................. 3

Electives/ or Courses in Major and/or Minor Teaching Fields .............. 33-68

90-105

Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 43 credits in Education including the following required courses totaling 43 credits: Education 200, 202, 206, 309, 310, 311, 312, 340, 404, 407.

In addition, the student will complete work in the following areas: English, 21 credits including 9 credits in English composition; Social Studies, 20 credits; Science, 18 credits; Mathematics, 6 credits; Health, Physical Education and Recreation, 6 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) ........................................... 3-5

SC 118, Oral Expression ................................................................. 3

LA 151-2, Introduction to Humanities ............................................... 3

Geog. 101, Physical Elements of Geography .................................... 3

Mus. 123-4, Music Education in the Elementary Schools ................. 3

Ed. 200, Orientation to Education ......................................................... 2

Ed. 201, Education Laboratory .............................................................. 2-6

Ed. 202, The Elementary School Child .................................................. 4

HPR 199, First Aid ............................................................................ 2

Hist. 261-2, United States History ......................................................... 4

Math. 125, Theory of Arithmetic ........................................................... 4

Math. 220, Intuitive Geometry (or an elective course in Math) ............... 4

Pol. Sci. 101, American Government ..................................................... 4

Electives ................................................................................. 10-105

Junior and Senior Years

Ed. 340, Survey of Children's Literature .............................................. 3

Ed. 366, Teaching Elementary School Reading ...................................... 3

Ed. 367, Teaching Elementary School Mathematics .................................. 3

Ed. 310, Teaching Elementary School Social Studies ............................. 3

Ed. 311, Teaching Elementary School Science ....................................... 3

Ed. 312, Teaching Elementary School Language Arts ......................... 3

A course in Advanced Composition or Communication (e.g., Eng. 360, Eng. 371, Eng. 450, SC 253, SC 385) ............................................. 3

Art 313-14, Elementary School Art ......................................................... 6

Ed. 407, Conservation of Natural and Human Resources in Montana ....... 3

HPR 329, Teaching Physical Education in Elementary School ......... 3

HPR 339, The School Health Program .................................................... 3

Ed. 404, Student Teaching: Elementary .................................................. 15

Ed. 407, Problems in Teaching ................................................................. 3

Electives ................................................................................. 36-40

90-90

RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATES.

The University of Montana admits its graduates who meet state certification requirements to the State Department of Public Instruction for teaching certification. Graduates must be approved by the Dean of the School of Education. Students who expect to teach in the state of Montana should consult with the School of Education to determine specific requirements because they differ from those in some states.

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

1. A bachelor's degree from the University of Montana or other approved institution of higher education.

2. Twenty-four or more quarter credits in Education designated by the Dean of the School of Education (see Preparation for Secondary Teaching below).

3. Preparation in one or more special subject areas commonly taught in the elementary schools, not to exceed five courses in one field.

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, including Assignment 1.

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

Students who expect to be certified to teach in the secondary grades must complete the academic major or minor and G. S. E. in an approved institution of higher education.

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 TO BE TAKEN BY STUDENTS NOT MAJORING IN ELEMENTARY EDUCATION.

Sophomore year: Educ. 202, 2 credits.

Junior year: Educ. 201, 6 credits.

Senior year: Educ. 340, 4 credits.

PREPARATION FOR PROFESSIONAL CERTIFICATION.

The Montana professional certificate is issued to applicants having 3 or more years successful teaching experience who have completed a master's degree from an accredited institution of higher education beyond the bachelor's degree. Students intending to qualify for this certificate must file with the School of Education at least two quarters preceding the quarter of practice teaching. Upon the recommendation of the holder of the certificate, the School of Education will similarly submit a statement setting forth their proposed programs.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

123-124 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS

125-126-127 SCIENCE FOR ELEMENTARY TEACHERS 5 (4-2)

Open only to majors in Elementary Education. (125) A survey of the fundamental aspects of the universe, atomic structure, and related topics. A survey of the animal and plant kingdoms, including taxonomy, morphology, physiology, life cycles, reactions, basic chemistry, biochemistry, metabolism, cell structure, relationship of cell structure and function, cell division, basic genetics, origins of life, and related topics. (127) A survey of the animal and plant kingdoms, including anatomy, biochemistry, physiology, life cycles, ecology, evolution, and related topics.

200 ORIENTATION TO EDUCATION 2. Teaching as a profession, elementary school and its purposes. Problems, issues, and trends in education today. Career opportunities in education, certification requirements.

201 EDUCATION LABORATORY V R E prereq c/1.

202 THE ELEMENTARY SCHOOL CHILD 5 prereq 200, coreq 201. Principles of growth and development and the psychology of learning as applied to the elementary school child. A minimum of 2 hours per week will be spent in observation of children in the school environment.
EDUCATIONAL PSYCHOLOGY 4 prereq 200. The growth and developmental characteristics of adolescents. Psychological and sociological foundations of learning in the junior and senior high schools. 301-302-303 METHODS OF TEACHING PHYSICAL EDUCATION ON THE SECONDARY LEVEL. (See Health, Physical Education and Recreation.)

305 SECONDARY SCHOOL TEACHING PROCEduRES 5 prereq 200 and 205.

308 TEACHING ELEMENTARY SCHOOL READING 3 prereq 202.

309 TEACHING ELEMENTARY SCHOOL MATHEMATICS 3 prereq 202 and an introductory course in modern mathematics or c.i.

310 TEACHING ELEMENTARY SCHOOL SOCIAL STUDIES 3 prereq 202.

312 TEACHING ELEMENTARY SCHOOL LANGUAGE ARTS 3 prereq 202.

322-324-325 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 =.

404 STUDENT TEACHING: ELEMENTARY V R-15 prereq 200, and consent of Director of Student Teaching.

405 STUDENT TEACHING: SECONDARY V R-10 prereq 200, 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.)

329 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.

330 TEACHING OF ENVIRONMENTAL EDUCATION (K-12) 3 prereq Educ 304 and c/i.

337 PROBLEMS IN ENVIRONMENTAL EDUCATION 3 prereq c/i. Designing, selection, and evaluation of materials for the teaching of Environmental Education.

338 METHODS OF TEACHING PHYSICS. (See Physics.)

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

341 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.

344 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.

346 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.

347 INTEGRATING MULTI-MEDIA MATERIALS IN INSTRUCTION 3.

348 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 3.

349 CATALOGING AND CLASSIFICATION 4, Su 3 prereq c/i.

350 MATERIALS SELECTION AND BIBLIOGRAPHY 4, Su 3 prereq c/i.

354 LIBRARY REFERENCE MATERIALS 4, Su 3 prereq c/i.

355 AUDIOVISUAL COMMUNICATION 3. Utilization of sound and visual teaching aids; intensive laboratory work in basic instruction materials and evaluation methods. (See Business Administration.)

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 personnel problems, community relations, and organizational structure of schools.

372 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.)

590 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. Prereq teaching experience and c/i. Curriculum trends and instructional materials, research, and supervisory techniques relevant to the modern elementary school language arts program.

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

414 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 the modern elementary school social studies program.

415 SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience and c/i. Curriculum trends, instructional materials, research, and supervisory techniques relevant to the modern elementary school arithmetic program.

418 SUPERVISION AND TEACHING OF SCIENCE IN THE ELEMENTARY SCHOOL 3 prereq 125-126-127 or =, teaching experience and c/i. Curriculum trends, instructional materials, research, and supervisory techniques relevant to the modern elementary school science program.

420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq 200, 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. Prereq teaching experience of at least 3/4 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. General safety education. To prepare teachers for 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 students who have had experience in this field. General safety education.

427 READING IN JUNIOR AND SENIOR HIGH SCHOOL 3 prereq 206 or =. Programs, materials, teaching, reading in the content fields, research, and developments.

428 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 206 or teaching experience.

429 THE SLOW AND RETARDED LEARNERS 3 prereq 12 credits in Education. Needs, aims, identification, curriculum, teaching methods, and research.
32—EDUCATION

432 THE BRIGHT AND GIFTED PUPILS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching, supervision, and evaluation.

434 REMEDIAL READING LABORATORY 3 R-9 prereq or co­

req 334 and c/i. Supervised practice in diagnosis and remedial in­

struction.

435 INTRODUCTION TO MENTAL RETARDATION 3, prereq 202 and c/i. Historical, psychological, social, and educational aspects of mental retardation.

436 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.

437 PRECISION TEACHING AND BEHAVIOR MODIFICATION IN THE SPECIAL CLASSROOM 3 prereq 481 or 483. Learning theory approach to the analysis and evaluation of academic and para­

academic 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 centralized libraries for curriculum enrichment ex­

perience, reading, guidance, and teaching library skills. Responsibil­

ities of classroom teachers, elementary librarians, library super­

visors, 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 libra­

ries, including story telling and organization of the children's depart­

ment in the public library.

443 LIBRARY WORKSHOP 3 R-9 prereq c/i. Problems of li­

brary administration. General problems 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. In­

dependent study and research. Group analysis and discussion of individual projects.

445 LIBRARY PRACTICE 5 prereq c/i. The student performs 

library routines in a school, public or college library under the super­

vision of a trained professional librarian.

447 PREPARATION OF INEXPENSIVE INSTRUCTIONAL 

MATERIALS 3 prereq 347. Graphic techniques in the areas of let­

tering, coloring, enlarging, mounting, and production in the prepara­

tion of media for projected and non-projected use.

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

449 ADMINISTRATION OF AUDIOVISUAL COMMUNIC­

ATIONS PROGRAMS 3 prereq courses in field or c/i. Manage­

ment of the adopted program, and instruction of communication 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 c/i. Orientation to the need, organization, and methodology of guidance services in the elementary schools.

452 EDUCATIONAL MEASUREMENT 4 prereq 205 or teaching experience. Basic principles of measurement of educational out­

comes, such as remedial and secondary teaching; application of scien­tific techniques to educational data; analysis of standardized tests; construction and use of teacher-made tests.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCA­

TION 3. Enter either quarter. (461) to 1800; (462) 1800 to present.

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

460 INDEPENDENT STUDY V R-10 prereq c/i.

464 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 experi­

ences in administration, counseling, special education or curriculum. (Admission by application only.)

500 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.

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

532 HIGH SCHOOL CURRICULUM 4 prereq 530 or c/i. Sociological, psychological, and philosophical foundations of the high school curricula to be used 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 im­

plementation of the curriculum.

534 CURRICULUM ISSUES 3 prereq c/i. Current issues in cur­

ricula at all levels of education pertaining to planning, developing, implementing, and evaluating.

535 CURRICULUM WORKSHOP V R-10 prereq teaching ex­

perience and c/i.

550 ADVANCED EDUCATIONAL PSYCHOLOGY 3. General behavior and learning: motivation, interference reduction, reinforce­

ment, teaching for permanence and transfer. Current research in field.

551 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.

552 INDIVIDUAL APPRAISAL IN COUNSELING AND GUID­

ANCE 3 prereq 480 and 481. Collecting and interpreting data concerning the individual use of such data in counseling.

553 GROUP COUNSELING AND GUIDANCE PROCEDURES 5 R-10 prereq 480 and 481 and a course in abnormal psychology or per­

sonality dynamics. Group processes, interaction and practical experience.

554 OCCUPATIONAL INFORMATION 3 prereq 450 or c/i. Sources, techniques of analysis, surveys and statistics, trends in classifica­tion, filing system, evaluation, selection, and use of occupa­tion.

555 THEORIES OF COUNSELING 3 prereq 450 or 481 and a 

course in abnormal psychology or personality dynamics. A survey of current thought concerning individual and group counseling.

556 INDIVIDUAL COUNSELING PRACTICUM 3 prereq c/i.

557 ORGANIZATION AND ADMINISTRATION OF PERSON­

NEL SERVICES 3 prereq c/i. The development and organization of guidance services in the school with emphasis on philosophy, organization procedures and facility 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 R-10, prereq 

an introductory counseling practicum and c/i.

561 COMPARATIVE EDUCATION 3. A comparison of the ed­

ucational systems of 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 EDUCA­

TION 3 prereq c/i. The background of education in its broadest sense as found in the religions, the economic system, the family, the estate, and other social institutions.

569 SCHOOL AND COMMUNITY 3 prereq c/i. Community re­

sources which may be utilized for the enrichment of the educational program.

570 EDUCATIONAL ADMINISTRATION 4 prereq teaching ex­

perience. Administrative relationships at federal, state, and local levels; responsibilities of school superintendents.

571 ADMINISTRATIVE BEHAVIOR 3, prereq teaching experi­

ence or c/i.

572 ELEMENTARY SCHOOL ADMINISTRATION 3 prereq 

teaching experience.

573 SECONDARY SCHOOL ADMINISTRATION 3 prereq teach­

ing experience.

574 SCHOOL SURVEYS AND STUDIES 3 prereq 570. Techni­

ques and organization for the study of future needs and direction of education in the local school district.

575 SCHOOL SUPERVISION 3 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, relationships of revenues to expenditures; relationship of foundation programs and district reorganization.

577 SCHOOL FACILITIES PLANNING V 2-4 prereq 570 or c/i. Procedures for determining school facility needs and prepa­

ration of educational specifications.

578 LEGAL BASIS OF PUBLIC EDUCATION 3 prereq 570 or c/i. Legal concepts of education in the United States; legislation affecting educational purposes, 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.
581 COLLEGE TEACHING 3 preq 30 credits of graduate work. The type of teaching applicable to the college level.

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

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

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

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

586 VOCATIONAL DEVELOPMENT THEORY 3 preq 554 or c/l. A comparison of current theories of vocational development.

589 INDEPENDENT STUDY V R-10 preq consent of adviser and instructor.

590 SUPERVISION OF STUDENT TEACHING 3 preq 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.

594 SEMINAR V R preq c/l. Group analysis of problems in specific areas of education.

595 METHODS OF EDUCATIONAL RESEARCH 4. Research problems; their statement, organization, techniques, tabulation of materials, statistical concepts necessary for interpretation of research data. (An introductory course in statistics is highly desirable.)

597 EDUCATIONAL STATISTICS 4 preq an introductory course in statistics and c/l.

599 RESEARCH V R-15 preq c/l.

630 ADULT AND CONTINUING EDUCATION 3 preq c/l. Differences in methods used with children and adults. Psychology of adult learner and techniques for stimulating new interests and purposes.

633 CURRICULUM TRENDS IN HIGHER EDUCATION 3 preq c/l.

638 THE AMERICAN COMMUNITY/JUNIOR COLLEGE 3 preq c/l.

670 ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION 3 preq c/l.

699 THESIS OR PROFESSIONAL WRITING V R-30.

EDUCATION—33

BIOLOGICAL SCIENCE

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
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<tbody>
<tr>
<td>(87-93 credits)</td>
<td>(55-64 credits)</td>
</tr>
<tr>
<td>Micro 300—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot-Zool 111—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 114—General Botany</td>
<td>10</td>
</tr>
<tr>
<td>Zool 112—General Zoology</td>
<td>10</td>
</tr>
<tr>
<td>Bot 303—Local Flora (or Zool 306)</td>
<td>8-4</td>
</tr>
<tr>
<td>Bot-Zool 268—Basic Concepts of Ecology (or Bot 305)</td>
<td>3-5</td>
</tr>
<tr>
<td>Bot 255—Plant Physiology (or Zool 205)</td>
<td>5</td>
</tr>
<tr>
<td>Bot-Zool 485—Genetics</td>
<td>5</td>
</tr>
<tr>
<td>For-Educ 304—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>*Chem 101-2-3-4—General Chemistry and Laboratory</td>
<td>8</td>
</tr>
<tr>
<td>*Chem 160 and 164—Survey of Organic Chemistry and Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>Geol 101-2-3—Introduction to and Environmental Geology (or Phys 111-2-3)</td>
<td>12-15</td>
</tr>
<tr>
<td>Math 116—College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>Electives—Upper Division Biology Courses</td>
<td>3-6</td>
</tr>
<tr>
<td>*Students presenting a minor field in Chemistry should substitute Chem 121-2-3-4-5-6.</td>
<td></td>
</tr>
<tr>
<td>**Minors may substitute Bot 265 or For-Educ 304 or Bot-Zool 250.</td>
<td></td>
</tr>
</tbody>
</table>

BUSINESS ADMINISTRATION (SECRETARIAL)

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(54-60 credits)</td>
<td>(46-65 credits)</td>
</tr>
<tr>
<td>Bus Ad 180 or =—Beginning Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 181 or =—Intermediate Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 182 or =—Advanced Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 183—Production Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 184-5—Stenography</td>
<td>15</td>
</tr>
<tr>
<td>Bus Ad 193—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 194—Records Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 381-3-3—Accounting Principles</td>
<td>9</td>
</tr>
<tr>
<td>Bus Ad 292—Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 357—Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 370—Electronic Information Processing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Basic Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 383—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 384—Methods of Teaching Shorthand &amp; Transcription</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 385—Philosophy of Vocational Business Education</td>
<td>3</td>
</tr>
<tr>
<td>Econ 211—Introduction to Economic Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

BUSINESS ADMINISTRATION (NON-SECRETARIAL)

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(54-60 credits)</td>
<td>(46-65 credits)</td>
</tr>
<tr>
<td>Bus Ad 180 or =—Beginning Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 181 or =—Intermediate Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 182 or =—Advanced Typewriting</td>
<td>0-2</td>
</tr>
<tr>
<td>Bus Ad 183—Production Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 183—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 194—Records Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 310-2-3—Accounting Principles</td>
<td>9</td>
</tr>
<tr>
<td>Bus Ad 292—Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 357—Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 370—Electronic Information Processing</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad-Educ 380—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad-Educ 381—Methods of Teaching Bookkeeping &amp; Basic Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus Ad 383—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 385—Philosophy of Vocational Business Education</td>
<td>3</td>
</tr>
<tr>
<td>Bus Ad 401—Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Econ 200-212,215—Introduction to Economic Theory I, II, III</td>
<td>9</td>
</tr>
<tr>
<td>Econ 301—Money and Banking</td>
<td>4</td>
</tr>
</tbody>
</table>

CHEMISTRY

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>(46 credits)</td>
<td>(32 credits)</td>
</tr>
<tr>
<td>Chem 121-2-3-4-5-6—College Chemistry and Laboratory</td>
<td>15</td>
</tr>
<tr>
<td>Chem 240-6—Quantitative Analysis and Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>Chem 260-5 and 267-8—Organic Chemistry and Laboratory</td>
<td>10</td>
</tr>
<tr>
<td>Chem-Educ 332—Methods of Teaching High School Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem—Survey of Physical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Chem 432—Physical Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem 481—Elementary Biodynamics</td>
<td>3</td>
</tr>
<tr>
<td>Electives—Upper Division Chemistry Courses</td>
<td>3</td>
</tr>
<tr>
<td>*Prereq = Phys 111-2-3 (15 cr.); Math 116-7 (10 cr.)</td>
<td></td>
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</table>
### COMMUNICATION SKILLS

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 credits</td>
<td>37 credits</td>
</tr>
</tbody>
</table>

- **SpCo 110—Introduction to Systems of Communication**
- **SpCo 112—Argumentation**
- **SpCo 114—Oral Expression**
- **SpCo 214—Introduction to the Process of Communication**
- **SpCo 311—Oral Interpretation**
- **SpCo 314—Discussion and Small Groups**
- **SpCo 333—General Semantics**
- **SpCo 335—Message Composition**
- **SpCo 336—Speech Criticism**
- **SpCo-Educ 424—Methods of Teaching Communication**

- **SpCo 443—Advanced Public Speaking**
- **SpCo 444—Rhetorical Theory**
- **Eng 100—Composition**
- **Eng 205—Introduction to Creative Writing**
- **Eng 450—Advanced Composition**
- **Jour 270—Reporting**
- **Jour 292—Magazine Article Writing**
- **Jour Educ 312—School Publications and Teaching Methods**

*Minors may substitute SpCo 112 for SpCo 110.

### COMPUTER SCIENCE

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 credits</td>
<td>37 credits</td>
</tr>
</tbody>
</table>

- **CS 101—Introduction to Computing**
- **CS 201—Fortran Programming**
- **CS 202—Cobol**
- **CS 271-2—Computing and Mathematics**
- **CS 301-3—Intermediate Programming**
- **CS 302—Systems Analysis**
- **CS 350—Switching Theory**
- **CS 401-2—Advanced Programming**
- **CS 402—Computer Applications in Education**

*PreReq = Math 001 (6 cr.)

### DRAMA

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 credits</td>
<td>28 credits</td>
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</tbody>
</table>

- **Dr 101—Introduction to the Theater**
- **Dr 121-3—Elementary Acting**
- **Dr 123—Stagecraft**
- **Dr 201-2—Beginning Theater Workshop**
- **Dr 201—Dramatic Literature**
- **Dr 244—Stage Make-Up**
- **Dr 251—Stage Speech**
- **Dr 303—History of the Theater**
- **Dr 311—Directing**
- **Dr 499—Seminar**

Electives—Any Course(s) 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</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 credits</td>
<td>56 credits</td>
</tr>
</tbody>
</table>

- **Geog 101—Physical Elements of Geography**
- **Geog 300—Introductory Meteorology**

Chem 101 and 104—General Chemistry

- **Geol 101—Introduction to Geology**
- **Geol 102—Methods (or Geol 302)**
- **Geol 200—General Paleontology**
- **Geol 205—Principles of Stratigraphy**
- **Geol 210—Introduction to Rocks and Minerals**
- **Geol-Educ 306—Methods of Teaching Earth Science**

**Geol 310—Geomorphology (or Geog 370)**

**Ecol 304—Conservation of Natural and Human Resources in Montana**

**Astr 131-2—Elementary Astronomy**

**Ecol 416—Hands On Field Experiences (3 credits)**

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

### ECONOMICS

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 credits</td>
<td>39 credits</td>
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</table>

- **Econ 211-212—Introduction to Economic Theory I, II, III**
- **Econ 301—Money and Banking**
- **Econ 304—Public Finance**
- **Econ 311-3—Intermediate Economic Analysis I, II, III**
- **Econ 321—Labor Economics**
- **Econ 331—International Economics**
- **Econ 425—Methods of Teaching Social Studies in Secondary Schools**

Electives—Courses in Economics

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

### ENGLISH

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 credits</td>
<td>36 credits</td>
</tr>
</tbody>
</table>

- **Eng 161-2—World Literature**
- **Eng 200—Applied Literary Criticism**
- **Eng 211-2—Introduction to Major British Writers**

**Eng 231—Introduction to Major American Writers**

**Eng 342—Shakespeare (or 343)**

**Eng 371—The Structure of Modern English**

**Eng-Educ 333—Methods of Teaching English**

**Eng 450—Problems in Composition**

**Eng 482—Literature for the High School Teacher**

**SpCo 111—Introduction to Public Speaking**

**PreReq = Math 001 (6 cr.)

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

**PreReq = Math 115 (5 cr.)

**PreReq = Math 101 (5 cr.)

### FRENCH

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 credits</td>
<td>36 credits</td>
</tr>
</tbody>
</table>

- **Fr 101-2—Elementary French**
- **Fr 201—Intermediate French**
- **Fr 302—Oral and Written Expression**
- **Fr 303—French Civilization and Culture**
- **Fr 401—Applied Linguistics**
- **Fr 402—Advanced Composition**
- **FLE-Educ 306—Methods of Teaching Foreign Languages**

**PreReq = Math 001 (6 cr.)

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

### GENERAL SCIENCE

(Major Only)

Does not qualify for teaching Chemistry or Physics

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>78 credits</td>
<td>62 credits</td>
</tr>
</tbody>
</table>

- **Micro 100—Elementary Microbiology**
- **Bot-Zool 111—Introduction to Biology**
- **Bot 114—General Botany**
- **Bot 265—Local Flora**
- **Chem 101-2—General Chemistry**
- **Chem 160 and 164—Survey of Organic Chemistry**
- **Educ 304—Conservation of Natural and Human Resources**
- **Geol 101—Introduction to Geology**
- **Astr 111-2—General Physics**
- **Astr 131—Elementary Astronomy**
- **Zool 112—General Zoology**
- **Zool 200—Field Zoology**
- **Educ-Educ 425—Methods of Teaching Secondary Science**

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

### GENERAL SCIENCE

(Major Only)

Does not qualify for teaching Chemistry or Physics

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>78 credits</td>
<td>62 credits</td>
</tr>
</tbody>
</table>

- **Micro 100—Elementary Microbiology**
- **Bot-Zool 111—Introduction to Biology**
- **Bot 114—General Botany**
- **Bot 265—Local Flora**
- **Chem 101-2—General Chemistry**
- **Chem 160 and 164—Survey of Organic Chemistry**
- **Educ 304—Conservation of Natural and Human Resources**
- **Geol 101—Introduction to Geology**
- **Astr 111-2—General Physics**
- **Astr 131—Elementary Astronomy**
- **Zool 112—General Zoology**
- **Zool 200—Field Zoology**
- **Educ-Educ 425—Methods of Teaching Secondary Science**

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

### GENERAL SCIENCE

(Major Only)

Does not qualify for teaching Chemistry or Physics

<table>
<thead>
<tr>
<th>Major Field</th>
<th>Minor Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>78 credits</td>
<td>62 credits</td>
</tr>
</tbody>
</table>

- **Micro 100—Elementary Microbiology**
- **Bot-Zool 111—Introduction to Biology**
- **Bot 114—General Botany**
- **Bot 265—Local Flora**
- **Chem 101-2—General Chemistry**
- **Chem 160 and 164—Survey of Organic Chemistry**
- **Educ 304—Conservation of Natural and Human Resources**
- **Geol 101—Introduction to Geology**
- **Astr 111-2—General Physics**
- **Astr 131—Elementary Astronomy**
- **Zool 112—General Zoology**
- **Zool 200—Field Zoology**
- **Educ-Educ 425—Methods of Teaching Secondary Science**

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

<table>
<thead>
<tr>
<th><em>Major Field</em> (67 credits)</th>
<th>Minor Field (57 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 101 - Physical Elements of Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geog 102 - Introductory Human Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geog 201 - Map Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Geog 211 - Economic Geography</td>
<td>3</td>
</tr>
<tr>
<td>Geog 390 - Geography of North America</td>
<td>3</td>
</tr>
<tr>
<td>Geog 391 - Cultural Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geog 485 - Urban Geography</td>
<td>5</td>
</tr>
<tr>
<td>Geog 370 - Landform Analysis</td>
<td>3</td>
</tr>
<tr>
<td>*Geog 235 - Population and Resource Geography</td>
<td>3</td>
</tr>
<tr>
<td>*Educ 420 - Methods of Teaching Secondary Science</td>
<td>3</td>
</tr>
</tbody>
</table>

** Electives - Courses from Social Science and Physical Science Areas: 27 credits

*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.

**18 credits should be selected from one department in the social science area or from one department in the physical science area; the remaining 9 credits should be from one department in the other area.

### GERMAN

<table>
<thead>
<tr>
<th><em>Major Field</em> (60 credits)</th>
<th><em>Minor Field</em> (48 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Ger 101-2-3 - Elementary German</td>
<td>15</td>
</tr>
<tr>
<td>*Ger 201-2-3 - Intermediate German</td>
<td>15</td>
</tr>
<tr>
<td>Ger 201 - Oral and Written Expression</td>
<td>6</td>
</tr>
<tr>
<td>Ger 203 - German Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Ger 311-3-3 - Survey of German Literature</td>
<td>3</td>
</tr>
<tr>
<td>Ger 401 - Applied Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Ger 402 - Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>*FL/Eng 360 - Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
<tr>
<td>*Electives - Any Upper Division German Courses</td>
<td>9</td>
</tr>
</tbody>
</table>

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

**Credits will be allowed for exempted courses.

*Must be taken prior to the professional quarter.

†Minors may substitute Ger 402.

### HEALTH, PHYSICAL EDUCATION

<table>
<thead>
<tr>
<th><em>Major Field</em> (61-62 credits)</th>
<th><em>Minor Field</em> (40-41 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPER 165 - Concepts in Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>HPER 115-119 - Professional Activities</td>
<td>4</td>
</tr>
<tr>
<td>HPER 209 - First Aid (or 399)</td>
<td>2 or 3</td>
</tr>
<tr>
<td>HPER 200 - History and Principles of Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>HPER 120-130 or 215-220 - Professional Activities</td>
<td>2</td>
</tr>
<tr>
<td>HPER 240 - Care and Prevention of Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>HPER 290 - Human Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>HPER-Ed 301 - Methods of Teaching Physical Education Secondary Level (or 315)</td>
<td>3</td>
</tr>
<tr>
<td>HPER 305 - Problems in Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>HPER 306 - Teaching Physical Education in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>HPER 388 - The High School Intramural Program</td>
<td>2</td>
</tr>
<tr>
<td>HPER 366 - Organization and Administration of Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>HPER-Edu 375 - The School Health Program</td>
<td>3</td>
</tr>
<tr>
<td>HPER-Edu 375 - Methods in Teaching Health</td>
<td>3</td>
</tr>
<tr>
<td>HPER 381 - Applied Anatomy and Kinesiology</td>
<td>5</td>
</tr>
<tr>
<td>HPER 395 - Preventive and Corrective Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>HPER 485 - Senior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>HPER 485 - Measurement and Evaluation in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>*HPER 470 - Physiology of Exercise</td>
<td>3</td>
</tr>
</tbody>
</table>

### HISTORY-POLITICAL SCIENCE

<table>
<thead>
<tr>
<th><em>Major Field</em> (55 credits)</th>
<th><em>Minor Field</em> (33 credits)</th>
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</thead>
<tbody>
<tr>
<td>Hist 104-5-6 - European Civilization</td>
<td>12</td>
</tr>
<tr>
<td>Hist 104-5-6 - United States History</td>
<td>8</td>
</tr>
<tr>
<td>Hist 201-2-3 - American Government</td>
<td>10</td>
</tr>
<tr>
<td>*FL/Edu 215-4-5 - Introduction to International Relations</td>
<td>5</td>
</tr>
<tr>
<td>*Edu 420 - Methods of Teaching Social Studies in Elementary Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

*Elections - Courses in History: 15 credits

*Must include at least 12 credits of upper division courses.

### HOME ECONOMICS

<table>
<thead>
<tr>
<th><em>Major Field</em> (64 credits)</th>
<th><em>Minor Field</em> (46 credits)</th>
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</thead>
<tbody>
<tr>
<td>H Ec 102 - Personal and Family Living</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 106 - Home Management in Theory and Practice</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 158 - Textile Selection</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 157 - Introductory Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 153 - Clothing Problems Laboratory (or 154)</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 210 - Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 211 - Principles of Food Preparation</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 202 - Food Preparation Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 246 - Nutrition</td>
<td>3</td>
</tr>
</tbody>
</table>

**H Ec 395 - Child Development I | 3 |
**H Ec 396 - Child Planning | 3 |
**H Ec 303 - Interior Design and Furnishings | 3 |
**H Ec 309 - Meal Management | 3 |
**H Ec 308 - Family Finance | 3 |
**H Ec 307 - Home Living Center | 3 |
**H Ec 346 - Family and Consumer Science | 3 |
**H Ec 338 - Advanced Clothing Problems | 3 |
**H Ec 337 - Advanced Problems in Child Development | 3 |
**H Ec 360 - Marriage and Family Relationships | 3 |
**H Ec 421 - Teaching Home Economics | 5 |
**H Ec 490 - Seminar | 1 |

*Prereq - Chem 101 (3 cr.)

**Prereq - Psych 110 (5 cr.)

**Prereq - Art 125 (2 cr.)

### ITALIAN

<table>
<thead>
<tr>
<th><em>Major Field</em> (60 credits)</th>
<th><em>Minor Field</em> (48 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ital 101-2-3 - Elementary Italian</td>
<td>15</td>
</tr>
<tr>
<td>Ital 201-2-3 - Intermediate Italian</td>
<td>15</td>
</tr>
<tr>
<td>Ital 301-2-3 - Oral and Written Expression</td>
<td>6</td>
</tr>
<tr>
<td>Ital 303 - Italian Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Ital 311-2-3 - Survey of Italian Literature</td>
<td>3</td>
</tr>
<tr>
<td>Ital 401 - Applied Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Ital 402 - Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>*FL/Edu 360 - Methods of Teaching Foreign Languages</td>
<td>3</td>
</tr>
<tr>
<td>*Electives - Any Upper Division Italian Courses</td>
<td>9</td>
</tr>
</tbody>
</table>

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

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

**Credits will be allowed for exempted courses.

†Minors may substitute Ital 402.

*Must be taken prior to the professional quarter.

### JOURNALISM

<table>
<thead>
<tr>
<th><em>Major Field</em> (46 credits)</th>
<th><em>Minor Field</em> (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jour 100 - Social Role of Mass Media</td>
<td>3</td>
</tr>
<tr>
<td>Jour 104 - Current Affairs</td>
<td>3</td>
</tr>
<tr>
<td>Jour 227 - Elementary Photography</td>
<td>3</td>
</tr>
<tr>
<td>Jour 270 - Reporting</td>
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<td>Jour 307 - History and Principles of Journalism</td>
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<td>Jour 315 - School Publications and Teaching Methods</td>
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<td>Jour 369 - Principles of Advertising</td>
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<td>Jour 341 - Advertisements</td>
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<td>Jour 358 - Specialized Reporting</td>
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<td>Jour 380 - News Editing</td>
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<td>Jour 381 - Advanced News Editing</td>
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<td>Jour 386 - Public Opinion</td>
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<td>Jour 397 - Law of Journalism</td>
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<td>Jour 367 - Reporting Public Affairs</td>
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<td>Jour 485 - Editorial Writing and Interpretation</td>
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<td>Jour 468 - Mass Media in Modern Society</td>
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### RIV TV 140 - Introduction to Radio and Television | 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 in which student teaching can be accomplished.
### 36—EDUCATION

#### LATIN

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<tr>
<th>Major Field</th>
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#### SOCIAL SCIENCES—BROAD FIELDS

(Department Courses)

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ENGLISH—37

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ENGLISH. In addition to the general requirements for graduation listed earlier in the catalog, the student seeking the degree of Bachelor of Arts with a major in English must complete a minimum of 30 credits in the major and not more than 66 credits in the department. English 100 does not count toward the English major. The required courses are listed in the schedules given below. By the beginning of his junior year the student should have decided definitely which of the schedules he is to follow.

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

CORE CURRICULUM

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

II. All students are expected to take, in addition English 200 in the sophomore year; two quarters in one sequence and one in the following from English 211-215, 220, 221-225, 230, or 243; 3 credits from English 360 or 371.

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.

SCHEDULE A. LITERATURE

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

English 485 (Chaucer); 3 credits from 491-492-493. The remaining credits required for completion of the minimum 50 may be selected from 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 English and American literature and written numbered above 300.

SCHEDULE C: TEACHING

(For teacher certification requirements, see Education)

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

Option 1

English 371, 382, 482; Speech 111.

Option 2

(Extended major for single endorsement)

English 371, 382, 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 scholarly discipline 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 upon graduate work in linguistics and would provide him with a background to work in teaching 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, if not offered by the University, should bear in mind that a reading knowledge of at least two foreign languages is necessary for advanced work in the field. See listings under 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 001, Remedial Expository Writing, and receive a "pass" grade before they may enter 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 $4.00 will be charged for this course.
38—ENGLISH

100 COMPOSITION 3 R-5. 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 students who plan on or are engaged in advanced work in a professional area. Analysis and selection of individual problems in writing—especially problems of structure, development, and style.

CREATIVE WRITING

FOR UNDERGRADUATES

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

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

306 THE WRITING OF DRAMA. (See Drama.)

312-313-315 CREATIVE WRITING: POETRY 3 prereq 202 or c/l. Enter any quarter.

FOR GRADUATES AND UNDERGRADUATES

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

412-414-415 ADVANCED CREATIVE WRITING: POETRY 3 prereq 312-313-315 and c/l. 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.)

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

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 present.

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


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

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

TEACHER TRAINING

FOR UNDERGRADUATES

483 LITERATURE FOR THE HIGH SCHOOL TEACHER 3. Open to seniors only. The literature usually taught in grades 11 through 13 with intensive study of a few selections.

FOR UNDERGRADUATES AND GRADUATES

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 1 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/l.

LITERATURE

FOR UNDERGRADUATES

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


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

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


FOR UNDERGRADUATES AND GRADUATES

207-208-209 THE DRAMA 3 o/y prereq 9 credits of Literature. Enter any quarter. (207) Aeschylus to Moliere. (208) Racine to Shaw. (209) Pirandello to the present.


334 THE SHORT STORY 3.

341 TUDOR AND JACOBEAN DRAMA 3 prereq 9 credits of Literature. Representative plays from Everyman 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. Technical and critical literature from Aristotle to contemporary critics and the reading of representative plays from Aeschylus to the modern dramatists.

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

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 AND DRAMA 3 prereq 1 quarter of 386 or 388. A chronological survey of the period, with emphasis on the major metaphysical poets and on the physical poetry beginning with Donne, and classical poetry beginning with Jonson, and their interrelationship as seen in poets like Carew and Marvell.

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

390 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 upon 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. For credit 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/l. Sponsors vary. (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-6 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 thinking which are different from their own; (2) to enable students to gain proficiency in the language; (3) to prepare candidates for academic work in various fields by providing a solid basis for graduate study 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 skills: three years in high school, 211; two years in high school, 112; 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 in another high school or university. Requirements for the departmental (academic) majors are listed below within the various foreign languages. Requirements for the teaching majors and minors are listed separately under Education. English 100 must be completed.

RECOMMENDED BACKGROUND COURSES FOR FOREIGN LANGUAGE MAJORS. The Department of Foreign Languages strongly recommends that all foreign language majors take, as early as possible in their college careers, the courses entitled Introduction to the Humanities (Humanities 100). All majors in Romance Languages are strongly urged to take the course, Introduction to Romance Philology, R Ph 266, 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, and is applied in various ways, such as in teaching English and foreign languages. Although at present the University does not offer a degree in Linguistics, a student majoring in linguistics subjects would prepare a student to enter upon graduate work in linguistics and would provide him with a background in teaching 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 of literatures which can 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. Knowledge of foreign languages is essential for comparative literature. Some of the courses in comparative literature require a reading knowledge of foreign languages. Students interested in working toward a degree in comparative literature (not offered at this University) should become familiar with the knowledge of at least two foreign languages is necessary for advanced degrees. See the listing under the Departments of Foreign Languages and English for course descriptions.

GRADUATE WORK. See Graduate School Bulletin.
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 (480) (Greek 101-102 may be substituted for 4 credits of Latin 480.)
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 =. 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.
334 (434) 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.
411-112 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.
450 CONTEMPORARY FRENCH POETRY 3 prereq 303.
450 CONTEMPORARY FRENCH STUDIES 3 prereq 303.
460 HISTORY OF THE FRENCH LANGUAGE 3 prereq 303.
490 (491) SEMINAR 3 R-18 prereq 303. 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 32 credits of upper division work in German, which must include 211-312-313. (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, 220, 221, 222. 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 1 3 prereq 203. Emphasis on pronunciation and phonetics.
302 (303) 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.
301 APPLIED LINGUISTICS 3 prereq 302 or c/l. Specific problems in contrastive phonology, morphology, and syntax.
AND 201-202.

Problems in contrastive phonology, morphology, and syntax.

Enter any quarter.

Skills. Credit not allowed for coreq and c/i.

Emphasis on active use of Italian.

To continue to Intermediate Italian 201-202-203.

Audio-lingual emphasis. For students who plan to obtain a major or emphasis on pronunciation and phonetics.

Signed for students who wish a reading knowledge but do not plan earlier in the catalog.

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. Russian 101 to 203, inclusive, or equivalent.

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

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

4. Two quarters in history of Europe, chosen from the following: History 215, 216, 305, 324, 335, 336.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY RUSSIAN 5.

FOR UNDERGRADUATES

101-102-103 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

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

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

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

311-312-313 SURVEY OF ITALIAN LITERATURE 2 prereq 203. Enter any quarter.

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

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

421-422 DANTE'S DIVINA COMMEDIA 3 prereq 311-312-313, or coreq and c/i.

431-432 ITALIAN RENAISSANCE 3 prereq 311-312-313, or coreq and c/i.

433 17TH AND 18TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

441 19TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

442 20TH CENTURY ITALIAN LITERATURE 3 prereq 311-312-313, or coreq and c/i.

460 HISTORY OF THE ITALIAN LANGUAGE 3 prereq 311-312-313, or coreq and c/i.

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

PERSIAN

FOR UNDERGRADUATES

101-102-103 ELEMENTARY PERSIAN 5.

311-312 PERSIAN READINGS 4 prereq 103 or =.
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 265-266-267) when this course is offered.

FOR UNDERGRADUATES

301-302-303 ELEMENTARY SPANISH 3.

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.

301-202-203 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.

211-212 (213-215) SPANISH READINGS 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.


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

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

603 ADVANCED CONVERSATION 3 prereq 303 or c/i.

421 (335) 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 (481) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.
### BACHELOR OF SCIENCE IN FOREST SCIENCE

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

### 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>SURVEY OF WILDLIFE CAREERS</td>
<td>1 (1-0). (Also listed as Bot 170 and Zoel 170).</td>
</tr>
<tr>
<td>190</td>
<td>SURVEY OF FORESTRY 2</td>
<td>(2-0). The field and subject matter of the forestry profession.</td>
</tr>
<tr>
<td>199</td>
<td>FORESTRY PROBLEMS V</td>
<td>prereq c/l.</td>
</tr>
<tr>
<td>210</td>
<td>INTRODUCTORY SOILS 4</td>
<td>(3-3) prereq Chem 101-102, 104-105 or c/i. The chemical, physical, biological, and morphological characteristics of soils.</td>
</tr>
<tr>
<td>220</td>
<td>PRINCIPLES OF TECHNICAL EXPRESSION 2</td>
<td>(2-0). The criteria of good technical expression—clarity, directness, logical order, and terseness.</td>
</tr>
<tr>
<td>250</td>
<td>FOREST INSTRUMENTS 1</td>
<td>(0-3). The use, care and adjustment of instruments used in forest surveying and the field practices of forestry.</td>
</tr>
<tr>
<td>252</td>
<td>LAND SURVEY SYSTEMS AND GRAPHICS 4</td>
<td>(3-3) 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, and topographical plans. The construction and use of leveled maps. Survey work in the field.</td>
</tr>
<tr>
<td>250-291</td>
<td>DENDROLOGY 2</td>
<td>(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. (291) The conifers. (291) The broadleaf trees.</td>
</tr>
<tr>
<td>299</td>
<td>FORESTRY PROBLEMS V</td>
<td>prereq c/l.</td>
</tr>
<tr>
<td>300</td>
<td>FOREST MEASUREMENTS 4</td>
<td>(3-4) prereq 250, 252, c/l. The measurement, inventory, volume and growth determination of timber and other forest land resources.</td>
</tr>
<tr>
<td>309</td>
<td>FARM FOREST 2</td>
<td>(2-4) prereq c/l. The principles of forest mensuration, management, silviculture and soils for small woodland holdings.</td>
</tr>
<tr>
<td>315</td>
<td>FOREST ECOLOGY LABORATORY 2</td>
<td>(0-6) prereq 310 and c/l. Basic forest ecology field technique. Vegetation surveys conducted over an elevational gradient in forest. Field trips will exemplify the concepts developed in For 310.</td>
</tr>
<tr>
<td>321</td>
<td>FOREST FIRE PLANS 3</td>
<td>(3-0) prereq junior standing and 320, Area pre-suppression planning and fire use planning. Action planning on project size fires.</td>
</tr>
<tr>
<td>333</td>
<td>RANGE LIVESTOCK PRODUCTION 2</td>
<td>(2-0) prereq 360 and c/l. Selection, production, and management of range livestock.</td>
</tr>
<tr>
<td>399</td>
<td>FORESTRY PROBLEMS V</td>
<td>prereq c/l.</td>
</tr>
<tr>
<td>498</td>
<td>SENIOR THESIS</td>
<td>3 prereq senior standing. Preparation of a major paper based on study or research in a field selected according to the needs and objectives of the student.</td>
</tr>
</tbody>
</table>

### FOR UNDERGRADUATES AND GRADUATES

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<th>Course Code</th>
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<tbody>
<tr>
<td>301</td>
<td>FOREST BIOMETRICS 4</td>
<td>(3-3) prereq Math 106 or 109.</td>
</tr>
<tr>
<td>304</td>
<td>CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 3</td>
<td>prereq c/l. A critical survey of cultural, physical, and social elements of 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. Same as Education 304.</td>
</tr>
<tr>
<td>310</td>
<td>FOREST ECOLOGY 3</td>
<td>(3-0) prereq Bot 111, 114, 115 or c/l. The ecosystem concept is utilized to examine the processes (e.g. nutrient cycling, energy flow, and photosynthesis) of the plants and animals within the forest. The ecosystem is also a major paper based on study or research in a field selected according to the needs and objectives of the student.</td>
</tr>
<tr>
<td>311</td>
<td>SILVICULTURE 4</td>
<td>(3-3) prereq 300, 310 or c/l. Concepts of silviculture with emphasis on methodology.</td>
</tr>
<tr>
<td>312</td>
<td>FOREST TREE IMPROVEMENT 3</td>
<td>(2-4) prereq 311. Plant breeding methods for genetically improved forest tree seed; quantitative genetics.</td>
</tr>
<tr>
<td>322</td>
<td>NATURAL RESOURCE POLICY 3</td>
<td>(3-0).</td>
</tr>
<tr>
<td>323</td>
<td>NATURAL RESOURCE ADMINISTRATION 3</td>
<td>(3-0).</td>
</tr>
<tr>
<td>323A</td>
<td>FOREST FIRE MANAGEMENT 3</td>
<td>(3-0).</td>
</tr>
<tr>
<td>332</td>
<td>FOREST ENTOMOLOGY 3</td>
<td>(2-3) prereq Bot 250, 251 or c/l.</td>
</tr>
<tr>
<td>340</td>
<td>WOOD ANATOMY AND FUNDAMENTAL PROPERTIES 4</td>
<td>(3-3) prereq 290. Wood identification and anatomy; relationships of the physical, chemical and mechanical properties to specific uses.</td>
</tr>
<tr>
<td>341</td>
<td>CHEMICALLY DERIVED WOOD PRODUCTS 3</td>
<td>(3-0) prereq Chem 211, 214 or equivalent and For 340.</td>
</tr>
<tr>
<td>342</td>
<td>WOOD ADHESIVES TECHNOLOGY 3</td>
<td>(3-0) prereq 340 and junior standing.</td>
</tr>
<tr>
<td>343</td>
<td>FOREST PRODUCTS AND INDUSTRIES 4</td>
<td>(3-4) prereq junior standing.</td>
</tr>
<tr>
<td>350</td>
<td>ADVANCED SURVEYING 4</td>
<td>(2-4) prereq 252 and c/l.</td>
</tr>
<tr>
<td>351</td>
<td>AERIAL PHOTOGRAVIMETRY 3</td>
<td>(2-3).</td>
</tr>
<tr>
<td>354</td>
<td>TRANSPORTATION SYSTEMS 4</td>
<td>(4-0) prereq 252. Transportation planning and development in relation to resource use, with emphasis on conflicts of interest.</td>
</tr>
<tr>
<td>356</td>
<td>RANGE MANAGEMENT 4</td>
<td>(3-3) prereq junior standing and c/l.</td>
</tr>
<tr>
<td>361</td>
<td>RANGE FORAGE PLANTS 4</td>
<td>(0-8) prereq 360, Bot 386 and c/l.</td>
</tr>
<tr>
<td>362</td>
<td>RANGE ECOLOGY 3</td>
<td>(2-3) prereq Bot 250, 251.</td>
</tr>
<tr>
<td>363</td>
<td>WILDLIFE CONSERVATION 3</td>
<td>(3-0) prereq 360 and c/l.</td>
</tr>
<tr>
<td>364</td>
<td>ENVIRONMENTAL CONSERVATION 3</td>
<td>(3-0) prereq c/l.</td>
</tr>
<tr>
<td>365</td>
<td>WILDLAND RECREATION MANAGEMENT 3</td>
<td>(3-0).</td>
</tr>
<tr>
<td>367</td>
<td>RECREATION AREA PLANNING AND DESIGN 4</td>
<td>(3-4) prereq 365. Over emphasis on design and planning.</td>
</tr>
<tr>
<td>368</td>
<td>HYDROLOGIC PRINCIPLES 3</td>
<td>(2-4) prereq c/l.</td>
</tr>
<tr>
<td>370</td>
<td>CHEMISTRY OF PLANT CONSTITUENTS.</td>
<td>(See Chem 390 and Bot 390).</td>
</tr>
<tr>
<td>391</td>
<td>CHEMISTRY OF WOOD PRODUCTS.</td>
<td>(See Chem 391).</td>
</tr>
<tr>
<td>400</td>
<td>FOREST RESOURCE INVENTORY 4</td>
<td>(0-8) prereq 300, 301.</td>
</tr>
<tr>
<td>401</td>
<td>TIMBER MANAGEMENT 4</td>
<td>(4-0) prereq 310, 421 or c/l.</td>
</tr>
<tr>
<td>410</td>
<td>FOREST RESOURCES FIELD TRIP</td>
<td>1-3 prereq upper division student and c/l. A joint faculty and student field trip for study and discussion of resource management and use.</td>
</tr>
</tbody>
</table>
411 SOIL CHEMISTRY 2 (2-0) prereq 210.
412 SOIL PHYSICS 2 (2-0) prereq 210.
413 FOREST REGIONS OF NORTH AMERICA 3 (3-0) prereq 310-311 or c/l. 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, 306, 390, 360. 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 5 (6-10) prereq c/l. 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/l.
422 ECONOMICS OF WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq Econ 202 and c/l.
424 FOREST TAXATION SYSTEMS 3 (3-0) prereq 421 or c/l.
425 INDUSTRIAL FORESTRY 3 (2-2 labs by arrangement) prereq 421 and 460 or c/l.
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/l.
451 AERIAL REMOTE SENSING 3 (3-0) prereq 351 and c/l.
453 TIMBER HARVESTING 3 (3-0) prereq Econ 202.
456 GROWTH-QUALITY RELATIONSHIPS OF WOOD 3 (1-4) prereq 311, 340 or c/l.
460 RANGE ANALYSIS AND SURVEY TECHNIQUES 4 (2-6) prereq 360 and c/l.
461 RANGE LIVESTOCK NUTRITION 3 (2-2) prereq 360 and c/l.
462 RANGE ECONOMICS 3 (3-0) prereq 360, Econ 201 and c/l.
464 RANGE ADMINISTRATION 2 (2-0) prereq 360 and c/l.
465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and c/l.
470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq Zool 308, 309 or c/l.
471 BIG GAME CONSERVATION 3 (2-field trips) prereq 360 or c/l.
472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/l.
480-481-482 INTEGRATED FOREST RESOURCE MANAGEMENT 3 (3-0-2). (480) prereq senior standing. (481) prereq 480 or c/l. (482) prereq 481 or c/l.
483 PARK MANAGEMENT 3 (3-0) prereq 383, 384 and c/l.
485 WATERSHED MANAGEMENT 3 (2-4) prereq 385.
486 HYDROLOGY SEMINAR 2 (2-0) o/y prereq c/l. Regional, national, and international problems of water supply, transfer and quality.
487 WATER USE AND DEVELOPMENT 2 (2-0) o/y. History of water use and policy development.
489 SOIL AND WATER CONSERVATION 4 (3-4) prereq c/l.
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).
496 FORESTRY AND ECONOMIC DEVELOPMENT 2 (2-0) prereq c/l.
499 WORLD RESOURCE PROBLEMS 2 (2-0) prereq c/l.
500 ADVANCED FORESTRY MANAGEMENT 3 prereq 411, 421 and 480.
502 ADVANCED FOREST MEASUREMENTS 3.
511 ADVANCED SILVICULTURE 3 (2-2) prereq 311 and c/l.
520 ADMINISTRATIVE LEADERSHIP Extension course V prereq undergraduate degree from a college or university of recognized standing. Intensive instruction in the fundamentals of sociology, psychology, speech, writing, business administration, public relations and related fields. One month, 30 hours per week. Staff of university specialists in fields involved.
521 ADVANCED FOREST ECONOMICS 3 (3-0) prereq 421.
522 FOREST VALUATION 3 (3-0) prereq 421.
523 FOREST LAND RESOURCE ECONOMICS 3 (3-0) prereq 421.
530 FOREST FIRE BEHAVIOR 3 (2-0) prereq 330, 430. The forest fire as a three dimensional problem involving fuels, topography, weather and the influence of these on behavior of wild and prescribed fire. Emphasis is placed on high intensity fires and erratic fire behavior.
531 FOREST FIRE INFLUENCES 3 (3-0). The effects of wild and prescribed fire and its influence on plant succession, forest regeneration, and the microclimate of the forest.
542 WOOD RESIDUE UTILIZATION 4 (2-8) Prereq 341, 440, 441. Techniques for volumetric survey. Classification and product use for various types with detailed emphasis on the type most pertinent to interests of student concerned.
543 WOOD PARTICLE BOARD—TECHNOLOGY AND PRACTICE 3 (1-6) prereq 342, 440, 441, 456.
551 ADVANCED AIR PHOTO ANALYSIS 3 (3-0) prereq 461, c/l.
560 ADVANCED RANGE MANAGEMENT 3 prereq 360 and 460.
561 ECOLOGICAL ANALYSIS AND INVENTORY OF LAND RESOURCES 2 (2-0). Methods of collection and analysis of land resource data on an ecological basis. Inherent characteristics of climate, vegetation and soils. Variability, modification and limitations of resource elements. Existing systems of resource classification will be evaluated. A model system will be developed.
570 WILDLIFE SEMINAR 1 (1-0).
580 WILDLAND RECREATION SEMINAR 1 (1-0). Presentation by students, staff, and guest speaker. Current policy and research issues.
584 ADVANCED WILDLAND RECREATION MANAGEMENT 3 (3-0) prereq 363 and c/l.
591-592 RESEARCH METHODS 3 prereq one course in statistics or statistical elements of forest measurement and c/l. Enter either quarter. (591) The nature of scientific research, planning research projects, organization and presentation of research results. (592) Application of statistical methods to the design of forestry research, techniques of analysis of research data.
699 SEMINAR V 1-3. Presentation by students and staff of papers in their field of specialization.
699 FORESTRY PROBLEMS V. Individual problem course offered by different instructors under various titles.
700 RESEARCH V. Independent research. The type of problem will be identified for forestry majors as follows: Management, Silviculture, Soils, Economics, Fire Control, Utilization, Engineering, Range Management, Wildlife Management, Recreation, Conservation and Protection or General.
699 THESIS V R-15.

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, vegetation, soils and landsform 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 more 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 broad general background 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) Those 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. (2) 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 the above two major areas: anthropology, economics, history, political science, or sociology (social science) and the biological sciences, geography, 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 mathematico-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) Europe, U.S.S.R., 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 mapping.

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

380 CARTOGRAPHY 5 prereq c/l. The interpretation, construction, and use of important map projections. Cartographic techniques utilized in the presentation of data.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =. Cultural areas of Canada and the United States with emphasis on differentiation in 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 understanding 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 the interplay between these and earth's surface, 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 c/l. 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.


380 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 V R-12 prereq 12 credits in Geography.

413 POPULATION AND RESOURCE GEOGRAPHY 3 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.

530 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.

689 THESIS V R-15.
**FOR UNDERGRADUATES**

*For explanation see Course Description (Index)*

<table>
<thead>
<tr>
<th><em>Courses offered alternate years.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>101-102 <em>INTRODUCTION TO GEOLOGY</em> 4 (3-2). Geologic activity of streams, waves, wind, and ice and their relations to landscape; formation of sediments and sedimentary rocks; stratigraphic time and measurement of geologic time; growth, movement and structural features of igneous and metamorphic rocks; earthquakes; deformation of rocks; mineral deposits; credit not allowed for 110 and 101-102.</td>
</tr>
<tr>
<td>103 <em>ENVIRONMENTAL GEOLOGY</em> 4 (3-3). Geology as related to quality of man's environment.</td>
</tr>
<tr>
<td>110 <em>PHYSICAL GEOLOGY</em> 5 (3-4). Minerals, rocks, and structure of the earth's crust; the dynamic processes, volcanism, earthquake, and other phenomenon which shape the earth landscape. Credit not allowed for 110 and 101-102.</td>
</tr>
<tr>
<td>130 <em>FIELD METHODS</em> 3 (1 + all day Saturday field trips.) prereq 102 or 110. Problems covering wide range of geologic topics; techniques of field work and interpretation of results.</td>
</tr>
<tr>
<td>200 <em>GENERAL PALEONTOLOGY</em> 4 (3-2) primarily for science majors. General principles of paleontology, evolution, and history of plants and animals.</td>
</tr>
<tr>
<td>202 <em>PRINCIPLES OF STRATIGRAPHY</em> 5 (3-4) prereq or coreq 102. Processes of sedimentation and methods of analyzing stratigraphic records, including correlation, sedimentary rock description and classification.</td>
</tr>
<tr>
<td>210 <em>INTRODUCTION TO ROCKS AND MINERALS</em> 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 of laboratory mainly hand specimen study. (Credit not allowed toward a geology degree.)</td>
</tr>
<tr>
<td>215 <em>INTRODUCTORY MINERALOGY</em> 5 (3-4) prereq one quarter of college algebra. Introduction to the structure and organization of crystal of crystal system. Systematic mineralogy of about 80 rock forming and economically important minerals.</td>
</tr>
<tr>
<td>218 (315) <em>PETROLOGY</em> 4 (2-4) prereq 215. Identification, description, and origin of igneous and metamorphic rocks.</td>
</tr>
<tr>
<td>250 (350) <em>INTRODUCTION TO ECONOMIC GEOLOGY</em> 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.</td>
</tr>
<tr>
<td>310 <em>GEOMORPHOLOGY</em> 3 (2-2) prereq 102 or 110. Landforms in terms of processes which create them. Basic processes of physical geology. Emphasis on modern concepts.</td>
</tr>
<tr>
<td>320 <em>PROBLEMS V</em> prereq 30 cr. in Geology or = and c/l. Supervised investigation in any phase of geologic study in which the student has sufficient background to contribute original thought.</td>
</tr>
<tr>
<td>325 <em>STRUCTURAL GEOLOGY</em> 4 (2-4) prereq 102, math through trig. Geology of deformed rocks. Geologic maps, analysis of geologic structure by geometric and stereographic projections. Mechanical principles of rock deformation.</td>
</tr>
<tr>
<td>439 <em>FIELD GEOLOGY</em> Su 5 V 9-10 prereq 130 and c/l. Given by Indiana University Geology Department near Black Hills and Whitehall, Montana. Detailed and regional geologic studies in field. Includes mapping on aerial photographs and topographic base maps, interpretation of geological structures; formation of major landforms; rock types and their usage.</td>
</tr>
<tr>
<td>459 (300) <em>FILM GEOPHYSICS</em> 3 prereq 102 or 101. Motion picture techniques in geology. Field and laboratory interpretation of geophysical data. Preparation for graduate work in geophysics.</td>
</tr>
</tbody>
</table>

### FOR UNDERGRADUATES AND GRADUATES

#### 400 *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. |  |

### SUMMARY OF REQUIREMENTS

<table>
<thead>
<tr>
<th>1. Geology course requirements (including Geology 429, Field Geology)</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Allied science requirements</td>
<td>60</td>
</tr>
<tr>
<td>3. English and Foreign Language requirements</td>
<td>21</td>
</tr>
<tr>
<td>4. Electives</td>
<td>77</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>192</strong></td>
</tr>
</tbody>
</table>

**GRADUATE WORK.** See Graduate School Bulletin.
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 teams to participate in formal and informal competition, in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, touch football, softball and volleyball, and (3) preparation for professional careers in the various fields related to physical education and recreation.

The department offers Bachelor of Science and Bachelor of Arts degrees with a major in Health, Physical Education or Recreation; 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.

FOR GRADUATES

507 *CARBONATE PETROLOGY 4 (3-4) preq 426. Description, classification and environmental interpretation of carbonate rocks chiefly of the shallow marine environment. 511-512 *METALLIC MINERAL DEPOSITS 4 (3-4) preq 203, 315, 351. Theoretical and descriptive aspects of nature, origin, classification and geologic environments of metallic mineral deposits; field trips. 513 *NON-METALLIC MINERAL DEPOSITS AND COAL 4 (3-4) preq 203, 218, 331. Descriptive and theoretical aspects of origin, distribution, classification and use of non-metallic deposits of building and chemical materials. Field trips. 520 *PETROGENESIS 3 (3-0) preq 426 and 428. Advanced discussion of modern theories of origin of igneous and metamorphic rocks. 522 *STRUCTURAL ANALYSIS 3 (3-2) preq 351, 351. Study and interpretation of the fabric of naturally deformed rocks. Analysis of tectonites on all scales, including geologic map, hand specimen and outcrop. 532 *SOLID STATE GEOPHYSICS 3 (3-0) preq Math 311, Physics 223, Physics 301 recommended. Physical properties of crystalline solids with particular application to geophysical problems.
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN HEALTH AND PHYSICAL EDUCATION

Two degrees are offered in this Department: Bachelor of Arts degree and minor. Requirements in physical education, and courses specifically designated in other disciplines.

To remain enrolled in Professional Activities 115-130 and 215-220, students must meet the minimum departmental proficiency level in both skill and knowledge of the activity. Exemption from courses may be allowed for a demonstrated high level of proficiency.

English 100 is required. Students failing to demonstrate an acceptable college standard (score of 17 on the ACT English examination) must fulfill the requirements listed below. Those who score above 90 on the ACT will be exempt from English 100.

Teacher Certification: Course requirements in Education to meet teacher certifications are listed under Education in this catalog. Certification is approved for K-12 grades.

 Majors planning to teach are urged to refer to the School of Education for these requirements in minors and additional courses.

For Undergraduates

100 PHYSICAL EDUCATION ACTIVITIES—Non-Majors in health, physical education, and recreation may include up to but not more than six credits 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.


199 FIRST AID 2. Red Cross Standard and Advanced courses and Medical Self-Help. Certification secured upon completion of course.

200 (190, 198) HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION 3.

203 ADVANCED COACHING TECHNIQUES 1.

210 COACHING OF FOOTBALL 3.

211, 212, 218 THEORY OF OFFICIATING FOOTBALL 1.

213 COACHING GYMNASIUMS 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.


223 (200) COACHING OF BASEBALL 3.

225 RECREATION EDUCATION, OFFICIATING, THEORY AND PRACTICE I R-3.

226 OFFICIATING BASKETBALL (WOMEN) 2.

229 DANCE HISTORY 3.


233 THEORY AND PHILOSOPHY OF DANCE 2.

234 WATER SAFETY INSTRUCTOR 2 prereq Red Cross Senior Life Savers, (190) Fund. Movements and Tumbling. Instructor may withhold upon successful completion of requirements, providing student has reached his 18th birthday.

240 CARE AND PREVENTION OF ATHLETIC INJURIES 3.

250 SKI INSTRUCTORS QUALIFICATION PROGRAM 3. Prereq to 242. Students must attempt to achieve 5 and 6 levels and 1-6 courses. Instructors of America.

261 (261) INTRODUCTION TO RECREATION 3. Social significance of recreation and leisure; community approach to recreation. Principles and practice concerned with leadership of recreation programs.

290 HUMAN ANATOMY 5. The systems of the body and the structure of organs composing these systems.

301-302-303 METHODS OF TEACHING PHYSICAL EDUCATION ON THE SECONDARY LEVEL 2 prereq 6 credits from 115-120 and/or 215-220. Experience in teaching; class organization, analysis of techniques, development of units of instruction in seasonal sports.
HEALTH, PHYSICAL EDUCATION AND RECREATION—49

402 DANCE PRODUCTION 3 prereq 401. Choreography, stag­
ing, lighting, makeup, costuming and other problems of dance in pro-
duction and performance in concert dance and dance demonstra-
tions. 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, 388, 410 or concurrent registration, and 460, section 18.

440 RECREATIONAL AREAS AND FACILITIES 3. The plan-
ing, 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 areas and day camps. Methods and techniques for financing,
and public relations. Coordination with youth-serving institutional
and municipal agencies.

465 MEASUREMENT AND EVALUATION IN PHYSICAL
EDUCATION 3. Orientation to testing and measuring, administra-
tive use of tests, elementary statistical techniques and procedures.

466 (366) CURRICULUM CONSTRUCTION 3. Classification
and analysis of physical education activities; criteria for selecting activi-
ties; construction of program for specific situations.

470 PHYSICAL EDUCATION AND RECREATION FOR THE
SPECIAL student 3 prereq 359. Includes problem areas in leading
games, rhythms and social recreation activities for the special
child.

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.

480 ADVANCED CORRECTIVE PHYSICAL EDUCATION
PRO-
CEDURES 3. Critical review of orthopedic and rehabilitation
problems faced in the professional field of corrective physical
education and physical therapy. Recommended resource c urriculum
for special students.

491 PRACTICUM IN RECREATION V R-9 prereq 464 and c/l.

FOR GRADUATES

501 RESEARCH METHODS 3 prereq or coreq 503 or =. Instruc-
tion in developing individual studies.

502 RESEARCH IN RECREATION 3.

503 STATISTICAL MEASUREMENTS IN PHYSICAL
EDUCATION 4 prereq 485 or =. Specific tests for evaluation of organic,
motor, neuromuscular, psychological and social outcomes. Practice in con-
struction 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
EDUCA-
TION AND ATHLETICS 3 prereq 365 or = and c/l.

532 (466) SUPERVISION IN PHYSICAL EDUCATION 3 prereq
365 or =. Roles and responsibilities of supervisors in exerting effectiv-
expressive leadership.

533 PHILOSOPHY OF LEISURE AND RECREATION 3 prereq
464 and c/l. Exploration of philosophical foundations for recreation
in a dynamic society. Challenge of increased leisure and role of recrea-
tion in present and predicted environments.

535 SEMINAR IN THE ADMINISTRATION OF PUBLIC
RECREATION PROGRAMS 3. Problem areas associated with ad-
ministration of organized recreation, activity programs in municipal,
state and national park systems, and recreation agencies.

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 car-
der problems, rest home programs, the retired, and the impact of
frailty on leisure activities.

575 SPORTS MEDICINE 2 (2-4) prereq 385, 478. The medical
aspects of sports and physical training. The etiology and manage-
ment of injuries, drug use and therapy, nutrition, fatigue, problems
arising and other medical problems associated with participation in
sports.

585 ADVANCED KINESIOLOGY 3 prereq 384. Analysis of com-
plex movements, specific skills, and motor coordination in terms of
the mechanics of skeleton and muscular movement.

590 PRACTICUM IN COLLEGE PHYSICAL EDUCATION 2.

591 INDEPENDENT STUDY V R-5 prereq c/l.

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 businessmen with basic 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 50 credits in History is required with 40 credits from courses numbered over 300 and including History 300. The history major 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 course in French, Italian, or Spanish; 4 quarters in German; 5 quarters in Russian, Latin, or Greek; or 5 quarters of active skills in any language.

A student may offer a combined major in History and Political Science 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.

Graduate Work. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

104-105-106 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.)

215-216 Europe in the 19th Century 3. Enter either quarter. (215) The internal political, economic and social development of European states from 1815-1870. (216) continuation after 1870 to 1914.


261-262-263 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.

265-266-267 Hispanic-American History 3. Enter any quarter. (265) The history of Spanish-speaking areas of the Western Hemisphere; institutional development to 1810. (266) The Latin American struggle for independence; the emergence of the caudillo in the 19th century; socio-economic forces from 1810 to 1916. (267) Rise of the modern Latin American states; renaissance nationalism; inter-American relations; modern revolutionary movements.

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, Antigonid, Seleucid and lesser states, Hellenization of non-European areas; 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 influence 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 ideas of the Renaissance applied to economic, political and cultural developments in Western Europe from 1350 to 1500; the impact of the Renaissance on the early modern era.

310 the reformation 3. The impact of the Reformation on European society, politics, economic theory and religious thought from 1500 to 1600.

311-312-313 early modern europe 3. Enter any quarter. (311) The political, economic and social development of Europe from 1450 to 1599. (312) 1599 to 1648. (313) 1648 to 1763.


319 contemporary European history 4. Prereq 103. The internal affairs and the external relationships of the principal European states since 1918.

320 medieval Germany 911-1250 3. The Frankish experiment and the unification of Germany under Otto, Salian, and Hohenstaufen dynasties with special emphasis on constitutional growth.


323 slavic world to 1613 3. Ancient and medieval history of the Slavic Empire, Asia Minor, and the Slavic states as it affects Russia.


334 modern war and Western Society 3. Prereq a college course in modern European history. A history of warfare from the French Revolution. Emphasis is placed upon relationships of government and military command, upon problems of strategy, and upon theories of war.


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) Continuation from the 10th through the 12th centuries, with the impact of Islam and Byzantium. (338) European and Western political changes from 1300 to 1500. Continuation to the 15th centuries; the new scientific movement; the decline of the unities of the Middle Ages.

339 history of Canada 4. Prereq 101, 242 or 261. Canada to the present time, with emphasis upon Canadian-American diplomatic and economic relations; the growth of the Canadian West.


351-352 Colonial America 3. (351) The transfer of English civilization to America in the seventeenth century, with attention to the colonies in 1650-1700. Special emphasis on the geographical differences of the colonies and particular settlements. (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.


359 recent United States 1929 to present 3. The Great Depression and New Deal; World War II; the Cold War and after.

52—HOME ECONOMICS

544 FIELD COURSE IN EUROPEAN DIPLOMACY SINCE 1870 3-5. Intensive reading in the diplomatic history of Europe in the late nineteenth and twentieth centuries.

545 FIELD COURSE IN EUROPEAN INTELLECTUAL HISTORY 3-5. Intensive reading in the intellectual history of Europe since the late Middle Ages.

546 FIELD COURSE IN EUROPEAN INSTITUTIONAL HISTORY 3-5. Intensive reading in the intellectual history of select European institutions since the early Middle Ages.

547 FIELD COURSE IN MEXICAN HISTORY 3-5.

548 FIELD COURSE IN LATIN AMERICAN HISTORY 3-5.

549 FIELD COURSE IN EARLY MODERN EUROPE 3-5.

550 FIELD COURSE IN RUSSIAN HISTORY 3-5. Intensive reading in 19th century Russia.

561 BUSINESS HISTORY, LITERATURE AND METHOD 3 prereq c/i. A survey of the literature of business history from the colonial period to the present, with emphasis upon the methodology and techniques of economic, entrepreneurial, and business history. (See also Bus. Ad. 561)


597 SEMINAR IN EUROPEAN HISTORY 3 R-6 prereq 40 cr. in History including 591. Special problems in European History.

598 SEMINAR IN AMERICAN HISTORY 3 R-6 prereq 40 cr. in History including 591. Special problems in American History.

699 THESIS V R-9 for M.A. degree and R-20 for Ph.D. degree.

HOME ECONOMICS

Curricula are designed to provide a well rounded educational program which will not only prepare the individual for more effective living in the home and community but also for a professional career. The program assures each student an opportunity for a basic liberal education in addition to meeting professional requirements.

Opportunities for graduates are many and varied. Home Economics at the University of Montana prepares students for positions in the areas of education, extension, dietetics and institution administration, research, business, government and community services, and industry.

There are 4 general plans available to the undergraduate major. Plan 1 provides a secondary school teaching certification including the Montana Vocational Education requirements. Plan 2 prepares one for work in the area of Foods & Nutrition, including institutional management and meets the American Dietetic Association’s requirements for Dietetic Internship. Plan 3 prepares one for Nursery School teaching. Plan 4 is a program in general Home Economics and the student may 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 259), 210, 342 (or 342), 303, 308, 310, 307, 308, 421, 499 (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, 303, 321, 342, 346, 405, 452, 453, 446; Chemistry 151, 152, 261, 262, 481; Microbiology 200, 306; Zoology 202; Education 265. For further requirements consult advisor.

3. Teaching in the Nursery School: Home Economics 102, 249, 302, 304, 310, 321, 367, 368, 406, 497; Chemistry 101; 6 credits of Social Welfare; Education 331; Psychology 230, 240; Sociology 305.

4. General Home Economics: Home Economics 102, 157, 210, 258, 266, 302, 303, 304, 305, 490. Students select option (a) or (b) according to their personal and educational interests.

(a) Clothing and Textiles emphasis: Home Economics 264, 282, 338, 359, 360, 458; Art 125, 200, 201, 202; 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 required 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 of the family and community, and family financial obligations.

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 available to meet the needs of the student in the theory and application of home management. Emphasis on applying resources to obtain satisfaction for individuals and families.

141 ELEMENTARY FOODS 3 (2-0). The selection, storage, preparation, and serving of foods. Non-majors and non-minors only.

146 ELEMENTARY NUTRITION 3 (3-0). Fundamental principles of adequate human nutrition. Non-majors and non-minors only.

155 TEXTILE SELECTION 3 (2-2). Fabrics for family clothing and home furnishings. Analysis of fibers, yarns, weaves and finishes.


158 CLOTHING LABORATORY 2 (4-4) prereq or coreq 157. Basic principles applied to planning and making garments. Designed for the student who is lacking in experience in clothing construction.

210 HOUSEHOLD EQUIPMENT 3 (3-0) prereq 109. Principles of operation, materials specifications, selection, care and use of equipment.

241 (141) PRINCIPLES OF FOOD PREPARATION 3 (3-0). The selection, storage, and preparation of food. Methods of food conservation. Majors and minors only. Credit not allowed for both 141 and 241.

242 FOOD PREPARATION LAB 2 (0-4) prereq or coreq 241. Basic principles applied to food preparation. (For the student who is lacking in experience in food preparation.)

246 NUTRITION 3 (3-0) prereq Chem 101. Nutrition given in the light of the chemistry and physiology of digestion.

258 EXPERIMENTAL CLOTHING 2 (0-4) prereq 157. Working with new fabrics using a variety of construction and fitting techniques.

264 WEAVING 2 (0-4) prereq Art 125. Basic weaving techniques with emphasis on creativity.

265 CHILD DEVELOPMENT I 3 (3-0) prereq Psych 110. Prenatal through age 6.

266 CHILD DEVELOPMENT II 3 (3-0) prereq Psych 110. The child from 6-14 years.

302 HOME PLANNING 3 (2-2) prereq 210 and Art 125. Physical and aesthetic considerations in planning and selecting a home.

303 INTERIOR DESIGN AND FURNISHINGS 5 (4-2) prereq 302. Art principles applied to Interior Decoration to create attractive, efficient backgrounds for living. A study of outstanding period styles and contemporary designs and designers, plus qualities to consider in selecting home furnishings.

304 FAMILY HOUSING 3 (3-0) open to non-majors. Housing in relation to needs of various types of families and to the family life cycle.

355 MEAL MANAGEMENT 3 (3-4) prereq 109, 210, 241, 246. Nutritional and social aspects of family meals, with emphasis on time, energy, money, and equipment management.

359 FAMILY FINANCE 5 (5-0) open to non-majors. Individual and family finance with emphasis upon financial planning, savings, insurance, investments, and use of credit.

310 HOME LIVING CENTER 3 prereq 109, 210, 241, 246, 305, 309. Residence in the home living center for unmarried students; special problems of managing the home for married students.

331 (451) QUANTITY FOOD PRODUCTION V 2-4 (1-4) prereq 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, 381, 491-492-493. Three quarters of a foreign language are required.

CURRICULUM IN JOURNALISM

Freshman Year

Journ 100—Social Role of the Mass Media .................................................. Cr. 3
Journ 150—Elements of Writing ................. . ............................................. Electives and courses in allied fields 39-46
Journ 270—Reporting .................................................. Sophomore Year 45-52
Journ 290—History and Principles of Journalism ............................................. Electives and courses in allied fields 3 39-50

Junior and Senior Years

Journ 360—Principles of Advertising .................................................. 3
Journ 361—Advertising Sales .................................................. 3
Journ 371—Advanced Reporting .................................................. 3
Journ 372—Specialized Reporting .................................................. 3
Journ 380—News Editing .................................................. 3
Journ 381—Advanced News Editing ................. . ............................................. 3
Journ Electives (including sequence requirements) ..................... 15-30
Additional electives and courses in allied fields ............................... 07-20

Total recommended hours in Journalism ............................................. 195
Total recommended hours in General Education ............................... 147

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 297, 300, 307, 470, 495.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 348; Journalism 352, 363, 364.

MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 297, 332, 333, 334.

RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 341-342-343, 346, 348, 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.

HUMANITIES, INDIAN STUDIES, JOURNALISM—53

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 151. Developments in fibers and finishes, legislation, and standardization. Comparison and evaluation of textiles.

367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 265. Participation in the laboratory.

370 TEACHING IN THE NURSERY SCHOOL 5 (6-10) prereq 265. (Primarily for nursery school teaching majors.)

406 NUTRITION IN DISEASE 3 (3-0) prereq 246. The symptoms of diseases, prophylaxis 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 Educ 421.)

432 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 481 or concurrent language and typing is recommended.

446. ADVANCED NUTRITION 3 prereq Chem 481 or concurrent enrollment. Readings and discussion of nutritional research.

448 READINGS IN CLOTHING 3 (3-0). The social and psychological aspects of clothing.

490 (501) SEMINAR IN HOME ECONOMICS V 1-3 R-12.

499 PROBLEMS IN HOME ECONOMICS V R-12. Qualified students may select for study special problems in any of the major fields in Home Economics. Offered by various instructors under different titles.

FOR GRADUATES

699 THESIS V R-15.

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.
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 students take advantage of tax specialization (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 non-law school legal 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.
- September 23, Thursday ................................. Columbus Day, no classes
- October 1, Monday ......................................... Veterans Day, no classes
- October 25, Monday ................................... Thanksgiving vacation begins after last class
- November 23, Tuesday .................................... Class resumes 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 24-29, Monday-Saturday ..................... Semester examinations
- February 8, Tuesday ...................................... Registration
- February 9, Wednesday ................................. Classes begin at 8 a.m.
- February 15, Thursday .................................. Lincoln's birthday, no classes
- February 21, Monday ...................................... Washington's Birthday, no classes
- March 27, Monday ....................................... Spring break begins after last class
- May 23, Thursday .......................................... Last day of classes
- May 29-June 3, Monday-Saturday ...................... Semester examinations
- June 11, Thursday .......................................... Last day of class
- June 12, Friday ............................................. Classes resume at 8 a.m.

**SPRING SEMESTER 1972**

- February 8, Tuesday ...................................... Registration
- February 9, Wednesday ................................. Classes begin at 8 a.m.
- February 15, Thursday .................................. Lincoln's birthday, no classes
- February 21, Monday ...................................... Washington's Birthday, no classes
- March 27, Monday ....................................... Spring break begins after last class
- May 23, Thursday .......................................... Last day of classes
- May 29-June 3, Monday-Saturday ...................... Semester examinations
- June 11, Thursday .......................................... Last day of class
- June 12, Friday ............................................. Classes resume at 8 a.m.

**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 faculty, descriptions of courses, and nontresaille 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 from an accredited 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. Applicants may be admitted on probation, but must take English 450 during the first semester of 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 08560.

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 in the law school in which he is attending; and (4) that the applicant is eligible to continue in this Law School in accordance with the policies and regulations specified herein. An applicant is not likely to be admitted unless he has a very high scholastic average in the law work previously taken and is exceptionally qualified to pursue the study of law.

BASIS FOR EXCLUSION: (1) Failures: A student who has failed more than 10 credits shall be excluded from the Law School. Any student who has completed two semesters of law study but thereafter fails two courses in any semester shall be excluded from the Law School. (2) Weighted Average: A student whose law school record is deficient more than five (5) grade points at the end of his second or third semester shall be excluded. A student who fails to obtain an index of 2.0 at the end of his fourth semester of law study in all law courses for which he has registered and received a grade, or fails to maintain such an index thereafter shall be excluded from the Law School.

Any required course in which a student has received an F grade shall be repeated. No other course may be repeated. The grade received 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 six semesters in the law school; and (3) complete ninety semester hours of law with an index of 2.0 in all courses in which the student has received a grade. A student who transfers credits from another law school shall receive the recommendations of the law faculty and of the faculty of the University of Montana. A student who transfers credits 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 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.

Candidates for graduation with honors must achieve an index of 3.1 (honors) or 3.5 (high honors) on law credits attempted and received; and satisfactory recitation. Failure to attend classes regularly may result in disciplinary action.

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.

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Requirements for graduation with honors must achieve an index of 3.1 (honors) or 3.5 (high honors) on law credits attempted and received; and satisfactory recitation. Failure to attend classes regularly may result in disciplinary action.
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 fields rather than the entire width of any of them, or 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 fulfills their prerequisite in this major at this college.

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 Pass/Fail/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>Credits</th>
<th>MAJOR REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Anthropology, Economics, Geography, Psychology, Sociology (any two)</td>
</tr>
<tr>
<td>9</td>
<td>History or Political Science or both (History 151-152-153 recommended)</td>
</tr>
<tr>
<td>12</td>
<td>Literature (English 211-212-213 and 231-232-233 recommended)</td>
</tr>
<tr>
<td>8-10</td>
<td>Philosophy (Philosophy 209-209-209 recommended)</td>
</tr>
</tbody>
</table>

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>Credits</th>
<th>9. Anthropology, Economics, Geography, Psychology, Sociology (any two)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>History or Political Science or both</td>
</tr>
<tr>
<td>24</td>
<td>Literature or Philosophy or Humanities 351 and 451 or any combination</td>
</tr>
</tbody>
</table>

Elective credits to bring the total to 195

MATHEMATICS

is a discipline of intrinsic beauty when considered as an independent entity; it is also a discipline of tremendous utility in the study of the physical, biological, and social sciences, and other disciplines in general. The importance and the usefulness of mathematics have been greater than at the present time, and, accordingly, the need for well-trained, competent mathematicians has never been greater than at the present time. This is indicated, in some measure, by the emphasis placed upon mathematics education and mathematics research by various agencies of the national government. The well-prepared graduate in mathematics will find excellent opportunities for a career involving teaching and research in an academic life at the high school or university level, or for a career in applied mathematics in business, industry, or government.

The Bachelor of Arts, Master of Arts and Master of Arts for Teachers, and Doctor of Philosophy degrees are offered.

HIGH SCHOOL PREPARATION. All mathematics courses for university credit must have prerequisites, 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, the student in mathematics must complete 25 credits, 15 of which must be in a foreign language (five quarters of German, French, Russian, or three quarters of each of two of these) and English composition 101 and 102 are required. On the basis of 80 percent or better on the ACT English test the minimum ACT Mathematics score must be 30. Students scoring at or below the 33rd percentile on the ACT English test must pass English 101 before entering English. Those at or above the 82nd percentile are exempt from the requirement. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 311, 421, 422, 423, 451, 462, 453 and 9 credits in other approved Mathematics courses, including 3 credits in courses numbered above 300. The student must present 33 credits in at least three courses selected from Botany, Chemistry, Geology, Microbiology, Physics, Zoology, and Mathematical Statistics (i.e., Mathematics 411, 412, 413, 441, 442, 443). An alternative is for the student to present 15 credits of French, German, or Russian and 18 credits of courses above those above, 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 15 credits for a major in Mathematics. Math 151, 152, 153, 251, 252. A geometry course selected from 301, 385, and 387, a statistics course selected from 123, 341, 344, and 347, and six additional credits in mathematics beyond above 302. 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)

101-102 THE SPIRIT OF MATHEMATICS. 3. The evolution of mathematical thought is examined by consideration of specific problems. The content may be varied at the discretion of the instructor. Consideration of selected elementary problems introduces elementary concepts of number theory, algebra, geometry, complex numbers, graph theory, counting and probability, and game theory. (Credit not allowed toward a major in mathematics.)

104-105-106 MATHEMATICS FOR SOCIAL SCIENCES. 3 prereq 101-102. An examination or two years of high school algebra. Ideas of elementary functions, linear algebra, sequences, series, probability, and introductory statistics 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 or exemption by examination or two years of high school algebra. Study of properties of elementary functions—polynomials, algebraic equations and inequalities, exponential and logarithmic functions, hyperbolic functions, and trigonometric functions—is followed by consideration of probability and an introduction to stochastic processes. Solutions to problems 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, functions, equations and inequalities, systems of linear 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. Ideas of elementary functions, linear algebra, sequences, series, probability, and introductory statistics are developed and applied, with emphasis on the concept of mathematical models, to examples from various social sciences and business. Properties of polynomial, rational, circular, and other elementary functions of one variable.

123 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 123 or 117 or exemption by examination or two years of high school algebra. Ideas of elementary functions, including trigonometry. Limits, continuity, differentiation, and integration of elementary functions, infinite series, Taylor series, applications.

153 LINEAR ALGEBRA 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore levels. (Not offered after 1971-72 academic year.)

202 INTUITIVE GEOMETRY 4 prereq 130 or c/l. Axiom system, essentials of the Euclidean plane geometry, and selected topics. (For education majors.)

251 CALCULUS III 5 prereq 153. Partial differentiation, multiple integrals, line and surface integrals, series of functions, improper integrals, applications to geometry.

252 CALCULUS IV 5 prereq 251. Development of concepts of limit, continuity, convergence, differentiation, and integration.
253 ELEMENTARY DIFFERENTIAL EQUATIONS 4 prereq 153
Solution of ordinary differential equations with emphasis on linear
equations and applications to physical problems. Laplace transform
methods and series solutions are considered.
271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 001 and c/i. The elements of linear equations, inequalities, and
probability, the binomial theorem, log and trigonometric functions,
and other topics are given by a digital computer. (271) Linear equations and inequalities, linear programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Computer Science 271-272-273.)

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 considerations for the sec-
ondary school curriculum. The development of geometric trans-
formations as they apply to the secondary school.
305 TOPICS IN MATHEMATICS V prereq 1 year experience in
teaching high school mathematics. The main purpose of this course is to help high school mathematics teachers improve their ma-
thematics. Content varied to meet the needs of the student. (Credit not
allowed toward a degree in Mathematics.)
306 HISTORY OF MATHEMATICS 4 prereq 15 credits in Math-
ematics. History 101-102 recommended. An historical study of
the development of mathematics from the Egyptian and Baby-
lonian eras to the nineteenth century.
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, the continuum hypothesis.
310 MATRIX ALGEBRA 4 prereq. 153. Introduction to and use
of eigenvalues and eigenvectors. Use of various canonical forms of
matrices, numerical solutions of linear equations and an introduc-
tion to linear programming.
311-312-313 APPLIED ANALYSIS 3 prereq 252. (311) Ordinary
differential equations. Systems of linear differential equations, series
solutions, Bessel and Legendre equations, Picard's method, and
selected topics. (312) Classical vector analysis. Linear algebra,
matrix vector analysis, Stokes' theorem, introduction to tensor
analysis and selected topics. (313) Differential equations. Partial
differential equations, separation of variables, Sturm-Liouville sys-
tems, special functions, integral equations, and selected topics.
317 DIFFERENTIAL EQUATIONS 4 prereq 358. Existence of solu-
tions, methods of solution, and applications of ordinary differ-
equations, with emphasis on linear equations. (Intended pri-
marily for those enrolled in NSF Summer Institute. Other students
may enroll by special permission.)
324-325 INTRODUCTION TO ALGEBRAIC STRUCTURES 3 pre-
req 252. Mathematical proofs, sets, mappings, and algebraic systems.
327-328 (315-316) MODERN ALGEBRA 5 prereq 252 and c/i.
Groups, rings, integral domains, fields, and vector spaces. (Intended
primarily for those enrolled in NSF Summer Institute. Other students
may enroll by special permission.)
329 TOPICS IN ALGEBRA 4 prereq 237. 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.)
337 (383) INTRODUCTION TO GENERAL TOPOLOGY 4 prereq
358 or other topological courses. General topological concepts,
continuity, convergence, separation axioms, metric spaces. (Intended
primarily for those enrolled in NSF Summer Institute. Other students
may enroll by special permission.)
341-342-343 MATHEMATICAL STATISTICS 3 prereq 252 and
and/or 352. Development of necessary mathematical concepts, probabili-
ty, random variables and distribution functions, sampling, testing hy-
potheses, confidence intervals.
344-345-346 (302-303) STATISTICAL METHODS 3 prereq
in courses in mathematics. As preparation for advanced courses,
he should have Math 421-422-423.
511-512-513 ADVANCED MATHEMATICAL METHODS 3 prereq
of equations including linear equations, with emphasis on linear
differential equations. Non-linear equations, numerical solution of
non-linear equations, methods of solution, and applications to
ordinary differential equations, numerical solution of integral equa-
tions, and selected topics. (Intended primarily for those enrolled
in NSF Summer Institute. Other students may enroll by special per-
mission.)
517 STRUCTURE OF RINGS 3 prereq 253. Radicals and the
Weatherburn theorem. Group rings, tensor products, and selected
topics.
521 THEORY OF GROUPS 3 prereq 423. Sylow theorems and
applications to finite groups. Series decompositions and selected
topics.
525 THEORY OF FIELDS 3 prereq 423. Algebraic and transcen-
dental extensions. Topics from Galois theory, algebraic functions,
and/or ordered fields.
523 STRUCTURE OF RINGS 3 prereq 423. Radicals and the
Weberburn theorem. Group rings, tensor products, and selected
tops.
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, 406, 415, 420; Physics 111-112-113; Zoology 111-112-113, 202, 204, 313; Chemistry 121-122-123, 124-125-126, 245-246, 211-212, 214-215; 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, 207, 404, 405, 407, 418, 419, 430; Chemistry 401-402, 403-405, 370-372 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>
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<tr>
<td>Chem 121-122-123</td>
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<tr>
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<tr>
<td>Zool 111-112-113</td>
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<tr>
<td>Introduction to Biology</td>
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<tr>
<td>General Zoology</td>
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<tr>
<td>Microb 111</td>
<td>5</td>
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<tr>
<td>Survey of Microbiology</td>
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<tr>
<td>Math 107-108-109</td>
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Sophomore Year

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<tr>
<td>Chem 211-212-213</td>
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<td>Organic Chemistry</td>
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<td>Chem 214-215-216</td>
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<tr>
<td>Laboratory</td>
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<td>Chem 245</td>
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<td>Quantitative Analysis</td>
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<td>Biozoo 265</td>
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<tr>
<td>General Microbiology</td>
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<td>Microb 201</td>
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<td>English 101-102</td>
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<td>Zoology 302</td>
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<tr>
<td>Human Physiology</td>
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Junior Year

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<tr>
<td>Physics 111-112-113</td>
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<tr>
<td>Microb 302</td>
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<td>Microbiology</td>
<td>5</td>
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<tr>
<td>Microb 310</td>
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<td>Immunology and Serology</td>
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<tr>
<td>Zoology 313</td>
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<td>Vertebrate Histology</td>
<td>5</td>
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<tr>
<td>Zoology 304</td>
<td>5</td>
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<tr>
<td>Comparative Vertebrate Anatomy</td>
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Senior Year

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<tbody>
<tr>
<td>Microb 406-407</td>
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<tr>
<td>Clinical Microbiology</td>
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<td>Microb 415</td>
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<tr>
<td>Medical Mycology</td>
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<td>Microb 404</td>
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<td>Molecular Genetics</td>
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<td>Microb 420</td>
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<td>Virology</td>
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<td>Microb 405</td>
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<td>Seminar</td>
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<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</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 of Clinical Pathologists and the Department of Medical Technology 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, 405, 415, 416, 420; Zoology 111-112-113; Chemistry 121-122-123, 124-125-126, 245-246, 211-212, 214-215; Physics 111-112-115; Mathematics 107-108-109; English 100 and 450. Chemistry 214 or 458, 472 are recommended. A minimum of 45 credits in the major field is required to receive a baccalaureate 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
Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>3</td>
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<tr>
<td>Chem 124-125—College Chemistry</td>
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</tr>
<tr>
<td>Zool 111-112-113—Introduction to Biology</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem 211-212—Organic Chemistry</td>
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<tr>
<td>Chem 214-215—Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem 245—Quantitative Analysis</td>
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</tr>
<tr>
<td>Chem 246—Quantitative Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Micro 290—General Microbiology</td>
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<tr>
<td>Micro 291—General Microbiology</td>
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<tr>
<td>English 100—Composition</td>
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Junior Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Phys 111-112-113—General Physics</td>
<td>5</td>
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<tr>
<td>Micro 200—Microbial Physiology</td>
<td>3</td>
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<tr>
<td>Micro 202—Medical Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>Micro 310—Immunology and Serology</td>
<td>3</td>
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<tr>
<td>Comp Sci 205-306-207—Computer use in the Natural Sciences</td>
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Senior Year

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Micro 415—Medical Mycology</td>
<td>5</td>
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<tr>
<td>Micro 420—Virology</td>
<td>3</td>
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<tr>
<td>Micro 411—Epidemiology</td>
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<tr>
<td>Micro 410—Molecular Genetics</td>
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<td>Micro 405—Seminar</td>
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<td>Chem 481-482—Elementary Biochemistry</td>
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<td>Chem 484-485—Elementary Biochemistry Laboratory</td>
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<tr>
<td>Chem 270—Survey of Physical Chemistry</td>
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<td>Chem 378—Survey of Physical Chemistry Laboratory</td>
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</tr>
<tr>
<td>Zoology 321—Protozoology</td>
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</tbody>
</table>

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 clinical significance to agriculture, food, drug, fermentation and other industries. (Not allowed toward a major in microbiology.) (Students enrolling in Micro 100 are strongly urged to enroll concurrently in Micro 101—Elementary Microbiology Laboratory—which will strengthen their understanding of microbiological concepts.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 2 (4-0) 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) prereq senior standing in one of the biological sciences and/or 1. Biochemical mechanisms of mutation, DNA replication, nature of the genetic code, genetic recombination, genetic transcription and translation.

405 SEMINAR 1 (1-0) R-4 prereq 200, 302. Recent literature in microbiology and related subjects.

406 CLINICAL MICROBIOLOGY 3 (3-0) prereq 200, Chem 160, 265 or 266. Principles of hematology, microbiology, urinalysis and other clinical parameters of disease and health.

407 CLINICAL MICROBIOLOGY LABORATORY 2 (1-0) prereq or coreq 406 or Chem 384 or 481 or Zool 340. Clinical diagnostic methods.

411 EPIDEMIOLOGY 3 (3-0) prereq 302. Distribution and frequency of disease; factors affecting its spread and control.

415 MEDICAL MYCOLOGY 5 (3-4) prereq 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 the yeasts.

419 MYCOPLASMA AND L-FORMS 2 (2-0) a/y prereq 302. Physiology, immunology, pathogenesis, taxonomy, and interrelationships of microorganisms lacking cell walls, including Mycoplasma (FPP and FPL), bacterial, fungal and other L-forms, and bacterial protoplasts and spheroplasts.

420 VIROLOGY 3-5 (3-4) prereq 200. Properties, characteristics and infectious nature of bacteriophages, animal viruses and rickettsiae.

430 SPECIAL PROBLEMS IN MICROBIOLOGY V 1-5 R-18 prereq 200, 300 and 3.0 average in biological sciences, Independent research.

458 POPULATION AND ECOLOGICAL GENETICS 5 (5-0) prereq 255 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.

24.00

27x146

27x116

27x104

27x98

27x140

27x134

27x37


599. T HESIS 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
- with a major in Elementary Music
- with a major in Choral Conducting
- with a major in Instrumental Conducting
- with a major in Choral and Instrumental Conducting and Music Administration

Bachelor of Music
- with a major in Performance
- with a major in Theory or Composition

Bachelor of Arts
- with a major in Music.

GRADUATE WORK. See Graduate School Bulletin.

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the Music Department is by certificate from the high school from which the student graduates. The faculty of the Music Department is more concerned with evidence of talent, 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 this catalog, the following special requirements must be completed:

1. For the Bachelor of Music Education, the course requirements in Curriculum A must be completed.
B. CURRICULA 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 degree in performance of an instrument or voice. Students who have 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:

- Music course requirements for Curriculum A-2 shall include a total of 121 credits as follows:
  - English, 9 cr.
  - Psychology, 5 cr.
  - General 125-6-7, 15 cr.
  - Upper division electives, 12 cr.

- 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:

- 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; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature, English 100; Academic Electives, 13 cr.

- Suggested Freshman Program: Piano 201, Band or Orchestra, Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature, English 100; Academic Electives, 13 cr.

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 scholastic 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 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. The remaining Music credits are applicable toward this degree: Performance, 12 cr.; Ensemble Music, 6 cr. (however, Music Department requires participation in Music Department ensembles).

- Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Introduction to Music Literature, English 100; Academic Electives, 21 cr.

COURSES 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 prerequisites c/l.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide study in a performance minor. This study is designed to give the beginning...
student certain proficiencies in order that he may use this application as a tool rather than as a medium for performance. A total of 12 credits is allowed in any one performance area.

MUSIC 201, 401 Performance Major V 1-4 R-24 prereq audition and 139. 1st quarter of (each course).

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum A must have a field which is secondary to their primary major, i.e., Music Education. A student entering in Music 201 should show evidence of the equivalent of two years' prior study. Students majoring in Performance (Curriculum B) must show talent for solo performance and evidence of the equivalent of four years' prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

105-103-104 REFERTORY BAND, CHOIR, ORCHESTRA 1-3. The development of school music. Observation of conducting and teaching methods. Study on secondary instruments.

105 SUMMER SESSION CHORUS 1.

106 UNIVERSITY CHOIR 1.

107 COLLEGIATE CHORALE 1.

108 ORCHESTRA 1.

109 UNIVERSITY BAND 1.

Courses 106 through 110 are major musical organizations. Prereq c/1. Non-majors may apply 6 credits toward graduation.

110-112-113 THEORY I 3. Materials and structure of music. Application of principles in two, three, four-part writing and at the keyboard. 111 is prereq to 112; 112 and 138 are prereq to 113.

114-115-116 PIANO IN CLASS 1. All major and minor scales 2 octaves and arpeggios. Keyboard in all positions. Harmonization of simple tunes with I IV V7 chords. Materials such as Oxford and Burrows Adult Beginner's books. Transposition, memorization, and sight-reading.


122-123-124 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS 12 credits. Written Fundamentals and basic rudiments of music. (123-124) Integration of materials into the elementary classroom. Emphasis placed on all aspects of teaching music creatively in the elementary school. (Not open to music majors. 125 may be waived on basis of proficiency examination. It is advisable to take Educ 206 before enrolling for this sequence.)

125-126-127 STRING INSTRUMENTS IN CLASS 1. Group instruction for beginning students on violin, viola, cello, and bass, with emphasis on teaching procedures.


134 INTRODUCTION TO CONCERT MUSIC 4 (3-2). Music in our present-day culture; illustrated lectures for the layman on forms, style, and composition. Concert music and the orchestra practiced in recording and concert attendance. For non-majors only.

135 INTRODUCTION TO MUSIC LITERATURE 4. The elements of musical understanding; the place of music in history with emphasis on its relation to social change and to the history of other arts. Comparative survey of masterpieces of music from the Renaissance through the Twentieth Century. Review of all periods of music history. Study of recordings. Concert attendance required. Open to non-majors with c/1. (Credit not allowed for both 135 and 138.)

137-138-139 AURAL PERCEPTION I 3, 3, 3. Coreq 111. 138-139, prereq or coreq 112-113. A laboratory course in singing and dictation to supplement Theory I.

140 ENSEMBLE GROUPS 1. Any small group of two or more players or singers may have a course outlined by the instructor. The development of sight reading and accompanying skills with music literature; accompanying. Students may register for more than one ensemble group in a given quarter. Music majors must satisfy requirements as stated for each curriculum; non-music majors may apply 6 credits toward graduation.

159 (159-160-161) COMPOSITION 2 R-4 prereq c/1. An introduction to the basic art of music composition. (May be substituted for upper division electives for students not majoring in theory or composition.)

211-212-213 THEORY II 2 prereq 112 and 139, coreq 207-208-209. Continuation of Theory I.

215-216-217 INTERMEDIATE PIANO IN CLASS 1 prereq Music 116 or placement test. All major and minor scales 2 octaves HT. Further development of finger technique, transposition, memorization, and sight-reading.

234-235-236 HISTORY OF MUSIC 3 prereq 135. Enter any quarter. The history of music in Western Civilization from its origin to modern times and its relationship to general cultural development.

237-238-239 AURAL PERCEPTION II 2 prereq 113 and 139, coreq 211-212-213. A lab course in singing and dictation to supplement Theory II.

247-248-249 KEYBOARD HARMONY 1 prereq or coreq 212 and c/1. Practice applied to the major harmony board. Exercises in modulation, transposition, and development of extemporaneous playing.

259 (259-260-261) COMPOSITION 2 R-4 prereq 6 credits of 189. Original work in composition. (May be substituted for upper division electives for students not majoring in theory or composition.)

302-303-304 BAND, CHORAL, ORCHESTRAL CONDUCTING 2 prereq or coreq 231. Conducting methods and materials. Study on secondary instruments.

311-312-313 THEORY II 2 prereq 213. Chromatic harmony: altered chords, foreign modulation; analysis and writing in Classical and Romantic styles, both instrumental and vocal.

319 PIANO FOR THE CLASSROOM TEACHER 2. Presenting simple material at a basic level of skill, toward a wider utilization of the piano in classroom and school situations.

320-321 PIANO METHODS AND MATERIALS 3 e/y prereq placement in Piano 401. Methods and materials for teaching piano classes in public schools and private studios. Procedures in teaching beginning, intermediate and advanced students in private studios. Practical demonstrations and supervised laboratory experience with children and children's classes.


357-358 CHORAL ARRANGING 2. Practical experience in arranging for vocal groups including the specific problems of the immature and changing voice.


331 CONDUCTING METHODS AND MATERIALS 3 prereq 10 credits in music including 113.


337 ELEMENTARY MUSIC ADMINISTRATION AND SUPERVISION 2. Administration and supervision of elementary music in the public schools, the development of curriculum in general music and related arts.

359 (359-360-361) COMPOSITION 3 R-9 prereq 213 and 6 credits of 259. Creative writing of music.


408 SEMINAR IN MUSIC EDUCATION 1 prereq Educ 405. Music education and conducting. Review of recent publications in choral and instrumental music.


423 MUSIC OF THE ROMANTIC PERIOD 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Twentieth Century.

445 SENIOR RECITAL V 1-2 coreq 401.

459 (459-460-461) COMPOSITION 3 R-9 prereq 9 credits of 359. A continuation of composition with writing in the larger forms.

FOR UNDERGRADUATES AND GRADUATES

308 WORKSHOP IN MUSIC EDUCATION V 1-3 prereq junior or senior status, majoring in music education experience. Special workshops and clinics in elementary and secondary public school teaching problems.

309 PEDAGOGY OF STRINGS 2 prereq c/1. Procedures and materials in class string instruction utilizing clinical demonstrations with children.

441 READINGS IN MUSIC CRITICISM 3. Comparison of selected writings of 20th century composers, including Stravinsky, Ellington, Schoenberg, Sessions and Copland. (For the layman as well as the music student.)

FOR GRADUATES

501 PERFORMANCE TECHNIQUES V 1-4 R-15. Individual instruction in voice, piano, organ, string or wind instruments. Students desiring further study of minor performance fields may elect 1-2 credits.
511 (431) ADVANCED CONDUCTING 3 R-12 prerequisite 231 and c/l. A continuation of 331, 302-303-304. Class and/OR individual study of the art of conducting with emphasis on performance with university performing groups.

512 LITERATURE FOR HIGH SCHOOL INSTRUMENTAL GROUPS 2 a/y. Comparative study and performance of new publications.

513 LITERATURE FOR HIGH SCHOOL CHORAL GROUPS 2 a/y. Comparative study and performance of new publications.

514 CURRENT LITERATURE FOR HIGH SCHOOL SOLO AND SMALL ENSEMBLE GROUPS 2 a/y. Comparative study and performance of literature with attention to pedagogical use as related to style.

515 PROBLEMS IN TEACHING ELEMENTARY MUSIC 2 a/y. Evaluation of new approaches; state and city course outlines; music in ungraded schools. Presented for class study.

516 PROBLEMS IN TEACHING JUNIOR HIGH SCHOOL MUSIC 2 a/y. Evaluation of new courses of study; Development of curriculum for general and special classes; Problems selected for class study.

517 ORFF AND KODALY APPROACHES TO ELEMENTARY MUSIC 2 a/y. Procedures currently in use in Germany and Hungary.

518 CHILDREN'S MUSIC LITERATURE 2. Texts, recordings, and books related to growth in musical understanding through the child's reading and listening.

519 TESTS AND MEASUREMENTS IN MUSIC 2. Evaluation of selected standardized tests.

520 RESEARCH IN MUSIC EDUCATION 2. Research problems; their statement, organization, compilation of materials, concepts necessary for interpretation of data.

521 SCHOOL MUSIC ADMINISTRATION 3. School systems, plans for organizing and administering the music program in the elementary and junior and senior high school. For students whose primary purpose in advanced study is preparation for administrative or supervisory work in music education.

524 MUSIC IN HIGHER EDUCATION 3. A survey of administrative problems, curricular content, contemporary teaching techniques, teaching personnel, and other areas of interest to the music teacher at the college level.

530 INDEPENDENT STUDY V R-9. Students must have projects approved by a music staff member before enrolling.

531 SYMPHONIC LITERATURE 3. A survey of orchestral music; the Mannheim composers, the Viennese classics, the Romantics, and contemporary European and American developments.

532 OPERATIC LITERATURE 3. Opera from its beginnings, the Florentine Camera, 18th and 17th century French and Italian opera, Gluck's reform, Mozart's dramatic works. The Romantic opera in Italy and Germany, contemporary opera trends.

533 KEYBOARD LITERATURE 3. Keyboard literature from the developments of the Baroque era to the contemporary period, including the suite, sonata, character pieces, etc.

534 CHAMBER MUSIC LITERATURE 3. Survey of chamber music, quartet, trio, quintet, etc., in various instrumental combinations. The repertoire is presented for the analysis of formal structure and aesthetic values are discussed.

535 SONG LITERATURE 3. The art song from the classic period to the contemporary era including the German lied, French chanson, and related literature.

536 CHORAL LITERATURE 3. Survey of both secular and sacred music for choral ensembles, dealing chiefly with the music from the 16th century to the contemporary school.

538 TRENDS IN CONTEMPORARY MUSIC 3. A survey of trends in American and American music from the end of World War II to the present. Emphasis on the serial technique, the serial technique, and other new techniques of composition.

539 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of an evolving democratic state on the arts, the development of various centers of performing arts and the types of music performed.

540 INTRODUCTION TO MUSICOCOLOGY 2. Nature, scope, and goal of musicology, its methods and history. Survey of bibliography, different approaches and styles of scholarly writing. Formats and techniques of writing.

542 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

551-552-553 ADVANCED ORCHESTRATION 2 prerequisite 329. Styles in orchestration techniques from 1750 to present.

554-555-556 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approach of leading composers from the polyphonic period to the present.

557 TECHNIQUES OF COMPOSITION 2. An introduction to composition for graduate students. Development of techniques and skills necessary to the composer.

559 COMPOSITION V R-12.

562 SEMINAR V 1-5 R-15. Investigation of research in fields of individual interest.

599 GRADUATE PROJECT IN MUSIC V R-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 action, duration, and mode of administration.

The curriculum offered by the School of Pharmacy consists of a five-year program leading to the degree of Bachelor of Science in Pharmacy. The first two years, or pre-professional years, of the curriculum, are spent in the study of the physical, chemical, and biological sciences, and in other course work necessary to satisfy the general university requirements. During the final three years of the curriculum, the student devotes his time to the study of the several pharmaceutical sciences. This program of study is designed to prepare him to 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.
REQUIREMENTS FOR ADMISSION TO THE PROFESSIONAL CURRICULUM:

1. The general requirements for admission to the University of Montana as listed earlier in the catalog.
2. At least two years as prescribed in the pre-pharmacy curriculum (may be transferred from a community college):


   Applicants presenting two years of satisfactory college work but with deficiencies in the above list may be admitted, but such deficiencies must be removed.

   The English composition requirement should be completed by the end of the third year of full-time college enrollment. Effective full-time study after 1969 and accepted for on a part-time basis, those below the 25th percentile shall take English 601, 100 and either English 450 or Speech Communication 111. If ACT scores are above the 25th but below the 80th percentile, the student shall take English 100 and either English 450 or Speech Communication 111. ACT scores at or above the 80th percentile are required to take only one quarter of English 450 or Speech Communication 111.

   Each applicant for admission to the professional curriculum must have a minimum of 135 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete an average of 45 credits per year.

   Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.
2. Complete not less than five full academic years of training, including both pre-pharmacy instruction and a minimum of three years of professional instruction. In order to meet the accreditation requirement of a minimum of three full years of professional instruction for the Bachelor of Science degree, each candidate must complete a minimum of 135 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete an average of 45 credits per year.
3. Complete not less than 225 credits of course work.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for licensure as a Registered Pharmacist in Montana must pass an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States, of good moral character, and shall be a graduate of an accredited professional college of pharmacy. However, an applicant shall not receive a license until he has completed an internship in an approved pharmacy.

GRADUATE WORK. See Graduate School Bulletin.

PHARMACY CURRICULUM

First year: English or Speech Communication 111; Business Administration 201; Chemistry 482, 483, or 485; Pharmacy 306b, 320, 324, 330, 331, 352; Zoology 340-341; electives.

Second year: Microbiology 200, 302; Pharmacy 404, 414-415-416, 425, 444, 461, 462, 463, and electives.

Third year: Microbiology 411; Pharmacy 503, 504, 505-506, 516, 517-518-519, 540, 545, 576, 577, 578, 586, and electives.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 USE AND ABUSE OF DRUGS 3. The nature of drugs; their history, development and normal use in treatment of disease. Drug dependence and abuse, the special classes and types of drugs involved. (Not open to pharmacy majors.)

306 (206) ORIENTATION TO PHARMACY 1 (1-0).

320 (320) PHARMACEUTICAL CALCULATIONS 3 (3-2).

324 (424) PHARMACOGNOSY 4 (3-3). Majors V 1-3 (1 cr./o). Nonmajors, Pharmacy, Chem 482 or pre-Pharmacy, and science majors. 30 hr. of plant and animal products used in pharmacy and medicine.

330-331 PHARMACOLOGIC PRINCIPLES 3 prereq or coreq Zoology 341. Concepts of dosimetry, and other factors governing the known functional activity of prototype drugs that influence the mind or body or both.

352 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. Exercises in computer programming with reference to inventory, finances and drug activity.

404 INTRODUCTION TO DISPENSING 2 (1-2) prereq 463.


418 MEDICINAL CHEMISTRY LABORATORY 2 (4-0 to 9) R-4 prereq 414. Synthesis, identification 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 482 or c/. Continuation of 324.

440 DRUGS OF PSYCHOPHARMACOLOGY 3 (3-0) prereq Chem 213, 216 and 482, Zool 341. Drugs which influence behavior.

444 APPLIED PHARMACOLOGY 5 (5-0) prereq 330, 331, Chem 482. Therapeutic and toxicologic aspects of chemical agents used as drugs.

461-462-463 PHARMACY 5 (3-0) prereq 320 and Chem 213. Fundamentals of pharmacy and the various classes of pharmaceutical preparations.

466 MEDICINAL PLANTS AND PHARMACOGNOSTIC TECHNIQUES V 1-5 (0-3/cr) R-10 prereq 425. Collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.

468 DRUG MICROSCOPY V 1-4 (0-3/cr) R-5 prereq Bot 115 or c/. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

503-504 BIOLOGICAL MEDICAL PRODUCTS 3 (3-0) prereq Micro 302. Biologics, 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 (0-2-3) prereq senior standing in pharmacy. Continuation of 517.

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 445, the laboratory skills of investigating known as well as unknown drug effects. Designed not only for those who are interested in the pharmaceutical sciences but also for those who utilize drugs to facilitate study and research in their specific discipline.

555 ADVANCED PHARMACY V 3-5 (0-9 to 15) prereq 506 or =. Problems involved in formulation and preparation of pharmaceuticals.

570 COSMETICS 3 (1-6) prereq 463. Cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 3 (1-4) prereq 352.

592-593 HOSPITAL PHARMACY I 1-3 (2-0/cr) prereq 505. Instruction and participation in the routine of a hospital pharmacy.

594 INSTITUTIONAL PHARMACY 3 (3-0) prereq c/i, 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/i. 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.
PHILOSOPHY

is the search for wisdom by carefully reasoned reflection. Philosophical enquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, as a framework of mental experiences, or as an open field for 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 completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits including Philosophy 110, 210, 286, 299, 300, and three or more credits in courses numbered 400 or above. Normally students are expected to complete Philosophy 286, 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. It should be noted that philosophical writing appears deficient for work in the department will be required to take an appropriate English course.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO PHILOSOPHY 5. The main problems of metaphysics, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

110 LOGIC 5. Deductive and inductive inference, kinds of definition, the detection of fallacies, and the methods of science.

120 ETHICS 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.

210 SYMBOLIC LOGIC 5. A systematic study of deductive logic using modern symbolic techniques.

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 Christian thinkers. (302) Late Medieval, Renaissance and some modern thinkers. (303) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

310 (353) PHILOSOPHY OF SCIENCE 5 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 (355) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/l. Structural and functional 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, ideas 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 e/y prereq 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, and the standards of art criticism, and of the kinds of knowledge communicated by art. Readings from philosophical literature and a comparison with the nature of the arts.

341 PHILOSOPHY IN LITERATURE 3 prereq 10 credits in Philosophy or Literature or_. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS 3 prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature or_. Enter any quarter. (345) Music. (346) Visual arts. (347) Literature. (348) Film. Examination of philosophical problems related to the particular arts and discussion of the nature of the arts.

350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the source, nature and extent of knowledge with special attention to the relation of perception to the physical world, and to the concept of the mind.

351 METAPHYSICS 3 prereq 10 credits in Philosophy. What are the basic questions of Metaphysics? Does it attempt to answer? What questions is it fitted to answer? Traditional and contemporary pursuits of these questions.

354 PHILOSOPHY OF RELIGION 5 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 4 o/y prereq 5 credits in Philosophy and c/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 which advance the autonomy of history against the relevance of the philosophy of history for the working historian.

360 PLATO 5 e/y prereq 298 or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

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-10 prereq 300 or 10 credits in Philosophy and c/l. Selection to be announced in the class schedule.

373 EXISTENTIALISM 5 prereq 10 credits in Philosophy and c/l. Selected readings from the philosophical works of one or more existentialist thinkers.
PHYSICS

is the science that has as its objective the formulation and verification of laws or relationships among the different physical quantities. Some of the most important of these quantities are mass, time, length, force, energy, momentum, electric charge, electric field strength, entropy, wave length. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biophysics, meteorology and geophysics. In addition the subject of 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 111-112-221-222-223, in some order, or courses offered in other departments: Mathematics 121, 151, 182, 213, 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 equivalents to (1). A total of 9 credits in English including English 100 and 456 are required except that students scoring less than the 51st percentile on the English section of the ACT test are required to take English 100 and students receiving 94th percentile or higher are exempt from English. Recommended courses in other departments include 10 credits in 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)

PHYSICS

111-112-113 GENERAL PHYSICS 5 (5-2) prereq for 111. Math 107, 111 is prereq for 112 and 113, but 112 is not prereq to 113. (111) Mechanics and wave motion. (112) Heat, electricity and magnetism. (113) Modern physics. Credit not allowed for both 111-112-113 and 221-222-223.

221-222-223 GENERAL PHYSICS 5 (5-2) prereq for 221; Math 116 or 112, 221 is prereq for 222 and 223, but 222 is not prereq to 223. This course satisfies medical and technical school requirements in general physics. (221) Mechanics and wave motion. (222) Heat, electricity and magnetism. (223) Modern physics. Credit not allowed for both 221-222-223 and 231-232.

231-232-233 LABORATORY ARTS 1 (0-3) prereq 223. Open to upper division physics majors who have completed 223. Enter any quarter. Elements of glass blowing, machine shop practice, and electronic construction techniques.

FOR UNDERGRADUATES AND GRADUATES

301 (271) VECTOR ANALYSIS 3 (3-0) prereq 222 and Math 252.

314-315-316 ELECTRICITY A W 3 (3-0), S 4 (3-3) prereq 301.

322-323-324 LIGHT 2, A W (2-0), S 1 (3-3) prereq 223 and Math 252.

328 METHODS OF TEACHING PHYSICS 3 (3-4) prereq 221, 222, 223. Texts, demonstrations and laboratory experiments used in contemporary approaches to teaching of high school physics. (Credit not allowed toward degree in physics.)

331 MECHANICS AND HEAT 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

332 ELECTRICITY RADIATION AND ATOMIC PHYSICS 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

341 FUNDAMENTALS OF MODERN PHYSICS 5 (5-0) prereq one year of general physics. Not for physics majors.

371-372-373 (471-472) MECHANICS 3 (3-0) prereq 301 and Math 253.

431 SELECTED TOPICS V 1-5 R-10 prereq c/l and 15 credits in Physics.
SPECIAL REQUIREMENTS must be completed for the Bachelor of Arts from courses numbered over 213 and a minimum of 45 credit hours in Political Science, with a major in Political Science: English, Government, and (5) International Relations, Organization and Government, politics, and public law as sub fields, (2) Public Administration, (3) Political Theory, (4) Comparative Government, and (5) International Relations, Organization and Law.

POLITICAL SCIENCE is the study of government and politics both in their domestic and international aspects. By meeting requirements outlined below, a student may earn a Bachelor's degree in Political Science, in Political Science and Economics, or in Political Science and History. A Master of Arts degree in Political Science is also offered.

Courses offered in the Political Science department are designed to aid students in attaining the following objectives:

(1) To assist all students in securing a broad liberal education and to equip them with the foundations for effective discharge of the duties of American citizenship;

(2) To provide undergraduate preparation for those students who propose to continue the study of Political Science at the graduate level with the ultimate goal college teaching and research;

(3) To offer a broad program of training for those students who plan careers in government or politics, including training for both the foreign service and the domestic public service, at both the elementary and secondary levels;

(4) To assist in preparing students for careers in teaching at both the elementary and secondary levels;

(5) To provide a sound background for those students who intend to enroll in law and other professional schools.

The major fields of Political Science are (1) American Government and Politics with national, state and local government, politics, and public law as sub fields, (2) Public Administration, (3) Political Theory, (4) Comparative Government, and (5) International Relations, Organization and Law.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts with a major in Political Science: English 109, Economics 211-212-213 and a minimum of 45 credit hours in Political Science with 30 credits from courses numbered 300 and over.

Political Science courses required of all majors are: 201, 202, 231 and 485, one course in theory, and one course in comparative government. Majors must take at least one additional course in 3 of the 5 fields listed above.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 30 credits must be in Political Science and 20 credits in History. A minimum of 30 credits must be selected from courses numbered over 300.

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 10 credits in Economics.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

"Courses offered alternate years.

101 INTRODUCTION TO POLITICAL SCIENCE 5. Issues and problems confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 2 prereq or coreq 101. Law as a system of social control; legal systems and law-making institutions.

201 (202) AMERICAN GOVERNMENT 5. Constitutional principles of the national government; democratic political processes, including public opinion, interest groups, political parties, and elections; structure of the national government, congress, the presidency, and the courts.

203 (204) AMERICAN GOVERNMENT 5 prereq 201. Functions of the foreign office, including finance, business, agriculture, conservation, welfare, national defense, foreign policy, and selected problems of public policy.

210 INTRODUCTION TO INTERNATIONAL RELATIONS 5. The nation-state as a political unit, its development and evolution, and its place in the modern world system; development and organization of nation-states, alliances, blocs, international organizations; factors affecting stability and change in the system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICAL 5 prereq 101 or any 200 level course in Political Science. Structure of politics, government and authority in the developing area of Latin America.

322 COMPARATIVE GOVERNMENT AND POLITICAL 5 prereq 101 or any 200 level course in Political Science. Structure of politics, government and authority in the developing area of Africa.

327 POLITICS OF ASIA 5 prereq 201. Structure of politics, government and authority in the developing area of Asia.

331 THEORIES OF INTERNATIONAL RELATIONS 3 prereq 231. Survey of basic concepts and theoretical approaches to international relations and their application to selected problems.

332 (331) INTERNATIONAL ORGANIZATIONS 3 prereq 231. The machinery of international cooperation with particular reference to the United Nations.

335 AMERICAN FOREIGN POLICY 3 prereq 202 and 231. American diplomatic, economic and defense policies since World War II and their significance in international politics.

341 (341) POLITICAL PARTIES 5 prereq 201. Nature and organization of political parties; conduct of nominations and political campaigns; role of political parties in political systems, with special emphasis on the American system.

342 (341) POLITICAL INTEREST GROUPS 3 prereq 341 or c/l. Interests and group influence in the political system; interaction of interest groups with public opinion, political parties, legislative bodies, executives, administrators, and the courts.

343 VOTING BEHAVIOR 3 prereq 341. The electorate and the election process; attitudes and behavior of voters; the significance of election results for the political system.

351 POLITICS AND ETHICS 5 prereq 101 or any 200 level course in Political Science. An exploration of the relationship between the good man and the good citizen, through selected classic works of political theory, such as Plato's Republic, Aristotle's Politics and others.

352 THEORIES OF THE MODERN STATE 5 prereq 101 or any 200 level course in Political Science. The dilemma of action, the meaning of "political social contract theories, the logic of the modern state. Machiavelli, Hobbes, Locke and others.

353 DEMOCRATIC THEORY 3 prereq 101 or any 200 level course in Political Science. A study of the different models of democratic theory from American political thought, with emphasis on the Federalists, Jefferson, Calhoun and the New Left.
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 and dental schools have become 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 do well in the American Medical College Admission 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. Superlative scholarship is of importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. High school students who are contemplating a career in the Pre-medical Sciences curriculum at the University should plan on a program of high school studies which will include 3-4 years of college preparatory mathematics, some Latin for several years, two years of college chemistry, and do well in college physics and complicating background in literature and social science.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements in the Pre-medical Sciences, demonstrates a high level of competency, and is relatively well balanced.

Applicants for entrance to Schools of Medicine exceed the number that 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.

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choice. To be considered by a School of Medicine the student must do well in the American 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.

The Western Interstate Commission for Higher Education was designed to provide financial aid to 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 30 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 Vertebrates and Invertebrates; 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, Mathematics, 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-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
HPRF 230—Human Anatomy 3
Micro 100—Elementary Microbiology 3
Micro 101—Elementary Microbiology Lab 1
Micro 102—Elementary Medical Microbiology 3
Soc 101—Introductory 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

**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, 230; two laboratory courses selected from 210, 215, or 230 and two laboratory courses selected from 240, 315, or 350; 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 220 or above. At least one English composition course, Mathematics 125 and Zoology 111-112-113 or 111-320 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 AND GRADUATES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>105 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. 5</td>
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<tr>
<td>111 INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY 5 (4-2) prereq 110. Advanced general psychology. Experimental and quantitative methods employed in laboratory approaches to the scientific study of behavior. 5</td>
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<tr>
<td>190 PSYCHOLOGICAL INVESTIGATION V 1-3 R-5 prereq 110 and c/i. Supervised investigation of psychological problems. 1-3</td>
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<tr>
<td>210 (311) LEARNING 5 (4-2) prereq 111. Principles of behavior change. 5</td>
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<tr>
<td>215 (312) MOTIVATION 5 (4-2) prereq 111. Conditions which influence basic drives, incentives, and the development of complex motives. 5</td>
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<tr>
<td>220 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 111 and Math 125. Application of statistical techniques to psychological data. 5</td>
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<tr>
<td>230 (312) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111, course(s) in zoology recommended. Basic neural regulatory mechanisms underlying behavior. 5</td>
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<tr>
<td>240 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Individual behavior as a function of interpersonal interaction. Emphasis on research literature. 5</td>
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<td>310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 111. 5</td>
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<tr>
<td>315 (206) COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. Meaning and purpose of our and other animals' lives in terms of the biological principles which rule us. 5</td>
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<tr>
<td>320 (312) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111, course(s) in zoology recommended. Basic neural regulatory mechanisms underlying behavior. 5</td>
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<tr>
<td>342 PERSONNEL PSYCHOLOGY 3 (3-0) prereq 110. Selection, classification, and training; worker efficiency and adjustment problems. 3</td>
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<tr>
<td>343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prereq 110. Applications of psychology in industry. 5</td>
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<tr>
<td>361 ABNORMAL PSYCHOLOGY 5 (5-0) prereq 110. Description and classification of abnormal orientations, with emphasis on their psychological dynamics. 5</td>
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<tr>
<td>390 PROBLEMS IN PSYCHOLOGY V R-5 prereq 15 credits in Psychology and c/i. 5</td>
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<tr>
<td>411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis. 5</td>
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<tr>
<td>420 PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/i. Styles of motivation, frustration, conflict, and defense mechanisms. Major emphasis on psychoanalytic dynamics. 4</td>
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<tr>
<td>451 INDIVIDUAL DIFFERENCES 3 (3-0) prereq 110. Nature and extent of individual and group differences. 3</td>
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<tr>
<td>480 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prereq 220 and c/i. Derivation and evaluation of some of the more complex models of learning, choice behavior, and signal detection. 4</td>
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<tr>
<td>491 TOPICAL SEMINAR V R-6 prereq 15 credits in psychology and c/i. Topics of current interest with critical examination of the literature. 5</td>
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**FOR GRADUATES**

501-502-503 PROSEMINAR 8 (8-0) prereq graduate standing in psychology. Survey of the basic fields of psychology. (501) Learning, motivation and thought processes. (502) Comparative, perception, physiological, and sensory. (503) Personality, psychopathology, and social. 8

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. 2

510 HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0). Development of concepts, systems, and theories in psychology. 4
512 THEORIES OF LEARNING 4 (4-0). Critical review of current learning theories based on analysis of fundamental concepts, experimental data, and theoretical implications.

513 ADVANCED LEARNING 4 (4-0). Principles and methods pertaining to the acquisition and retention of new behavior.

514 THOUGHT PROCESSES 4 (4-0) prereq 10 credits from 310, 311, 312 and 220. Experimental and theoretical analysis of problem solving, concept formation, and other complex symbolic behavior.

515 ADVANCED MOTIVATION 4 (4-0). Drive, incentive, and other motivational variables as they influence performance.

516 ADVANCED COMPARATIVE 4 (4-0) Directed towards a synthesis of existing data from various life forms into universal principles of behavior.


521-523-525 ADVANCED PSYCHOLOGICAL STATISTICS 4 (4-0). (521) Brief review of algebra and summation, discrete and continuous probability distribution, expectation, and distribution of parameter estimates. (522) Hypothesis testing. Type I and II errors, power, single factor analysis of variance, regression, and analysis of variance as a special case of regression. (523) Individual comparisons and contrasts, higher order factorial designs, and special topics.

530 ADVANCED DEVELOPMENTAL PSYCHOLOGY 4. (4-0) Behavioral development throughout the life span. Emphasis on analysis of research and theoretical interpretation.

540 INTERVIEW AND CASE HISTORY TECHNIQUES 2 (1-2). Clinically oriented. Client centered, supportive and consulting interviewing practiced. A behavioristic orientation toward case history taking is presented.

544 ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.

550-551-553 PSYCHOLOGICAL EVALUATION 4 (2-2) prereq c/l. Administration, scoring, and interpretation of standard tests, with supervision of individual and group tests of aptitudes and intellectual abilities. (551) Objective measures of personality functioning: introduction to projective techniques, TAT and related tests. (553) Rorschach and other projective approaches.


561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiology, diagnostic criteria and treatment of the major functional and organic disorders: research literature.

562 ADVANCED SENSORY SYSTEMS AND PERCEPTION 4 (4-0).

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior; electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field; types of cases handled by the clinician; techniques in evaluation and therapy; contributions in consultation, training and research.

586 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychotherapy.

590 INDEPENDENT RESEARCH V 1-6 R-10.

599 THESIS V R-10.

600 TOPICAL SEMINAR V 1-3 R. Advanced treatment of highly specialized topics of current interest.

601 SEMINAR IN MEASUREMENT V 1-3 R.

602 SEMINAR IN EXPERIMENTAL V 1-3 R. Topics in learning, motivation, perception, and sensory processes.

603 SEMINAR IN SYSTEMATIC V 1-3 R. Topics in history, systems, and theories in psychology, including theory construction.

604 SEMINAR IN CLINICAL V 1-3 R.

605 SEMINAR IN COMPARATIVE AND PHYSIOLOGICAL V 1-3 R.

606 SEMINAR IN PERSONALITY AND SOCIAL V 1-3 R.

670 CLINICAL PRACTICUM 2 (0-4) R-12 prereq c/l. Supervised practice of clinical techniques in a professional setting.

685 CLINICAL INTERNSHIP 0 prereq acceptable proficiency in clinical techniques. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

696 ADVANCED PSYCHOTHERAPY 2 (3-0) R-6 prereq 566 or c/l. A continuous and intensive study of the psychotherapeutic relationship and the various therapeutic techniques including supportive, client-centered, analytic, and hypotherapeutic.

699 ADVANCED CLINICAL PRACTICUM 2 (0-4) R-6 prereq 585. Directed experience in clinical supervision.

700 DISSERTATION V R-30.

**RADIO AND TELEVISION**

Courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio- television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio- television specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. Production of programs for broadcast from the University's radio station, KUFS, 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.

**Departmental Requirement:**

**Foreign Language**

15

**Major Requirements:**

32 credits from Radio-Television 140, 241-242-243, 346, 348, 440, 442-443, 494, Drama 359 (342);

32

Journalism 100, 257

7

48

132

195

**FOR UNDERGRADUATES**

140 INTRODUCTION TO RADIO AND TELEVISION 3. Open to non-majors.

341-342-343 (240, 242, 345) RADIO PRODUCTION 2 prereq 140 for 341; prereq 341 and Journ 270 for 342; prereq 341 for 343. Work on faculty-directed University radio station. (341) Operation of broadcasting equipment, F.C.C. regulations and writing for radio. (342) Planning and production of news and special affairs. (343) Advanced training in areas of broadcasting.

346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 3 prereq 140.

**FOR UNDERGRADUATES AND GRADUATES**

399 ADVANCED RADIO-TELEVISION PROBLEMS V prereq consent of the chairman.

440 CINEMATOGRAPHY (see Journalism).

441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses. Preparation, producing and directing television programs. Preparation of news and special affairs programming for television.

494 RADIO-TELEVISION SEMINAR 3 prereq or coreq 441. Radio-television and their effects, society and responsibility of the broadcasting industry.
RELIGIOUS STUDIES

The proper sphere for the academic study of religions is understood to be coextensive with the broad field of human learning in which the question of the humanity of man lies closest. 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 surrounding 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 personal and social existence. Religion 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 various degree programs have still to be formulated. The following list of courses is by no means complete and will be revised with the addition of faculty.

101-102 INTRODUCTION TO THE STUDY OF RELIGION 3. Enter any quarter. Satisfactory performance as discussed: 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 phenomenology 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 THE ANCIENT NEAR EAST 3. Enter either quarter 201 or 202. The political, cultural and religious history of the Near East from the neolithic period to the time of Alexander the Great (332 B.C.) From the ancient Mesopotamia to the 6th century A.D. The history of the 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 the contents of the Christian tradition and the legacy of Paul in Reformation and post-Reformation Christianity.

236 THE RISE OF HISTORICAL CONSCIOUSNESS IN THE ANCIENT NEAR EAST 3 prereq 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 prereq 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., Mystic tradition east and west, modern Islam, Soka Gakkai, Hasidic Judaism, American social gospel movement, Puritanism, Gandhi, Luther, Voltaire, John Stuart Mill).

276 CONTEMPORARY THEOLOGY 3 prereq 3 credits in Philosophy or R.S. The thought of major Christian figures, Protestant and Roman Catholic, in the 20th Century.

311 THE BIBLE IN THE AMERICAN TRADITION 3 prereq History 261 and 262 or c/i. Primary documents in the history of American biblical interpretation; the relation of biblical interpretation to 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 prereq 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 interaction of these faiths in the wider Hellenistic context.

341 RHETORIC IN CLASSICAL GREEK AND SEMITIC LITERATURE 3 prereq R.S. or Greek 211 and 212. The course draws from Gorgias and the Hebrew homily through Paul.

346 RELIGION AND SOCIAL REALITY 3 prereq 5 credits in sociology or c/i. Cult and society from the standpoints afforded by various religious traditions.

347 HUMAN SPIRIT AND TECHNOLOGY 3 prereq 10 credits in physical sciences or c/i. The "revelation" 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 prereq 10 credits in Philosophy or c/i. Theories of the origins of the "death of God" idea in 19th century Europe, especially in Hegel, Nietzsche, Feuerbach, Stirner, Marx, and Kierkegaard.

354 PHILOSOPHY OF RELIGION 5 prereq 5 credits in Philosophy and 5 credits in Religious Studies, or c/i. Philosophical dimensions of the select religious phenomena; examination and investigation of types of religious sensibility. (Same as Philosophy 354.)

355 RELIGION IN CONTEMPORARY SOCIETY 3-5, c/i. A critical study of religious issues as expressed in selected works from contemporary letters, art (visual, plastic, musical), and social commentary.

370 RELIGION AND POLITICAL IMAGINATION prereq 5 cr. in Literature, Phil. Sci. or c/i. An interdisciplinary study of the role of religion in the formation of modern western and non-western nations, domestic and international politics, church-state issues, and the interaction between religious and political imagination.

379 ATHEISM IN THE MODERN WORLD prereq 10 credits in Literature, Phil. Sci. or c/i. A critical study of major movements as expressed by leading atheistic thinkers and in related cultural and social movements.

405 PROBLEMS IN RELIGIOUS STUDIES 5 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.
201-302-303 APPLIED LEADERSHIP AND MANAGEMENT 2
Prereq: 401. A two-year course (301-302-303). Designed to emphasize the use of military and other governmental agency maps. Introduction to small unit tactics with emphasis on leadership, decision making, preparation and development of staff, principles of war and development of the military in an emerging United States. (202) Emphasis of survey 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. Introduction to the leadership activities of the Army leadership laboratory each week. Leadership laboratory consists of preparing small unit tactics, planning and executing them by practical exercise. The leadership and operational aspects of cold weather mountain 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 ROTC and University. Undergraduate students interested in acquiring a commission in the Army Reserve. This enrollment may be cancelled if the student withdraws from the University or for other specified reasons.

201-302-303 ADVANCED LEADERSHIP AND MANAGEMENT 3.
(301) Principles and techniques of the military leader. Followed by pre-advanced leadership training with emphasis on problems of leadership and military teaching methods. (302) Pre-advanced leadership training with emphasis on the selection of small unit operations. Army communications systems and their application to small unit operations. Army leadership and management laboratory consists of practical work in instructing and directing small units and other exercises developed to design the junior officer.

404 FLIGHT TRAINING. No credit. This elective is offered at no cost to qualified students concurrent with flying training for the Reserve. This course is the same as for the four year program. Application in small unit operations. Army leadership and management laboratory consists of practical work in instructing and directing small units and other exercises designed to develop the junior officer.

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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 professionals that fall under 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 welfare professions; 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 requirements listed earlier in the catalog, 45 credits in social welfare courses are required to receive 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 work, must be taken. Students are urged to take a variety of courses in the social and behavioral sciences. Two quarters of English composition are required. Students scoring at or above the 93rd percentile on the ACT English examination will be exempt from this requirement. Those at or below the 31st percentile must pass English 001 before entering English 100. Students who demonstrate in departmental course work a standard proficiency will be exempt from this course work. In addition, two quarters of English composition are required. Members of the departmental staff are prepared to advise and counsel students who wish to plan their lives of individuals, small groups, and complex organizations.

SOCIAL WORK CERTIFICATION SEQUENCE. The Social Work Certification Sequence is a specialized program designed to prepare students for employment as social work professionals and for graduate education in social work. The certificate is awarded to students upon completion of the requirements for a baccalaureate degree and the following special requirements: SW 181, 200, 340-341, 342, 344, 350, 351, 354, 375, 380, 390, 391, 392, 480, 485, 502, 530, 550, and 530. The certificate is offered in social welfare.

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FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTORY SOCIOLOGY 5.

102 SOCIAL PROBLEMS 5.

200 AMERICAN SOCIETY 5 prereq 5 credits in sociology or c/i. Structure and function of contemporary American society.

201 SOCIAL SCIENCE METHODS 5 prereq 10 credits in social sciences. The methodology, techniques and instruments of measurement used in the social sciences.

204 COURTSHIP AND MARRIAGE 2. Factors in courtship and marriage. (Credit not allowed toward a degree in sociology.)

205 ELEMENTARY SOCIAL STATISTICS 5 prereq Math 601 or exemption by examination and 5 credits in sociology or c/i. Simple statistics and graphic techniques commonly used in the social sciences. Credit not allowed for this course and Psych 220 or BAd 250.

207 INTRODUCTION TO SOCIAL CHANGE 5 prereq 5 credits in sociology or c/i. Analysis of creation and development of social organizations and relationships.

208 SOCIAL PSYCHOLOGY (SOCIOLOGICAL) 5 prereq 5 credits in sociology or c/i. The major theories of the community from Toennies to the present. The rise and development of social interaction. The spatial patterns of human communities.

216 FIELD WORK PRACTICUM 2. Factors in interviewing related to actual research programs. (Prereq: 3 credits in sociology or c/i.)

217 CRITIQUE OF SOCIOLOGY 5. The major theoretical and empirical contributions to sociology. Special emphasis on graduate school and professional orientations. (Credit not given for both Soc 270 and Anth 270.)

218 INTERANALYSIS AND INQUISITION 5. The criteria for social science theses and dissertations. (Credit not given for both Soc 280 and Anth 280.)

219 INDEPENDENT STUDY V 1-2 R-6 prereq c/i.


403 INDEPENDENT STUDY V 1-2 R-6 prereq c/i.

FOR UNDERGRADUATES AND GRADUATES

302 SOCIAL STRATIFICATION 3 a/y prereq 10 credits in sociology or c/i. The class system in contemporary society. The role of social class theory, class behavior, and current research in social stratification in American society.

304 POPULATION 4 prereq 10 credits in social sciences. A quantitative and qualitative analysis of world population; vital statistics and population change; migration and immigration.

305 THE FAMILY 5 prereq 10 credits in sociology or c/i. Comparative, historical and analytical study of the family.

306 CRIMINOLOGY 5 prereq 10 credits in sociology or c/i. The causes, control, correction, and prevention of crimes.

307 SOCIALIZATION 3 prereq 10 cr. In Sociology Including 208 or c/i. Processes and products of social learning.

308 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 208 and Anth 208.)

309 INTRODUCTION TO COMPLEX ORGANIZATIONS 4 prereq 10 credits in sociology or c/i. Bureaucracies and bureaucratization in modern society.

310 DEVELOPMENT OF SOCIAL THOUGHT 5 prereq 10 credits in sociology or c/i. Social thought from earliest times to the establishment of sociology.

311 (S W 381) JUVENILE DELINQUENCY 5 prereq 10 credits in sociology or c/i. Nature and extent of the problem. The role of courts, social agencies, and schools in its prevention and treatment.

312 URBAN SOCIOLOGY 4 a/y prereq 10 credits in sociology or c/i. The rise and development of cities; social organization of the city; problems of urban communities.

313 RURAL SOCIOLOGY 4 Su 3 a/y prereq 10 credits in sociology or c/i. Organization and social relationships of rural life; the rural community, problems of rural life. Special emphasis on Montana and the Northwest.

314 FIELD OBSERVATION 3 prereq 10 credits in sociology or c/i. Interviewing procedures and social science research guided experiences in interviewing related to actual research programs.

315 HUMAN ECOLOGY 3 prereq 10 credits in sociology or c/i. The organization of population and land units through processes of social interaction. The spatial patterns of human communities.

316 SOCIOLOGY OF EDUCATION 5 prereq 10 credits in sociology or c/i. A sociological consideration of the structure and operations of the American educational system.

317 THE COMMUNITY 3 prereq 10 credits in sociology or c/i. The major theories of the community from Toennies to the present with emphasis on the patterns of social organization and change.

318 CULTURE AND PERSONALITY (See Anthropology)

371 PROBLEMS IN SOCIAL ORGANIZATION V R-15 prereq 15 credits in sociology or c/i. Topics of current interest in sociology.

390 FOUNDATIONS OF MODERN SOCIOLOGY 5 prereq 15 credits in sociology including 216 or c/i. Selected sociological problems arising from the theories of Durkheim, Weber, and contemporary writers.

392 INSTITUTIONAL DYNAMICS 3 prereq 15 credits in sociology including 207, or c/i. Interrelationships of institutions in process of change.

404 COLLECTIVE BEHAVIOR 3 a/y prereq 15 credits in sociology including 208 or c/i. Theories relating to mass social behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

405 SOCIOLOGY OF WORK 5 prereq 15 credits in sociology or c/i. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

406 MEDICAL SOCIOLOGY 5 prereq 15 credits in sociology or c/i. The sociological analysis of medical phenomena in terms of such sociological concepts as complex organization, adult socialization, institutions, and social change.

407-408-409 SEMINAR V 2-5 R-10 prereq 15 credits in sociology or c/i. Enter any quarter. (Topics vary.)

410 PENOLOLOGY 5 a/y prereq 15 credits in sociology including 306 or 311 or c/i. Theory and practice of penal methods in correctional institutions. Probation and parole.

411 PERSONALITY AND SOCIAL STRUCTURE 3 prereq 15 credits in sociology including 208, or c/i. The major theoretical links between structural features of society and the concept of personality, 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 sociology or c/i. Processes and consequences of social change in urban industrial society.

506 (411) ADVANCED GENERAL SOCIOLOGY 4 prereq 401 and graduate standing in sociology or c/i. Review and analysis of major sociological theory and research.

507-508-509 SEMINAR V R-15 prereq graduate standing in sociology or c/i. (Topics vary.)

507-508-509 SEMINAR IN URBAN STUDIES 3 prereq graduate standing in sociology or c/i. Selected topics in urban affairs. (Also listed as Pol. Sci. 587-588-589.)

509 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and consent of department chairman. Supervised internships.

509-509-509 SEMINAR V R-15 prereq graduate standing in sociology 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-9 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 communication emphasize theoretical conceptions of the nature, production, use, and role of messages in life and society; and applications of these conceptions to interpersonal, public and organizational communication.

Undergraduates are awarded the Bachelor of Arts degree in Speech Communication, but may select one of several emphases, depending upon their interests. Students interested in teaching may select either the Teaching Communication Skills emphasis or the Teaching Speech Communication Education emphasis; students interested in entering business, industry, 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).
### SPEECH COMMUNICATION—75

#### Freshman

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<th>Major</th>
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<tbody>
<tr>
<td>Engl 100—Lower Division Composition</td>
<td>3</td>
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<tr>
<td>SpCo 110—Introduction to Interpersonal Communication</td>
<td>3</td>
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</table>
| SpCo 112—Argumentation | 5
| SpCo 118—Oral Expression | 3 |

#### Sophomore

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<tr>
<td>SpCo 314—Discussion and Small Groups</td>
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<tr>
<td>Jour 333—Magazine Article Writing</td>
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<tr>
<td>SpCo 333—General Semantics</td>
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<td>SpCo 335—Message Composition</td>
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<td>SpCo 355—Message Composition</td>
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<td>SpCo 371—Structure of Modern English</td>
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<tr>
<td>Jour-Educ 318—School Publications and Teaching Methods</td>
<td>3</td>
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<tr>
<td>SpCo-Educ 424—Methods of Teaching Communication Skills</td>
<td>3</td>
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<tr>
<td>SpCo 443—Advanced Public Speaking</td>
<td>3</td>
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<tr>
<td>SpCo 444—Rhetorical Theory</td>
<td>3</td>
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<tr>
<td>Engl 450—Advanced Composition</td>
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</table>

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 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.

### 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. The 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 applications 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) prereq 111. Practice in preparation, delivery and criticism.

225 INTRODUCTION TO THE PROCESS OF COMMUNICATION 5 (3-6). Major concepts and principles relevant to the nature and use of signs and symbols in the total process of communication.

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

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

313 CONFERENCE LEADERSHIP 2. Methods and procedures of conducting meetings, including the use of parliamentary procedure.

314 (214) DISCUSSION AND SMALL GROUPS 3. The processes involved in informal small-group interaction. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4. Theory and research on questions of intraorganizational communication problems.

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

335 MESSAGE COMPOSITION 3. The influence of language and language habits on perception, evaluation and decision; particular attention to the concepts of structure and meaning.
FOR UNDERGRADUATES AND GRADUATES

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 422.

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.

452 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 CONTemporary MESSAGE STRATEGIES 3 a/y prereq c/i.

553 SEMINAR: RHETORIC AND PUBLIC COMMUNICATION 3 a/y prereq c/i.

571 SOCIOGRAMA 3 a/y c/i.

588 COMMUNICATION PRACTICES 3. (See Business Administration.)

597 RESEARCH METHODS AND MATERIALS 5 prereq Statistics. Principles and techniques of quantification and design in communication research. Practice in the techniques of professional writing.

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

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.

SPEECH PATHOLOGY AND AUDIOLOGY

represents an integration of disciplines among social and life sciences concerned with the processes by which people communicate and with difficulties arising in these processes. Study in this field is designed to provide a deeper understanding of the processes, resources, facilities and disabilities of human communication.

Although students take the Bachelor of Arts degree in Speech Pathology and Audiology, this is a pre-professional degree and is not intended to prepare a student for employment in the field. For students intending to engage in professional clinical work, it is recommended that requirements for clinical certification by the American Speech and Hearing Association be met. Persons receiving the degree, Master of Speech Pathology and Audiology, meet all requirements for a Certificate of Clinical Competence; persons receiving the Master of Arts degree in Speech Pathology and Audiology may or may not meet certification requirements depending on their professional goals. Professional employment opportunities for persons receiving graduate degrees in Speech Pathology and Audiology include clinical service centers, hospitals, public schools, health departments, colleges and universities, industrial programs, research centers, and private practice.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements listed earlier in the catalog, the student must complete a minimum of 48 credits and not more than 70 credits in Speech Pathology and Audiology. All students majoring in the Speech Pathology and Audiology program are required to complete a core curriculum as follows: Speech Pathology and Audiology 100, 101, 119, 202, 235, 236, 322, 323, 341, 346, 350, 363, 383 (4 credits); SPA 430, 480, 484, 485 level 9 additional credits: Anthropology 160 or 153; English 450 or Speech Communication 335; Sociology 101; Psychology 110 and 206; Speech Communication 111; Zoology 202; 5 credits each in Child Development, Philosophy and Statistics; 6 credits other than 111 and 355 in Speech Communication.

SUGGESTED PROGRAM FOR UNDERGRADUATES

<table>
<thead>
<tr>
<th>Year</th>
<th>Electives</th>
<th>Crs 1</th>
<th>Crs 2</th>
<th>Crs 3</th>
<th>Crs 4</th>
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<tr>
<td>Freshman</td>
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<tr>
<td>English Composition</td>
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<tr>
<td>Soc 101</td>
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<tr>
<td>Philosophy</td>
<td>5</td>
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<td></td>
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<tr>
<td>Math 119</td>
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</tr>
<tr>
<td>Zool 202</td>
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<td>SPA 232, 235, 236</td>
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<tr>
<td>Math 120</td>
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<td>Junior</td>
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<td>SPA 337, 380, 481</td>
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<td>SPA 341, 413, 414</td>
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<td>SPA 383, 435</td>
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<tr>
<td>SPA 331, 3PCo electives</td>
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<tr>
<td>Senior</td>
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<td>SPA 482, 450</td>
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<td>Psych 220 or Soc 206</td>
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<td>Electives including 9 credits in SPA</td>
<td>14</td>
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</tbody>
</table>

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
SPEECH PATHOLOGY AND AUDIOLOGY—77

University does not offer a degree in linguistics, a concentration in linguistics is available to majors or c/i. The major student will 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, Psychology, 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, 232. 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 communication problems common to 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, psychic conditions, and socio-cultural differences between speakers and listeners.

338 CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS 5 (3-1) prereq 235 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 prereq 336 or c/i. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

342 DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS II 2 (4-4) prereq 341. Supervised clinical practice in the out-patient clinic.

351 DEVELOPMENTAL SEMILOGY 3 prereq SPA 119, 232. Characteristics and determinants of the sign process associated with the main stages in human development through the life span.

350 CLINICAL AUDIOLOGY 3 (3-1) prereq c/i. 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 (2-2) 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 psychological factors.

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.

444 ARTICULATION: ACQUISITION AND DISORDERS 4, prereq 235. Acquisition of articulatory behavior in children's language; types, causes, and remediation of disorders.

455 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.

456 VOCAL BEHAVIOR AND DISORDERS 3 prereq 235. Functional and organic therapeutic techniques aimed at remediation for efficient use.

457 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. Anaatomic, physiologic, and neural 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 SEMILOGY 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 otologic diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.

482 REHABILITATION OF THE HEARING HANDICAPPED 3 (3-1) prereq 380. Speech reading, auditory training, hearing aid fitting and evaluation, speech habilitation and conservation in children and adults; relationships with education and vocational counseling.

490 PROBLEMS V R-6 prereq c/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 PSYCHOCOUSTICS 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.

535 PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V (6-2) R-6 prereq 435.

536 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/i.

537 SEMINAR: ANATOMICAL DEFECTS OF SPEECH 3 prereq c/i.

538 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.

550 SEMINAR: MEDICAL ASPECTS OF COMMUNICATION DISORDERS I 3 c/i. Discussion of the medical aspects of communication disorders with participation of a number of medical specialists.

553 ADVANCED CLINICAL AUDIOLOGY 3 (3-1) prereq 481. Noise measurement, exposure, and control; hearing conservation in industry; architectural acoustics surveys; experimental clinical procedures; administrative aspects of audiological services.

584 INSTRUMENTATION FOR AUDITORY REHABILITATION 3 (3-1) prereq 456. 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 audiosensory 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.

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 faculty 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.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student should elect four years of mathematics in high school, 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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<tr>
<td>Botany 114 - General Botany</td>
</tr>
<tr>
<td>*Chem 101, 102, 105 - General, Survey, Organic</td>
</tr>
<tr>
<td>Chem 104, 105, 164 - Lab</td>
</tr>
<tr>
<td>**Math 107, 108, 109 - Biology for Scientists</td>
</tr>
<tr>
<td>Zool-Bot-For 170 - Survey of Wildlife Careers</td>
</tr>
<tr>
<td>Engl 100 - Lower Division Composition</td>
</tr>
<tr>
<td>Electives</td>
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TERRESTRIAL OPTION

Sophomore Year

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<th>Course</th>
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<tbody>
<tr>
<td>Zoology 113, 112 - General Zoology</td>
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<tr>
<td>Botany 235, 236 - Plant Physiology, Local Flora</td>
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<tr>
<td>SPC 111 - Introduction to Public Speaking</td>
</tr>
<tr>
<td>Bot-Zool 250 - Basic Concepts of Ecology</td>
</tr>
<tr>
<td>Bot-Zool 251 - Ecology Lab</td>
</tr>
<tr>
<td>Phys 111 and 112 or 113 - General Physics</td>
</tr>
<tr>
<td>Electives</td>
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<td>Total</td>
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Junior Year

<table>
<thead>
<tr>
<th>Course</th>
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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>
</tr>
<tr>
<td>Forestry 360 - Range Management</td>
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<tr>
<td>Math 125 or Math 244, 246 - Statistical Methods</td>
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<td>Electives</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>For 470, 471, 472 - Adv. W.L., Big Game, Habitat</td>
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<tr>
<td>Botany 355 - Plant Ecology</td>
</tr>
<tr>
<td>Zoology 360 - Community Ecology (Recommended)</td>
</tr>
<tr>
<td>Zool-Bot-For 491, 492, 493 - Senior Wildlife Sem</td>
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<td>Electives</td>
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<td>Total</td>
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AQUATIC OPTION

Sophomore Year

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<tbody>
<tr>
<td>Zool 113, 112 - General Zoology</td>
</tr>
<tr>
<td>Botany 235 - Plant Physiology</td>
</tr>
<tr>
<td>SPC 111 - Introduction to Public Speaking</td>
</tr>
<tr>
<td>Bot-Zool 250 - Basic Concepts of Ecology</td>
</tr>
<tr>
<td>Bot-Zool 251 - Ecology Lab</td>
</tr>
<tr>
<td>Math 126 or Math 344-345</td>
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<tr>
<td>Physics 111 and 112 or 113</td>
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<td>Electives</td>
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Junior Year

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Zool 310 - Ichthyology</td>
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<td>Zool 360, 361 - Cellular Phys., Comp. Phys.</td>
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<tr>
<td>Chemistry 245, 246 - Quantitative Analysis, Lab</td>
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<td>Botany 355 - Plant Ecology</td>
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<tr>
<td>Botany 265 - Local Flora</td>
</tr>
<tr>
<td>Forestry 365 - Hydrologic Principles</td>
</tr>
<tr>
<td>For 320 or Jour 334 - Technical Writing</td>
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<tr>
<td>Electives</td>
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<td>Total</td>
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</tbody>
</table>

One summer at the University of Montana Biological Station (or other station) enrolled in Zoology 461, Limnology, and one of the following three courses: Zoology 366, Aquatic Insects; Botany 368, Aquatic Flowering Plants; Botany 441, Physiology. This summer could be taken either after the junior year or the senior year.

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Zoology 366 - Aquatic Insects</td>
</tr>
<tr>
<td>Zoology 413 - Fisheries Science</td>
</tr>
<tr>
<td>Zoology 350 - Population Ecology (Recommended)</td>
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<tr>
<td>Zoology 360 - Community Ecology</td>
</tr>
<tr>
<td>Zoology 405 - Animal Behavior</td>
</tr>
<tr>
<td>Zool-Bot-For 491, 492, 493 - Senior Wildlife Sem</td>
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<tr>
<td>Electives</td>
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<td>Total</td>
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</tbody>
</table>

WILDLIFE HONORS OPTION

Honors students must complete either For 470, 471, 472 or Zool 310, Zoal 461, and Zool 411 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, 303; Econ 211, 212; For 310, 310c, 380, 381, 381, 380, 480, 491, 492, 493; Geog 360, 370; Geol 101, 102, 130, 200; Micro 200; Math 246, 349; Pol Sci 362, Bot; Zoal 363, 364, 404.

**Students desiring more thorough preparation in Chemistry should elect Chem 121, 122, 129, 280, 291.

**Students desiring more thorough preparation in mathematics should elect Math 121, 123, 125, 281, 291.

ZOLOGY

is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.

In addition to the Bachelor's degree, the Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and environmental 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 BIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: at least 45 credits including the following—Zoology 111, 112, 113, 250, and 330 or 331; 204 or 404; 306, 308, 309, or 310; 325 or 326; 330 or 360; 402; and 485.

In addition, the following must be completed: Botany 114, 115; Chemistry 101, 102, 104 and 105, 106, 104, or 121, 122, 123, and 124, 125, 126; Mathematics 107, 108, 109; Physics 111, 112, 113, or 121, 122, 123.

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 the sciences.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 36 credits in Zoology or related fields as follows: Zoology 111, 112, 113, 250, 306, 308, 309, 310, 325, 330, 360, 365, 366, 461; any one course from Microbiology of Animal and Botany or one course from Zoology 303, 304, 305, 313, 325, 340, 341.

Senior examinations are given only to candidates for honors. GRADUATE WORK. See Graduate School Bulletin.

SUGGESTED CURRICULUM IN BIOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>English 100—Lower Division Composition</td>
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<tr>
<td>Math 107, 108, 109—Mathematics for Biological Sciences</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 111, 112—Introduction to Biology, General Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Social Sciences, or Humanities, or Physical Education</td>
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<tr>
<td>4 or 7 or 6 or 7</td>
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Sophomore Year

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>English 101-102-160—General Chemistry</td>
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<tr>
<td>Chemistry 121-122-123—College Chemistry</td>
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<tr>
<td>Foreign Languages 101-R, 102-R, 103-R</td>
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</tr>
<tr>
<td>Electives</td>
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<tr>
<td>Zoology 250—Basic Concepts of Ecology</td>
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</tr>
<tr>
<td>Zoology 251—Elementary Zoology Laboratory</td>
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Junior Year

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>English 101-102-160—General Chemistry</td>
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</tr>
<tr>
<td>Foreign Language—Advanced Courses</td>
<td>4 or 4</td>
</tr>
<tr>
<td>Physics 111-112-113 or 201-222-223—General Physics</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 230—Biological Literature</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Zoology Courses</td>
<td>5-10</td>
</tr>
<tr>
<td>Electives</td>
<td>5-10</td>
</tr>
<tr>
<td>11-18 15-18 15-18</td>
<td>16-17</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-160—General Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>Botany 114, 115—General Botany</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Zoology Courses</td>
<td>5-10</td>
</tr>
<tr>
<td>Electives</td>
<td>7-12</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

Courses also offered at Biological Station (*Courses only at Biological Station): 308, 360, 365, 366, 368, 371, 382, 395, 402, 403, 411, 420, 425, 426, 545, *461, 600, 698.

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 verterbrates. (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 cell biology, cellular metabolism and genetics, primarily invertebrates and vertebrates. Credit not allowed for this course and Botany or Zoology 111.

132 EVOLUTION, GENETICS AND MAN 3 prereq Gen 131 or =. Evolution; especially as related to man and including evidence, mechanisms, genetics, nature of hereditary material and adaptation. Not counted toward a major in Botany, Microbiology or Zoology.

FOR GRADUATES

FOR UNDERGRADUATES AND GRADUATES

101 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) a/y prereq 325, 329. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

103 ANIMAL PARASITOLOGY 5 (3-4) e/y prereq Zool 112-113. Parasitism as a biological phenomenon, origin of parasitism, adaptations and life cycles, parasites and their environment, host parasite interrelationships, and parasite metabolism will be emphasized.

104 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates.

105 ANIMAL MICROTECHNIQUE 5 (2-6) prereq 161. Preparation of animal specimens and squashing of remaining whiteworms, paraffin sectioning, frozen sections with clinical and morphological Cryorfast microtome, polyester embedding and histochemical methods. A basic introduction to these techniques will be shown at the beginning of the course. May be taken concurrently with 103.

106 HERPETOLOGY 3 (2-2) o/y prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

107 AQUATIC BIOLOGY 5 (3-7) prereq 206 and 265. The biology of fresh waters with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. 108. The structure and function of aquatic organisms below vertebrae. 109. The taxonomy, distribution and taxonomic position of aquatic organisms below vertebrae.

130 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.

131 MAMMALOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. 132. Field trips.

130 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.

132 (305) VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic animal cytology, tissue types and organology are studied. May be taken concurrently with 305.

131 PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoa.

132 INVERTEBRATE ZOOLOGY I 5 (3-4) prereq 112. Structure, function, and phylogeny of the lower phyla. 133. The taxonomy, distribution, and phylogeny of the higher invertebrates.

132 INVERTEBRATE ZOOLOGY II 5 (3-4) prereq 112. The life processes of the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 350.

131 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.

131-341 MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three courses of college chemistry, including labs. (341) General physiological properties of protoplasm; blood; body temperature regulation; respiration and excretion. (341) Digestion, nutrition and intermediary metabolism; excretion, conduction, response, responses; endocrine and cranial functions.

130 POPULATION ZOOLOGY 5 (3-4) prereq 111, 112, 113, 250, College Calculus, Statistics. The dynamics of animal populations including techniques for studying populations, patterns of population change and population models.

130 COMMUNITY ECOLOGY 5 (3-4) prereq 111, 112, 113, 250, College Calculus, Statistics. The structure and function of communities including production, food webs, nutrient cycling, diversity and stability.

130 ECOMORPHOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.

170 SURVEY OF WILDLIFE CAREERS 1 (1-0) (same as Forestry and Botany 170).

202 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion 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 (2-0) prereq one year of college biology. Ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Bot 250.)

251 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq or coreq 250. Population growth and competition, community structure and interrelationships with environmental factors. Field work included. (Credit not allowed for this course and Bot 251.)
403 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 485.)

404 (302) VERTEBRATE EMBRYOLOGY 5 (3-2) 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.

413 FISHERY SCIENCE 3 (3-6) prereq 307, 310. The problems involved in investigating 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.

433 PROBLEMS IN VERTEBRATE ECOLOGY 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.

434 PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY 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 INVERTEBRATE 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 100, 104. Same as Botany 437.

442 BIOLOGY OF FOREST INSECTS 3 (3-0) prereq Zool 113. Biology and biornomics 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 biochemical and biometric structure of populations. The influences of changes: rational basis of control including principles of biological control.

450 MARINE INVERTEBRATES 3 (1-5) prereq 436, a problem type course in the biology, systematics and ecology of marine invertebrates with particular reference to habitat niche of the animals of the Pacific Coast. (A 5-day trip to coast of Oregon or Washington required.)

461 LIMNOLOGY 6 (5-25) prereq 113 and Chem 123, 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 considerations 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 =. The structure and design of chromosomes from bacteria to higher organisms. Chromosome behavior and changes and their role in development and evolution. Same as Botany 487.

488 POPULATION AND ECOLOGICAL GENETICS 5 (5-0) prereq Bot 485 or =. 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 1 (3-0) o/y prereq 25 hours in zoology including 250 and 485. Selected topics relating to evolution, speciation and the various philosophies influencing systematic zoology.

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 RADIATION BIOLOGY 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-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 major invertebrate phyla in relation to environment.

532 (402) COMPARATIVE PHYSIOLOGY-VERTEBRATE 5 (3-4) prereq Physics 113 or 223, Chem 212, 215 and one animal physiology course. Physiological processes of the organ systems of the five vertebrate classes in relation to environment.

533 (333) ENDOCRINOLOGY 5 (3-4) prereq Zool 113 and one animal physiology course. The physiology of the glands of internal secretion of the vertebrates with a survey of those of the invertebrates.

590 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Botany, Chemistry, and Microbiology.)

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

685-686-687 ADVANCED MOLECULAR BIOLOGY LABORATORY 1-2-3 prereq Chemistry 160 or c/i. Laboratory biochemically oriented research techniques. (Same as Botany, Chemistry, Microbiology and Pharmacy.)

699 THESIS V R-15.
1970 faculty directory ...

ACHESON, JOHN P., LL.B., University of Montana; Associate Professor of Law (deceased 5-12-71)

ADAMS, HARRY F., M.S., University of Washington; Head Track Coach Emeritus; Professor Emeritus of Health and Physical Education

AHNMARK, ROBERT, M.A., Adams State College; Instructor in Education (part-time)

ALEXANDER, PAUL B., Ph.D., University of Oregon; Lecturer in Geography (Faculty Affiliate)

ALLEN, CHARLES K., Ph.D., Ohio State University; Associate Professor of Psychology

ALLEN, RALPH, L.S., Oregon State University; Assistant Professor of Education

ALLEN, RICHARD W., M.A., University of Montana; Assistant Professor of Education (Faculty Affiliate)

ALT, DAVID D., Ph.D., University of Texas; Assistant Professor of Philosophy

AMMONS, ALICE A., M.A., University of Montana; Assistant Professor Emeritus (Instructor Emeritus)

ANDERSON, JOHN P., B.A., University of Montana; Assistant Professor Emeritus, President's Office

ANDREWS, JOANNE H., B.S., University of Montana; Instructor in Home Economics

ATHOWE, JOHN M., Jr., Ph.D., Stanford University; Professor of Psychology (Faculty Affiliate)

AURO, A. RUDY, M.P.A., Washington State University; Professor of Art

BAILEY, HAROLD, Ph.D., Ohio State University; Chairman and Professor of Psychology

BAILEY, E. JOHN, B.A., University of Montana; Controller Emeritus (Professor Emeritus)

BAKER, EDSON, D.B., Purdue University; Assistant Professor of Speech Communication

BALLARD, WILLIAM R., Ph.D., University of Chicago; Professor of Mathematics

BANNAUGH, ROBERT P., Ph.D., University of California; Director of the Computer Center; Chairman and Professor of Computer Science

BARKLEY, JOAN, B.A., University of Montana; Assistant Professor Emeritus (Instructor Emeritus)

BAUGHMAN, ROBERT L., M.A., University of Montana; Research Associate Emeritus (Faculty Affiliate)

BAUMAN, THOMAS D., B.A., University of Montana; Assistant Professor of Anthropology

BETTY, JULIA A. (Mrs.), M.A., University of Michigan; Assistant to the Dean of Students (11-25-70 to 6-30-71)

BHADRAK, NAGENDRA, Ph.D., Poona University; Research Associate in Forestry and Chemistry

BIER, JESSE, Ph.D., Princeton University; Professor of English

BLEEKEY, BRUCE M., M.A., Yale University; Instructor in English

BLOCH, RICHARD W., M.A., University of Montana; Instructor in Mathematics

BLYTHE, JOHN (Mrs.), B.A., University of Texas; Assistant Professor of Foreign Language

BORSHEK, MAXINE (Mrs.), M.A., University of Montana; Assistant Professor of Art

BRACKMANN, ROBERT J., Ph.D., Iowa State University; Resident Administrator and Visiting Professor, Minuteman Education Program (Malmstrom Air Force Base)

BOWMAN, DEAN J., M.S., Colorado State University; Instructor in Sociology (part-time)

BOYD, LANCE R., M.F.A., University of Montana; Instructor in Music (part-time)

BRADBURY, GEORGE J., Ph.D., University of Illinois; Professor of Business Administration (Management)

BROMBERG, ARTHUR P., M.S.F., Oxford University; Professor of Foreign Languages

BROOKE, CHARLES P., M.D., St. Louis University School of Medicine, J.D., University of Montana; Lecturer in Law (part-time) (1st Semester)

BROWN, GORDON, Ph.D., University of North Carolina; Professor of Sociology (Executive Director of the Institute for Social Science Research)

BROWNS, GAYL, B.A., University of Montana; Assistant to the Dean

BRUNSON, ROYAL B., Ph.D., University of Michigan; Professor of Zoology

BRYAN, CHARLES A., Ph.D., University of Arizona; Associate Professor of Mathematics

BRYAN, GORDON H., Ph.D., University of Maryland; Professor of Pharmacology

BUBBS, HENRY G., Ph.D., University of California; Chairman and Professor of Philosophy

BUROW, MARIA (Mrs.), M.A., University of Montana; Assistant Professor of Health, Physical Education and Recreation

BUNN, DONALD L., M.F.A., University of Washington; Assistant Professor of Art

BURGOS, WILLY, Ph.D., University of Basel, Switzerland; Lecturer in Zoology (Faculty Affiliate)

BUSSELL, MARVIN M., Ph.D., University of California at Los Angeles; Professor of Foreign Languages
GUY, DONALD C., Ph.D., University of Illinois; Visiting Associate Professor of Business Administration, Minuteman Education Program (Faculty Affiliate)

HABECK, JAMES R., Ph.D., University of Wisconsin; Professor of Botany

HADDON, SAM E., J.D., University of Montana; Lecturer in Law (part-time)

HAISER, HARRY A., J.D., University of Montana; Lecturer in Law (part-time)

HAINSWORTH, BRAD E., Ph.D., University of Utah; Assistant Professor of Political Science (on leave, 1-1-71 to 11-1-71)

HALFORD, LARRY J., B.S., University of Montana; Instructor in Sociology and Social Welfare (part-time)

HALL, GREGORY M., B.S., University of Montana; Instructor in Psychology

HALL, JAMES F., Ed.D., University of Montana; Coordinator of Extension and Continuing Education; Assistant Professor of Education

HALVORSON, CURTIS H., B.S., University of Wisconsin; Research Associate in Forestry (Faculty Affiliate)

HAMMEL, OSCAR J., Ph.D., University of Wisconsin; Professor of History

HAMILTON, H. DICE, Ph.D., University of Colorado; Associate Professor of History

HANNAN, WILLIAM T., Jr. (Major), B.S., State University of New York Marine College; Associate Professor of Military Science (Faculty Affiliate)

HANSEN, DANIEL L., M.S., Michigan State University; Instructor in Mathematics (part-time)

HANSEN, KURT A., M.A., University of Montana; Instructor in Foreign Languages

HARDMAN, DON, M.P.H., University of Montana; Assistant Professor of Education (Faculty Affiliate)

HARDY, CHARLES E., M.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

HARDY, MABEL G. (Mrs.), M.A., University of Montana; Instructor in Sociology and Social Welfare (part-time)

HARRIS, JOHN T., Ph.D., University of Montana; Associate Professor of Forestry

HART, RAY L., Ph.D., Yale University; Chairman and Professor of Economics

HARTONG, ALLAN L., M.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

HARVEY, LesRoy H., Ph.D., University of Michigan; Professor of Botany and Curator of the Herbarium

HARVEY, MARIA (Mrs.), M.A., University of Michigan; Lecturer in Foreign Languages

HATCHER, Karin A. (Mrs.), M.S., University of Wisconsin Library School; Assistant Catalog Librarian (Instructor)

HAYDN, DONALD C., A.M., University of Oklahoma; Instructor in Foreign Languages

HAWK, ROBERT G., B.S., University of Montana; Research Associate in Forestry (Faculty Affiliate)

HAY, JOHN G., M.A., University of Wisconsin; Instructor in Foreign Languages

HAYDEN, RICHARD J., Ph.D., University of Chicago; Professor of Physics and Astronomy

HAYES, LOUIE D., Ph.D., University of Arizona; Assistant Professor of Political Science (on leave, 1970-71)

HEBER, GEORGE B., B.S., University of Michigan; Professor of Economics (Sabbatical leave, 1970-71)

HEBNER, JOHN M. (Lt. Colonel), B.G.E., University of Montana; Deputy Director of Military Science (Faculty Affiliate)

HEIDEMANN, Peter D., Michigan State University; Associate Professor of Psychology

HENDERSHOT, DOROTHY L., M.S., University of Tennessee; Associate Professor of Home Economics

HENDRICKSON, MASON E., Ph.D., Oregon State University; Associate Professor of Mathematics

HENDRICKSON, JOHN H., M.M., University of Oregon; Campus Service Coordinator of Instructional Materials Service (Assistant Professor)

HENNINGSEN, FREDERICK A., M.A., University of Montana; C.P.A., Montana; Professor of Business Administration (Accounting and Finance (Business Administration)

HENNINGSEN, FREDERICK A., M.A., University of Montana; C.P.A., Montana; Professor of Business Administration (Accounting and Finance (Business Administration)

HENRY, STEPHEN S., M.A., University of Montana; Operations Manager of Computer Center; Instructor in Computer Science

HENDRICKSON, CHARLES E., M.P.H., University of Montana; Professor of Physical Education and Recreation

HERBERT, DONALD J., M.A., University of Oregon; Visiting Lecturer in Political Science (Winter and Spring Quarters)

HESLER, CURTIS J., M.B.A., University of Montana; Instructor in Management

HERZ, PHILIP J., M.A., State University of Iowa; Chairman of Radio-Television; Associate Professor of Journalism

HEWITT, GLORIA C., Ph.D., University of Washington; Associate Professor of History

HICKS, BRADLEY A., B.S., Montana State College; Visiting Assistant Professor of Home Economics

HICKS, MARY J., B.S., Montana State College; Director of Head Start Supplementary Training Program, Instructor in Education (part-time)

HILL, FRANCES A., Ph.D., Ohio State University; Associate Professor of Psychology

HILL, WALTER E., Ph.D., University of Michigan; Assistant Professor of Mathematics

HIRSCH, STANLEY N., B.S., University of New Mexico; Research Associate in Forestry (Faculty Affiliate)

HOLTER, LAWRENCE W., M.A., University of Michigan; Associate Professor of Education
KETTLEWELL, NEIL M., Ph.D., Professor of Psychology
JOHNSON, PHOEBE, Associate Professor of Psychology
KING, WALTER N., Ph.D., Yale University
JOHNSON, THOMAS J., Professor of Psychology
JEPPESEN, JENNINGS, Assistant Professor of Psychology
JAMES, JACOBSON, Associate Professor of Psychology
IVAN, TACK, WALTER F. (Captain), Division Coordinator and Associate Professor of Psychology
HUTCHINSON, ERNEST INGHAM, Professor of Psychology
HOOVER, Hoon, Professor of Psychology
HOFMAN, RUDOLPH O., University of Wisconsin; Professor Emeritus of French
HOOVER, Jack L., M.A., Washington State University; Director of Admissions; Assistant Professor of Education
HOOVER, John M., Professor of Art
HOOVER, J. GEORGE, M.A., Columbia University; Professor of Music
HUNT, J. JOHN, J.D., Colorado State College; Division Coordinator and Associate Professor of Education
HUT, LUCIEN (LUTZEN) M.M., Royal Conservatorium, Rotterdam; Assistant Professor of Music
HUTCHESON, EMERIE M., University of Montana; Instructor in Economics (Winter and Spring Quarters)
HYNDMAN, DONALD W., Ph.D., University of California; Associate Professor of Geology
INGRAM, ROBERT E., M.P.A., Yale University; Assistant Professor of Drama
JENSEN, ROBERT S., Ph.D., University of Texas; Assistant Professor of Botany
IVANJACK, WALTER F. (Captain), B.S., University of Illinois; Associate Professor of Military Science (Faculty Affiliate)
JACOBSON, MARK J., Ph.D., University of California; Chairman and Professor of Physics and Astronomy
JAMES, RICHARD E., M.A., Northwestern University; Chairman and Assistant Professor of Drama
JARKA, HORST, Ph.D., University of Vienna; Professor of Foreign Languages ( Sabbatical Leave 1970-71)
JAY, ROBERT H., Ed.D., University of Oregon; Division Coordinator and Associate Professor of Education
JELLE, WILLIAM L., Ph.D., University of Minnesota; Lecturer in Zoology (Faculty Affiliate)
JENKIN, DONALD A., Ph.D., University of Florida; Assistant Professor of English
JENKINS, MARY ANNE, (Mrs.), M.A., University of Florida; Assistant in Mathematics (Fall Quarter) (part-time)
JENNINGS, JOSEPH W., Jr., Ph.D., Michigan State University; Associate Professor of Psychology
JEPPESEN, C. RULON, Ph.D., University of California, Professor Emeritus of Physics and Astronomy
JEPPESEN, RALPH, M.S., University of Illinois; Assistant Professor of Physics and Astronomy
JOHNSON, AGNEE FAYE (Mrs.), M.S.W., National Catholic School of Social Service; Instructor in Sociology and Social Welfare (part-time)
JOHNSON, DALE L., M.A., University of Montana; Archivist, Library (Instructor) (on leave, 9-1-70 to 6-31-71)
JOHNSON, JOHN C., M.S.W., Catholic University of America; Associate Professor of Social Work and Assistant Director of the University Center for Mental Health
JOHNSON, MAXINE C. (Mrs.), M.A., University of Montana; Assistant Director of the Bureau of Business and Economic Research and Associate Professor of Business Administration
JOHNSON, PEOBE, B.A., Valley City State College; Library Associate in Library Service
JORDAN, THOMAS G., Ph.D., University of Chicago; Professor of Management (Business Administration)
JOHNSON, DONALD O., Ph.D., Eastman School of Music, Professor of History
JOHNSON, EUGENE J. (Major), B.A., University of Montana; Associate Professor of Military Science (Faculty Affiliate)
JOHNSON, FRANK R., M.P.A., University of Iowa; Associate Professor of Art
JORDAN, EVAN P., Ph.D., University of Iowa; Associate Professor of Speech Pathology and Audiology
JOURDAN, RICHARD E., Ph.D., University of Wisconsin; Professor of Chemistry
KARLIN, JULES A., Ph.D., University of Minnesota; Professor of History
KATZ, CHARLES J., M.D., Rush Medical College; Director of Mental Health in Student Health Service (Winter and Spring Quarters)
KELLY, EDWARD J., B.A., San Jose State College; Lecturer in Chemistry
KEMPNER, JACOB, Ph.D., Ohio State University; C.P.A., Montana; Chairman and Professor of Accounting and Finance (Business Administration)
KETTLEWELL, NEIL M., Ph.D., University of Michigan; Assistant Professor of Psychology
KING, WALTER N., Ph.D., Yale University; Professor of English
KIRKPATRICK, THOMAS O., Ph.D., Ohio State University; Associate Professor of Business Administration (Management)
KITtridge, WILLIAM A., M.P.A., University of Iowa; Assistant Professor of English
KNIGHT, ARTHUR C., M.D., University of Maryland; Staff Physician, Health Service
KNOWLES, GERHARD M., M.S., University of Montana; Instructor in Business Administration
KOOPR, DONALD B., Ph.D., University of Wisconsin; Chairman and Professor of Business Education and Office Administration (Faculty Affiliate)
KONZIEKES, RICHARD L., Ph.D., University of Chicago; Professor of Forestry
KORDON, WALTER, Ph.D., University of South Dakota; Assistant Professor of Microbiology
KOTOS, EDWARD S., M.S.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)
KRESS, JOHN P., Ph.D., Yale University; Division Coordinator and Professor of Forestry
KREMEN, JOHN A. (Major), B.S., University of Santa Clara; Associate Professor of Military Science (Faculty Affiliate)
KRUECKER, ROBERT F., M.S., Yale University; Research Associate in Forestry (Faculty Affiliate)
LACKEY, LAWRENCE, B.S., University of Michigan; Professor of Forestry (Faculty Affiliate)
LACKMAN, DAVID R., University of Pennsylvania; Lecturer in Immunology, Department of Microbiology (Faculty Affiliate)
LACKSCHWITZ, GERTRUD (Mrs.), Ph.D., Goettingen University (Germany), Associate Professor of Foreign Languages
LAI, GRACE T. M., University of Washington; Assistant Catalog Librarian in Library Service (Instructor)
LAI, YUAN-ZONG, Ph.D., University of Washington; Research Associate in Forestry and Chemistry
LANDINI, RICHARD G., Ph.D., University of Florida; Academic Vice President, Professor of English
LANFORD, J. RAY, Ph.D., Rice University; Assistant Professor of Philosophy
LANEO, ROBERT W., M.F., Colorado State University; Assistant to the Dean and Associate Professor of Psychology
LAPKIN, PETER P., Ph.D., University of California; Professor of Foreign Languages
LARSEN, HERMAN B., Ph.D., University of Utah; Visiting Professor of Sociology and Social Welfare (part-time) (Fall and Winter Quarters)
LABSON, CARL L., M.D., University of Minnesota; Director of the Stella and Willis Memorial Institute; Professor of Microbiology
LAW, M. JAMES, M.D., Creighton University; Faculty Affiliate in Speech Pathology and Audiology
LAWRY, JOHN F., Ph.D., Harvard University; Associate Professor of Philosophy
LEA, MRS. M., M.Mus., College Conservatory of Music of Cincinnati; Assistant Professor of Music
LEBRET, C. W., S.J.D., Harvard University; Dean Emeritus of the School of Education
LEE, ANDREW E., Ph.D., University of New Mexico; Assistant Professor of Psychology
LEBRE, CYNTHIA J., M.A., University of Maryland; Instructor in Health, Physical Education and Recreation
LESTER, JOHN L., B.Mus., Southwestern University; Acting Dean of Fine Arts and Professor of Music
LEWS, GEORGE D., M.Mus., University of Montana; Associate Professor of Music
LEWS, HARLEY W., M.S., University of Montana; Track and Cross Country Coach and Instructor in Health, Physical Education and Recreation
LEWIS, MARY JEANNE (Mrs.), B.Mus., University of Montana; Lecturer in Music (part-time) and English (part-time)
LEWIS, VANETA (Mrs.), M.Ed., University of Montana; Associate Professor of Home Economics
LEHMAYER-KARLOWITSCH, BEBA, M.A., University of Vienna; Instructor in Foreign Languages
LEINBERG, ZONA, M.S., University of Montana; Instructor in Health, Physical Education and Recreation
LINDSAY, ROBERT O., Ph.D., University of Oregon; Associate Professor of Foreign Languages
LINSLEY, ROBERT C., M.A., Harvard University; Professor Emeritus of Business Administration
LOPES, DONALD O., Ph.D., Montana State University; Associate Professor of Mathematics
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