1969-1970 Course Catalog

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The Montana University System is constituted under the provisions of Chapter 92 of the Laws of the Thirteenth Legislative Assembly, approved March 14, 1913 (effective July 1, 1913). The general control and supervision of the University System are vested in the State Board of Education, ex-officio Regents of the Montana University System. For each of the component institutions there is a local executive board.

MONTANA STATE BOARD OF EDUCATION
Ex-officio Regents of the Montana University System
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The University System comprises the following institutions, schools, and departments:

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

Robert T. Panzer, President

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

Leon H. Johnson, President

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

Stanley J. Heywood, President

NORTHERN MONTANA COLLEGE, HAVRE
Established March 8, 1929, and consisting of
The Division of Education—Elementary, Secondary, Vocational-Technical, and Pre-Professional Courses

Joseph R. Crowley, President

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

E. G. Koch, President

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

James E. Short, President

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

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

use of the catalog...

1. Students should study with care those sections on REGISTRATION AND GENERAL REGULATIONS and on GRADUATION REQUIREMENTS. This information should be reviewed before registration periods.
2. When checking on particular courses, be sure to review COURSE DESCRIPTIONS (see Index).
3. Detailed fall quarter class schedules carry course forecasts for winter and spring quarters, for which detail is usually available by the middle of each preceding quarter.
4. If you have selected a major, study carefully the specific additional requirements for graduation listed under your chosen field. You are responsible for planning your program.
5. When in doubt as to meanings or interpretation of listed information, consult your adviser or department chairman.
Calendar 1969-1970...

UNIVERSITY OF MONTANA

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

1969 AUTUMN QUARTER

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

1970 WINTER QUARTER

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

SPRING QUARTER

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

SUMMER QUARTER

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

AUTUMN QUARTER

September, 21-26, Monday through Saturday..........Orientation
September 24-25, Thursday and Friday...............Registration
September 28, Monday.....................................Instruction begins
November 11, Wednesday................................Veterans' Day, a holiday
November 28, Thursday...................................Thanksgiving Day, a holiday
December 18, 5:20 p.m..................................Autumn Quarter ends

Christmas recess begins

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official directory, 1968-1969...

EXECUTIVE BOARD

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

ADMINISTRATIVE OFFICERS

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Earl C. Low, Ph.D...........................Acting Academic Vice President
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Robert L. Van Horn, Ph.D..........................Dean, School of Pharmacy
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Andrew C. Cogswell, M.A..........................Dean of Student Affairs
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Charles E. How, M.A..........................Director of Placement
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Robert B. Blakey, B.S..........................Director of Food Services
James A. Brown, M.S..........................Coordinator of Student Facilities
Keith T. Larson, B.A..........................Manager of Family Housing
Thomas J. Collins, B.S..........................Director of University of Montana Foundation; Director of Public Services
John L. Delano, B.A..........................Executive Director, Alumni Association
James F. Hall, Ed.D..........................Coordinator, Extension and Continuing Education
James A. Parker, B.S..........................Director of Physical Plant
Lawrence D. Stuart, B.A.........................Director of Information Services
Jack Swarthout, B.A..........................Director of Athletics

THE FACULTY

Alcher, John P., LL.B., University of Montana; Assistant Professor of Law
Adams, Harry F., M.S., University of Washington; Head Track Coach Emeritus; Professor Emeritus of Health and Physical Education
Adams, Alfred C. (Major), M.A., Norwich University; Associate Professor of Military Science (Faculty Affiliate)
Alexander, Paul B., Ph.D., University of Oregon; Assistant Professor of Geography
Allen, Charles K., Ph.D., Ohio State University; Assistant Professor of Psychology
Alt, David D., B.S., University of Texas; Associate Professor of Geology
Ammons, R. B., Ph.D., State University of Iowa; Professor of Psychology
Anderson, C. Leroi, Ph.D., Ohio State University; Associate Professor of Sociology (part-time)
Andersen, Hal E., B.S., Central Washington State College; Research Associate in Forestry (Faculty Affiliate)
Anderson, Homer E., M.A., University of Montana, Director of Admissions (Instructor)
Anderson, Richard, M.B.A., University of Oregon; Instructor in Management (Business Administration) (Winter and Spring Quarters)
Anderson, Robert L., M.Ed., Colorado State University; Assistant Professor of Education
Anderson, Robert N. (Capt.), B.A., University of Wyoming; Assistant Professor of Aerospace Studies (Faculty Affiliate)
Andre, Eugene, M.A., University of Washington; Professor of Music
Arnold, Morton L., Ph.D., University of Wyoming; Associate Professor of Social Welfare
Armstrong, Lucille J. (Mrs.), B.A., University of Montana; Assistant Professor Emeritus, President's Office
Arnold, Arlen F., M.A., State University of Iowa; Professor of Art
Arnt, Abigail, B.A., Skidmore College; Visiting Lecturer in Drama
Autio, A. Rudy, M.F.A., Washington State University; Acting Chair, Department and Professor of Art
Barb, Harold, Ph.D., Ohio State University; Chairman and Professor of Psychology
Bangs, E. Ker, B.A., University of Montana; Controller Emeritus (Professor Emeritus)
6—OFFICIAL DIRECTORY

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McCLAIN, MEDORA,
McGIFFERT, McBROOM,
MATTILL, MARTIN,
McCRORY,
McCLOY, JAMES
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MANIS, MERLE E., Ph.D.,
Mason,
MALLORY,
LORING, EMILIE
Lowery, David
Lucas, Robert C., Ph.D., University of Minnesota; Research Associate in Forestry (Faculty Affiliate)
Lundberg, Worf, J.D., University of Southern California; Assistant Professor of Law
Lyon, L. Jace, Ph.D., University of Michigan; Research Associate in Forest (Faculty Affiliate)
McGAR, McGAR, McGAR, E. Ph.D., University of California; Professor of Chemistry
MALLORY, R. PATRICK, M.L.S., University of Illinois; Order Librarian (Instructor)
Malouf, Carl Log, Ph.D., Columbia University; Professor of Anthropology
Manley, Merle E., Ph.D., University of Oregon; Assistant Professor of Mathematics
Manlove, Spencer, M.S., San Jose State College; Associate Professor of Mathematics
MANSFIELD, MICHAEL J., M.A., University of Montana; Professor of History (on leave)
MARBY, REED, D.V.M., Colorado State University; Research Associate in Forestry (Faculty Affiliate)
MARSILLO, LINO A., L.L.B., University of Montana; Lecturer in Business Administration (Management) (part-time)
Martin, R. K., M.A., University of Montana; Manager, Field House; Business Manager of Athletics (Instructor)
Martin, Reby R. (Mrs.), M.A., University of Montana; Lecturer in Foreign Languages (Faculty Affiliate)
Martinson, Alvilda J., M.Ed., University of Montana; Associate Professor of Business Education and Office Administration (Business Administration)
Martin, Edwin L., M.A., Harvard University; Professor of Philosophy
Mason, David R., S.J.D., Harvard University; Duxon Professor Emeritus of Philosophy
Mason, Susie D. (Mrs.), M.S., University of Tennessee; Instructor in Home Economics (part-time)
Martin, William P., M.A., University of Montana; Assistant Professor Emeritus of Education
McBroom, William H., Ph.D., Ohio State University; Assistant Professor of Sociology
McCabe, John M., J.D., University of Montana; Assistant Professor of Management (Business Administration)
McClain, Sara C. (Mrs.), M.A., Indiana University; Instructor in Speech Pathology and Audiology (Faculty Affiliate)
Mccloy, JAMES, M.D., Louisiana State University, Assistant Professor of Geography (Faculty Affiliate)
McCoy, John P., LL.B., University of Wisconsin; Assistant Professor of Law
McDuffie, Keith A., Ph.D., University of Pittsburgh; Assistant Professor of Foreign Languages
McGiffert, Robert C., M.A., Ohio State University; Associate Professor of Journalism
McGlynn, Fred F., M.A., Northwestern University; Instructor in Philosophy
M'CHugh, HELGA H. (Mrs.), M.Ed., University of Montana; Instructor in Home Economics (on leave 1958-59)
McLaverty, Bernard J., M.D., Jefferson Medical College; Lecturer in Pathology and Medical Technology, Department of Microbiology (Faculty Affiliate)
McPeek, Leonard J., M.A., University of Montana; Instructor in Mathematics
Meeks, John R., Ph.D., University of Colorado; Assistant Professor of Foreign Languages
Medora, RUSTEM S., Ph.D., University of Rhode Island; Assistant Professor of Pharmacy
Mills, B., Ph.D., University of Washington; Assistant Professor of Chemistry
Merriam, Harold G., Ph.D., Columbia University; Professor Emeritus of English
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Michele, MAURICE M., LL.B., Loyola University; Law Librarian; Assistant Professor of Librarianship
Midgrett, Adelaide S. (Mrs.), B.A., University of Montana; Assistant Catalog Librarian (Assistant Professor)
Miller, Charles N., Ph.D., University of Michigan; Assistant Professor of Botany
Miller, Donald C., M.A., University of South Dakota; Assistant Professor of Health and Physical Education
Miller, J. Earle, Ph.D., University of Illinois; Professor Emeritus of History
Miller, Kirt, R. D.M.A., University of Southern California; Associate Professor of Music
Mills, J. ROY, M.A., University of Notre Dame; Instructor in English
Mills, George H., Ed.D., University of Illinois; Professor of Education
Mills, Douglas E. M., University of California; Director of Technical Services, Library (Associate Professor)
Milner, Kelsey C., Ph.D., Tulane University; Lecturer in Medical Microbiology (Faculty Affiliate)
Miloslovich, Patricia V., M.S., Washington State University; Associate Professor of Home Economics (part-time)
Minayo, Masao, Ph.D., University of Hokkaido; Visiting Lecturer in Geography (part-time)
Mitchell, George L., L.L.B., University of Montana; Administrative Vice President; Associate Professor of Business Administration
Mitchell, James D. M.D., University of Oklahoma Medical School; Lecturer in Pharmacy (Faculty Affiliate)
Moore, John E., M.A., University of Michigan; Professor of English
Moore, Mary Y., M.S., M.S., Dreux Institute of Technology; Assistant Catalog Librarian (Instructor)
Moore, Terence J., L.L.M., New York University; Assistant Professor of Law (part-time)
Morris, Melvin S., M.S., Colorado State University; Professor of Forestry
Morton, John J., Ph.D., University of Wisconsin; Lecturer in Microbiology (Faculty Affiliate)
Munro, James R., Ed.D., University of Washington; Professor of Psychology
Murphy, John S., M.F.A., University of Montana; Lecturer in Art (part-time)
Muselman, Joseph A., Ph.D., Syracuse University; Associate Professor of Music
Mutl, Robert W., M.S., University of Montana; Research Associate in Forestry (Faculty Affiliate)
Myers, William, M.D., Ph.D., Ohio State University; Chairman and Professor of Mathematics
Nakamura, Miyuru, Ph.D., Boston University; Chairman and Professor of Sociology
Nelson, S., Ph.D., University of Pennsylvania; Visiting Professor of Business Administration
Nelson, Rita, M.A., University of Montana; Assistant Acquisition Librarian and Serials Librarian (Assistant Professor)
Nelson, Thomas J., Ph.D., University of Wisconsin; Associate Professor of Forestry
Noble, John H., Jr., B.S., University of Montana, CPA Montana; Instructor in Accounting and Finance (Business Administration)
Nomvenich, Patricia J. (Mrs.), M.A., Northwestern University; Instructor in Foreign Languages (part-time)
Nord, Ronald V., B.S., University of Wisconsin; Assistant Football Coach
Oakland, Lloyd, M.Mus., Northwestern University; Professor Emeritus of Music
O'Connor, John E., M.D., University of Nebraska; Lecturer in Speech Pathology and Audiology (Faculty Affiliate)
O'Gara, Bartholomew W., Ph.D., University of Montana; Assistant Librarian, Montana Cooperative Wildlife Research Unit; Lecturer in Zoology (Faculty Affiliate)
Ormsbee, R. A., Ph.D., Brown University; Lecturer in Biochemistry, Department of Microbiology (Faculty Affiliate)
Ortis, Domenico, Ph.D., University of California; Professor of Foreign Languages
Ostermiller, R. K., Ph.D., University of Illinois; Professor of Chemistry
Pace, R. Wayne, Ph.D., Purdue University; Chairman and Associate Professor of Speech Communication
Parker, Robert T., M.D., University of Montana; President; Professor of Business Administration
Pappas, Elizabeth, M.D., University of California at Los Angeles; Assistant Professor of Neurology
Parker, Charles D., Ph.D., State University of Iowa; Director of the Speech and Hearing Clinic; Chairman and Professor of Speech Pathology and Audiology
Pashley, Walter A., Jr., (Colonel), B.S., The Citadel; Chairman and Professor of Military Science (Faculty Affiliate)
Pasquer, Andre, B.S., University of Montpellier; Instructor in Foreign Languages
Passaro, David J., LL.M., University of Michigan Law School; Associate Professor of Law
Patterson, William E., M.S.E., Wayne State College; Assistant Professor of Business Education and Office Administration (Business Administration)
Payne, Thomas, Ph.D., University of Chicago; Professor of Political Science
Pease, Laurel E., M.S., San Fernando Valley State College; Associate Professor of Business Administration (Accounting and Finance)
Pearson, Clifford W. (Captain), B.S., University of Montana; Assistant Professor of Aerospace Studies (Faculty Affiliate)
TEMPLETON, James R., Ph.D., University of Oregon; Associate Professor of Zoology

THANE, Jeremy G., LL.B., University of Montana; Lecturer in Law (part-time)

Thomas, Robert D., Ph.D., Pennsylvania State University; Associate Professor of Chemistry

THOMPSON, E. C., M.L.S., Emory University; Dean of Library Services (Professor)

THOMPSON, Ronald B., Arch., Dip. T.P., University of London; Visiting Lecturer in Sociology (Autumn Quarter)

Tims, John P., Ph.D., University of Southern California; Assistant Professor of Zoology

Tolliver, Rosalind M. (Mrs.), B.A., University of Washington; Instructor in Foreign Languages

Tonsfeldt, Ward, Assistant in the Bureau of Business and Economic Research; Instructor in Economics

Tooze, J. Howard, LL.M., Harvard University; Professor Emeritus of Law

Toole, K. Ross, Ph.D., University of California at Los Angeles; Professor of History

Tsoucatos, Alexander, M.A., University of California, Berkeley; Research Associate in the Bureau of Business and Economic Research; Instructor in Economics

Turner, Robert T., Ph.D., University of California at Los Angeles; Professor of History

Ushijima, Richard N., Ph.D., University of Utah; Associate Professor of Microbiology

Van de Wetering, John E., Ph.D., University of Washington; Chairman and Associate Professor of History

Van De Wetering, Maxine (Mrs.), B.A., University of California at Los Angeles; Lecturer in the History of Science (part-time)

Van Hoven, Geneva (Mrs.), M.A., University of Wisconsin; Instructor in Education

Van Hoven, Robert L., Ph.D., State University of Iowa; Dean and Professor of Pharmacy

Van Meter, Wayne P., Ph.D., University of Washington; Associate Professor of Chemistry

Vick, Olin C., Ph.D., Pennsylvania State University; Assistant Professor of Psychology

Vincent, William C., Ph.D., Michigan State University; Research Associate in Botany (Faculty Affiliate)

Vogel, Sally A. (Mrs.), M.A., University of New Mexico; Instructor in History

Votrubac, George F., Ph.D., University of Michigan; Assistant Professor of Mathematics

Wadreck, Theodore J., M.P.A., Wayne State University; Instructor in Art

Wagner, Paul M., University of Minnesota; Staff Physician, Health Service

Wailes, John L., Ph.D., University of Colorado; Professor of Pharmacy

Waldron, Ellis L., Ph.D., University of Wisconsin; Professor of Political Science and Director of the Bureau of Government Research

Wallace, Robert F., Ph.D., University of Minnesota; Chairman and Professor of Economics

Walters, H. A., Ph.D., Pennsylvania State University; Associate Professor of Psychology

Wambach, Robert F., Ph.D., University of Minnesota; Associate Professor of Forestry; Associate Director, Forest and Conservation Experiment Station

Wang, John B., Ph.D., University of Maryland; Assistant Professor of Foreign Languages

Warwick, Paul S., M.A., Claremont Graduate School; Instructor in Education

Watkins, William L., Ph.D., University of California, Berkeley; Assistant Professor of Chemistry

Watkins, John G., Ph.D., Columbia University; Director of Clinical Training and Professor of Psychology

Watson, Frank J. M., North Western University; Associate Professor Emeritus of Education

Weber, John P., Ph.D., University of Illinois; Professor of Geology

Weidman, Robert M., Ph.D., University of California; Professor of Geology

Weigel, Eugene, B.Mus., Yale University; Professor of Music

Weisel, George F., Ph.D., University of California at Los Angeles; Professor of Zoology

Welch, Lois H. (Mrs.), Ph.D., Occidental College; Assistant Professor of English

Wenner, Rudolph, M.Mus., Eastman School of Music, Professor of Music

White, Elaine, M.A., University of Montana; Instructor and Executive Secretary of Education

White, M. Catherine, M.A., University of Montana; Assistant Librarian and Reference Librarian Emeritus (Professor Emeritus)

White, Roy C., Ed.D., University of Montana; Assistant Professor of Education; (on leave 1968-69)

Wicks, John H., Ph.D., University of Illinois; Associate Professor of Economics

Wilrey, Ronald B.A., Washington State University; Visiting Lecturer in Foreign Languages

Williams, Rose, M.F., Yale University; Dean and Professor Emeritus of Forestry; Director Emeritus of the Forest and Conservation Experiment Station

Wilmers, William J., M.L.S., University of Illinois; Assistant Reference Librarian (Instructor)

Wilson, Brenda P. (Mrs.), M.A., University of Southern California; Professor Emeritus of Business Administration (Business Education and Office Administration)

Wilson, Paul B., M.A., University of Nebraska; Instructor in Geography

Wilson, Vincent M., New York University; Professor of Health and Physical Education

Winston, Donald H., Ph.D., University of Texas; Associate Professor of Geology (on leave 1968-69)

Winston, Ralph J., D.B.A., Washington University; Visiting Professor Minuteman Education Program (Malmstrom Air Force Base)

Woodbury, George W., Ph.D., University of Minnesota; Assistant Professor of Chemistry

Wright, Benjamin W., M.A., University of Montana; Instructor in Sociology

Wright, Philip L., Ph.D., University of Wisconsin; Chairman and Professor of Zoology

Yale, I. Keith, Ph.D., University of California; Assistant Professor of Mathematics

Yates, Lesland, M. Ph.D., Washington State University; Associate Professor of Chemistry

Zimmermann, Robert R., Ph.D., University of Wisconsin; Professor of Psychology
university of montana/missoula

about the university . . .

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

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

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

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

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

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

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

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

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

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

facilities . . .

PROPERTY . . . The main University campus spreads over 118 acres on the east side of Missoula. There are an additional 624 acres on Mt. Sentinel. A few blocks south of the main campus is a 154-acre site with 394 married student housing units and a nine-hole golf course. Approximately six miles southwest of the main campus is Fort Missoula where the University owns a parcel of 298 acres. Two major UM facilities are located outside Missoula: 20,850 acres in Lubrecht Experimental Forest, 35 miles northeast of Missoula, and 167 acres on Flathead Lake including the Biological Station, 90 miles north of Missoula at Yellow Bay.

LIBRARIES . . . Campus libraries have over 450,000 volumes in their collections, including extensive holdings of periodicals, maps, microtext, government publications and a special Northwest History collection. The library is a regional depository for United States Government documents and for the Army Map Service.

THE UNIVERSITY BIOLOGICAL STATION is located at Yellow Bay on the east shore of Flathead Lake, 90 miles north of Missoula. The University controls 180 acres, including two islands, and has permission to carry on investigation on Wild Horse Island, an area of approximately 2,000 acres.

Facilities include an administration-recreation building, a four-room laboratory, three one-room laboratories, a kitchen and dining hall, three bath houses, thirty-five one-room and eleven two-room cabins, and various maintenance buildings. These facilities and the new Morton J. Elrod Research Laboratory, dedicated in August 1967, enable a year-round program of research and teaching.

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

For further information, write to the Director, Biological Station, University of Montana, Missoula, Montana 59801.

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

Publications include the Montana Business Quarterly and various monographs. Contributors include members of the bureau staff, the faculty, and on occasion, students.
THE FOREST AND CONSERVATION EXPERIMENT STATION of the School of Forestry operates under Chapter 141, Laws of Montana of 1937. The dean of the School of Forestry was designated as director. The act specifies that the purpose of the station are:

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

"To cooperate with the other departments of the Montana University System to develop the State Forest Service, as the state forestry research unit, the state fish and game commission, the state livestock commission . . . the United States government and its branches as a land grant institution, or otherwise, in accordance with their regulations."

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

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

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

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

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

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

"To provide an active and continuing program of research, extension, organization and operation of wildlife education, research, extension and demonstration programs . . ."

The Montana Unit, through its graduate research fellowship program, investigates wildlife problems approved by the Unit Coordinating Committee in order to make it possible for the commission to the Health of the Public Health Service and the Stella Duncan Memorial Foundation to study logging, lumbering and milling operations, and the related problems of the State of Montana. Such gifts of land or other donations as may be made to the University. 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 SOCIOLOGICAL RESEARCH, funded by the National Institutes of Health, serves the Montana Public Affairs Report 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, the Montana Coordinating Committee in order to make it possible for the University of Montana, the health sciences 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.

ADMISSION . . .

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

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

ADMISSION APPLICATION FEE. Effective fall quarter 1969, a non-refundable $10 fee must be sent with the application for admission by all under-graduate applicants (applicants with less than a baccalaureate degree).
TESTING . . . All new freshmen, and transfer students with less than a full year in college, are required to take the AMERICAN COLLEGE TESTING PROGRAM examination preferred in October. December test also is offered in February, May and August. Complete information and registration forms are sent to all high school counselors and principals well in advance of each test date. If information is not available, write to REGISTRAR, University of Montana, Missoula, Montana 59801.

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

New freshmen who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance and have the results sent to the University will pay an $8 registration fee and take it on campus before they register.

Students from non-English speaking countries who wish to qualify for admission to the University must give evidence of proficiency in English. Students should arrange to take the Test of English as a Foreign Language (TOEFL). Requests for information on test procedures and applications should be directed to:

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

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

GENERAL REQUIREMENTS . . . Applicants for admission must be of good moral character. Veterans of any branch of the United States Armed Forces should present a discharge marked other than "dishonorable." Race, color or creed are not relevant to admission.

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

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

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

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

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

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

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

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

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

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

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

AS A SPECIAL STUDENT: Persons 21 years of age or over who are not graduates of high schools, who cannot meet all the requirements for regular standing, may register to service personnel, honorably discharged veterans and non-veteran adults. Credit is allowed for any courses taken in an accredited high school. By examination, a student may prepare at the University; (3) various tests prepared to pursue successfully college courses.

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

registration . . .

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

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

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

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

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

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

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

degrees and majors . . .

Bachelor's, master's, doctor of education and doctor of philosophy degrees are offered at the University of Montana. The degrees of bachelor of arts and bachelor of science typically are awarded upon completion of a four-year academic course in the arts and sciences. These degrees require satisfaction of the foreign language requirement and completion of a major (a concentration in a single discipline or stated interdisciplinary program) of not more than 70 quarter credits. The bachelor of science degree is awarded in home economics and in health and physical education without a foreign language.

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

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

Graduate degrees offered at the University, including detailed degree requirements, are listed in the Graduate School bulletin which may be secured from the dean of the Graduate School.

COLLEGE OF ARTS AND SCIENCES

Bachelor of Arts, with majors in:

- Anthropology
- Biology
- Botany
- Chemistry
- Communication
- Speech Communication
- Speech Communication
- Education
- Speech Pathology and
- Audiology
- Economics
- Economics-Political Science
- Economics-Sociology
- English
- French
- Geography
- Geology
- German
- Health, Physical Education, Recreation
- History
- Music
- Music Education
- Music Administration
- Instrumental Conducting, Choral and Instrumental Conducting
- Audiovisual Communications
- Recreation
- Russian
- Social Welfare
- Sociology
- Sociology-Economics
- Spanish
- Zoology

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

Bachelor of Science in Dental Hygiene, Medical Technology, Physical Therapy and Wildlife Biology

PROFESSIONAL SCHOOLS

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

ADVANCED PROFESSIONAL DEGREES

Bachelor of Laws
Juris Doctor

academic requirements . . .

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

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

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

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

Number of Credits Attempted

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

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

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

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

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

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

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

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

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

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

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

A student must have a 2.0 grade average in all courses for which he has registered and an entering freshman must have a scholastic record equivalent to a 2.0 grade average in order to challenge a course.

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

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

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

A fee of $3 per credit hour is charged. Such examinations are available only to regularly enrolled students.

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

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

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

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

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

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

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

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

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

2. English composition may be required selectively by schools or departments for any or all of their majors. English 150 must be taken during the freshman year. English 250 and 350, if required, may be taken during any two of the three remaining years, but in no case will any student be allowed to take both English 250 and English 350 in the same year.

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

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

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

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

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

Groups III and IV. At least 12 credits in each of Groups III and IV, in each group at least 8 of the required 12 credits must be in one discipline.
CATALOG GOVERNING GRADUATION . . . A student may graduate under University requirements for the year in which he was enrolled for the first time in any institution of higher education in the United States if he completes graduation requirements within a continuous six-year period. If a student interrupts his attendance a year or more, he must graduate under the catalog in effect at the time of readmission. A change of major requires the student to change only to major course requirements in effect at that time. A student may, with the approval of his dean or department chairman, graduate under a later catalog than that under which he entered.

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

CREDITS REQUIRED FOR A DEGREE . . . Normally credits assigned to a course are equated in the following way: one credit for each 50 minutes of lecture with two hours of preparation for the lecture expected of the student. Credit granted for laboratory work is normally one credit hour per two or three hours laboratory session. A total of 195 credits, including 3 credits of required physical education and excluding credits in basic physical education, is necessary in all courses for graduation with a bachelor's degree except that more are required in art, law and pharmacy. Candidates for the degree of Bachelor of Laws or Juris Doctor must complete three years of law totaling 90 semester hours in addition to the entrance requirements of the School of Law. Admission requirements of candidates for the degree of Juris Doctor include graduation from an approved college or university. Candidates for the degree of Bachelor of Science in Pharmacy must complete a five-year course. Candidates for the bachelor of arts degree from the College of Arts and Sciences must complete 98 credits in that college, except that credits in art or drama may be included. The professional degree, Bachelor of Fine Arts, requires 110 credits in art.

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

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

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

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

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

REQUIREMENTS OF PARTICULAR CURRICULA . . . Candidates for a bachelor's degree must comply with any

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

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

**SENIOR EXAMINATIONS** . . . Some departments and schools in the University require a senior comprehensive examination as part of graduation requirements. This examination does not in any way replace the regular quarterly examinations except that departments adopting or using these senior examinations may excuse their major students during the senior year from regular quarterly examinations in major department subjects. The examination is a written examination of at least three hours length, and additional oral or written examinations may be given. Examinations are given in 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 maintain 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 1970 summer session will open June 22 and close August 21; the first half-session, June 22 to July 22; the second half-session, July 23 to August 21.

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

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

Courses are to be offered in all of the basic arts and sciences, as well as in the areas of business administration, education, journalism, pharmacy and fine arts. Both undergraduate and graduate work are offered in most of these areas.

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

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

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

**THE GRADUATE SCHOOL** . . .

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

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

**FINANCIAL OBLIGATIONS** . . .

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

**SUMMARY OF EXPENSES** . . . This does not include fees for special purposes such as applied music and forestry. Married students living in University-operated family housing pay rental rates varying from $66 to $109 a month depending on the size and type of apartment.

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

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

**STUDENT FEES** . . . The following is a detailed schedule of quarterly fees authorized for the University year 1969-70 in all schools and departments except where otherwise specified. For the law school, which is on a semester plan, the semester fees will be 50% above the quarterly fees. Fees are subject to modification by action of the State Board of Regents.

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

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

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<table>
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<tr>
<th></th>
<th>Autumn Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
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<td>Students not residents of Montana add:</td>
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</table>

*Non-refundable admissions application fee not included (see admissions).
FEES FOR SPECIAL PURPOSES...

LATE REGISTRATION: The charges are $10 for the first day late, plus $2 for each day of instruction thereafter, to a maximum of $24, payable by students who did not register during the period designated for registration, unless their late registration was due to the fault of the University. The fee also is payable by students who register during the prescribed registration period except for payment of fees. If a bank declines payment of a personal student check and returns it to the University, and such action is due to fault of the student, the fee shall be charged from the date of the check tendered by the student to the University.

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

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

REMOVAL OF INCOMPLETE: $2 per course.

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

CREDIT BY EXAMINATION: A fee of $3 per credit hour is charged.

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

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

REFUNDS... All fees, except the $15 registration fee and the $10 admission application fee are refunded to students who withdraw before the beginning of classes. No fee refunds are made after the fourth week of instruction (except music). Students who withdraw after the beginning of classes but before the end of the fourth week will be refunded according to the refund schedule published below.

Applied music refund is based on a charge of $1.75 per 1/2-hour lesson for the number of weeks elapsed since the beginning of the quarter.

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

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

REGULAR STUDENTS
Week of Instruction
First Second Third
Registration None None None
Incidental 75% 50% 50%
Building 100% 50% 50%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service 100% 50% 50%
Non-Resident Tuition 80% 60% 40%

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

REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS

Registration None None None
Incidental 40% 20% 20%
Building 50% 25% 25%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service None None None
Non-Resident Tuition 80% 60% 40%
student organizations...
The University encourages a full and well-rounded program of activities designed to stimulate students' intellectual, vocational and social interests. Among the types of student extracurricular activities are student government, societies and clubs of students engaged in particular studies, professional and honorary organizations, athletic clubs or teams for men or women, student publications, musical organizations, church groups and residence hall clubs.

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

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

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

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

UNIVERSITY CENTER... The new University Center (Student Union), completed in January 1969, houses a significantly expanding extracurricular-activities program for University employees and faculty. The building includes student legislative chambers, offices, lounges, work areas, music listening rooms, hobbies and craft areas, art gallery, conference areas, ball room, coffee shops, bowling lanes, billiard and pool areas, a food service, a medical office, 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 the use of remedial procedure where indicated; and (4) selection of appropriate vocational area.

The Counseling and Testing Center has a further responsibility to (1) administer, report and aid in the interpretation of freshman placement tests and other standardized tests; (2) assist University personnel and welfare groups in their guidance work; and (3) 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. The 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 for students to enroll in a supplemental Blue Cross health insurance program which is inexpensive and extends protection to the student through the vacation periods between quarters and during the summer. This insurance is offered at the time of registration.

The Health Service Building contains a dispensary and semi-private patient rooms for students requiring confinement for general medical care or isolation for communicable 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 8 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.

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.

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

Interview schedulings, employer information and vacancy listings are available for positions in schools, colleges, business, industry and government service. The Placement Cen-
FAMILY HOUSING... Married students may apply to the Family Housing Office for accommodations in modern, moderately priced apartment-type units located within walking distance of the main campus. Studio apartments, with one, two, three, and four bedrooms are available.

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

FRATERNITY AND SORORITY HOUSES... Nine national fraternities and six national sororities maintain their own residences under University supervision. Membership in fraternities and sororities is by invitation, but eligibility for pledging is based on satisfactory scholarship accomplished in high school or the college previously attended. Eligibility for initiation is based on satisfactory academic performance in the University. Sorority houses are under the immediate supervision of resident housemothers who are appointed with the approval of the associate dean of students.

FINANCIAL AID... The University has available for its students an extensive program of financial aid and participates in the College Scholarship Service (CSS) and the American Student Aid Association. At the University, scholarships are awarded by the department concerned. Grants are available to undergraduates. For detailed information on this program, write the Financial Aid Office.

EDUCATIONAL OPPORTUNITY GRANTS: For those who qualify on a basis of need, federal education opportunity grants are available through the generosity of friends and alumni of the University. Graduate scholarships are administered by the graduate dean and undergraduate scholarships by the dean of students. Prize awards relating to specific departments are awarded by the department concerned.

standards of student conduct...

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

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

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

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

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

UNPAID BILLS . . . Individual students who owe bills to the University for fees, fines, board and room in the residence halls and quarters of University-approved living groups or at functions of University or University-approved organizations (including athletic events) is forbidden. Students violating this regulation are expected to abide by state and federal laws in the use or possession of intoxicating liquor or drugs.

LICOR . . . The use or possession of intoxicating liquor (including beer) in the buildings and on the grounds of the University or in residence halls and quarters of other University-approved living groups or at functions of University students or University organizations (including athletic events) is forbidden. Students violating this regulation are subject to suspension or expulsion. Other University students are expected to abide by state and federal laws in the use or possession of intoxicating liquor or drugs.

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

The illegal use or sale of drugs is also a violation of University regulations. Therefore, it is essential that the University take action toward any student who illegally uses or sells drugs, or toward any organization whose books are kept in the Business Office of the University or in fraternity and sorority houses.

Because the University Health plan does not cover insurance (liability, property damage, medical payments, etc.), the University will in no case be directed toward punishing the drug offender but only toward achieving the fundamental University objectives of helping the individual student and providing the best possible educational environment for the entire student body.

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

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

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

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

The Board of Judicial Review is made up of four full-time faculty members selected by the Faculty Senate and three student members chosen by Central Board, governing body of the University. Occasionally a student has a disagreement with a University faculty member concerning which he feels he should have a right to appeal. In such an event, he should consult the dean of students for advice.

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

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

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

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

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

COLLEGE OF ARTS AND SCIENCES

Anthropology
Biology
Botany
Chemistry
Communication
Speech Communication
Speech Communication
Education
Speech Pathology and Audiology
Computer Science
Dental Hygiene
Economics
English
Foreign Languages
French
German
Greek (no major)
Italian (no major)
Latin
Russian
Spanish
Geography

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION
Accounting
Business Education
Finance
General Business

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

THE SCHOOL OF FINE ARTS

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

SCHOOL OF FORESTRY

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

SCHOOL OF JOURNALISM

Advertising
Magazines
News-Editorial
Radio-Television

SCHOOL OF LAW

SCHOOL OF PHARMACY

AFFILIATED SCHOOL OF RELIGION (no major)

course numbering system . . .

001-099 Courses below college level. Credit not allowed toward graduation.
100-199 Freshman Courses
200-299 Sophomore courses
300-399 Junior courses
400-499 Senior courses
500-599 Graduate courses

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

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

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

course descriptions . . .

When reading course descriptions, please note the following:

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

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

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

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

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

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

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

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

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

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

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

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

### Courses of Instruction

#### ANTHROPOLOGY

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

**Special Requirements for the Undergraduate Degree:** In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in anthropology courses or approved cognate courses listed below are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) Credits taken in anthropology include the following: Anth 119, 152, 153, 358, 371, 372, 382. In addition, one course in ethnology and one course in archaeology must be taken. Not more than 20 total credits in the following variable credit courses may be counted toward the degree: Anth 353, 356, 451, 530, and 551. The following sociology courses must be completed: Soc 101, 201, and 205; English 360; Geography 255; and Religion 304 may be counted toward a major in anthropology. A minimum of 35 of the 50 credits required must be in anthropology courses. The departmental English composition requirement must be completed.

**Graduate Work.** See Graduate School Bulletin

### For Undergraduates

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

**119 Phonetics** (see Speech Communication 119).

**152 Man and His Culture 5.** The origin and development of man and his culture, and the processes involved in culture change, e.g., acculturation, diffusion.

**153 Cultural Anthropology 5.** The social life of man; his family structures, his group institutions-economic life, religion, political forms, education, arts, and arts.

**154 Race and Minorities 3.** Problems of assimilation of racial and cultural minorities.

**251 Primitive Technology 3.** Prereq 152 or 153. Technology processes used by people in preliterate societies and early civilizations.

### For Undergraduates and Graduates

*Course offered every other year

**308 Race and Ethnic Relations 3.** Prereq 154 and Soc 101. Racial and ethnic differentiation and its social consequences. (Credit not allowed for this course and identical Sociology 308.)

**340 Primitive Religion 3.** Prereq 152 or 153 and one course in ethnology. Theories and practices of the supernatural phenomena found among primitive peoples throughout the world.

**351 Prehistoric Cultures 3.** Prereq 152 or 153 or =. Prehistoric man and his cultures, up to the Neolithic Age to the dawn of written history.

**354 Old World Archaeology 4.** Prereq 3 prereq 152 or 153 or =. The development of pre-Columbian American peoples and cultures.

**355 Archeology of North America 4.** Prereq 152 or 153 or =. The origins, backgrounds and development of pre-Columbian American peoples and cultures.

**356 Historical Archeology 3.** Prereq 152 or 153 or =. The location and evaluation of historical sites in Montana and the Northwest. Techniques utilized in excavating historical sites and systems for the classification of historical site artifacts.

**358 Physical Anthropology 4.** Prereq 152 or =. The history, evolution, and present nature of man's bodily structure. Identification and determination of age and sex of human osteological materials.

**360 Indians of the Southwestern United States 3.** Prereq 152 or =. The development of Indian cultures in southwestern United States from the most ancient evidences of man to the present.

**361 Indians of North America 4.** Prereq 152 or 153 or =. The native cultures of North America, north of the Rio Grande.

**362 Indians of South America 4.** Prereq 152 or 153 or =. The cultural origins of South America.

**363 Peoples of Africa 4.** Prereq 152 or 153 or =. The aboriginal cultures of Africa.

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

**366 Northwest Ethnology 4.** Any quarter in which field parties are organized. V 1-5 R-12 prereq 152 or 153 or = and c/i. A field course. Indian tribes of Montana and related areas.

**368 Peoples of the Pacific 4.** Prereq 152 or 153 or =. The peoples who inhabit the islands of the Pacific Ocean, including Polynesia, Melanesia, Micronesia and larger islands around Australia.

**369 Peoples of Central America 4.** Prereq 152 or 153. The prehistoric remains of high civilizations, ethnic groups, and the effects of European contact on these cultures.

**371 Culture and Personality 4.** Prereq 152 or 153 or =. The role of culture in the formation of personality.

**372 Culture and Theory 4.** Prereq 152 or 153 or =, and Soc 310. The development of theory and method in cultural anthropology in the present. Various archaeological, ethnological, and socio-psychological theories in the light of historical anthropology.

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

**380 Historical Linguistics 4.** Prereq 152 or 153 or =, and English 360. Some significant theories and methodological assumptions of selected schools of linguistic theory.

**382 Language and Culture 3.** Prereq 119 and c/i. Analysis of relationships between languages and cultures of the world. (Also listed as Speech 383.)

**385 Peoples of the Far East 4.** Prereq 152 or 153 or =. The cultures and culture of China, Japan, Korea, Southern Asia, and adjacent areas.

**386 Peoples of Western Asia 4.** Prereq 152 or 153 or =. The peoples and culture of the area from the Mediterranean Near East to India.

**390-391-392 Seminar V R-9.**

**453 Advanced Problems V 1-2 R-6.** Prereq 152 or 153 or =, and c/i.

**459 Modern Indian Problems 3.** Prereq 152 or 153 or =. Social and health problems, legislation, education, and economic conditions of Indians of the United States.

**453 Social Anthropology 3.** Prereq 152 or 153 or =. The principles and theories of social organization and institutions.

**473 Cultural Dynamics 3.** Prereq 152 and 153. The processes of cultural change, acculturation and integration.

**480 Linguistic Methods 3.** Prereq 303 and c/i. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant. (Also listed as Speech 480.)

### 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.**

**580-581-582 Graduate Seminar V R-15.** Selected problems in anthropology.

**699 Thesis V R-9.**
ART
is man’s visual means of communication and expression in two and three dimensional form. The art curriculum aims at developing the most effective skills and knowledge possible for each student who is concerned with becoming competent in such visual communication-expression. A student may choose to emphasize one area of art-some-what more than others as a preparation for a particular type of career. The important areas are: drawing, design, painting, sculpture, ceramics, printmaking, and history of art. Careers are to be found in teaching, in a great variety of commercial areas, and in the “free-lance” or independent field.

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

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

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

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

The Bachelor of Fine Arts is a professional degree requiring 110 credits in art, distributed as follows: Drawing 12, Painting and Watercolor 12, Design 6, Ceramics 6, Printmaking 6, Photography 4, Lettering 2, Art History 15, Sculpture 12 and art electives 55 credits. Ninety credits are required outside of the department. All general university requirements except foreign language must be completed. Fourteen quarters are usually required to complete this degree.

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

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

Suggested first year program:

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<tr>
<th>Quarter</th>
<th>A</th>
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<tr>
<td>Art 123</td>
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<tr>
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<td>Elective from Groups or Lang.</td>
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<tr>
<td>R &amp; PE 109</td>
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GRADUATE WORK. See Graduate School Bulletin

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


129 CERAMICS 2 R-4. Clay projects, building, throwing, glazing, and firing. Offered for one credit by extension.

160 LAYOUT AND LETTERING 2 R-6. Pen and brush lettering, commercial art techniques.

200 SURVEY OF WESTERN ART: THE ANCIENT WORLD 3.

201 SURVEY OF WESTERN ART: EARLY CHRISTIAN TO MANNERISM 3 prereq 200.

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

215 PHOTOGRAPHY 2 R-6 prereq 127.

229 INTERMEDIATE CERAMICS 2 prereq 4 credits of 129.

233 (133) PRINTMAKING 2 R-6 prereq 9 credits of 123. Methods and techniques.

235 (135) SCULPTURE 3 R-6 prereq 9 credits of 123.

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

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

FOR UNDERGRADUATES AND GRADUATES

300 INTRODUCTION TO ART EDUCATION.

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


307 METHODS OF TEACHING SECONDARY ART 3.

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

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

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

327 JEWELRY 2 R-6 prereq 127.

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

333 (334) ADVANCED PRINTMAKING V 2-6 R-6 prereq 6 credits of 233.

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

340 ADVANCED PAINTING V 2-6 R-6 prereq 9 credits of 240.

383 EARLY RENAISSANCE 3 prereq c/l.

384 HIGH RENAISSANCE 3 prereq c/l.

385 BAROQUE AND ROCOCO ART 3 prereq c/l.

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

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

393 AMERICAN ART 3 prereq c/l.

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

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

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

414 ART IN SPECIAL EDUCATION 2.

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

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

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

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

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

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

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

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

FOR GRADUATES

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

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

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

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

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

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

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

699 THESIS AND TERMINAL PROJECT V R-15.
BIOLOGY

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BIOLOGY

In addition to the general requirements listed earlier in the catalog the following special requirements must be completed for a Bachelor of Arts degree with a major in Biology: 55 or more credits in Biology including Botany 111, 114, 115; 2 credits of 495 and at least one course from each of the following groups: (1) Microbiology 260, 263, 330, 432, 433, 437, 435; (2) Ecology 250, 255, 345; (3) Anatomy-Cytology 433, 437, 439; (4) Taxonomy 265, 365, 366, 368, 467; (5) Genetics, 468, 469, 497.

The following courses in allied sciences must be completed: Chemistry 121-122-123 (College Chemistry), Chemistry 261-262-263 (Organic Chemistry), Physics 111-112-113 (General Physics) or Physics 221-222-223 (General Physics), Math 116 (College Algebra), Math 117 (Trigonometry), and Math 118 (Introduction to Calculus).

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

For undergraduate special requirements, see Course Descriptions (Index)

BOTANY

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

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

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

HIGH SCHOOL PREPARATION

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BOTANY

In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Botany: 45 credits in Botany including Botany 111, 114, 115; 2 credits of 495 and at least one course from each of the following groups: (1) Morphology, 441, 442, 443, 445, 475, 483, 484; (2) Anatomy-Cytology, 433, 437, 439; (3) Ecology 250, 255; (4) Anatomy-Cytology 433, 437, 439; (5) Taxonomy 265, 366, 368, 467; (6) Genetics, 468, 469, 497.

Also required are: Zoology 112, 113; Mathematics 118; English 150, 250, 350; Microbiology 260; Chemistry 160 or 261; Physics 111-112-113 or 221, 222, 223. Recommended electives: Geography 390, Geology 110; Chem. 461, 462; and a course in statistics. The foreign language requirement listed in the catalog must be satisfied: French or German preferred.

Courses 265, 335, 365, 370, 375, 441, 555 may require field trips extending some miles from the campus. Students are required to pay their pro rata share of transportation, insurance, etc. costs for such trips.

Suggested first year program:

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<tr>
<th>Quarter</th>
<th>Course</th>
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<tr>
<td>A</td>
<td>Botany 111, 114, 115</td>
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<tr>
<td>W</td>
<td>Chemistry 101, 102, 160 or 121, 122, 123</td>
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<td>S</td>
<td>Anatomy-Cytology 433, 437</td>
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<td>Math 116, 117</td>
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<td>English 150</td>
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<td>Health &amp; Phys 100</td>
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Other courses that the student may elect include 4 (0-4) recommended electives: Geography 390, Geology 110; Chemistry 121-122-123 (College Chemistry), Chemistry 261-262-263 (Organic Chemistry).

FOR UNDERGRADUATES

A survey of the morphology, reproduction and evolutionary relationships of the various plant groups.

115 (123) LOCAL FLORA 4 (3-4) preq 114. An introduction to the identification of flowering plants.

BIOLOGY, BOTANY—23

FOR GRADUATES

A满脸, preservation and identification of plants and consideration of where they grow. Given only as an extension course. Credit not allowed toward degree in Botany.

111 INTRODUCTION TO BIOLOGY 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and metabolism, genetics, origin of life, and mechanisms of evolution and adaptation. Credit not allowed for this course and Zool 111.

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

115 (112) GENERAL BOTANY 5 (3-4) preq 114 or =. An introduction to the anatomy, physiology and ecology of higher plants.

250 BASIC CONCEPTS OF ECOLOGY 3 (3-0). Introduction to the ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Zool 250.)

251 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) preq 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.)

265 (123) LOCAL FLORA 4 (3-4) preq 114. An introduction to the identification of flowering plants.

FOR UNDERGRADUATES AND GRADUATES

325 (225) PLANT PHYSIOLOGY 5 (3-4) preq 115 and Chem 169 or 123. An introduction to 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) preq 15 cr. in Botany. Techniques of preparing cleared whole mounts, cytological squashes, woody and non-woody celldlinum mounts; maceration of wood; use of freezing, sliding and rotary microtomes.

355 PRINCIPLES OF PLANT ECOLOGY 5 (3-4) preq 250, 251 and 356. Plants and plant communities in relation to their physical and biotic environment. (Six credit course at Biological Station.)

365 SYSTEMATIC BOTANY 5 (2-3) preq 115 or =. The identification of various groups of vascular plants. Collecting and preserving of vasc ular plants. (Credit not given for both 265 and 365. Given for 6 cr. at the Biological Station.)

366 AGROLOGY 5 (2-6) preq 265 or =. Identification, classification, and ecological relationships of grasses, sedges, and rushes. (Given for 3 cr at the Biological Station.)

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

370 FOREST PATHOLOGY 4 (3-4) preq 250 or 355, and For 290-291. The agencies of disease and decay of trees and structural timbers.

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

463 BIOLOGICAL ILLUSTRATIONS 2 (0-4) preq 1 year of biology and 1 yr. introductory to the use of the camera and skills of producing illustrative materials relevant to the biological sciences. ($25 special supplies fee. Credit not allowed for this course and Zool 463.)
24—BOTANY

421 MINERAL NUTRITION 5 (3-4) e/y prereq 325. The absorption, transport and utilization of mineral nutrients in plants and the requirements of plants: research methods in plant tissue analysis and the culture of plants under controlled nutrient regimes.

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

423 (325) RESPIRATORY METABOLISM IN PLANTS 5 (3-4) o/y prereq 325. Chem 335 and Phys 115 or =. The respiratory mechanism in plants, relationships of respiration to other processes in the plant, photosynthesis, nitrogen metabolism.

427 PLANT VIRUSES 4 (2-4) prereq 115 or =. Micro 420. Plant viruses and the diseases which they cause. The isolation, purification, identification, and host ranges of selected plant viruses.

428 ALGAL PHYSIOLOGY 5 (3-4) prereq 325, 441 or c/l. Comparative macro- and ultrastructure, physiology, biochemistry, and ecology of the photosynthetic bacteria and algae with special emphasis on the algae and their relationships to both the bacteria and higher plants.

429 (329) PROBLEMS IN PLANT PHYSIOLOGY V 1-6 (0-3/cr) R-6 prereq 335, 361 or c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

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

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

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

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

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

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

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

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

446 (346) SPERMATOPHYES 5 (2-6) e/y prereq 115 or =. The morphology and life histories of the gymnosperms and angiosperms.

449 (349) PROBLEMS IN PLANT MORPHOLOGY V 1-6 (3-0) cr R-6 prereq 335, 444 or 445 or c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

459 (359) PROBLEMS IN PLANT ECOLOGY V 1-6 (0-3/cr) R-6 prereq 250 or 335 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant ecology not taken up in regular courses.

461 PRINCIPLES OF BOTANICAL NOMENCLATURE 2 (3-0) e/y prereq c/l. Application of the rules of nomenclature to plant classification.

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

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

479 (379) MYCOLOGY AND FOREST PATHOLOGY V 1-6 (0-3 cr) R-6 prereq 391 or 415 or c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of mycology and plant pathology not taken up in regular courses.

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

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

485 (355) GENETICS. (See Zoology.)

486 (356) EVOLUTION 3 (3-0) prereq 265, 485; Zool 115. The nature of and processes by which evolution occurs. (Credit not allowed for this course and Zool 486.)

487 CYTOGENETICS 4 (3-2) prereq 485 or =. The structure and duration of chromosomes from bacteria to higher organisms. Chromosome behavior and changes, their role in development and evolution. (Credit not allowed for this course and Zoology 487.)

489 PROBLEMS IN PALEOBOTANY V 1-6 (0-3 per credit) R-6 prereq 465 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

490 SEMINAR IN BIOLOGY 1 (2-0). Special problems in Biology. (Credit not allowed for this course and Zool 480.)

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

495 BOTANICAL LITERATURE 1 (3-0) R-2 prereq 20 credits in botany. Student reports on current botanical literature.

FOR GRADUATES

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

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

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

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

551 GENERAL ECOLOGY 6 (6-10) prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Community concepts including succession, stratification, periodicity and energy relationships: introduction to population problems. Offered at the Biological Station. (Credit not allowed for this course and Zool 551.)

555 ADVANCED PLANT ECOLOGY 4 (2-4) e/y prereq 355, Math 125 cr or =. Field and laboratory analysis of theories and methods used in the description and interpretation of plant and environmental relationships.

563-566 TAXONOMY OF VASCULAR PLANTS 5 (2-4) o/y prereq c/l. Classification, distribution and evolutionary relationships of the vascular plants.

564 EXPERIMENTAL TAXONOMY 4 (3-4) e/y prereq 437, 486, 565. Modern concepts in classification, emphasis on ecological, chemotaxonomic and other modern approaches to the problems of plant classification.

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

571 ADVANCED FOREST PATHOLOGY 3 (2-2) e/y prereq 371, 471, 475. Mycorrhizal, rust and defoliating fungi and dwarf mistletoes of the forest.

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

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

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

699 THESIS V R-15.

COURSES OFFERED AT THE BIOLOGICAL STATION

Many of the courses listed are offered during the summer session at the Biological Station on Flathead Lake. In the past, these have traditionally been Bot 365, 366, 368, 403, 441, 442, 449, 469, 475, 490, 549, 561, 565, 600.
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 organizational revolution and actively to participate in the molding of the future of that age.

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

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

Opportunity for further study at the graduate level is offered through two programs leading to the degrees of Master of Business Administration or Master of Science in Business Administration (with concentrations in accounting, business education, computer systems, finance, management, or marketing). The MBA program is particularly suited to those students whose undergraduate training has been in areas other than business administration. Further details may be obtained from the Graduate Studies Bulletin or by specific inquiries directed to: Director of Graduate Studies, School of Business Administration.

PRE-BUSINESS PROGRAM

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

The general university and pre-business administration requirements include: Health and Physical Education 100 (3 quarters, 3 credits); English 100, 105, 115, 120, 125 (the junior and senior years); requirements from Group I; requirements from Group II inculding Mathematics 116; requirements from Group IV; Speech 111 or 112; Business Administration 201-203 and 205. Pre-business requirements are prerequisites for all business administration courses numbered 300 and above.

ADMISSION AND GRADE POINT REQUIREMENTS

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

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

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

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

b. Complete core courses: Economics 301, Bus Ad 322, 340, 342, 350, 357-358, 360, 370, and 446. Core courses may not be taken for graduate credit by Bus. Ad. majors. Non-business majors may arrange to take 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, B. A. or C. General Business Management—Option A or Option B, Marketing, 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 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.

e. Offer not less than a total of 75 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credit requirement are: all courses offered by the Department of Economics; English 400; History 473, 474; and courses listed in the curricula of the areas of concentration.

f. Present not less than 90 credits (exclusive of Health and Physical Education) of work taken in departments and schools other than the School of Business Administration.

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

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

CURRICULA OF THE AREAS OF CONCENTRATION

ACCOUNTING

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

Bus Ad 203—Accounting Principles 3
Bus Ad 303-304—Cost Accounting 6
Bus Ad 309-310-Intermediate Accounting 8
Bus Ad 401-402-Intermediate Tax 8
Bus Ad 409—Advanced Accounting 2
Bus Ad 413—Accounting Theory 3

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

Bus Ad 314—Governmental Accounting 3
Bus Ad 350—Electronic Information Processing 4
Bus Ad 410—Advanced Accounting 3
Bus Ad 418—C.P.A. Review 5

FINANCE

Students concentrating in Finance must include the following courses:

Bus Ad 183—Production Typewriting 2
Bus Ad 193—Beginning Secretarial Practice 4
Bus Ad 194—Records Management 3
Bus Ad 203—Elementary Accounting 3
Bus Ad 292—Office Machines Practice 2
Bus Ad 380—Methods of Teaching Typewriting 4
Bus Ad 381—Methods of Teaching Bookkeeping and Accounting 4
Bus Ad 383—Office Management 3
Bus Ad 384—Methods of Teaching Shorthand and Transcription 2

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

BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

Students concentrating in Business Administration must include the following courses:

Bus Ad 223—Commercial Banking 3
Bus Ad 259—Theory of Business Finance 3
Bus Ad 350—Principles of Insurance and Risk 3
Bus Ad 430—Investments 3
Bus Ad 421—Problems in Finance 3
Bus Ad 438—Analytical Methods in Finance 3
Bus Ad 439—Intermediate Econ. Analysis 4

*Bus Ad 347—Managerial Economics 3

*Students are advised to take Econ 311 before BA 347.

FINANCE

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

Option A: Financial Management

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

Bus Ad 223—Commercial Banking 3
Bus Ad 259—Theory of Business Finance 3
Bus Ad 350—Principles of Insurance and Risk 3
Bus Ad 430—Investments 3
Bus Ad 421—Problems in Finance 3
Bus Ad 438—Analytical Methods in Finance 3
Bus Ad 439—Intermediate Econ. Analysis 4

*Bus Ad 347—Managerial Economics 3

Students are advised to take Econ 311 before BA 347.
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. 330—Principles of Insurance and Risk 3
Bus. Ad. 331—Life and Health Insurance 3
Bus. Ad. 332—Property and Liability Insurance 3
Bus. Ad. 333—Real Estate Law 3
Bus. Ad. 334—Management of Financial Institutions 3
Bus. Ad. 401-402—Income Tax 6
Bus. Ad. 426—Social Insurance 3

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. 424—Money and Capital Markets 3
Bus. Ad. 425—Real Estate Finance 3
Bus. Ad. 426—Property Valuation Theory 3
Bus. Ad. 427—Property Management 3
Econ. 383—Land Economics 3
Soc. 587-588—Seminar in Urban Studies (anyone of the three) 3
21

GENERAL BUSINESS

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

Bus. Ad. 301—Administrative Accounting 4
Bus. Ad. 347—Microeconomic Analysis 4
Bus. Ad. 363—Analysis of Marketing Communication 3
or
Bus. Ad. 460—Marketing Management I 3
Bus. Ad. 421—Problems in Finance 3
Bus. Ad. 441—Personnel Management 4
Bus. Ad. 444—Regulation of Industry 4
25

MANAGEMENT

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

Option A. Industrial Organization and Management (Production)

Bus. Ad. 301—Administrative Accounting 4
Bus. Ad. 442—Personnel Management 4
or
Bus. Ad. 421—Problems in Finance 3
Bus. Ad. 444—Regulation of Industry 4
Econ. 321—Labor Economics 3
or
Econ. 322—Labor Economics 3
Any two 6
Econ. 324—Industrial Relations 3
21-22

Option B. Personnel Management and Human Relations

Bus. Ad. 301—Administrative Accounting 4
Bus. Ad. 441—Personnel Management 4
Psych. 342—Personnel Psychology or Psych 343 Industrial Psychology 3
Econ. 321—Labor Economics 3
Econ. 322—Labor Economics 3
Any two 6
or
Econ. 324—Industrial Relations 3
25

MARKETING

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

Bus. Ad. 301—Administrative Accounting 4
Bus. Ad. 302—Consumer Behavior 3
Bus. Ad. 363—Analysis of Marketing Communication 3
Bus. Ad. 400-401—Marketing Management I, II 6
Bus. Ad. 466—Marketing Research 3
Engl. 450—Problems in Composition 3
20

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 2
Bus. Ad. 184-185—Stenography 15
Bus. Ad. 187-188—Production Stenography 10
Bus. Ad. 189-190—Advanced Shorthand, Transcription 3
Bus. Ad. 193—Beginning Secretarial Practice 2
Bus. Ad. 194—Records Management 3
Bus. Ad. 303—Elementary Accounting 3
Bus. Ad. 323—Office Manager Practice 3
Bus. Ad. 325—Advanced Secretarial Practice 5
Bus. Ad. 355—Office Management 3
Engl. 430—Problems in Composition 3
49

*Bachelor of Arts in Business Administration

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

ACCOUNTING

FOR UNDERGRADUATES

*For explanation see Course Descriptions (Index)

201 ACCOUNTING PRINCIPLES 3. The basic concepts and principles of accounting. Emphasis on the usefulness of accounting data as a management tool.

202 ACCOUNTING PRINCIPLES 3 prereq 201. Continuation of 201.

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

FOR UNDERGRADUATES and GRADUATES

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

301 ADMINISTRATIVE ACCOUNTING 4 prereq 202. Open only to non-accounting majors. The significance of accounting data within involvement in mechanical techniques: interpretation of financial statements, internal control, budgeting, costing of products manufactured and sold, and accounting reports for administrative control. (Credit not allowed for both Bus Ad 301 and 303-304.)

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

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

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

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

307 INTERMEDIATE ACCOUNTING 4 prereq 305. Continuation of 306.

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

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

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

404 AUDITING 3 prereq 403. Continuation of 403.


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

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

418 C.P.A. REVIEW 5 prereq 304, 404, 408, 410, 412 and c/i. Primarily for students preparing to take the examinations for the certificate of Certified Public Accountant. Comprehensive review of questions and problems. Determining the maximum acceptable examination, and auditing given by the American Institute of Certified Public Accountants.

499 SEMINAR V R-4.

FOR GRADUATES

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

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

505 MANAGERIAL ACCOUNTING 3. Principles, theories and procedures of recording transactions for the development and interpretation of financial statements and statements of the financial position. Emphasis on decision leading to the use of financial statements in the utilization of resources. Interpretation, use, and limitations of accounting reports.

506 MANAGERIAL ACCOUNTING 2 prereq 505 or =. The significance and usefulness of accounting data in relation to managerial activities. Concepts and procedures for presentation of data for managerial, governmental and auditing purposes and the limitations and effectiveness of these presentations. Cost analysis, cash flow, and analytical reports. Interpretation, use, and limitations of accounting reports.

599 RESEARCH V R-6. Special research problems.

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

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

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

699 THESIS V R-9.

FINANCE

322 BUSINESS FINANCE 3 prereq all pre-business requirements. Forms of business organization, financial analysis, management of current assets, capital budgeting, financial planning, cost of capital, financial decisions, dividend policy. 323 COMMERCIAL BANKING 4 prereq Econ 301 and BA 322. Liquidity, loan and investment policy, credit analysis, loan administration, underwriting, loan commitments, life insurance companies and other financial institutions.

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

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

330 PRINCIPLES OF INSURANCE AND RISK 3 prereq Econ 203. Basic risk analysis: introduction to fire, casualty, life and health coverage. An analysis of insurance as an industry, underwriting, organization and industry practices; the liability peril: automobile insurance. Comparison and evaluation of insurance coverage. (Graduate credit available for non-business majors only.)

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

332 PROPERTY AND CASUALTY INSURANCE 3 prereq 330. Concepts, analysis of insurance; insurance principles facing specific types of business and personal risks: multiple-line policies relating to cost of capital and analysis; practical case problems in liability and direct loss situations.

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

341 PROBLEMS IN FINANCE 3 prereq 322. Analysis of problems relating to management of current assets, capital budgeting, dividend policy, equity, debt, financial planning.

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

343 ADVANCED PROBLEMS IN FINANCE 3 prereq 421. Functional analysis of problems facing financial management, with emphasis on long-term financing, dividend policy, debt policy, valuation for corporate mergers.

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

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

346 (En 307) PROPERTY VALUATION THEORY 3 prereq 353. The theoretical basis for appraising and basic value principles and non-economic limitations thereon; market indicators, locational analysis, classic approaches to value, valuation techniques, capitalization techniques, correlating the approaches.

347 PROPERTY MANAGEMENT 3 prereq 324. Management principles: feasibility studies; acquisition, promotion, development and maintenance of properties; owner, tenant and personnel relations; accounting and record keeping.

348 SOCIAL INSURANCE 3 prereq 330. The background, development, and current status of various plans contributing to the financial security of individuals and groups in our society, which is a function of government participation. Particular emphasis will be placed on social security, unemployment insurance, industrial accident and health, retirement, and liability perils.

349 ANALYTICAL METHODS IN FINANCE 3 prereq 322 and 323. The application of analytical methods such as linear programming and statistical decision making to financial problems, including investment and capital budgeting problems.

499 SEMINAR V R-4.

FOR GRADUATES

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

599 RESEARCH V R-6. Special research problems.

581 PROBLEMS IN FINANCIAL MANAGEMENT 3 prereq 322 and 523 or =. Internal and external aspects of business finance as viewed from the financial and underwriter’s point of view, applicable to the management of working capital, capital budgeting, financial planning, external financing and corporate mergers.

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

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

699 THESIS V R-9.

MANAGEMENT


341 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 4 prereq 240, 260. Current practice and problems in the industrial production areas of: materials procurement, inventory control, warehousing, materials handling.

357 LEGAL ENVIRONMENT OF BUSINESS 3 prereq all pre-business requirements. The legal environment and theory of law as related to business environment. What law is, sources and classifications of law, judicial, administrative, and decision making, principles of tort and criminal law, trends in law and business.

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

359 C.P.A. LAW REVIEW 3 prereq 338. The legal theory and principles underlying the enforcement of securities laws in connection with secured transactions, creditor's right, trusts and estates, wills and intestate succession. (Students intending to take the CPA examinations, but open to all students.)

371 INTRODUCTION TO COBOL PROGRAMMING 2 prereq Math 301 or =. Primarily for students in Business or Economics. Computer programs will be developed and written by students. (Credit not allowed for both Bus Ad 371 and CS 212.)

FOR UNDERGRADUATES AND GRADUATES

340 PRODUCTION MANAGEMENT 3 prereq all pre-business requirements. Management of the planning, design and operation of a production system—production as a function of the business rather than as a strictly manufacturing activity; and research and development, new product design, physical facilities, materials management, process design, production planning and control.

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

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

347 MANAGERIAL ECONOMICS 4 prereq 340. The application of economic analysis to the operation of a business. Demand and cost analysis, competitive and non-competitive pricing, and multiple production functions. Marketing strategy and selected behavioral models. The focus on statistical analysis, correlation, and linear programming.

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

353 SAMPLING AND STATISTICAL CONTROL 3 prereq 250 or Math 128. Applications in business, statistical control of product quality, industrial processes, and inventories.

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

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

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

444 REGULATION OF INDUSTRY 4 prereq 340, 360, and Econ 301. Examining the economic, administrative, and social implications of government participation in the economy and social control.

446 ADMINISTRATION AND BUSINESS POLICIES 4 prereq 340, 360, and Econ 301. (May only be taken in one of last two quarters of junior or senior year.) Topical and topic-oriented development, an integrated view of the organic specializations. Practice in analytical tools involved in problem solving and in coordination.

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

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

470 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS 3 prereq 350, and Cs 212. A study of the techniques for the analysis and design of business data processing and information systems utilizing the computer. Flow-charting, decision tables, data matrices, computer-related problems and principles of computer application to business systems and judging the feasibility of computer processing.

475 COMPUTER SIMULATION OF BUSINESS SYSTEMS 3 prereq 350, and Cs 212. Computer simulation of business information and control systems for simulation on electronic computers. Applications in inventory control, planning, forecasting and budgeting.

499 SEMINAR V R-4.

FOR GRADUATES

540 INDUSTRIAL HUMAN RELATIONS 4. Analysis of management role in the firm and its relationships to the firm through use of behavioral models drawn from contemporary psychology and social psychology.

542 RESEARCH METHODS 2. Sources of data, governmental and trade association reports, analysis of customer behavior, data problems and interpretation; problem formulation, research organization and planning; case analysis and experimental design.

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

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

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

499 SEMINAR V R-4.

FOR GRADUATES

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

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

599 RESEARCH V R-6. Special research problems.

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

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

699 THESIS V R-9.

BUSINESS EDUCATION AND OFFICE ADMINISTRATION

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

FOR UNDERGRADUATES

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

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

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

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

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

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

186 ADVANCED STENOGRAPHY 5 prereq 185 or equivalent. Dictation and Transcription. 187-188-189 ADVANCED STENOGRAPHY 5 prereq 187: 186 or placement; 188: 187 and 189 or placement; 189: 188 and 191 or placement. Review, speed development, Civil Service and State Merit tests. Concurrent enrollment in 190-191.

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

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

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

292 OFFICE MACHINES PRACTICE 2. Calculators and Adding.

FOR GRADUATES

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

381 METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS 2 prereq 201 or teaching experience in business subjects. Required of teaching majors and minors in Business Administration.

382 ADVANCED SECRETARIAL PRACTICE 5 a/y prereq 183, 187, 190, 193, 194, 282; Engl 450; or c/l. Practical application to typical secretarial activities. Required for future administration majors.


384 METHODS OF TEACHING SHORTHAND AND TRANSCRIPTION 2 prereq 194. Teaching shorthand and business subjects. Required of teaching majors and minors in Business Administration.

388 PHILOSOPHY OF VOCATIONAL BUSINESS EDUCATION 3. Major issues and forces affecting the development of vocational and technical business education; theories and practices relative to organization, operation and evaluation of vocational and technical business education programs; historical development of vocational education; and the relationships of vocational education to practical arts and general education.

388 PRACTICES IN VOCATIONAL BUSINESS EDUCATION 3. Teaching techniques for various units of instruction; the development of materials for use, development of the student, the organization of student clubs, equipment, and curriculum.

387 COOPERATIVE VOCATIONAL BUSINESS EDUCATION PROGRAMS 3. The organization and operation of vocational business education programs in the high school and post-secondary levels. Determining local needs, curriculum development, coordination techniques, and evaluation.

499 SEMINAR V R-4.

FOR GRADUATES

580 IMPROVEMENT OF INSTRUCTION IN OFFICE MACHINES PRACTICE 3 prereq 183 or business teaching experience and c/l. Lecture, methods, and rotation-plan techniques in teaching newest office machines.

581 IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE 2 prereq 183 or business teaching experience and c/l. Lecture, methods, and rotation-plan techniques in teaching secretarial machines. Duplication processes in producing the high school newspaper.

582 PROBLEMS IN TEACHING BOOKKEEPING 3 prereq 201 or bookkeeping teaching experience and c/l. Developing a course of study using the latest methods and materials.

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

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

583 UNIT COURSES IN BUSINESS EDUCATION V R-10 prereq major or minor in Bus. Ad. or business teaching experience and c/l. Several units may be taken in one or more summers. Each unit will carry a specific designation of topic covered.

599 RESEARCH V R-6. Special research problems.

697 PROFESSIONAL PAPER V R-5. Based on primary or secondary research. Subject matter in the area of the student's major interest must be approved by graduate advisor.

699 THESIS V R-9.

CHEMISTRY

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

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Science degree with a
CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

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<tr>
<th>Year</th>
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<tr>
<td>Freshman</td>
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<tr>
<td>Chem. 121-2-3</td>
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<tr>
<td>Math 121-152</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Phys. Ed. 100</td>
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<td>R.O.T.C. 101-2-3 (Optional)</td>
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(Beginning Math course actually dependent on placement test.)

Sophomore Year

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<td>Math 121-152</td>
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<td>Physics 221-2-3</td>
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<td>Chem. 245</td>
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<td>Electives or Eng. 250</td>
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<td>R.O.T.C. 201-2-3 (Optional)</td>
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(Recommended Group I electives other than Group I (3 cr.). III and IV requirements and other chemistry include further Mathematics, Physics, advanced Geology and French or Russian.)

Junior Year

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<td>German 101-102</td>
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<td>Chem. 370</td>
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<td>Electives to include Cr. Engl. 250 or 250</td>
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(Senior Year)

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(Senior Year)

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(Beginning Math course actually dependent on placement test.)

Sophomore Year

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<tr>
<th>Cr.</th>
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<tbody>
<tr>
<td>Chem. 261-2-3 (or 265-6-7)</td>
<td>5</td>
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<tr>
<td>Zoöl. 111-152</td>
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<tr>
<td>Physics 245</td>
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<tr>
<td>Electives</td>
<td>2-3</td>
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<tr>
<td>Mil. Sci.—optional</td>
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<tr>
<td>Engl. 250</td>
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Junior Year

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<tr>
<td>Phys. 221-3-3</td>
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<tr>
<td>For. Lang. 101, 102, 103</td>
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<tr>
<td>Zool. 404</td>
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<td>Electives (e.g., Zool. 304) or Engl. 350</td>
<td>5-8</td>
<td>0-3</td>
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<tr>
<td>Chem. 370</td>
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</table>

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

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

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

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

160 SURVEY OF ORGANIC CHEMISTRY 5 (5-4). Normally to follow Chemistry 101-102 as the third 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.

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

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

285-286-287 ORGANIC CHEMISTRY 5 (4-5) prereq 123. Designed for chemistry majors.

FOR UNDERGRADUATES AND GRADUATES

329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY 3 (2-1) prereq 123 or 122. Designed to familiarize prospective high school chemistry teachers with texts, demonstrations and laboratory experiments used in newer approaches to teaching of high school chemistry (CA and CHEMS). Credit not allowed toward bachelor's degree in chemistry.

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


375-376-377 PHYSICAL CHEMISTRY LABORATORY 1 (0-4) prereq 345, and 372-373, 374 or concurrent enrollment.

384 PHYSIOLOGICAL CHEMISTRY 3 (3-0) or 5 (5-4) prereq 160, 262 or 256. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

390 (361) CHEMISTRY OF PLANT CONSTITUENTS 4 (4-0) prereq 160 or 169. The chemistry of the plant components, including sugars, glycides, polysaccharides, lignin and extracts. (Same as Bot. 390 and For. 360).

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

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

446 INSTRUMENTAL ANALYSIS 5 (3-6) prereq 245, 371 and 376. Theory and practice of chemical instrumentation and instrumental analysis.

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

452 INORGANIC CHEMISTRY 3 (3-0) prereq 123, 283 or 287, 371 or 376. The principles of systematic inorganic chemistry.

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

455 INORGANIC CHEMISTRY LABORATORY 2 (0-6) prereq 123, 283 or 287 and c/l. The techniques in preparation of inorganic compounds.

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

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

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES. In addition to the general requirements for graduation listed earlier in the catalog, the student must complete a minimum of 45 credits and not more than 70 credits in Communication. All students majoring in the Communication program are required to complete a core curriculum as follows: Communication 111, 220, 223, and 303; Psychology 110; Sociology 101; Sociology 205 or Psychology 220; Anthropology 152 or 153 and 5 credits in Philosophy. The foreign language requirement listed earlier in the catalog must be satisfied. Additional requirements for the special programs in Communication are listed in the following sections.

Suggested Programs for Undergraduates:

SPEECH COMMUNICATION EMPHASIS

Freshman

Spch 111—Introduction to Public Speaking ........................................ 3
Phil elective ....................................................................................... 3
Spch 112—Argumentation .................................................................. 3
Soc 101—Introduction to Sociology .................................................. 3
Anthr 152—Man and His Culture ..................................................... 3
Anthr 153—Cultural Anthropology .................................................... 3
English Composition ........................................................................ 3

Sophomore

SpCo 231—Introduction to Communication ......................................... 5
SpCo 230—Introduction to Communication ......................................... 5

Junior

Spch 314—Discussion and Small Groups .......................................... 3
SPA 330—Introduction to Speech Pathology ....................................... 3
Spch 333—General Semantics ......................................................... 3
Spch 355—Speech Composition ........................................................ 3
Soc 355—Elementary Social Statistics or Sociology ........................ 3
Psych 220—Psychological Statistics and Measurements .................... 3
Electives from Communication Curriculum ....................................... 5

Senior

Spch 444—History of Rhetorical Theory .......................................... 3
Spch 445—History of American Public Address ................................ 3
Spch 446—History of British Public Address ..................................... 3
Electives from Communication Curriculum ....................................... 6
SPEECH PATHOLOGY AND AUDIOLOGY EMPHASIS

Freshman

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<th>Course</th>
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<td>H &amp; P.E.</td>
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<tr>
<td>English Lang.</td>
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<td>English Comp.</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>SpCo 112</td>
<td>5</td>
<td>5</td>
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<tr>
<td>SpCo 113</td>
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<tr>
<td>SpCo 232, 233, 234</td>
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<tr>
<td>Physical Sci.</td>
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<td>Soc or Anthro</td>
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<tr>
<td>Electives</td>
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<tr>
<td>16-17</td>
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Sophomore

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<tr>
<td>Humanities (in addition to Philos)</td>
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<td>SPA 335, 336, 338</td>
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<td>SPA 341</td>
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<td>SPA 360</td>
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<td>SpCo 131, 133, 135</td>
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<td>Electives</td>
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Junior

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<th>Course</th>
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<tbody>
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<td>Psych 220 or Soc 205</td>
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<td>Electives</td>
<td>9-11</td>
<td>15-17</td>
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<td>14-16</td>
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SPEECH COMMUNICATION EDUCATION EMPHASIS

Freshman

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

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

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Spch 119—Practicum in Oral Expression</td>
<td>3</td>
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<tr>
<td>Spch 265—Forensics</td>
<td>3</td>
</tr>
<tr>
<td>Spch 314—Discussion and Small Groups</td>
<td>3</td>
</tr>
<tr>
<td>SPA 330—Introduction to Speech Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SpCo 335—General Semantics</td>
<td>3</td>
</tr>
<tr>
<td>Spch 350—Speech Composition</td>
<td>3</td>
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<tr>
<td>Electives from Communication Curriculum</td>
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Senior

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<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>Spch 361—Performance of Literature</td>
<td>3</td>
</tr>
<tr>
<td>Spch 422—Teaching Speech in the Secondary School</td>
<td>3</td>
</tr>
<tr>
<td>Spch 445—History of American Public Address</td>
<td>3</td>
</tr>
<tr>
<td>Spch 462—Directing the Forensic Program</td>
<td>3</td>
</tr>
<tr>
<td>Edu 305—Secondary School Teaching Procedures</td>
<td>4</td>
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<tr>
<td>Edu 406—Student Teaching: Secondary</td>
<td>10</td>
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<tr>
<td>Edu 407—Problems in Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Edu 422—Educational Measurement</td>
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</table>

GRADUATE WORK. See Graduate School Bulletin.

FOUNDATIONS OF COMMUNICATION

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

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

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 INTRODUCTION TO SYSTEMS OF COMMUNICATION 5
Theory and evidence relevant to interpersonal and intrapersonal systems of communication. The role of language in human interaction.

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

223-223-224 INTRODUCTION TO COMMUNICATION 5 (4-2)
Major concepts and principles, focusing on the physiological, psychological, sociological, and cultural determinants of the production and reception of signs in human communication. (223 Phonology: the production of language. (223 Audiology: the reception and perception of language and other acoustic stimuli. (224 Process: the nature and use of signs and symbols in the total process of communication, with particular reference to meaning.

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

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

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

363 LANGUAGE AND CULTURE 3. (See Anthropology.)

FOR UNDERGRADUATES AND GRADUATES

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

471 COMPARATIVE SEMIOTICS 3 a/y prereq Zool 111-112-113. The sign process and its manifestation in the world of the phyletic scale.

490 LINGUISTIC METHODS 3. (See Anthropology.)

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

497 INTRODUCTION TO GRADUATE AND PROFESSIONAL PROGRAMS 2 prereq 18 credits of junior and senior level Speech Communication or c/l. The basic approaches to graduate and professional activities.

FOR GRADUATES

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

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

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

519 SEMINAR: FOUNDATIONS OF MEASUREMENT 3 prereq Psych 220 or Soc 205 or ..

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

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

597. RESEARCH METHODS AND MATERIALS 5 prereq Soc 205 or Psych 220 or .. Principles and techniques of research design and communication in research practice. Practise in the techniques of professional writing.

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

600 RESEARCH V R-10 prereq c/l.

699 THESIS V R-12.

SYSTEMS OF COMMUNICATION

(Speech Communication)

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

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)
111 INTRODUCTION TO PUBLIC SPEAKING 3. The theories and principles of public speaking. Practice speech composition, delivery and criticism.

112 ARGUMENTATION 5. The principles by which belief and conduct are influenced through appeals to logical reasoning. Evidence, analysis, logic, fallacies, refutation, rebuttal and their application to current economic, social and political problems.

115 PERSUASIVE COMMUNICATION 4. Principles and practice of attitude and behavior modification primarily by oral communication.

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

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

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

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

314 (214) DISCUSSION AND SMALL GROUPS 3. Study and practice in the processes involved in informal small-group interaction. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

316 COMMUNICATION IN ORGANIZATIONS 4. Emphasis on intra-organizational problems. Consideration of theory and research on questions of informational and directive communication as related to such factors as channels, structures, status, involvement, and morale.

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

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

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

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

FOR UNDERGRADUATES AND GRADUATES

422 (421) TEACHING SPEECH IN THE SECONDARY SCHOOL 3 prereq 15 credits in Communication. Planning the speech curriculum and its relationship to other school subjects; instructional materials and methods of teaching speech.

430 BUSINESS AND PROFESSIONAL INTERVIEWING 3. Theory and practice of communication behavior in dyadic situations as confronted in business, education, and professions. Experience in informational, employment, and decision-making interviews.

443 (343) ADVANCED PUBLIC SPEAKING 3 prereq 111 and 355 or c/i. Principles and practice in public speaking beyond that considered at the beginning levels; emphasis on informative and persuasive speaking.

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

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

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

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

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

490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

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

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

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

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

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

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

571 SOCIODRAMA 3 a/y prereq 371.

598 COMMUNICATION PRACTICES 3. (See Business Administration.

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

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12.

DISORDERS OF COMMUNICATION

(Speech Pathology and Audiology)

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

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

355 COMMUNICATION DISORDERS I 5 prereq 119, 223, 233, and 334. 2. Introduction to communication disorders present in educational and clinical field. Theories, research and selected remedial procedures relating to disorders of articulation, voice and language reception.

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

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

388 (387) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS I 3 prereq 326 or c/i. Principles and methods of handling speech and hearing disorders.

391 (351) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS I 3 prereq 326 or c/i. Principles and methods of handling speech and hearing disorders.

431 (331) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS II 2 prereq 341. Supervised clinical practice in the out-patient clinic.

439 (340) CLINICAL AUDIOMETRY 3 prereq 233. Fundamentals principles related to the measurement of hearing. Psychosocial problems and clinical techniques employed with the acoustically handicapped.

FOR UNDERGRADUATES AND GRADUATES

423 (333) CLINICAL PRACTICUM 1-3 R-4 prereq 338 and 341. Thirty clock hours per week of supervised clinical practice in the Speech and Hearing Clinic.

431 (351) STUTTERING 3 prereq 336. Stuttering as learned behavior; emphasis on prevention and habilitation.

432 (332) ORGANIC DISORDERS OF COMMUNICATION I 3 prereq 336 and 341. Theories, research and therapeutic procedures for problems of communication associated with anomalies in anatomical structure.

433 (333) ORGANIC DISORDERS OF COMMUNICATION II 3 prereq 336 and 341. Theories, research and therapeutic procedures for problems of communication associated with neurological disorders.

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

437 DIAGNOSTIC AUDIOLOGY 3, prereq 230. Special audiometric procedures used in otological diagnosis, pediatric audiology, hearing conservation in schools, professional issues in audiology.


490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

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

536 (456) PRACTICUM IN SCHOOL SPEECH AND HEARING THERAPY V R-9 prereq 435.
COMPUTER SCIENCE

The growing utility of computers in research and education as well as the increased impact of computers on our modern society strongly implies that a knowledge of computers and their capabilities should be a part of the basic education of all students. The 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, the student needs two years of mathematics (algebra and geometry). It is strongly recommended that high school preparation include four years of mathematics, one year of physics, and one year of chemistry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN COMPUTE R SCIENCE (subject to approval of the Board of Regents of the Montana University System). In addition to the general requirements for graduation listed earlier in the catalog, the following courses are required for the Bachelor of Science Degree in Computer Science: Computer Science 201, 212, 220, 301, 302, 303, 312, 320, 401, 402, 403, 471, 472, 473, Mathematics 125, 151-152-153, 201-202-203 and Philosophy 210. Computer Science 470, 471, 472, 473 and Mathematics 311, 312, 313, 321 are strongly recommended. Three courses must be taken, selected from: English 150, 250, 300; Journalism 304; Communication 111, 112, 115, 118.

FOR UNDERGRADUATES

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

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

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

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

271-272-273 COMPUTING AND MATHEMATICS 3-3-3 (3-4) prereq Math 001 and c/i. The elements of linear equations, inequalities, calculus, logic and probability are presented with the aid of a digital computer. (271) Linear equations and inequalities, linear programming. (272) Intuitive calculus. (273) Logic and probability theory. (Credit not allowed for this course and Math 272 or 277.)


DENTAL HYGIENE

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DENTAL HYGIENE. In addition to the general requirements for graduation listed earlier in the catalog (except the foreign language requirement Math 59), the following courses are required for the Bachelor of Science degree in Dental Hygiene: English 150; Mathematics 116, 125; Chemistry 101, 102, 160; Health, Physical Education and Recreation 101-102; Biology 101-102 or 200, 207; Home Economics 146 or 246, 366; Psychology 110, 230; Speech Communication 101, 302, 304, 305, 306, 310, 311, 312, 400, 401, 402, 403, 404, 410, 411, 412.

The Dental Hygiene Aptitude Test must be taken during the spring quarter, Sophomore year.

The National Board Dental Hygiene Test must be taken during the spring quarter, Senior year.
A total of 195 credits including 3 credits of required Health, Physical Education and Recreation 100 course is required. The Dental Hygiene licensure examination will be given once each year by the Montana State Board of Dental Examiners.

DENTAL HYGIENE CURRICULUM FOR THE B.S. DEGREE

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<th>Year</th>
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<tr>
<td>Freshman</td>
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<td>College Algebra (Math 116)</td>
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<td>Health, Physical Education and Recreation (HPER 100)</td>
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Sophomore Year

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<td>Human Anatomy (Histo 200)</td>
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<td>Elementary Medical Microbiology (Micro 102)</td>
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Junior Year

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<td>Drugs and Dental Therapeutics (Pharm 341)</td>
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Senior Year

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<td>Clinical Practice (DH 311)</td>
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<td>Field Practice (DH 410)</td>
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<td>Problems in Dental Hygiene (DH 411)</td>
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300 DENTAL ANATOMY 3 (3-0) prereq HPER 290. The growth and development of the teeth; morphology of permanent and primary teeth and the supporting tissues; drawing and carving of essential units.

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

302 GENERAL AND ORAL PATHOLOGY 3 (3-0) prereq Microbiology 101 and Dental Hygiene 300. A study of the diseases and abnormalities of the hard and soft tissues of the oral cavity.

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

305 DENTAL MATERIALS 3 (3-0) prereq Chemistry 160 (2-4). Physical and chemical properties of dental materials, with laboratory experience in their manipulation.

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

310 TECHNIQUES OF ORAL PROPHYLAXIS 3 (2-4). Objectives and principles of oral hygiene; instrumentation and procedure of oral prophylaxis, topical application, oral inspection, and dental health instruction, some clinical experience.

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

DENTAL HYGIENE ETHICS AND JURISPRUDENCE 3 (3-0). Fundamental ethics and professional application with reference to dental hygiene. Working arrangements and attitudes toward service to individual patients and communities. Professional loyalty. Legal status of dentistry and dental hygiene.

SEMINAR IN DENTAL HYGIENE 1 (1-0). ORAL ROENTGENOLOGY 3 (2-4). Radiographic techniques, exposure chemistry and processing of films, record keeping and mounting of films, direct application of dental hygiene, laboratory procedures involving experience of technique, processing, mounting, etc.

CLINICAL DENTAL HYGIENE 3 (3-12). Examination and charting techniques; Patient recall recording and notification. Field experience under close supervision. Continued prophylaxis experience.

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

COMMUNITY DENTAL HEALTH EDUCATION 3 (3-0). (Required for B S. Degree) Community Dental Health Education (local school or community Dental School Organization as a prerequisite). Application of educational principles to dental health teaching; instruction in planning for community dental health programs including actual dental survey experience; evaluation of dental health teaching materials. Study of established dental health education programs.

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

FIELD PRACTICE 3 (2-12). Observation and participation in dental hygiene practice at local school facilities. Instruction and class-room talks. Research surveys, recording and compiling data. Some advanced dental hygiene practice in the University Clinic under supervision.

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

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

DRAMA

Drama study is designed to train the student in acting, directing, design, playwriting and the technical phases of dramatic production and to give him experience in these areas; to prepare him to teach and direct in the high school theater and the college and university theater; and to relate through the study of the art of the theater the place of theater in the societies of the past and the present. The University of Montana Drama Department offers work leading to the Bachelor of Arts, Bachelor of Fine Arts, Master of Arts and Master of Fine Arts degrees in drama.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DRAMA. Inasmuch as no specific course requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree with a major in drama: Drama 101, 121-122-123, 131-132-133, 244, 241, 250, 202-203, 499 (4 cr. plus a minimum of 12 additional elective credits in Drama. All drama majors are required to enroll in Drama 200 or 300, Drama Workshop, for three years.

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

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

Senior comprehensive examinations are required for all graduating students.

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

Candidates for the Bachelor of Fine Arts degree will meet the same requirements as for the Bachelor of Arts degree except that the specific number of credits in the Department of Drama must be a minimum of 90 hours. The specific additional courses will depend upon the student's area of emphasis. A foreign language is not required for this degree.
DRAMA MAJORS PLANNING TO TEACH in Montana secondary schools must take, in addition to their drama major, a teaching major in another area for certification purposes. They will be certified in drama as a teaching minor. Students choosing English as their teaching major will be required to include Drama 201-202 or five credits of drama electives as part of their drama degree.

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


FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

1120 (112) INTRODUCTION TO THE THEATER 3. A survey of the elements which make up the art of play production. The principles underlying all the arts.

121-122-123 (121) ELEMENTARY ACTING 3. Principles of pantomiming, movement, stage vol. Emphasis upon teaching, stage vol. to young students. The physical theater, scenery, construction, painting, rigging, stage properties and fundamentals of lighting and costuming.

200 BEGINNING THEATER WORKSHOP V 6-9 R-12. Study and experience in the arts of theater according to the needs of the beginning theater student. Emphasis upon laboratory production, including all arts of the theater.


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

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

FOR UNDERGRADUATES AND GRADUATES

300 (304) WORKSHOP IN THEATER V 2-10 R-30 prereq previous work in theater or drama courses and consent of chairman. Study and experience in the arts of the theater according to the needs, preparation, and desires of the students; costumes, makeup, lighting, stagecraft, backstage organization, stage design, acting, directing, rehearsal and performance, business, and house organization and management.


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

FOR GRADUATES

307-308-309 THE DRAMA (see English)

311-312-313 (225, 422) DIRECTING 4. Elements of directing the play. Direction techniques in farce, comedy, melodrama, tragedy, musical comedy and opera. Laboratory directing assignments in conjunction with the Theater and Opera Workshops.

321-322-323 (301) ADVANCED ACTING 3 prereq 221-222-223 or c/l. Characterization and scene work. Study of pantomime; costumes, makeup, lighting, stage properties, and stagecraft.

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

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

335, 336, 345 STAGE LIGHTING 3 prereq 121. Principles and practice in stage lighting. Theatrical lighting equipment, instruments and their use. Students will work on lighting for major productions.

341, 342, 343 (341) STAGE COSTUMING 3. Costuming theory and practice; the history of costume; the design and construction of costumes.

351-352-353 (352) DRAMATIC INTERPRETATION 3 prereq 3 hrs. of voice courses. Theory and practice of oral interpretation of dramatic literature, including Reader's theater.

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

374 THEATER FOR CHILDREN 3 prereq c/l. History and objectives of the theater for the child audience; survey of existing production and children's theater programs. Techniques of acting, directing, and producing plays for children to be shown before child audiences in the community.

377 (364) CREATIVE DRAMATICS 3 prereq c/l. Children's literature suitable for dramatic form, improvisational and other playmaking techniques; the dramatic method in teaching non-theater subjects, demonstrations and exercise with laboratory groups of children.

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

400 TOURING 2-10 R-20 prereq consent of department chairman. Laboratory experience in total play production through participation in state, regional, national and international touring production programs.

431, 432, 433 SCENE DESIGN 3. Principles of stage design and the relation of the setting to the play, including principles of design, rendering, drafting and period decor.

435 (443) ADVANCED STAGE LIGHTING 3 prereq 335-336. Lighting for the theater and related forms, with special attention to modern lighting control and equipment, scenery projection, various forms of staging, and lighting design. Students will light productions.

439 SOUND IN THE THEATER 2. Principles, practice and equipment used to create sound and music effects for the theater.

444 (441) ADVANCED MAKE-UP 2 prereq 244 or experience and c/l. Principles and techniques of creating make-ups for characters from dramatic literature. Students will work on make-up for major production.

491, 492, 493 (401, 402, 403) THEATER PROJECTS V 2-4 prereq 300, 413-414, 421-422, 423-424, and demonstrated ability in theater and drama; to others with c/l on basis of much work in drama and the theater. Independent work in acting, directing, costume design, direction, playwriting, study of drama.

499 (491) SEMINAR 2 R-6 prereq 10 credits in drama courses or in English 307-308-309, 341-342-343, and c/l. Intensive study of dramatic theory relating to acting, directing, design, and dramaturgy.

FOR GRADUATES

501 STUDIES IN DRAMATIC LITERATURE 2 R-6 Concentration study of a play, style, or period. (Index)

506 (541) ADVANCED PLAYWRITING V 2-4 R prereq 306. Creative work of the student's choice. Structure, characterization and dialogue as used in the play form.

511 (522) SPECIAL PROBLEMS IN DIRECTION 2-4 prereq 312. Special directing problems involved in areas such as musical and opera production, pre-modern drama, etc. Individual directing projects.

515 (521) THEATER ADMINISTRATION 3 c/l. Administration and organizational techniques in the operation of theater producing organizations.

531 (511) TECHNICAL DIRECTION V 2-4 R-8 prereq strong technical background. Includes areas such as purchasing, scheduling, budgeting, staff control, and stagecraft maintenance. Students may serve as technical director for a production.

571 (531) SEMINAR IN HIGH SCHOOL THEATER PRODUCTION 2 prereq 321. Intensive study of play production in the secondary schools with particular emphasis upon direction and training of high school students.

690 THESIS V 2-5 R-15
ECONOMICS

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. The departmental English composition requirement must be completed.

Unless circumstances peculiar to the student's best interest indicate otherwise, the student shall take in the sophomore or junior year, Economics 201-202-203; Mathematics 116 (or equivalent), 125, Computer Science 101; Political Science 201; History 261-262; Anthropology 152 or Sociology 101; Philosophy 110; in the junior or senior year, Economics 301 and 311. It is strongly recommended that all students also take Mathematics 118 or 153 and Economics 408 as directed by the chairman of the department. It is also suggested that the student take Business Administration 201-202.

The following may be counted as part of the 50 credits required for a major in Economics: Geography 211; History 347-348-349, 374-375, 374-375, 473-474; Political Science 365; Mathematics 118 or 153, 344-345-346; Business Administration 360, 421, 460. It is recommended that the student take Business Administration 201-202.

Economics-Mathematics concentration. In addition to the diversification requirements listed above the student may elect a concentration in Economics and Mathematics. This concentration shall include: Economics 201-202-203, 301, 311-312-313, 360-361, and 481-482; and Mathematics 341-342-343 or 344-345-346 and one year of calculus. This program is not a joint major but represents instead concentrated undergraduate preparation for graduate study in theoretical economics.

COMBINED MAJORS. Minimum of 60 credits. Combined majors in economics and political science may be earned by meeting the following requirements with the remainder of credits selected according to the student's interests. Economics 201-202-203; Mathematics 116 or 153, and at least 12 additional credits in upper division courses. Political Science 201-202 and 18 additional credits in which 12 must be in upper division courses. A comprehensive examination is required of seniors with a major in the Economics-Political Science concentration.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101 CULTURAL ECONOMICS 5, Su 3. Institutional development of economic society; nature, origins and problems of modern capitalism. (Not open to students who have had Economics 201, 202 and 203.)


FOR UNDERGRADUATES AND GRADUATES

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


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

306 PUBLIC EXPENDITURE POLICY 3 prereq 203. Economic analysis of public expenditure programs; the nature 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.


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


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

331-332 INTRODUCTION TO INTERNATIONAL ECONOMICS 4, S 3, T 3. (331) Theoretical analysis; (332) Problems of policy-making.


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

350-351 ECONOMETRICS 4 prereq Math 125; 118 or 152. (350) General linear regression models; (351) Econometric theory and multiple equation models.

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

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


375 THE RUSSIAN ECONOMY 4, Su 3 prereq 203.

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

382 CONTEMPORARY ECONOMIC PROBLEMS 3 prereq 203.

385 LAND ECONOMICS 3 prereq 301. Economic and physical characteristics of land and the institutional background of real property; classifications of properties and market analysis; cyclical market fluctuation; impact of supply and demand; city growth, structure and planning; land use control, and real estate investment analysis.

406 MONETARY THEORY 4 prereq 301.

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

451-452 MATHEMATICAL ECONOMICS 4 prereq 312 and Math 125. (451) Constrained maximization, maximization over time; (452) Calculus of variations, input-output analysis, general equilibrium and programming, utility theory and game theory models.

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

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

FOR GRADUATES

501 GRADUATE RESEARCH V R-6.

510-511-312 ECONOMICS 3. Elements of analytical economics: the American economy, characteristics, performance; macro-economics, money and banking, monetary and fiscal policy; growth and stabilization, markets, pricing of outputs and inputs, government regulation; distribution theory and public policies: the public economy; the world economy, and the economic development. (Open only to MBA and MRA students.)

689 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 by the University of Montana for state certification to teach. Patterns of courses to be completed are planned in terms of the particular fields in which the student expects to teach.

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

A six-year program in school administration (two years of graduate work beyond the bachelor’s degree) is offered. The program is designed for practicing and prospective school administrators of demonstrated ability and promise.

Admission to the School of Education is a prerequisite for admission to graduate programs.

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

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

ADMISSION TO TEACHER EDUCATION. Students preparing to teach in the elementary grades should major in Education, those preparing to teach particular subjects, either in junior or senior high schools, major in the principal subject to be taught or in Foreign Language, Art, Music (vocal only), and Speech or a specialization in student teaching. All students preparing to teach must apply for admission to the School of Education at the University of Montana. Those who wish to major in Education must file a Declaration of Intent with the Executive Secretary of the School of Education at the University of Montana before being admitted. In order to be considered for certification in Education, before registering for student teaching.

Admission to Professional Quarter and Student Teaching. During the spring quarter of the student’s junior year, formal application for student teaching and assignment to a full quarter or other specified work in professional education must be made on forms obtained from the Director of Student Teaching. Normally, the professional quarter occurs during the student’s senior year.

Elementary: to qualify for this assignment, the student must have a cumulative gpa of 2.3 or better in all courses attempted, have no grade below C in Education courses, have the consent of the Director of Student Teaching. The professional quarter for the student preparing for elementary certification entails student teaching for an entire day for one full quarter (15 credits) and up to 2.0 credits in other general education courses (please note below under Admission to Professional Quarter).

Preparation to Psychology, although not counting toward the Education requirements, is prerequisite to all courses in Education and should be taken in the freshman or sophomore year. Students preparing to teach in the elementary grades should take Introduction to Psychology in the freshman year.

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

Elementary: to qualify for this assignment, the student must have a cumulative gpa of 2.3 or better in all courses attempted, have no grade below C in Education courses, have the consent of the Director of Student Teaching. The professional quarter for the student preparing for elementary certification entails student teaching for an entire day for one full quarter (15 credits) and up to 2.0 credits in other general education courses. Please note below under Admission to Professional Quarter.

Preparation to Teaching in the Secondary Grades: Candidates must earn a minimum of 40 credits in Education, including the following required courses totaling 35 credits: Education, 200, 208, 300, 310, 312, 342, 404, 405, 407. Elective courses totaling 5 credits selected from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 45 or more credits in a teaching major and 30 or more credits in a teaching minor. Requirements for teaching majors and minors: in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in Secondary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>A</th>
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<tbody>
<tr>
<td>Engl. 150—Freshman Composition</td>
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<tr>
<td>Group Requirements, Social Sciences</td>
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<td>Group Requirements, Humanities</td>
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<td>Psych. 110—Introduction to Psychology</td>
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<td>Sophomore Year</td>
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<table>
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<th>Junior Year</th>
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<tr>
<td>Engl. 250—Intermediate Composition</td>
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<td>Group Requirements, Social Sciences and Mathematics</td>
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<td>Group Requirements, Humanities</td>
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<tr>
<td>Edu. 150—Orientation to Professional Education</td>
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<tr>
<td>Education 205—Educational Psychology</td>
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<tr>
<td>Group Requirements, Social Sciences</td>
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<td>Teaching Minor</td>
<td>15-17</td>
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Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 40 credits in Education including the following courses totaling 40 credits: Education 200, 208, 300, 309, 310, 340, 404, 407.

In addition, the student will complete work in the following areas: English, 21 credits; Social Studies, 28 credits; Science, 18 credits; Mathematics, 9 credits; Health and Physical Education, 8 credits; Psychology, 8 credits; Art, 6 credits; and Music, 6-8 credits.

For elementary teachers, Group I and II requirements may be satisfied by the following: General 125, 126, 127, and 9 credits in Mathematics.

It is recommended that elementary teachers take Health and Physical Education 115-120 as part of their required work in Physical Education during the freshman and sophomore years.

Elementary Education majors may use their electives to strengthen any of the required academic fields, or to complete a minor in any of the following areas: Art, Music (vocal only), Foreign Language, Art, and Speech. All electives must be chosen with the approval of the Dean of the School of Education. Approved minor patterns are available at the School of Education Office.

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

Suggested Curriculum in Elementary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
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<tr>
<td>Engl. 150—Freshman Composition</td>
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<tr>
<td>Gen. 125-126-127—Science for Elementary Teachers</td>
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<td>Speech 111—Introduction to Public Speaking</td>
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<td>Psych. 110—Introduction to Psychology</td>
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<td>Group Requirements, Humanities</td>
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<td>English 305—Secondary School Teaching Procedures</td>
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<tr>
<td>Speech 111—Introduction to Public Speaking</td>
<td>3-5</td>
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Sophomore Year

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<tr>
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<tr>
<td>Edu 200</td>
<td>Orientation to Education</td>
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</tr>
<tr>
<td>Edu 201</td>
<td>Education Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>Edu 202</td>
<td>The Elementary School Child</td>
<td>3</td>
</tr>
<tr>
<td>Edu 200-300</td>
<td>Mathematics</td>
<td>4</td>
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<tr>
<td>H&amp;PE 198</td>
<td>First Aid</td>
<td>2</td>
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<tr>
<td>Hist. 261-262</td>
<td>United States History</td>
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<tr>
<td>Math. 130</td>
<td>Theory of Arithmetic</td>
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<tr>
<td>Math. 320</td>
<td>Intuitive Geometry</td>
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<td>Sci. 201-301</td>
<td>American Government</td>
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Junior Year

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<tr>
<td>Edu 340</td>
<td>Survey of Children's Literature</td>
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<tr>
<td>Edu 308</td>
<td>Teaching Elem. School Reading and Other Language</td>
<td>5</td>
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<tr>
<td>Edu 309</td>
<td>Teaching Elementary School Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Edu 310</td>
<td>Teaching Elementary School Science and Social</td>
<td>4</td>
</tr>
<tr>
<td>Engl. 350</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Art 303-304</td>
<td>Elementary School Art</td>
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<tr>
<td>Gen. 300</td>
<td>Conservation of Natural and Human Resources in Montana</td>
<td>3</td>
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<tr>
<td>H &amp; PE 339</td>
<td>Teaching Physical Education in Elementary Schools</td>
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<tr>
<td>H&amp;PE 373</td>
<td>The School Health Program</td>
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<tr>
<td>Social Sciences-Elective Courses</td>
<td>5</td>
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</tr>
<tr>
<td>Electives</td>
<td></td>
<td>16</td>
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</table>

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

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

1. A bachelor's degree from the University of Montana or other approved institution of higher education.
2. Twenty-four or more quarter credits in Education designated by the Dean of the School of Education (see Preparation for Secondary Teaching below).
3. Preparation in one or more special subject areas commonly taught in the secondary schools as indicated under COURSE REQUIREMENTS IN MAJOR AND MINOR TEACHING FIELDS, listed later.

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

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

Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarters preceding the quarter of practice teaching a statement setting forth their intended teaching fields. Those students who expect to be certified to teach in the elementary grades will similarly submit a statement setting forth their proposed programs. Each candidate for a certificate who has not already received credit in Student Teaching (Educ 404 or 405) will be assigned definite quarters in which he must register for that course.

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

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

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

Variations from these patterns of required courses for elementary and secondary standard teaching certification are permissible only with the approval of the Dean of the School of Education.

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

PREPARATION FOR SCHOOL LIBRARIANS. The library service program is designed to train school and teacher-librarians to meet the requirements of the Northwest Association of Secondary and Higher Schools and of the state of Montana. The requirement for schools of under 100 enrollment includes Education 343, 344, and 345. The student planning a more extended program should consult the library service instructor for advice on additional courses.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

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

202 THE ELEMENTARY SCHOOL CHILD 5 prereq 200, coreq 201. Principles of growth and development and the psychology of learning as applied to the elementary school child. A minimum of 2 hours per week will be spent in observation of children in the school environment.

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

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


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

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

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

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

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

330 PRINCIPLES OF RELIGIOUS EDUCATION. (See Religion.)

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

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

402 OBSERVATION AND PARTICIPATION: ELEMENTARY V R-6 prereq 206, 208, 310 or =, teaching experience and c/i. Observation and participation in teaching of a demonstration class of grade school students. For students with teaching experience who cannot secure the regular course in student teaching.

403 OBSERVATION AND PARTICIPATION: SECONDARY V R-6 prereq 203 or =, teaching experience and c/i. Observation and participation in teaching of a demonstration class of high school students. For students with teaching experience who cannot secure the regular course in student teaching.

404 STUDENT TEACHING: ELEMENTARY 15 prereq 200, 202, 208, 309, 210, 304 and consent of Director of Student Teaching. Observation, and participation in a demonstration class of grade school students. For students with teaching experience who cannot secure the regular course in student teaching.

405 STUDENT TEACHING: SECONDARY 10 prereq 200, 205, 305, and consent of Director of Student Teaching. Classroom teaching is a full day's work for a complete quarter, and although some observation and participation are included, the main emphasis is upon responsible student teaching. It includes as many of the regular duties and responsibilities of a teacher as can be included.

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

445 LIBRARY PRACTICE 5 prereq 20 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under the supervision of a trained professional librarian. Weekly meeting with Director of Library Service.
302 ALGEBRA FOR TEACHERS. (See Mathematics.)
303 GEOMETRY FOR TEACHERS. (See Mathematics.)
306 METHODS OF TEACHING EARTH SCIENCE. (See Geography.)
307 METHODS OF TEACHING SECONDARY ART. (See Art.)
316 SCHOOL PUBLICATIONS. (See Journalism.)
322 METHODS OF TEACHING BIOLOGY. (See General.)
326 TEACHING OF CONSERVATION 3 prereq Gen 300 and 12 credits in Educ and c/l. Current conservation programs and materials. Integral part of summer Conservation Education Workshop.
327 PROBLEMS IN CONSERVATION EDUCATION prereq c/l. May be taken for 3 credits if taken concurrently with Educ 326 or for 6 credits if preceded by Educ 326 and Gen 306. Designing, selection, and evaluation of materials for the teaching of conservation.
328 METHODS OF TEACHING PHYSICS. (See Physics.)
329 METHODS OF TEACHING HIGH SCHOOL CHEMISTRY. (See Chemistry.)
331 EARLY CHILDHOOD EDUCATION 3 prereq 12 credits in Elementary Education or teaching experience and c/l. Theory and techniques of teaching in pre-school and primary levels of education. Observation and participation in pre-school programs. Required for kindergarten and primary teachers.
334 REMEDIAL READING 3 prereq a basic course in teaching of reading or teaching experience, and c/l. Diagnosis and treatment of reading difficulties at elementary, secondary and college levels. Methods and materials for specialists, classroom teachers, and administrators who wish to initiate remedial programs.
340 SURVEY OF CHILDREN'S LITERATURE 3.
349 THE SCHOOL LIBRARY IN TEACHING 3. The use of books and libraries. The use of library materials in subject enrichment and unit planning. (May not be counted in the teaching minor.)
349 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 4, Su 3. Objectives of school library service, library routines, and political life; the school, special, and public institution; problems of American life which affect and are affected by the work of the public schools.
350 THE TEACHER AND SCHOOL ORGANIZATION 3 prereq teaching experience. The teacher's relationship to the organization, management, and financing of American public education with special emphasis on personnel problems, community relations, and organizational structure of schools.
373 THE SCHOOL HEALTH PROGRAM. (See Health and Physical Education.)
380 METHODS OF TEACHING TYPEWRITING. (See Business Administration.)
381 METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS. (See Business Administration.)
382 METHODS OF TEACHING ENGLISH. (See English.)
384 METHODS OF TEACHING SHORTHAND AND TRANSCRIPTION. (See Business Administration.)
385 PHILOSOPHY OF VOCATIONAL BUSINESS EDUCATION. (See Business Administration.)
386 PRACTICES IN VOCATIONAL BUSINESS EDUCATION. (See Business Administration.)
387 COOPERATIVE VOCATIONAL BUSINESS EDUCATION PROGRAMS. (See Business Administration.)
389 METHODS OF TEACHING FOREIGN LANGUAGES. (See Foreign Languages.)
411 (311) SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 3 prereq teaching experience and c/l. Analysis of current methods in the teaching of language arts in the elementary school. (Not a course in the teaching of reading.)
412 (312) SUPERVISION AND TEACHING OF READING 3 prereq teaching experience. Characteristics of good reading programs and their development in accordance with present day understandings of children and their development.
414 (314) SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 3 prereq teaching experience. Curriculum trends, instructional practices, teacher-pupil planning and evaluation, unit organization, integration with other areas, and use of community resources.
417 (317) SUPERVISION AND TEACHING OF ARITHMETIC 3 prereq teaching experience or c/l. Curriculum trends, instructional practices, and supervisory techniques relevant to modern elementary school arithmetic program.
420 METHODS OF TEACHING SECONDARY SCIENCE 3 prereq c/l. Special emphasis on personnel problems, community relations, and use of computers in secondary education.
429 SAFETY EDUCATION AND DRIVER TRAINING 3 prereq c/l. Supervised practice in teaching driver training. For students who have had experience in this field, general safety education. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.
435 ADVANCED SAFETY EDUCATION AND DRIVER TRAINING 3 prereq and 1 credit in Education and Driver Training courses in high schools. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.
437 READING IN JUNIOR AND SENIOR HIGH SCHOOL 3 prereq 205 or =. Programs, materials, testing, reading in the content fields, research in reading education.
438 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS 3 prereq 205 or teaching experience. Problems involved in the teaching of social studies in junior and senior high school. Curriculum trends, development, and presentation of units of instruction, selection and use of materials.
438 THE SLOW AND RETARDED LEARNERS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.
439 THE BRIGHT AND GIFTED PUPILS 3 prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.
440 LIBRARY PROGRAMS IN ELEMENTARY SCHOOLS o/y 3 Selection and use in children's literature. Functions and use of classroom collections and centralized libraries for curriculum enrichment experiences, reading, guidance, and teaching library skills. Responsibilities of classroom teachers, elementary librarians, library supervisors, elementary principals and administrators.
441 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 2 prereq 12 credits in Library Service. Methods of evaluating and improving school library services to teachers and students.
442 LIBRARY WORK WITH CHILDREN 3 or 5 credits prereq 341 or 342. A course in children's literature service in public libraries, including story telling and organization of the children's department in the public library.
443 LIBRARY WORKSHOP 3 R-8 prereq 9 credits in Library Service. Problems of library service. General sessions and committee work: individual work on problems of special interest within the workshop topic.
444 LIBRARY SEMINAR V R-10 prereq 20 or more hours in Library Service. Directed study. Independent study and research. Group analysis and discussion of individual projects.
447 PREPARATION OF INEXPENSIVE INSTRUCTIONAL MATERIALS 3 prereq 1 credit in Education, ability to read, ability to make use of lettering, coloring, enlarging, mounting, and production in the preparation of media for projected and non-projected use.
448 UTILIZATION OF AUDIOVISUAL MEDIA 3 prereq 347. Selection and utilization of audiovisual materials for an instructional communication system.
549 ADMINISTRATION OF AUDIOVISUAL COMMUNICATIONS PROGRAMS 4 prereq 560 or c/i. Management of an integrated program and administration of communications media for elementary or secondary school programs.

550 SECONDARY SCHOOL GUIDANCE 4 prereq 206 or teaching experience. Orientation to the need, organization, and methodology of guidance services in the secondary schools.

551 GUIDANCE IN THE ELEMENTARY SCHOOL 4 prereq 308, 309, or other teaching experience. Orientation to the need, organization, and methodology of guidance services in the elementary schools.

552 EDUCATIONAL MEASUREMENT 4 prereq 205 or teaching experience. Basic principles of measurement of educational outcomes in elementary and secondary teaching; application of statistical techniques to educational research. Construction and use of teacher-made tests.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 3. Historical and philosophical backgrounds of present day trends in the public education. Enter either quarter, (461) to 1550; (462) 1650 to present.

550 INDEPENDENT STUDY V R-10 prereq c/i. Selected topics under the guidance of a staff member. Term papers may be required.

594 SEMINAR V R prereq 12 credits in Education and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

FOR GRADUATES

505 INTERNSHIP V R-15 Supervised field experiences in administration, guidance, special education, curriculum. (Admission by application only.)

530 CURRICULUM FOUNDATIONS 4 prereq c/i. An analysis of the bases for curriculum in the light of historical perspective, value systems, current curriculum patterns, educational objectives, and emerging trends in the general field of educational administration. Major trends in course content, grade placement, organization of materials, and evaluation of outcomes.

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

533 JUNIOR HIGH SCHOOL CURRICULUM 4, prereq 530 or c/i. Sociological, psychological, and philosophical foundations of the junior high school. Curriculum trends in the separate subject areas, and organizing for the administration of the junior high school for implementation of curriculum.

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

550 ADVANCED EDUCATIONAL PSYCHOLOGY 3. General behavior and learning; motivation, interference reduction, reinforcement, teaching for permanence and transfer. Current research in field.

551 ADVANCED CHILD DEVELOPMENT 3 prereq c/i. Physical, intellectual, social, emotional development to age 12 with special reference to the writings of Piaget, Gesell, and others.

552 INDIVIDUAL APPRAISAL IN COUNSELING AND GUIDANCE 5 prereq 490 or 491, and 492. Procedures used by counselors who work with students in groups. Emphasis upon group processes, interaction and experience.

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

555 THEORIES OF COUNSELING 5 prereq 450 or 451, and 552. Current theories of counseling as applied by the school counselor in individual counseling.

556 SUPERVISED COUNSELING PRACTICE 5 prereq 555. Supervised practice in counseling students on an individual basis.

557 ORGANIZATION AND ADMINISTRATION OF PERSONNEL SERVICES 3 prereq 556. The development and organization of guidance services in the school with emphasis on philosophy, organization procedures and faculty involvement.

558 SEMINAR IN COUNSELING AND GUIDANCE 3 prereq 555 and 556. Current literature and research in the counseling and guidance field.

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

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

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.

588 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq 206 or c/i. The background of education in its broadest sense as found in the religion, the economic system, the family, the estate, and other social institutions.

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

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

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

593 SECONDARY SCHOOL ADMINISTRATION 3 prereq teaching experience. Administration of secondary education. Role of the principal in areas of competency.

594 SCHOOL SURVEYS AND STUDIES 3 prereq 592. Techniques of organizational study of future needs and direction of education in the local school district.

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

596 SCHOOL FINANCE 4 prereq teaching experience. Sources of school revenues; related costs, inequalities, legal limitations, and procedure of expenditure; relationship of foundation programs and district reorganization.

597 SCHOOL FACILITIES PLANNING V 2-4 prereq 590 or = and c/i. Procedures in determining school facility needs and planning facilities through educational specifications.

598 LEGAL BASIS OF PUBLIC EDUCATION 3 prereq 590 or = and c/i. Legal concepts of education in the United States; legal implications of the concept of education as a state function. Legal problems affecting pupils, parents, teachers, administrators, and school board members in relation to the school.

599 PERSONNEL ADMINISTRATION 3 prereq 590 and c/i. Problems of certified and non-certified personnel (not student); selection, in-service training, assignment, supervision, and welfare.

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

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

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

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

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

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

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

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

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

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

597 EDUCATIONAL STATISTICS 4 prereq Math 125, Educ 452 and 555 or concurrent registration therein and c/i.

599 RESEARCH V R-15 prereq c/i.

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

638 THE AMERICAN JUNIOR COLLEGE 3 prereq c/i.

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

699 THESIS OR PROFESSIONAL WRITING V R-30.

COURSE REQUIREMENTS

IN MAJOR AND MINOR TEACHING FIELDS

Students who wish to qualify for the Martian Secondary School Teaching Certificate must, according to the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete a minimum of 48 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. (Single endorsements on certificates will be allowed if the student presents a minimum of 60 credits in the teaching major in courses approved by both the department (or school) involved and the
School of Education.) In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

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

**ART**

**Required Courses:**
- Art 123--Drawing ........................................................................... 9
- Art 125, 126, 127--Design ................................................................. 6
- Art 129--Ceramics ........................................................................... 4
- Art 199--Layout and Lettering ........................................................... 0
- Art 200, 201, 202--Survey of Western Art ........................................... 6
- Art 223--Printmaking ...................................................................... 3
- Art 233--Sculpture ......................................................................... 3
- Art 239--Water Color ...................................................................... 3
- Art 240--Painting ............................................................................ 3
- Art 253, 304--Elementary School Art ................................................. 3
- Art 257--Methods of Teaching Secondary Art .................................... 3
- Art 325--Advanced Design (Photography) .......................................... 3
- Art 326--Advanced Design (Crafts) .................................................. 3

**BUSINESS ADMINISTRATION**

**Required Courses:**
- Bus. Ad. 181--Production Typewriting ............................................. 2
- Bus. Ad. 182, 183, 184--Introduction to Bookkeeping and Basic Business . 3
- Bus. Ad. 185, 186--Secretarial Practice .............................................. 3
- Bus. Ad. 194--Records Management ................................................. 2
- Bus. Ad. 201, 202--Accounting Principles ........................................... 3
- Bus. Ad. 203--Elementary Accounting ................................................ 3
- Bus. Ad. 292--Office Machines Practice .............................................. 2
- Bus. Ad. 367--Electronic Information Processing .................................. 3
- Bus. Ad. 368--Methods of Teaching Typewriting ................................. 2
- Bus. Ad. 369--Methods of Teaching Bookkeeping and Keeping Business . 2
- Bus. Ad. 380--Office Management .................................................... 3
- Bus. Ad. 381--Methods of Teaching shorthand and Transcription ........ 2
- Bus. Ad. 385--Business Machines Practice ........................................ 2
- Bus. Ad. 387--Cooperative Vocational Business Education Programs ...... 3
- Econ. 201, 202, 203--Principles of Economics ..................................... 3
- Econ. 301--Money and Banking ....................................................... 4

**ECONOMICS (Minor only)**

**Required Courses:**
- Econ. 201, 202, 203--Principles of Economics ..................................... 9
- Econ. 301--Money and Banking ....................................................... 4
- Econ. 311--Intermediate Economics Analysis ..................................... 4

**ELECTIVES:**
- Economics courses ........................................................................ 13

**ENGLISH**

**Required Courses:**
- Engl. 161, 162, 163--World Literature ............................................... 9
- Engl. 164, 165, 166--World Literature .............................................. 9
- Engl. 211, 212, 213--Introduction to Major British Writers ................ 9
- Engl. 231, 232, 233--Introduction to Major American Writers ............ 9
- Engl. 342 or 343--Shakespeare ......................................................... 3
- Engl. 371--The Structure of Modern English ....................................... 3
- Engl. 392--Methods of Teaching English ............................................ 3
- Engl. 426--Literature for the High School Teacher ............................... 3
- Spch. 111--Introduction to Public Speaking .................................... 3

**ELECTIVES:**
- English courses ........................................................................... 21

**FOREIGN LANGUAGES**

**Required Courses:**
- Span. 101, 102, 103--World Literature ................................................ 9
- Span. 201, 202, 203--World Literature .............................................. 9
- Span. 301, 302, 303--World Literature ................................................ 9

**ELECTIVES:**
- Spanish courses ........................................................................... 13

**COMPUTER SCIENCE (Minor Only)**

**Required Courses:**
- 302--Programming ......................................................................... 9
- 303--Application of Digital Computers ................................................ 4
- 304--Advanced Programming .......................................................... 9
- 480--Computer Applications in Education ........................................ 9
- Math 111--College Algebra ............................................................... 5
- Math 117--Trigonometry ................................................................. 3

**DRAMA (Minor only)**

**Required Courses:**
- Drama 101--Introduction to the Theater .......................................... 3
- Drama 121--Elementary Acting ....................................................... 3
- Drama 131, 132, 135--Stagecraft (any 2) ........................................... 5
- Drama 244--Stage Makeup ........................................................... 2
- Drama 245, 246, 247--Dramatic Literature (any 2) ............................. 6
- Drama 311--Directing ................................................................. 4

**ELECTIVES:**
- Any courses in Drama except 100 ..................................................... 4

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

**ELECTIVES (Minor only)**

**Required Courses:**
- Econ. 201, 202, 203--Principles of Economics ..................................... 9
- Econ. 301--Money and Banking ....................................................... 4
- Econ. 311--Intermediate Economics Analysis ................................... 4

**ELECTIVES:**
- Economics courses ........................................................................ 13

**ENGLISH**

**Required Courses:**
- Engl. 161, 162, 163--World Literature ............................................... 9
- Engl. 164, 165, 166--World Literature .............................................. 9
- Engl. 211, 212, 213--Introduction to Major British Writers ................ 9
- Engl. 231, 232, 233--Introduction to Major American Writers ............ 9

**ELECTIVES:**
- English courses ........................................................................... 21

**FOREIGN LANGUAGES**

**Required Courses:**
- Span. 101, 102, 103--World Literature ................................................ 9
- Span. 201, 202, 203--World Literature .............................................. 9
- Span. 301, 302, 303--World Literature ................................................ 9

**ELECTIVES:**
- Spanish courses ........................................................................... 13

**COMPUTER SCIENCE (Minor Only)**

**Required Courses:**
- 302--Programming ......................................................................... 9
- 303--Application of Digital Computers ................................................ 4
- 304--Advanced Programming .......................................................... 9
- 480--Computer Applications in Education ........................................ 9
- Math 111--College Algebra ............................................................... 5
- Math 117--Trigonometry ................................................................. 3

**DRAMA (Minor only)**

**Required Courses:**
- Drama 101--Introduction to the Theater .......................................... 3
- Drama 121--Elementary Acting ....................................................... 3
- Drama 131, 132, 135--Stagecraft (any 2) ........................................... 5
- Drama 244--Stage Makeup ........................................................... 2
- Drama 245, 246, 247--Dramatic Literature (any 2) ............................. 6
- Drama 311--Directing ................................................................. 4

**ELECTIVES:**
- Any courses in Drama except 100 ..................................................... 4
## EDUCA TIO—43

### FRENCH

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

*For Lang 300—Methods of Teaching Foreign Languages 3 3

**Electives:**
- French courses numbered over 300 9 3
- *Must be taken in the junior year.*

### GERMAN

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

*For Lang 300—Methods of Teaching Foreign Languages 3 3

**Electives:**
- German courses numbered over 300 9 3
- *Must be taken in the junior year.*

### ITALIAN (Minor only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (35 credits)</th>
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</thead>
<tbody>
<tr>
<td>Ital. 101, 102, 103—Elementary Italian</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Ital. 211, 212—Italian Readings</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Ital. 211—Italian Grammar Review and Composition</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ital. 311, 312, 313—Survey of Italian Literature</td>
<td>6</td>
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</table>
| For. Lang. 300—Methods of Teaching Foreign Languages | 3 | 3

### LATIN

<table>
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<tr>
<th>Required Courses:</th>
<th>Teaching Major (48 credits)</th>
<th>Teaching Minor (36 credits)</th>
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<tbody>
<tr>
<td>Latin 101, 102, 103—Elementary Latin</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Latin 211, 212, 213—Latin Readings</td>
<td>11</td>
<td>11</td>
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<tr>
<td>Latin 490—Major Latin Writers</td>
<td>22</td>
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### RUSSIAN

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

*For. Lang. 300—Methods of Teaching Foreign Languages 3 3

**Electives:**
- Russian courses numbered over 300 6 6

### SPANISH

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (45 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 101, 102, 103—Elementary Spanish</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Span 201, 202, 203—Intermediate Spanish</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Span 301, 302—Oral and Written Expression</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Span 303—Contemporary Hispanic Civilization and Culture</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Span 311, 312, 313—Survey of Spanish Literature</td>
<td>6</td>
<td>6</td>
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<tr>
<td>or</td>
<td></td>
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<tr>
<td>Span 331, 332, 333—Survey of Spanish American Literature</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Span 401—Applied Linguistics (minors may substitute Span 402)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Span 402—Advanced Composition</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
| *For Lang 300—Methods of Teaching Foreign Languages 3 3

**Electives:**
- Spanish courses numbered over 300 9 3
- *Must be taken in the junior year.*

### GEOGRAPHY (Minor only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (35 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog. 101—Physical Elements of Geography</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geog. 102—Introductory Human Geography</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geog. 201—Map Interpretation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 211—Economic Geography</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 336—Cultural Geography</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 360—Climatology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog. 370—Landform Analysis</td>
<td>3</td>
<td>3</td>
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</table>

**Electives:**
- Geography courses numbered over 300 6 6

### HEALTH AND PHYSICAL EDUCATION

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (35-36 credits)</th>
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<tbody>
<tr>
<td>H&amp;PE 206—History and Principles of Physical Education</td>
<td>3</td>
<td>3</td>
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<tr>
<td>H&amp;PE 215—Advanced Professional Preparation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 240—Care and Prevention of Athletic Injuries</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 261—Introduction to Recreation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 290—Human Anatomy</td>
<td>3</td>
<td>3</td>
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<tr>
<td>H&amp;PE 302—Methods of Teaching Phys Educ Secondary Level</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 339—Teaching Phys Educ in Elementary Schools</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 350—The High School Intramural Program</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 365—Organization &amp; Administration of Phys Educ</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 375—The School Health Program</td>
<td>3</td>
<td>3</td>
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<tr>
<td>H&amp;PE 380—Applied Anatomy</td>
<td>3</td>
<td>3</td>
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<tr>
<td>H&amp;PE 385—Kinesiology</td>
<td>2</td>
<td>2</td>
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<tr>
<td>H&amp;PE 390—Preventive &amp; Corrective Physical Education</td>
<td>3</td>
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<tr>
<td>H&amp;PE 399—First Aid (or H&amp;PE 399)</td>
<td>2</td>
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<tr>
<td>H&amp;PE 465—Measurement and Evaluation in Phys Educ</td>
<td>3</td>
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</tr>
<tr>
<td>H&amp;PE 475—Physiology of Exercise</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 490—Teaching Physical Education Activities</td>
<td>2</td>
<td>2</td>
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</tbody>
</table>

**For Women:**
- H&PE 222—Officiating Basketball | 2 | 2 |
- H&PE 301, 303—Methods of Teaching Phys Educ Secondary Level | 2 | 2 |
- H&PE 324, 325, 326—Dance Methods | 4 | 4 |
- H&PE 460—Seminar | 1 | 1 |

**Electives:**
- Courses in Physical Education 7 3
- H&PE 115-120 must be completed. These courses will satisfy the University requirement, but neither these nor PE 100 will be counted in credits applying toward the teaching major or teaching minor.

### HISTORY AND POLITICAL SCIENCE

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

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

- **Teaching Major (58 credits)**
- **Teaching Minor (37 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>H Ec. 125</td>
<td>Textile Selection</td>
<td>3</td>
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<tr>
<td>H Ec. 126</td>
<td>Introductory Clothing Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 209</td>
<td>Home Management in Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 210</td>
<td>Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 241</td>
<td>Principles of Food Preparation</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 246</td>
<td>Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 258</td>
<td>Clothing the Family</td>
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</tr>
<tr>
<td>H Ec. 303</td>
<td>Interior Design and Furnishings</td>
<td>5</td>
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<tr>
<td>H Ec. 305</td>
<td>Meal Management</td>
<td>3</td>
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<tr>
<td>H Ec. 309</td>
<td>Family Finance</td>
<td>5</td>
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<tr>
<td>H Ec. 310</td>
<td>Home Living Center</td>
<td>3</td>
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<tr>
<td>H Ec. 321</td>
<td>Methods of Teaching Home Economics</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 322</td>
<td>Advanced Clothing Problems</td>
<td>3</td>
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<tr>
<td>H Ec. 365</td>
<td>Child Development</td>
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<td>H Ec. 376</td>
<td>Advanced Problems in Child Development</td>
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<tr>
<td>H Ec. 400</td>
<td>Seminar</td>
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*Must be taken before Education 405.*

### JOURNALISM (Minor only)

- **Teaching Minor (30 credits)**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>Jour. 100</td>
<td>Introduction to Journalism</td>
<td>3</td>
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<tr>
<td>Jour. 196</td>
<td>Current Affairs</td>
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<tr>
<td>Jour. 240</td>
<td>Elementary Photography</td>
<td>3</td>
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<tr>
<td>Jour. 270</td>
<td>Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Jour. 290</td>
<td>History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Jour. 316</td>
<td>School Publications</td>
<td>3</td>
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<tr>
<td>Jour. 390</td>
<td>Principles of Advertising</td>
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<td>Jour. 420</td>
<td>Advanced Reporting</td>
<td>3</td>
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<tr>
<td>Jour. 380</td>
<td>News Editing</td>
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<td>Jour. 495</td>
<td>Editorial Writing</td>
<td>3</td>
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<tr>
<td>R &amp; TV 140</td>
<td>Introduction to Radio and Television</td>
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### LIBRARY SERVICE (Minor only)

- **Teaching Minor (30 credits)**

<table>
<thead>
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<tr>
<td>Edu. 343</td>
<td>Organization and Administration of the School Library</td>
<td>3-4</td>
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<tr>
<td>Edu. 344</td>
<td>Cataloging and Classification</td>
<td>3-4</td>
</tr>
<tr>
<td>Edu. 345</td>
<td>Materials Selection and Bibliography</td>
<td>3-4</td>
</tr>
<tr>
<td>Edu. 346</td>
<td>Library Reference Materials</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 347</td>
<td>Audiovisual Communication</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives:** From the following: 11-15

### BIOLOGICAL SCIENCE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu. 340</td>
<td>Survey of Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 440</td>
<td>Library Programs in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 441</td>
<td>Evaluation of School Library Services and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 442</td>
<td>Library Work with Children</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 444</td>
<td>Library Seminar</td>
<td>5-10</td>
</tr>
<tr>
<td>Edu. 495</td>
<td>Library Practice</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 482</td>
<td>Literature for the High School Teacher</td>
<td>3</td>
</tr>
</tbody>
</table>

### MATHEMATICS

- **Teaching Major (50 credits)**
- **Teaching Minor (35 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 121</td>
<td>Elementary Functions (College Algebra and Trigonometry)</td>
<td>5</td>
</tr>
<tr>
<td>Math. 125</td>
<td>Statistics</td>
<td>5</td>
</tr>
<tr>
<td>Math. 183</td>
<td>Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>Math. 255</td>
<td>Analytic Geometry and Calculus II</td>
<td>5</td>
</tr>
<tr>
<td>Math. 293</td>
<td>Analytic Geometry and Calculus IV</td>
<td>5</td>
</tr>
<tr>
<td>Math. 325</td>
<td>Analytic Geometry and Calculus V</td>
<td>5</td>
</tr>
<tr>
<td>Math. 345</td>
<td>-The Real Number System</td>
<td>5</td>
</tr>
<tr>
<td>Math. 302</td>
<td>Algebra for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Math. 303</td>
<td>Geometry for Teachers</td>
<td>5</td>
</tr>
</tbody>
</table>

### MUSIC

- **Teaching Major (60 credits)**
- **Teaching Minor (30 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 111</td>
<td>112, 113—Theory I</td>
<td>6</td>
</tr>
<tr>
<td>Music 120</td>
<td>Introduction to Music Literature</td>
<td>6</td>
</tr>
<tr>
<td>Music 129</td>
<td>Aural Perception I</td>
<td>4</td>
</tr>
<tr>
<td>Music 212</td>
<td>213, 215—Theoretical Foundation</td>
<td>4</td>
</tr>
<tr>
<td>Music 227</td>
<td>229, 230—Aural Perception II</td>
<td>6</td>
</tr>
<tr>
<td>Music 321</td>
<td>Conducting Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Music 332</td>
<td>Conducting Methods and Conducting Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Music 201</td>
<td>202—Secondary Applied Major</td>
<td>11</td>
</tr>
<tr>
<td>Music 100</td>
<td>Secondary Applied Minor</td>
<td>5</td>
</tr>
</tbody>
</table>

### SCIENCE

**Teaching Major (51-62 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Physiology</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Electives:**

### CHEMISTRY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu. 121</td>
<td>122—College Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Edu. 245</td>
<td>Quantitative Analysis</td>
<td>5</td>
</tr>
<tr>
<td>Edu. 261</td>
<td>Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>Edu. 277</td>
<td>Survey of Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Edu. 278</td>
<td>Survey of Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 371</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 481</td>
<td>Elementary Biochemistry</td>
<td>5</td>
</tr>
</tbody>
</table>

**Electives:**

- Chemistry courses numbered over 300
EARTH SCIENCE

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog. 101—Physical Elements of Geography</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol. 110—Physical Geology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol. 150—Introduction to Geologic Maps and Aerial Photos</td>
<td>3 or 4</td>
<td></td>
</tr>
<tr>
<td>Geog. 201—Map Interpretation</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 125—Field Methods</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 131—Introduction to Astronomy</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Geol. 200—General Paleontology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Geol. 203—Historical Geology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>For. 210—Forest Soils</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Geol. 210—Introduction to Rocks and Minerals</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 310—Geomorphology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 370—Landform Analysis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 306—Methods of Teaching Earth Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 350—Climatology</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Electives: 4-6 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys. 113—General Physics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Phys. 202—Principles of Stratigraphy</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bot. or Zool. 280—Basic Concepts of Ecology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 320—Structural Geology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 302—Field Geology for Natural Science Teachers</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 301, 302—Physiography of North America</td>
<td>3-6</td>
<td></td>
</tr>
<tr>
<td>Geol. 404—Introduction to Vertebrate Paleontology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Geol. 440—Introduction to Geophysics</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

GENERAL SCIENCE (Broad Fields Major only)

Does not qualify for teaching Chemistry or Physics.

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro. 100—Elementary Microbiology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot. 111 or Zool. 111—Introduction to Biology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot. 114—General Botany</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot. 205—Local Flora</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Chem. 101, 102—General Chemistry</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Chem. 180—Survey of Organic Chemistry</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Geol. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 101—Introduction to Geology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Phys. 111, 112, 113—General Physics</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Physics 131, 132—Introduction to Astronomy</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Zool. 111, 112—General Zoology</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Zool. 206—Field Zoology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Educ. 420—Methods of Teaching Secondary Science</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>

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

*Does not qualify for teaching Chemistry or Physics.

**PHYSICS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys. 221, 222, 223—General Physics</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Phys. 301—Vector Analysis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 314—Electricity</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 322—Light</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Phys. 328—Methods of Teaching Physics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 341—Fundamentals of Modern Physics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Phys. 344—Mechanics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 441—Advanced Laboratory</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Phys. 480—Physics Seminar I</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Electives:
- From Physics courses 6 credits

Math courses must be taken to satisfy requirements of the various physics courses.

SOCIAL SCIENCES (Broad Fields Major only)

Does not qualify for teaching Economics, Geography or Sociology.

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 201, 202, 205—Principles of Economics</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Geog. 331—Political Geography</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Geol. 302—Cultural Geography</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hist. 101, 102, 105—Modern European Civilization</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Hist. 201, 202, 205—Survey of Ancient and Medieval History</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Hist. 220—Introduction to American History</td>
<td>3-6</td>
<td></td>
</tr>
<tr>
<td>Pol. Sci. 201, 202—American Government</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Soc. 101—Introduction Sociology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Educ. 426—Methods of Teaching Social Studies in Secondary Schools</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>

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

**SOCIOLGY** (Minor only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthro. 152—Man and His Culture</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Anthro. 153—Cultural Anthropology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 101—Introduction Sociology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 200—American Society</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 207—Introduction to Social Change</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 208—Individual and Society</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 209—Socialization</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soc. 306—Introduction to Complex Organizations</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**SPEECH**

<table>
<thead>
<tr>
<th>Course</th>
<th>Major Credits</th>
<th>Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spch 111—Introduction to Systems of Communication</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 113—Introduction to Public Speaking</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 115—Argumentation</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Spch 118—Practicum in Oral Expression</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sp Co 232, 233, 234—Introduction to Communication</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Spch 236—Forensics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Spch 335—Discussion and Small Groups</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sp Pa 330—Introduction to Speech Pathology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sp Co 333—General Semantics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 339—Speech Composition</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Spch 361—Performance of Literature</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 432—Teaching Speech in the Secondary School</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 435—History of American Public Address</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Spch 482—Directing the Forensic Program</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Electives:
- Courses in Speech Communication 3 credits

**ENGLISH**

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

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

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

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

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ENGLISH**. In addition to the general requirements for graduation listed earlier in the catalog, the student seeking the degree of Bachelor of Arts with a major in English must complete a minimum of 50 credits in the major but not more than 66 credits in the department. English 150, 250, 350 and English 202, 351, 352 when used as a substitute for 250 or 350 may not count toward the English major. The required courses are listed in the schedules given below. By the beginning of his junior year the student should have decided definitely which of the schedules he is to follow.

All students majoring or minoring in English, whether their degrees are taken in the department of English or the School of Education, will be required to take the basic core curriculum in English studies. Schedules A, B, and C presume such a core curricu­lum and build from that.
I. English majors must satisfy the departmental composition requirement. Advanced students are expected to take the freshman year, English 161, 162, 163—World Literature.

II. All students are expected to take, in addition English 200 in the sophomore year; two quarters in one sequence and one in the other from English 211-212-213, and 221-222-223; English 342 or 343; 3 credits from English, 390 or 391. The maximum of courses up to 66 credits may include 401-402-403; 440, and 441.

III. The foreign language requirement listed earlier in the catalog must be met. Courses in Art, History, Philosophy, Psychology, and the Social Sciences are recommended.

SCHEDULE A: LITERATURE

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

English 485 (Chaucer); 3 credits from 491-492-493. The remaining credits required for completion of the minimum 50 may be selected from 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: English 301, 302, 303 (3 credits from 306 may be substituted for one quarter in this sequence); 401, 402, 403; 3 credits from 440, 441, 442; 3 credits from 491, 492, 493. The additional credits allowed up to a maximum of 66 may be taken from courses in General Literature, and English and American literature and writing numbered above 300.

SCHEDULE C: TEACHING

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

Option 1

English 371, 382, 482; Speech 111.

Electives: Other electives may be chosen from courses in the department numbered above 300. Among electives there must be at least one advanced course in American literature and one advanced course in British literature. Additional electives are recommended in Drama, Speech, and Journalism. Required minimum.

Option 2

English 371, 382, 482; Speech 111.

English electives: 18 credits (must include at least one advanced course in British literature, one advanced course in American literature, and may include courses in General literature, and English 390). 20 credits of electives chosen from the following Related Fields: Drama, Journalism, Speech.

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

GRADUATE WORK. See Graduate School Bulletin.

COMPOSITION

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

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

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

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

001 PREPARATORY COMPOSITION 3. A remedial course with emphasis on problems of basic mechanics (usage, punctuation, spelling, etc.), sentence structure, and simple organization. (Credit not allowed toward a degree.)

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

200 UPPER DIVISION COMPOSITION 3. A course designed to help students learn to write accurately and logically about the subject with which they are already familiar.

FOR UNDERGRADUATES AND GRADUATES

450 ADVANCED COMPOSITION 3. Concentration upon complex subjects and ideas, especially within the student's own professional area. (Senior standing is not required to enter this course if the student's ability in composition is adequate.)

CREATIVE WRITING

FOR UNDERGRADUATES

202 INTRODUCTION TO CREATIVE WRITING 3. Practice in creative writing at the introductory level.

203-204-205 CREATIVE WRITING 3 prereq 202 or 351 or 352 and c/i. Enter any quarter. Fiction and/or poetry.

306 THE WRITING OF DRAMA. (See Drama.)

FOR GRADUATES AND UNDERGRADUATES

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

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

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

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

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

FOR GRADUATES

510 FICTION WORKSHOP V R-15 c/i. Fiction writing. Class and individual instruction.

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

512 DRAMA WORKSHOP. (See Drama 541.)

699 THESIS V R-6 to 9.

LINGUISTICS

FOR UNDERGRADUATES AND GRADUATES

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

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

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

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


496 THE TEACHING OF ENGLISH AS A FOREIGN LANGUAGE 3 prereq General 369 or English 371 or c/i. The application of principles of modern linguistics to the problems of teaching English as a foreign language. Will include a contrastive study of English and at least one other language.

497 SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 3 R prereq General 369 or English 371 or c/i. Subjects vary: applications of linguistics, dialectology, stylistics, phonemics and morphemics, theories of grammar.

TEACHER TRAINING

FOR UNDERGRADUATES

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

FOR UNDERGRADUATES AND GRADUATES

382 METHODS OF TEACHING ENGLISH 3. Offered only during Spring Quarter. Juniors are expected to take it before practical teaching. Objectives, materials and organization of the curriculum from grades 7 to 12; observation of expert teachers; some practice in teaching and selecting of student themes. Does not count in curricular A and B. Credit is not allowed for this course and the identical course Educ 362.

FOR GRADUATES

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

FOR UNDERGRADUATES

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


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

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


FOR UNDERGRADUATES AND GRADUATES


341 TUDOR AND JACOBEAN DRAMA 3 prereq 9 credits of Literature. The major plays of Shakespeare, Ford and Shirley, plus a few early plays of Shakespeare.

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

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

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

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

388 BRITISH LITERATURE: SEVENTEENTH CENTURY. POETRY TO 1660 3 prereq 9 credits of Literature. Restricted to meta­physical poetry beginning with Donne, and classical 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 works 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 Gray, Johnson, and Fielding.

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

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

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

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

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

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

432-424-425 POETRY 3 prereq 9 credits of Literature. A chronolog­ical survey, with emphasis on close reading of representative works by major writers.

FOREIGN LANGUAGES

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

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

Two language laboratories with facilities for listening, oral practice, and recording are used to supplement regular class work, and are available to give the individual student opportunity to develop active use of the language.

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

HIGH SCHOOL PREPARATION. A student who has received credit for a foreign language in high school (but not in a college or university) and who wishes to continue that language at this University will enroll as follows: four years in high school, courses numbered 300 and above; three years in high school, 212 or 202: two years in high school, 210 or 201; one year in high school, 102, or if some time has intervened, 101.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. The total number of credits required for a major in a foreign language varies with the student’s high school
preparation or language credit transferred from another college or university. Requirements for the departmental (academic) majors are set forth below under the various languages. Requirements for the teaching majors and minors are listed separately under Education. The departmental English composition requirement must be completed.

RECOMMENDED BACKGROUND COURSES FOR FOREIGN LANGUAGE MAJORS. The Department of Foreign Languages strongly recommends that all foreign language majors take, as early as possible in their college career, the course entitled Introduction to the Humanities (Humanities 151-152-153) and Classical Mythology (Humanities 169).

GRADUATE WORK. See Graduate School Bulletin.

FRENCH

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

1. French 101 to 203 inclusive, or equivalent.
2. At least 27 credits of upper division work in French, which should include 311-312-313.
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 320, 321, 322. German 303 may be substituted for one quarter of history, but if so, may not also be counted as a French course.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY FRENCH 5.

201-202-203 INTERMEDIATE FRENCH 4 prereq 103 or =. Audio-lingual emphasis. For students who plan to obtain a major or minor in 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.

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

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.

421 (311) MEDIEVAL FRENCH LITERATURE 3 prereq 203.

422 (321) FRENCH RENAISSANCE 3 prereq 203.

423 (331) 17TH CENTURY FRENCH LITERATURE 3 prereq 203.

431 (341) 18TH CENTURY FRENCH LITERATURE 3 prereq 203.

432 (351) 19TH CENTURY FRENCH LITERATURE 3 prereq 203.

433 (361) CONTEMPORARY FRENCH LITERATURE 3 prereq 203.

490 (491) SEMINAR 3 R-18 prereq 203. Studies in major authors, periods, or genres.

FOR GRADUATES

111-112 FRENCH FOR GRADUATE STUDENTS 4. Intensive reading course to prepare graduate students to pass the reading examination required for advanced degrees. Does not carry graduate credit.

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

590 GRADUATE SEMINAR 3 R-9.


GERMAN

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

1. German 101 to 203, or equivalent.
2. At least 27 credits of upper division work in German, which must include 311-312-313.
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 320, 321, 322. German 303 may be substituted for one quarter of history, but if so, may not be counted as a German course.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY GERMAN 5.

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

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

FOR UNDERGRADUATES AND GRADUATES

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

502 (306) ORAL AND WRITTEN EXPRESSION II 3 prereq 301 or c/l. Emphasis on active use of German.

503 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.

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

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

431 (341) THE AGE OF GOTHIC 3 prereq 311-312-313, or concurrent registration and c/l.

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

431 (351) 16TH CENTURY REALISM 3 prereq 311-312-313, or concurrent registration and c/l.

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

451 20TH CENTURY GERMAN LITERATURE 3 prereq 311-312-313, or concurrent registration and c/l.

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

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

FOR GRADUATES

111-112 GERMAN FOR GRADUATE STUDENTS 4. Intensive reading course to prepare graduate students to pass the reading examination required for advanced degrees. Does not carry graduate credit.

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

590 GRADUATE SEMINAR 3 R-9.


GREEK

No major is given in Greek.

101-102 ELEMENTARY GREEK 5.

103 ELEMENTARY GREEK 3 prereq 102.

211-212 (213-215) GREEK READINGS 3 prereq 103.

HUMANITIES

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

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

ITALIAN

No major is given in Italian.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY ITALIAN 5.

211-212 (213-215) ITALIAN READINGS 4 prereq 103 or =.

217 ITALIAN GRAMMAR REVIEW AND COMPOSITION 3 prereq 212 or =.
FOR UNDERGRADUATES AND GRADUATES
311-312-313 (301-302-303) SURVEY OF ITALIAN LITERATURE
2 prereq 217. Enter any quarter.

LATIN

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

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

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

FOR UNDERGRADUATES AND GRADUATES
490 (491) MAJOR LATIN WRITERS V 2-3 R-30 prereq 213.

FOR GRADUATES
699 THESIS V R-15.

ROMANCE PHILOLOGY

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

RUSSIAN

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

1. Russian 101 to 203, inclusive, or equivalent.
2. At least 27 credits of upper division work in Russian, which must include 311-312-313.
3. Five quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 305, 324, 325, 326.

FOR UNDERGRADUATES
101-102-103 ELEMENTARY RUSSIAN 5.
201-202-203 INTERMEDIATE RUSSIAN 4 prereq 103 or =.
Audio-lingual emphasis. For students who plan to obtain a major or minor in Spanish, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 RUSSIAN READINGS 4 prereq 103 or =.
For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

FOR UNDERGRADUATES AND GRADUATES
301 APPLIED LINGUISTICS 3 prereq 203 or c/i. Specific problems in contrastive phonology, morphology, and syntax.

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.
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 283-284-285) when this course is offered.

FOR UNDERGRADUATES
101-102-103 ELEMENTARY SPANISH 5.
201-202-203 INTERMEDIATE SPANISH 4 prereq 103 or =.
Audio-lingual emphasis. For students who plan to obtain a major or minor in Spanish, or for those particularly interested in the active skills. Credit not allowed for 201-202 and 211-212.
211-212 (213-215) SPANISH READINGS 4 prereq 103 or =.
For students who do not plan to continue beyond the fifth quarter or who particularly want a reading knowledge. Credit not allowed for 211-212 and 201-202.

FOR 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 362 or c/i.
311-312-313 (301-302-303) SURVEY OF SPANISH LITERATURE 2 prereq 203. Enter any quarter.
401 APPLIED LINGUISTICS 3 prereq 302 or c/i. Specific problems in contrastive phonology, morphology, and syntax.
402 ADVANCED COMPOSITION 3 prereq 302 or c/i. Intensive practice in writing on different levels of usage and style.
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 3 prereq 311-312-313, or concurrent registration and c/i.
460 HISTORY OF THE SPANISH LANGUAGE 3 prereq 311-312-313, or concurrent registration and c/i.
490 (491) SEMINAR 3 R-18 prereq 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES
111-112 SPANISH FOR GRADUATE STUDENTS 4. Intensive reading course to prepare graduate students to pass the reading examination required for advanced degrees. (Does not carry graduate credit.)
500 DIRECTED READINGS 1-3 R-9 prereq undergraduate major in Spanish.
590 GRADUATE SEMINAR 3 R-9.

THE TEACHING OF FOREIGN LANGUAGES

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

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

is the professional management of natural resources, primarily forests and forest lands. A forester analyzes and interprets the physical, biological, social, and economic problems involved in the continued production and utilization of these resources.

Forestry education provides a background of knowledge of soils, vegetation, water, and wildlife and the use of forest lands for sustained production of timber and related products, grazing by domestic and wild animals, watershed protection, and outdoor recreation. It is directed toward an understanding of the relationship of these elements to human institutions.

The four-year curricula leads to the degrees of Bachelor of Science in Forestry or Bachelor of Science in Resource Conservation. Masters degrees offered as: Master of Forestry, Master of Science in Forest Resources Management, Master of Science in Wildlife Biology and Master of Resource Administration. The Doctor of Philosophy degree is offered in Forestry and Plant Science. (See Graduate School).

Forestry education includes laboratory and field study, affording opportunities to apply the theoretical knowledge gained in the classroom. A summer camp is not required; however, each undergraduate student must spend two summers of three months each in successful employment, gaining practical experience in work pertinent to his curriculum.

Employment opportunities for forestry graduates are substantial. The increase of intensive forestry and other resource use throughout the world is extending areas of employment for professional foresters and conservationists. At the same time, the diversity of forest conditions and users in Western Montana leads to excellent local opportunities.

Foresters are employed by government agencies, private companies, research organizations, consulting firms, and educational institutions. The curricula of the School of Forestry also prepare the students to meet Federal and State civil service requirements.

Degree candidates must complete a curriculum in forestry satisfactory to the staff of the School.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY: A minimum of 165 credits, with or without the physical education requirement. Three courses in communication selected from English 150, 250, 360, 460; Forestry 220; Journalism 334; Speech 111, 112, 115, 118. To continue as majors in the School of Forestry during the second, third and fourth years, students must maintain a grade-point average of 2.0 or above. Transfer students must have a grade-point average of 2.5 or above to be admitted to the School of Forestry.

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

BACHELOR OF SCIENCE IN FORESTRY

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

CORE CURRICULUM

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 111-114-115—General Botany</td>
<td>A</td>
</tr>
<tr>
<td>Chem 101-102-103—General and Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>(or Chem 121-122-123—College Chemistry)</td>
<td>(5)</td>
</tr>
<tr>
<td>For 190—Survey of Forestry</td>
<td>2</td>
</tr>
<tr>
<td>Math 116-117—College Algebra, Trigonometry</td>
<td>5</td>
</tr>
<tr>
<td>Math 118 (or 151)—Introduction to Calculus</td>
<td>5</td>
</tr>
<tr>
<td>H &amp; PE 100</td>
<td>1</td>
</tr>
</tbody>
</table>

(Second Year)

| Bot 250—Basic Concepts of Ecology           | -               |
| Bot 251—Ecology Laboratory                  | -               |
| Bot 252 (1)—Plant Physiology               | (5)             |
| Ecol 201—Economical Botany                 | -               |
| Phys 111—General Physics                    | -               |
| For 210—Forest Science                      | -               |
| For 252—Land Survey Systems and Graphics    | -               |
| For 250-251—Dendrology                      | -               |
| Electives (2)                               | -               |

(Third Year)

| For 300—Forest Measurements                 | 4               |
| For 351—Forest Biometrics                   | 3               |
| For 351—Aerial Photogrammetry               | 3               |
| For 310—Foundations of Silviculture         | 3               |
| For 311—Range Management                    | 4               |
| Forest Protection (3)                       | (3)            |
| For 320—Wildlife Conservation               | 3               |
| For 325—Wildland Recreation Management      | 3               |
| For 320—Forest Products (4)                 | 4               |
| For 322-323—Natural Resources Policy & Administration | 3       |
| For 324—Forest Principles                   | 3               |
| For 345—Transportation Systems              | 4               |
| Electives                                   | -               |

(Fourth Year)

| For 420-421—Forest Economics                | 3               |
| For 401-1-2—Integrated Forest Resources      | 3               |
| Management                                  | 3               |
| For 400—Senior Thesis                       | 3               |
| For 401—Forest Management                   | 4               |
| Electives                                   | -               |

(1) Life or Physical Science Course may be substituted
(2) Social Science or Humanities or both
(3) Two courses in protection required, selected from fire, pathology, entomology
(4) One course required in wood technology, wood chemistry, or forest industries

MAJOR IN FOREST RESOURCES MANAGEMENT

This major is for students who are preparing for work in resource management, administration, and staff specialties. Every student with a major in forest resources management receives a broad basic education in forestry. In addition, students may select courses beyond the core curriculum to provide depth in one or more resource fields. The student will select his courses in consultation with his advisors and other faculty.

MAJOR IN FOREST SCIENCE

This major is for students who wish to prepare for graduate study in some specific area of forest science. It is open only to students who are approved by the Dean of the School of Forestry and maintain a grade-point average of 2.7 or above.

The curriculum is designed to meet the needs of the individual student and consists of courses chosen by the student with the counsel of his advisor and approval of the Forestry faculty.

MAJOR IN FOREST BUSINESS

This major is for students who are preparing for work in forest industries such as manufacturing, product development, marketing, sales, and other fields not primarily forest resource oriented.

The curriculum is designed to meet the needs of the individual student and consists of courses chosen by the student with the counsel of his advisor and approval of the faculty of the School of Forestry.

BACHELOR OF SCIENCE IN RESOURCE CONSERVATION

This degree meets professional requirements in selected natural resource fields allied to forestry. Major programs are offered in range, recreation, soil, water, and wildlife. There is no fixed core curriculum for the BSRC degree, although the first two years of study are almost identical in course content to those required for the BSF. In the third year, the student selects a specific area of study, with a specialized program worked out with the advisor and approved by the faculty.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Description (Index)

190 SURVEY OF FORESTRY 2 (2-0). The field and subject matter of forestry and an introduction to the profession.

210 FOREST SOILS 4 (3-3) prerequisite Chem 101-102 or =. An introduction to the chemical, physical, biological, and morphological characteristics of soils.

220 PRINCIPLES OF TECHNICAL EXPRESSION 2 (2-0). The criteria of good technical expression—clarity, directness, logical order, and terseness. Standards of technical expression expected throughout a forester's education and professional career.
FORESTRY—51

253 LAND SURVEY SYSTEMS AND GRAPHICS 1 (3-3) prereq Math 116, Coreq Bot 113, Coreq joint faculty and student field trip. This course is the study of land survey systems. Measurements and legal aspects of property boundary lines and control, surveying, locationing and controlling, mapping maps, charts and contours, and the graphical presentation of data.

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

300 FOREST MEASUREMENTS 4 (3-4) prereq 252, Math 116, or c/I. The measurement, inventory, and growth determination of timber, foliage and wildlife; other forest resources; forest surveying. Collection and analysis of data for volume and yield tables.

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

310 FOUNDATIONS OF SILVICULTURE 3 prereq Bot 251 or c/I. Forest site quality, soil types, and natural vegetation; stand development, species composition, manipulation of vegetation, effect of environment on race and species formation. Development of seed, germination, seedling, and tree growth.

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

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

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

340 WOOD TECHNOLOGY 1 (3-3) prereq 290. Wood identification and anatomy; interpreting the properties of the physical, chemical and mechanical properties to specific uses.

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

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

FOR UNDERGRADUATES AND GRADUATES

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

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

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

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

332 FOREST ENTOMOLOGY 3 (2-3) prereq Bot 250, 251 or c/I. Identification, taxonomy; the biological cycle and factor control of insects affecting forests and forest products.

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

343 FOREST PRODUCTS AND INDUSTRIES 4 (3-4) prereq junior standing in the School of Forestry. Various types of wood products. Boiler, chemical, furniture, paper, pulp, paper, plywood, fiberboard, with emphasis on the interrelations, grades, performance characteristics, and primary conversion industries. By-products and residue utilization. Current trends and problems. (4-0) Non-wood products.

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

351 AERIAL PHOTOGRAGHY 3 (2-3). The elements of photogrammetry, photometric measurement, planimetric and topographic mapping, introduction to remote sensing and air photo analysis, with emphasis on the digital processing of aerial photography.

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

350 RANGE MANAGEMENT 4 (3-3) prereq 360. An introduction to the use of range animals. Management, grazing season, grazing capacity, control and distribution of livestock on range. Range improvements: forest and range interrelationships.

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

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

370 WILDLIFE CONSERVATION 3 (8-0) prereq 360 and c/I. The biology of animals and natural ecosystems. Wildlife resource use and management; wildlife population. (Not for Wildlife Management Majors.)

390 THE RENEWABLE RESOURCES AND THEIR CONSERVA- 
TION 3 (3-0) prereq 210 and Bot 250, 251. The interrelationships of renewable resources and policies. Management of their development and use to meet the needs of our expanding economy. Conservation practices and facilities and the agencies involved in their application. (Not for Wildlife Management Majors.)

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

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

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

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

391 CHEMISTRY OF WOOD PRODUCTS. (See Chem 387.)

400 FOREST RESOURCE INVENTORY 4 (6-8) prereq 300, 301. Inventory of a forest resource unit; mathematical basis for the conservation of wild birds and mammals. The social, economic and political framework of wildlife administration. (Not for Wildlife Management Majors.)

401 FOREST MANAGEMENT 4 (4-0) prereq 311, 410, senior standing in Forestry. Organization and management of forest properties, determination of allowable cut and regulation of the growing stock.

410 RESOURCES FIELD TRIP 1-3 prereq upper division student and c/I. A joint faculty and student field trip for study and discussion of resource management and use.

411 SOIL CHEMISTRY 2 (2-0) prereq 210. The chemical properties of soils, their measurement and influence on growth and distribution of plants.

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

420-421 FOREST ECONOMICS 3 (3-0) (420) prereq Econ 202 or c/I. Fundamentals of production management engineering applied to forest industry operations—functional analyses and factor control.

421-422 FOREST ECONOMICS 3 (3-0) (421) prereq Econ 202 or c/I. Application of economic analysis to problems of wildland recreation management and resource allocation to economic use of economic alternatives. (421) prereq 420 or c/I. Economic problems involved in the use of the forest resource and in the distribution of forest products.

422 ECONOMICS OF WILDLAND RECREATION MANAGE- 
MENT 3 (3-0) prereq Econ 202 or c/I. Application of economic analysis to problems of wildland recreation management and resource allocation to economic use of economic alternatives. (421) prereq 420 or c/I. Economic problems involved in the use of the forest resource and in the distribution of forest products.

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

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

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

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

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

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

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

442 SEASONING AND PRESERVATION 3 (3-0) prereq junior standing in School of Forestry. Principles involved in seasoning and preservation treatments of woods. Related wood anatomy. Application to present commercial practice. Several weekend trips to study and observe full scale wood products industries on location.

443 UTILIZATION (FIELD) 3 prereq junior standing utilizing major. Several weekend trips to study and observe full scale wood products industries on location.

450 ADVANCED PHOTOGRAPHY 3 (2-2) prereq 351 and c/l. Aerial photograpy and methods in map construction and compilation, resource inventories and forest engineering. (451) Aerial imaging systems, multi-band spectral analysis, photo-image analysis, for vegetation and terrain information.

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

454-460 FOREST ENGINEERING 3 (3-0) prereq 350. (454) Route planning, surveys, and design; physical and economic alternatives of route selection. (455) Contemporary problems of forest roads, maintenance and design. (456) Inventory and analysis of problems in the transportation development of forest land areas.

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

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

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

463 RANGE ECONOMICS 3 (3-0) prereq 360, Econ 301 and c/l. Range economics from range resource to economic decision making. Earnings and cash flow, tenure, taxation, fees and leases, economic utilization of forage, economics of range improvements, ranch organization.

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

465 REGIONAL RANGE MANAGEMENT 6 prereq 363, 460, 461 and 351. Regional range management problems and situations. Work done on senior spring trip.

470 ADVANCED WILDLIFE CONSERVATION 5 (4-2) prereq Zool 308, 309 or c/l. The application of knowledge of the biology of wild mammals and management and manipulations to wildlife, to the principles and practice of wildlife conservation.

471 BIG GAME CONSERVATION 5 (4-field trips) prereq 360 or c/l. The biology of big game mammals and its application to problems of conservation and administration. Includes field trips to major big game winter ranges.

472 WILDLIFE HABITAT CONSERVATION 5 (4-field trips) prereq 470 and c/l. Principles and techniques of assessment of wildlife population patterns to ecological change. Relations of land-use patterns to wildlife ecology. (473-477) SENIOR WILDLIFE SEMINAR prereq 470 and c/l. Senior seminar in Wildlife Biology or Forestry. Reports and discussion by students, faculty, and guest speakers on current topics in Wildlife Biology. (Double-listed as Zoology 491-492-493.)

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

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

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

486 HYDROLOGY SEMINAR 2 (2-0) o/y prereq c/l. Regional, national, and international problems of water supply, transfer and quality.

487 WATER USE AND DEVELOPMENT 3 (2-0) o/y. History of water use and policy development.

490-491-492 (490-491) INTEGRATED FOREST RESOURCE MANAGEMENT 3 (3-0). An integrated approach to silviculture, wood science, soil science, economics, political, and social philosophy. Emphasis on practical aspects. (492) Integrated forest resource management 3 (3-0). (493) Integrated forest resource management 3 (3-0).

495 FOREST ECOLOGY OF THE NON-TEMPERATE ZONES 2 (2-0). Selected topics in the ecology of the tropical rain forest, savannah, arid lands, tundra, and other eco-systems not commonly found in Montana.

496 FORESTRY AND ECONOMIC DEVELOPMENT 2 (3-0) prereq 495 and c/l. Readings and discussion of the problems of underdevelopment and the structural and procedural mechanics of economic growth, emphasized as they relate to forestry.

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

498 SENIOR THESIS 2 prereq senior standing. Preparation of a major paper based on study or research in a field selected according to the needs and interests of the student. (499) Senior thesis 2 (2-0).

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

FOR GRADUATES

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

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

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

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

521 ADVANCED FOREST ECONOMICS, EVALUATION AND RESOURCE POLICY (3-0) prereq 420-1. (521) Economic basis for multi-product management of forest industries and resource industries; historical study and analysis of valuation of forest industries and forestland resources. (523) Economic definition and historical analysis of forest industries and forest land resources.

524-525-526 RESOURCE POLICY AND ADMINISTRATION SEMINAR 3 (3-0) prereq 426-1. Each 1 a study of seminar papers. (524) Scaracy vs. growth at the resource level. (525) Procurement and incremental decision making in resource administration. (526) Professional bureaucracies in natural resource administration.

530 FOREST FIRE BEHAVIOR 3 (3-0) prereq 330, 430. The forest fire as a three dimensional problem involving fuels, topography, weather and the influence of these on behavior of wild and prescribed fire. Emphasis is placed on high intensity fires and catastrophic fire behavior.

531 FOREST FIRE INFLUENCES 3 (3-0). The effects of wild and prescribed fire and its influence on plant succession, forest regeneration, and the microclimate of the forest.

542 WOOD RESIDUE UTILIZATION 4 (2-6) prereq 341, 440, 441. Techniques for volumetric survey. Classification and product uses for various types with detailed emphasis on the type most pertinent to the wood type as a secondary use material. (543) Wood Reconstituted Boards 3 (1-8) prereq 342, 440. Different types of boards with properties and uses of each. Raw materials, adhesives, manufacturing, and product testing. Laboratory practices in making and testing sample boards.

550 ADVANCED RANGE MANAGEMENT 3 prereq 360 and 460. Analysis of range management problems by regions and forage types.

560 ECOLOGICAL ANALYSIS AND INVENTORY OF LAND RESOURCES 2 (2-0). Methods of collection and analysis of land resource data on an ecological basis. Emphasis will be on presentation of the inherent characteristics of climate, vegetation and soils. Variability, modification and limitations of resource elements will be considered. Existing systems of resource classification will be evaluated. A model system will be developed.

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

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

591-592 RESEARCH METHODS 3 prereq one course in statistics or statistical elements of forest measurement and c/l. Enter either quarter. (591) Design and use of scientific research, planning research projects, organization and presentation of research results. (592) Application of basic principles of design of research, techniques of analysis of research data.

598 SEMINAR V 1-3. Presentation by students and staff of papers in their field of specialization.

599 FORESTRY PROBLEMS V Individual problem course offered by different instructors under various titles.

600 RESEARCH V Independent research. The type of problem will be identified for forestry majors as follows: Management, Silviculture, Soils, Economics, Fire Control, Utilization, Engineering, Range Management, Wildlife Management, Recreation, Conservation and Protection or General.

699 THESIS V R-15.
GENERAL COURSES are offered as surveys or introductions to broad fields of learning, but there is no "general course" in which a degree is offered. Any student is expected to study in many fields as a matter of general education; and specialization in one curriculum, although required for a degree is strictly limited (see College: General Education Requirements). But it has been found advisable to provide certain degree-curricula which overlap two or more of the curricula described in other pages of the catalog and in which the specialized instruction is drawn from several fields. The curricula in Biology, Liberal Arts, Pre-Medical Science and Wildlife Biology are examples. It also has been found desirable to provide particular courses which overlap two or more fields; these are described below.

HUMANITIES

FOR UNDERGRADUATES

151-152-153 INTRODUCTION TO THE HUMANITIES 3. Enter any quarter. English majors who have completed 9 or more credits in literature may not receive credit in this course. A general survey of the field of Humanities through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation.

160 (161) CLASSICAL MYTHOLOGY. (See Foreign Languages.)

220 (221) FOREIGN LITERATURE IN TRANSLATION. (See Foreign Languages.)

265 SEARCH FOR IDENTITY 3. Revisionism as manifested in the African past and in the conflicts faced by the American Negro from 1619 through the Civil War.

556 A SEARCH FOR IDENTITY 3. The American Negro from Reconstruction to the present day with specific emphasis on the development of the Black Power movement.

297 SOUL COMMUNITY 3. A critique and analysis of the Black writers, artists, and musicians in relation to the Black man's search for identity.

341 THE FILM 3. An historical survey of the film with appreciation of techniques. (Given under auspices of the School of Journalism and the departments of English and Drama.)

FOR UNDERGRADUATES AND GRADUATES

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

365 THE ANATOMY OF PERSONAL RELATIONSHIPS 3 prereq any two of the 200 level courses. A critical analysis of the role of the races in light of their personal relationships with each other.

366 THE BLACK RENAISSANCE 3 prereq any two of the 200 level courses. A study of the black renaissance in Harlem during the 1920's and early 1930's: its contributions, why it failed, and why today the Black Renaissance is in fact emerging.

397 URBAN AFFAIRS 3 prereq any two of the 200 level courses. A study of the urban setting with particular emphasis on the nature and purpose of community organization and the political, economic, and educational associations, and cultural phenomena of the urban setting which reveal the racial character of our society.

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

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

SCIENCE

FOR UNDERGRADUATES

110 THE USE AND ABUSE OF DRUGS 2. The nature of drugs: their history, development and normal use in the treatment of disease. Drug dependence, social and cultural aspects, and the nature and use of drugs involved. (Not open to pharmacy majors.)

125-126-127 SCIENCE FOR ELEMENTARY TEACHERS 5 (4-2). Open only to majors in Elementary Education. (125) A survey of the fundamental aspects of physical science, including atomic and molecular structure, electricity, magnetism, wave motion, gravity, heat, states of matter, the universe, geological processes, structure, and related topics. (126) An investigation of the interrelationships of physical and biological sciences: the elements, chemical reactions, basic organic chemistry, metabolism, dependence and abuse and the special classes and types of drugs involved. (Not open to pharmacy majors.)

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Geography: a minimum of 56 credits in Geography, including Geography 101, 102, 201, 202, 211, 300, 360, 370, 380, 390, and one of four Geography courses 331, 335, 343, and 405; Economics 201-202-203; Geology 110; History 261-262 or Political Science 201-202-203; and Sociology 101 or Anthropology 152. The departmental English composition requirement must be completed.

131 INTRODUCTION TO BIOLOGICAL SCIENCE 4 (3-2). An introduction to the basic principles of biology, including aspects of cytology, cellular metabolism, genetics, origin of life, mechanics of evolution and adaptation. Offered by the departments of Botany, Microbiology and Zoology. Primarily for students not majoring in Botany, Microbiology, or Zoology. Credit not allowed for this course and Botany 111.

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

FOR UNDERGRADUATES

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

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

GENERAL LITERATURE

FOR UNDERGRADUATES

101-102-103 INTRODUCTION TO THE READING OF LITERATURE 3. Enter any quarter. (101) Fiction. (102) Drama. (103) Poetry. (May be substituted for English 190 on recommendation of the Director of Composition. Not applicable to Group IV requirements.)

FOR UNDERGRADUATES AND GRADUATES

307-308-309 THE DRAMA. (See English.)

344 THEORIES OF DRAMA. (See English.)

491-492-493 LITERARY CRITICISM. (See English.)

GEOGRAPHY

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Geography: a minimum of 56 credits in Geography, including Geography 101, 102, 201, 202, 211, 300, 360, 370, 380, and one of four Geography courses 331, 335, 343, and 405; Economics 201-202-203; Geology 110; History 261-262 or Political Science 201-202-203; and Sociology 101 or Anthropology 152. The departmental English composition requirement must be completed.

The following courses with the consent of the advisor may be counted toward a major in Geography: Botany 225 or 235; Business Administration 344, Economics 380, Physics 131-132, Geology 310, Sociology 304, and Forestry 380.

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

GRADUATE WORK. See Graduate School Bulletin.
GEOLOGY

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 PHYSICAL ELEMENTS OF GEOGRAPHY 3. Content and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, vegetation, and landforms.

105 INTRODUCTORY HUMAN GEOGRAPHY 3. The study of man and his works. An analysis of the cultural features of the world’s landscapes in relation to human occupation of the earth.

103-104-105 WORLD GEOGRAPHY 3. Enter any quarter. The peoples and places of the world today. 

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =. The cultural and physical backgrounds to problems of the North American republics.

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

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

305 GEOGRAPHY OF EUROPE 3 prereq 101 or =. The physical and cultural backgrounds to problems of the South American republics.

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

312 GEOGRAPHY OF AFRICA 3 prereq 101 or =. Regional differentiation and political and economic development of the whole continent.

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

318 GEOGRAPHY OF THE U.S.S.R. 3 prereq 101 or =. The geographical regions which are the basis for Soviet agriculture and industry.

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

320 GEOGRAPHY OF THE PACIFIC NORTHWEST 3 prereq 101 or =. The physical environment and human geography of the northwestern United States.

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

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

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

350 CLIMATOLOGY 3 prereq 101 or =. Elements and controls of weather and climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 3 prereq 101 or =. Topographic elements of the earth’s surface with emphasis on processes of morphologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 3 prereq 101, Geol 110 or =. Landform development in the desert environment.

401 ADVANCED PHYSICAL GEOGRAPHY 3 prereq c/l. Specialized aspects of Physical Geography.

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

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

413 POPULATION AND RESOURCE GEOGRAPHY 3 prereq c/l. Geographic aspects of problems arising from the relationships between human populations and their resource use.

415 ADVANCED REGIONAL GEOGRAPHY 3 prereq c/l. Analysis of concepts, methodology, and research in cultural aspects of Geography. Topics vary.

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

450 SEMINAR IN GEOGRAPHY V R-4 prereq 16 credits in Geography including 101, or =.

FOR GRADUATES

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

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

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

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

699 THESIS V R-15.

GEOLOGY

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed above, in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 130, 200, 202, 203, 310 (or Geography 370 with consent of advisor), 311-312, 315, 3 credits of 320, 330-331, 429. Also required are Mathematics 116, 117, 118, or Mathematics 121, 122, 118, Chemistry 121-122-123, 245; Physics 111-112 or 245, 246; English 150, 250, 450; Zoology 111, 112. A foreign language, 23 credits in one language, or 3 quarters in each of two languages, or a reading knowledge is required. French, German, Russian or Spanish is recommended.

Departmental requirements can be waived for students who at the end of any complete year have a B average in all college courses previously taken while pursuing a standard geology curriculum. A special geology curriculum may be devised for these students in consultation with their advisors. This will, for example, allow special study in a field of interest in chemistry, geophysics or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.
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**GRADUATE WORK.** See Graduate School Bulletin.

**FOR UNDERGRADUATES**

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

**101-102 INTRODUCTION TO GEOLOGY 4 (3-3).** Geologic activity of rain, streams, waves, wind and glacial ice; formation of sediments and sedimentary rocks; stratigraphic time and measurement of geologic time; origin and evolution of life; growth, movement and floating of continents; volcanoes; formation of igneous and metamorphic rocks; earthquakes; deformation of geologic deposits. Credit not allowed for 101-102 and 106. 101 preq to 106.

**103 INTRODUCTION TO GEOLOGY 4 (3-3) preq 102.** Various topics in geology including ore deposits, geology of petroleum, dinosaurs, geology of Montana, glacial Lake Missoula, surface of the moon, geology and man. Several Saturday field trips.

**110 PHYSICAL GEOLOGY 5 (3-4).** Intended primarily for physical and biological science majors. Minerals, rocks, and structure of the earth's crust; the dynamic processes, volcanism, landscape, and geologic history which shape the earth's landscape. Credit not allowed for 110 and 116-118. 110 preq to 102.

**120 INTRODUCTION TO GEOLOGIC MAPS AND AERIAL PHOTOS 4 (2-4) preq 103 or 110.** Interpretation of geographic maps. Geologic features in aerial photos. Elements of photogrammetry. Geologic illustration.

**130 FIELD METHODS 3 (1 + all day Saturday field trips.)** preq 110 or 102. Problems covering wide range of geologic topics; introduction to basic geographic mapping techniques.

**200 GENERAL PALEONTOLOGY 4 (3-2) preq 103 or 110.** General principles of paleontology, evolution, and history of plants and animals.

**202 PRINCIPLES OF STRATIGRAPHY 4 (3-2) preq 200.** Stratigraphic methods and principles. Examples drawn mostly from North American stratigraphic successions. Identification and classification of sedimentary rocks.

**203. HISTORICAL GEOLOGY 4 (3-2) preq 202.** The origin of the earth. Precambrian, Paleozoic, Mesozoic and Tertiary history.

**210 INTRODUCTION TO ROCKS AND MINERALS 4 (3-4) preq 110.** Common rock-forming and economic minerals. Various rock types and their texture, origin, occurrence, and physical and chemical properties. Laboratory mainly hand specimen study. (Credit not allowed toward a geology degree.)

**230 (360) INTRODUCTION TO ECONOMIC GEOLOGY 4 (4 + Field Trips) preq 112 or 110.** 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.

**240 GEOMORPHOLOGY 3 (3-2) preq 120.** Landforms in terms of the processes which create them. The basic processes of physical geography. Emphasis on modern concepts.

**311-312 MINERALOGY 4 (3-4) preq Chem 121 and Math 116.** Elements of crystallography; origin, classification and determination of common minerals by physical (including optical) and chemical methods; special emphasis on ore and rock forming minerals.

**315 PETROLOGY 4 (3-4) preq 312.** Identification, description, and origin of igneous and metamorphic rocks.

**325 PROBLEMS V preq 30 cr. in Geology or = and c/l.** Supplemental problems and laboratory periods for students of natural science. Primarily for teachers of Natural Science. For Lang 23 crs.)

**330-331 STRUCTURAL GEOLOGY 3 (3-2) preq 203, Math 118, Physics 113 or 223 or concurrent registration.** Structural features of earth's crust; their analysis by geometric and stereographic projections. Mechanical principles of deformation.

**429 FIELD GEOLOGY Su V 9-10 preq 130, 203 and c/l.** Given by Indiana University Geology Department at its field station near Whitehall, Montana. Details and regional study of Montana and the field. Includes measuring and describing sections, mapping on aerial photographs and topographic base and interpretative data. Trips from Black Hills to Yellowstone Park, and from Whitehall to Glacier Park. Registration must be completed by April 1.

**FOR UNDERGRADUATES AND GRADUATES**

**300 GEOLOGY FOR NATURAL SCIENCE TEACHERS 4 (3-2) preq 103 or c/l.** Primarily for teachers of Natural Science. General physical geography including minerals, rocks, erosion by streams and glacial, classification of volcanic rocks, igneous and metamorphic rocks. Credit not allowed toward a degree in geology.

**301 GEOLGY AND MINERAL RESOURCES OF MONTANA 3 (3-3) preq 300 and c/l.** Primarily for teachers of Natural Science. Broad discussion of the geology and evolution of Montana and adjacent areas through the last two billion years. Metallic and non-metallic mineral deposits in and near Montana. Frequent field trips. Not allowed toward a degree in geology.

**302 FIELD GEOLOGY FOR NATURAL SCIENCE TEACHERS 3 (3-3) preq 300, 313 or 315, 316 and 317.** Field study of igneous, metamorphic and sedimentary rocks; methods of sampling; standards of recoverable resources. Includes field trips. Not allowed toward a degree in geology.

**306 METHODS OF TEACHING EARTH SCIENCE 3 (2-4) preq 203 or 210.** Contemporary texts, demonstration techniques, laboratory experiments, and field procedures needed in developing a geology earth science curriculum. (Credit not allowed toward a degree in geology. Course does not satisfy group requirements.)

**308 (308) INTRODUCTION TO VERTEBRATE PALEONTOLOGY 4 (3-2) preq 200 or =.** Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals and birds.

**410-411 *INVERTEBRATE PALEONTOLOGY 4 (4-4) preq 110, 200 or Zool 111, 112 or concurrent registration.** (411) Principles of paleontologic interpretation of examples taken chiefly from the mollusks and echinoderms. Labs include paleontologic techniques.

**412 *MICROPALEONTOLOGY 3 (2-3) preq 202 or Zool 111, 112.** Principles of microfossil identification and interpretation. Stratigraphic associations of major animal and plant microfossil groups.

**420 OPTICAL MINERALOGY 4 (2-6) preq 315, Physics 113, or 223, and Math 116.** Theory and use of polarizing microscope in identification of non-opaque mineral fragments and minerals in thin section.

**425-426 PEGROLOGY/PETROLOGY 4 (2-6) preq 315, 420.** Descriptive and interpretative study in thin section of igneous microcrystalline rocks. (426) Mineral chemistry and metamorphic rocks. Advanced petrologic considerations included in both quarters.

HEALTH AND PHYSICAL EDUCATION

AND RECREATION

deals primarily with muscular activity and recreation to provide the individual with wholesome psycho-motor and organic development, with fitness for daily living, and with resources for use of leisure. The program provides (1) instruction in a wide variety of sports and recreation skills; (2) opportunity for student groups to organize teams and to participate in formal and informal competition, in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, touch football, softball and volleyball, and (3) preparation for professional positions in the various fields related to physical education and recreation.

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

Theory courses include structure and function of the human body, basic principles and teaching procedures, history and philosophy, and planning and administration of programs. Professional activity courses include training in teaching team games, individual and dual sports, gymnastics and tumbling, aquatics, and forms of the dance. Students interested in physical therapy and orthopedic rehabilitation may fulfill entrance requirements for approved schools of physical therapy. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation and practice in group leadership, training in crafts and social activity skills for leaders of youth groups, and background for careers in industrial and community recreation and in recreation therapy. All levels of American Red Cross certification are offered in conjunction with swimming and first aid courses.

Many graduates enter the teaching profession. Some choose to continue graduate studies with specialization in physical education, coaching, the dance, physical therapy, or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. Many elect careers in leadership positions in youth-serving organizations in playground and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION. Two degrees are offered in this Department: Bachelor of Science, which requires that the foreign language requirement listed below in the catalog be satisfied, and Bachelor of Science, which requires no course in foreign language. Students electing either degree will fulfill the requirements listed below. Upper division students are expected to maintain a cumulative grade-point average of at least 2.0 in order to continue as majors in the department.
General Education (69 crs.): Group I Life Sciences (to include Zool 111 and 202, Mibch 101); Group II Physical Sciences or Math (Pre-Physical Therapy to include Chem 101, Physics 111; Health to include Chem 101); Group III Social Sciences (to include Soc 101); Group IV Electives: (Additional 15 credits in addition English 150, Home Ec 146, Psych 110 and 220, H&PE 115-120 (3 cr. fulfills H&PE requirements) and Speech 135, 136, 234).

Teacher certification (54 crs.): Required only of students who desire teaching certificate: sequence of courses in Education plus teaching minor.


AREAS OF SPECIALIZATION (student selects one area for specialized study):

- Physical Education, Men: Required (21 crs.): H&PE 239, 338, 381, 373, 375, 380, 460, 490; Electives (13 cr. required): H&PE 211, 240, 311, 312, 325-326 or 356, maximum of 9 credits from 210, 211, 214, 225, 310, 321, 322.

- Physical Education, Women: Required (23 crs.): H&PE 232, 301, 302, 324, 339, 373, 375, 386, 460, 490; Electives (9 cr. required): H&PE 216, 225, 232, 235, 236, 238 or 356, maximum of 3 credits from 361, 362, 363.

- Coaching: Required (24 crs.): H&PE 210, 211, 240, 310, 311, 321, 460, 490, plus 2 of following 4 coaching courses 213, 214, 225, 322; Electives (10 cr. required): H&PE 329, 338, 356, 371, 373, 376, 386, one additional coaching course; Educ. 434.


- Health: Required (29 crs.): H&PE 373, 375, 386, 460, 486, Mibch 100, 101, 110, plus 2 of the following 3 courses in Home Ec 290, 390; Electives (12 cr. required): H&PE 240, 360, 490, 238 or 336; Soc 204, Home Ec 246, SPA 350, Educ 437.

Pre-Physical Therapy: Required (43 crs.): H&PE 240, 306, 380, 390, 460, 468, 585; Math 116, 117, SPA 338; plus 4-5 additional credits in Chemistry or Physics; Electives (33 crs. to be selected with consent of advisor).

Recreation Leadership: Required (Women 31 crs, Men 32 crs.): H&PE 326, 336, 356, 391, 362, 363, 460, 464, 490, 491; in addition men students also take H&PE 311 and two coaching courses; women students also take H&PE 222 and 2 courses from H&PE 301, 306, 303. Required Cognate Courses: Educ 347; 16 credits elected from Art, Drama, Music, Speech; 5 credits elected from Social (4 electives); 4 credits elected from Sociology; Electives: 10 credits required from HPE 390-1-3-(women 1 or 2) coaching courses (men), HPE 238, 339, 368.

Suggested first-year program:

- English 150, Psych 110, Speech 111
- Cr. Cr. Cr.
- Group III, Soc 101
- 4 5 6
- Zool 111, Home Ec, 146, Micro 102
- 5 4 3
- Group IV
- 3 3 3
- H&PE 115, 116, 117
- 1 1 1
- 17 17 17

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN RECREATION: Two degrees are offered: Bachelor of Arts with major in Recreation and Bachelor of Science with major in Recreation. Each student must meet the following requirements: 1. Six quarters required of all H&PE majors and minors in place of PE100.

115-120 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS. Six quarters required of all H&PE majors and minors in place of PE100.


180 First AID. 2. Red Cross Standard and Advanced courses and Medical Self-Help. Certification may be secured upon completion of course.

200 (190, 196) HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION 3. Historical, philosophical and social background as related to physical education today.

208 ADVANCED COACHING TECHNIQUES 1. Intensive training in special techniques for coaching various sports.

210 COACHING OF FOOTBALL 3. 211 (211, 212) THEORY OF OFFICIATING FOOTBALL 1. Principles, rules and experience.

1123 ADVANCED COACHING OF WRESTLING 1. History, values, principles, warm-up and conditioning, weight divisions, terminology and techniques. Certification may be secured upon completion of course.

1214 COACHING GYMNASTICS AND TUMBLING 3 prereq 119. History, values, principles, warm-up and conditioning, weight divisions, terminology and techniques. Certification may be secured upon completion of course.

1215 ADVANCED COACHING OF WRESTLING 3. History, values, principles, warm-up and conditioning, weight divisions, terminology and techniques. Certification may be secured upon completion of course.

220 COACHING OF BASEBALL 3.

222 RECREATION SPORTS OFFICIATING, THEORY AND PRACTICE 1. Prerequisites: Sociology 101. Practical experience in officiating team and individual indoor and outdoor recreational sports. Football and basketball officiating not included.

223 OFFICIATING BASKETBALL (WOMEN) 2. Theory, principles, rules and techniques. Practical experience in officiating intramurals. Ratings given by Women's National Officials Rating Committee upon successful completion of requirements.

231 DANCE HISTORY 3. Dance from its primitive beginning through modern expression.


236 THEORY AND PHILOSOPHY OF DANCE 2. A philosophical foundation for dance as related to other arts in historical development and style.

238 WATER SAFETY INSTRUCTOR 2 prereq Red Cross Senior Life Saving Certificate. Instructor's course in life saving and water safety. Red Cross Instructor's Certificate awarded upon successful completion of requirements, providing student has reached his 18th birthday.


294 SKI INSTRUCTORS QUALIFICATION PROGRAM 3. Prereq c/l. Open to all students with above average skiing ability. Theory, techniques, rules, techniques and practical experience in teaching methods, ski school progression, and ski mechanics. Preparation for potential ski instructor for certification by the Professional Ski Instructors of America.

261 (361) INTRODUCTION TO RECREATION 3 prereq Soc 101. Social significance of recreation and leisure; community approach to recreation. Principles and practice concerned with leadership of recreation programs. Credit not allowed for this and for Soc Wel 361.

293 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 COLLEGE AND SECONDARY SCHOOL LEVEL 9 credits from 115-120 and/or 215-220. Experience in teaching; class organization, analysis of techniques, development of units of instruction in seasonal sports.

310 COACHING OF BASKETBALL (MEN) 3.

311 (311, 312) THEORY OF OFFICIATING BASKETBALL (MEN) 1. Principles, rules, techniques and practical experience.

312 (311, 312) COACHING OF TRACK 3. Theory and practice in track and field events.

322 COACHING OF COMPETITIVE SWIMMING AND DIVING 3 prereq c/l. Coaching and analysis of competitive strokes and techniques. Development of training program on age group, high school and college level. Officiating and meet management.

324 METHODS AND MATERIALS IN SOCIAL AND LATIN DANCE 2.

325 METHODS AND MATERIALS IN MODERN DANCE 2 prereq 118 (Women).

326 METHODS AND MATERIALS IN FOLK DANCING AND SQUARE DANCING 2.
58—HEALTH AND PHYSICAL EDUCATION

327 CHILDREN’S DANCE LABORATORY 2 prereq 116 (Women) (Dance movement for children. Experience in observing and directing children’s dance.)

336 AQUATIC PROGRAM MANAGEMENT 3 prereq Senior Life Saving or =. Group methods of teaching swimming for various age groups. Organization and operation of classes in swimming. SCUBA diving, swimming for the handicapped, staging water shows. Swimming pool and waterfront management.

TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS 3 prereq PE majors and minors, senior standing, PE 200 and 6 credits in 115-120; elementary education majors, junior standing, PE 200. Principles and methods of elementary school physical education; theory and practice in selecting and teaching activities for children in grades one through six.


352 CAMP SCOUNSELOR 3. Qualifications and professional preparation for camp counselors. Duties and functions as a group leader; campcraft skills and techniques. Practical applications of techniques.


362 RECREATION LEADERSHIP (SOCIAL RECREATION) 3 prereq Soc 104. Principles of group leadership; program skills for various age groups and for special groups, such as the handicapped. Credit not allowed for this and Soc Wel 332.

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 3 prereq 360. Principles and practice in leadership of outing activities; skills and understandings essential to organized camping. Credit not allowed for this and Soc Wel 332.

364 FIELD WORK IN RECREATION 2, Su V R-4. Supervisory and leadership experiences, methods and techniques to be used in conducting recreation programs in outdoor recreation, community, social, institutional situations. Laboratory given in various activities. Activities are coordinated to outdoor activities of the school and to group activities available for leadership training.

365 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION 3 prereq 200. Principles and policies for the organization and administration of high school physical education department. Management of the physical plant.

375 (373, 375) METHODS IN TEACHING HEALTH 3 prereq PE major or minor or Educ major. Foundations for teaching health: planning for instruction; methods and techniques in direct, correlated, integrative, individual instruction; material aids and their sources, evaluation in health instruction.


388 INTRODUCTION TO PHYSICAL THERAPY 3 prereq cor. 386. Theory and practice of massage. The treatment of defects, limitations, diseases, growth disturbances, and accidents. Credit not allowed for this and Soc Wel 332.

390 CLINICAL TRAINING IN PHYSICAL THERAPY V 1-4 R-4 prereq 386 and c/i. Practical experience in local physical therapy centers.

399 FIRST AID 3. Red Cross Standard, Advanced and Instructor Training. Self-help in emergencies. Application at Instructor level may be secured from completion of course.

400 TEACHING PHYSICAL EDUCATION ACTIVITIES 2 R-4 prereq 115-120 and c/i. Assigned teaching projects in college classes, under supervision.

FOR UNDERGRADUATES AND GRADUATES

329 ADVANCED TECHNIQUES IN MODERN DANCE 2 prereq c/i. Advanced study of modern dance techniques contributing to flexibility, strength, and control in dance expression.


336 THE SCHOOL HEALTH PROGRAM 2. Problems of coordinating and a/doing the intramural sports program in the high school.

373 THE SCHOOL HEALTH PROGRAM 3. Required of Physical Education majors and minors. Function and scope of health service personnel; preventive and corrective aspects of common health problems; school and classroom aspects of healthful school living; development of health education in elementary school.

385 KINESIOLOGY 2 prereq 380. Advanced study of muscle action and joint mechanics of the body.

398 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 3 prereq 380. Prevention and detection of common physical defects, their correction. Problems encountered by the physical educator; follow-up programs possible under medical supervision.


405 RECREATIONAL AREAS AND FACILITIES 3. The planning, construction and maintenance of urban oriented recreation areas and facilities as they relate to organized activities in public and private parks and playgrounds. Methods and specific use camps and day camps. Methods and techniques for financing. Tax programs and possibilities. Federal support programs for area and state and national park systems and recreation departments.

406 SEMINAR V 1-3 R-12. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

407 ORGANIZATION AND ADMINISTRATION OF RECREATIONAL PROGRAMS 3 prereq HPE 200, C 1-3 R-1. Personnel, finances, facilities, programs and public relations. Coordination with youth-serving institutional and municipal agencies. (Credit not allowed for this and Soc Wel 464.)

408 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION 3. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures.

409 CURRICULUM CONSTRUCTION 3. Classification and analysis of physical education activities; criteria for selecting activities; construction of program for specific situations.

410 PHYSICAL EDUCATION AND RECREATION FOR THE AGING 3. Concepts, principles, techniques, and activities related to physical activity and leisure time needs of the special child. An integrated experience in leading games, rhythms and social recreation activities.

411 PHYSIOLOGY OF EXERCISE 3 prereq 391. The physiological effects of the different types of exercise on the human organism.

412 ADVANCED CORRECTIVE PHYSICAL EDUCATION PROCEDURES 3 prereq 386. Survey of orthopedic conditions which fall in province of the corrective physical education and physical therapy specialties. Emphasis on reconditioned therapeutic procedures; diagnosis and restoration of functions. Techniques necessary for methods of correction of physical education programs in schools and colleges.

413 PRACTICUM IN RECREATION V R-4 prereq 363 and c/i. Supervised field work. Experience in conducting recreation programs in community, social agency, and institution situations.

FOR GRADUATES

501 RESEARCH METHODS 3 prereq or coreq 503 or =. Research methods and techniques used in health, physical education and recreation. Instruction in developing individual studies.

502 RESEARCH IN RECREATION 3. Independent directed research.

503 STATISTICAL MEASUREMENTS IN PHYSICAL EDUCATION 4 prereq 465 or =. Specific tests for evaluation of organic, neuro-muscular, psychological and social outcomes. Practice in constructing and interpreting results, problems related to physical activity and leisure time needs of the special child. Emphasis on experience in leading games, rhythms and social recreation activities.

503 PSYCHOLOGICAL-BEHAVIORAL MEASUREMENT 3 prereq or =. Problems in the administration of high school and college physical education and athletic programs; finance, personnel, public relations.

503 (496) SUPERVISION IN PHYSICAL EDUCATION 3 prereq 365 or =. Roles and responsibilities of supervisors in exerting effective leadership.

555 SEMINAR IN THE ADMINISTRATION OF PUBLIC RECREATION PROGRAMS 2. Problems associated with administration of organized recreation, activity programs in municipal, state and national park systems and recreation departments.

556 SEMINAR IN THE ADMINISTRATION OF RECREATION 3. Problems associated in administration of the various types of recreation programs.

557 CURRENT TRENDS IN RECREATION 2. Sociological trends, present patterns of living and their implications in the development of new programs, philosophies and practices in recreation.

541 RECREATION FOR THE AGING 2. Concepts, principles, objectives and methods of recreation for the aging. Emphasis on cardiac problems, rest home programs, the retired, and the impact of increased leisure time and vacations.

575 SPORTS MEDICINE 2 (2-1) prereq 365, 478. The medical aspects of health and social recreation. Management of injuries, drug use and therapy, nutrition, fatigue, problems of aging and other medical problems associated with participation in sports.

585 ADVANCED KINESIOLOGY 3 prereq 385. Analysis of complex movements, specialized skills, and motor coordination in terms of the mechanics of skeletal and muscular movement.

591 INDEPENDENT STUDY V R-5 prereq c/i. Investigation of problem areas in Public Education and related fields (exclusive of thesis research).

699 THESIS V R-10.
HISTORY

is the study of man over the time span of the past, both as an individual and as a member of a group. For the student in search of a broad basis of education rather than in training for some particular occupation, the department offers a program of instruction designed to provide a knowledge and understanding of the basic problems 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 foreign service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and businessmen with a basis for the pursuit of their chosen profession, but also furnishes knowledge and perspective for intelligent leadership in community affairs.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in History. A minimum of 30 credits in History is required, with 30 of these from courses numbered over 215. A maximum of 21 credits in History from the ancient Near Eastern empires, and Classical Greece. Only 12 credits must be selected from courses numbered over 300.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

FOR EXPLANATION SEE COURSE DESCRIPTIONS (INDEX)

101-102-103 MODERN EUROPEAN CIVILIZATION 3. Enter any quarter. (101) Europe during the Renaissance, the Reformation, and the age of absolutism to 1700. (102) Europe during the 18th century, the French Revolution, Napoleon, and rise of nationalism to 1850. (103) Europe from 1850 to World War II.


215-216 EUROPE IN THE 17TH CENTURY 3 enter either quarter. (215) The internal political, economic and social development of the European states from 1618-1700. (216) continuation after 1670 to 215.


261-262-263 (251-252-253) UNITED STATES HISTORY 4. Enter either quarter. (261) The American nation from its colonial beginnings to the end of Reconstruction. (262) Continuation to the present.

265-266-267 HISPANIC-AMERICAN HISTORY 4. Enter any quarter. (265) The European background; the political and economic development of Spain and Portugal to the foundation of the Latin American colonies. (266) The Spanish and Portuguese colonies; the revolutionary period and the foundation of present day Latin American states. (267) The development of Latin American States in the 19th and 20th centuries.

FOR UNDERGRADUATES AND GRADUATES

201 ANCIENT NEAR EAST 3. Pre-Greek civilizations of Meso­ potamia, Asia Minor and Egypt.

203 (202) ANCIENT GREECE 3. Greek culture during the period of the city-states and the Age of Alexander the Great.

205 THE HELLENISTIC AGE 3. The Ptolemac, Antigonid, Seleucid and lesser states successor to the Alexandrian Empire, and their social, political and economic development to the time of their absorption by Rome.

206 (205) ANCIENT ROME 3. Early Etruscan civilization; Rome as part of Hellenistic culture. The Republic, the Principate and the Empire.

255 BYZANTINE HISTORY 3. Origins and development of the civilization of the Eastern Roman Empire to 1453. Relations with Persians, Arabs, Slavs and Turks; cultural and political influence upon the West.

260 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.

300 THE RENAISSANCE 3. The idea of the Renaissance applied to economic, political and cultural developments in Western Europe from 1300 to 1600; the impact of this idea on later historiography.

310 THE REFORMATION 3. The impact of the Reformation on European society, its political, economic and religious thought from 1500 to 1600.

311-312-313 EARLY MODERN EUROPE 3 Enter any quarter. (311) The political, economic, intellectual, and social development of Europe from 1480 to 1550. (312) Europe from 1550 to 1648. (313) Europe from 1648 to 1715.

314-315 FRENCH REVOLUTION AND NAPOLEONIC ERA 3 prereq 101 or 312. Enter any quarter. (314) The French Revolution to 1795. (315) The Directory, the rise of Napoleon, the First Empire, and the downfall of Napoleon.

316 THE EARLY TWENTIETH CENTURY (1900-1933) 3 prereq 103 or 242. Continuation of Great Britain; the political and economic development of France from 1815 to 1871. (316) 1871 to 1914. (317) 20th century.

319 CONTEMPORARY EUROPEAN HISTORY 4 prereq 103. The internal affairs and the external relationships of the principal European states since 1933.

320 MEDIEVAL GERMANY (911-1250) 3. The Frankish experi­ ment, emergence and development of Germanic states; the Salic and Hohenstaufen dynasties with special emphasis on constitutional growth.

321-322 CENTRAL EUROPE 4 prereq 101. (321) The develop­ ment of the states of central Europe from early modern times to 1815. (322) Continuation to the present.

324-325-326 HISTORY OF RUSSIA 3, 325 prereq to 326. (324) The beginnings of Russia to 1800. (325) Nineteenth and twentieth­century Russia; the communist revolution and the communist powers. (326) The Soviet Union since the Bolshevik Revolution.

327-328-329 MODERN FRANCE 3 enter any quarter. (327) The political, economic, and social development of France from 1815 to 1871. (328) 1871 to 1914. (329) 20th century.


334 MODERN WAR AND WESTERN SOCIETY 3 prereq a college course in modern European history. A history of warfare from the French Revolution; emphasis placed upon the role of government and military command, upon problems of strategy, and upon theories of war.

335 THE BRITISH EMPIRE 4 prereq 101 or 242. English explorations and colonization. The First British Empire. Developments in the nineteenth and twentieth centuries. The Empire today.

336-337-338 THE MEDIEVAL WORLD 3 enter any quarter. (336) Political, religious, intellectual and social development of Europe from the reign of Diocletian to the disintegration of the Carolingian Empire, 294 A.D. to 900 A.D. (337) Continuation from the 10th through the 12th centuries, with the impact of Islam and Byzantium on Western Europe. (338) Continuation from the 13th to the 18th centuries; the scientific movement; the decline of the unity of the Middle Ages.

339 HISTORY OF CANADA 4 prereq 101, 242 or 261. Canada to the present time, with emphasis upon Canadian-American diplo­ macy in economic relations. Canadian economic relations.


347-348-349 (333, 348) ECONOMIC HISTORY OF EUROPE 3 prereq 233, 248, 258. The economic development of the economies of ancient and medieval Europe to 1500. (348) European economic growth from 1500 to 1800. (349) Continuation since 1850.

351-352 (353) COLONIAL AMERICA 3. (351) The transfer of English civilization to America in the seventeenth century, with attention to the qualities that supported permanence and particular settiments. (352) American civilization from 1689 to 1790, emphasis on the political, social and economic maturing that prepared the colonies for the revolut­ ional era.

357-358 HISTORY OF THE SOUTH 3 enter any quarter. (357) The Civil War, Southern Reconstruction, and the “New South,” the South in the 20th century, with special emphasis on the historical development of racial issues.

359 RECENT UNITED STATES, 1929 TO PRESENT 3. The Great Depression and New Deal: World War II; the Cold War and after.


363-364 HISTORY OF CONSERVATION 3 enter either quarter. (363) Nature and environment in the United States, evolution of conservation from an individual and local level to national policy.

365 HISTORY OF CONSERVATION 3 enter either quarter. (365) Nature and environment in the United States, evolution of conservation from an individual and local level to national policy.

267 (367-368) MONTANA AND THE WEST 3. Political, social, economic, and cultural development of Montana, and its relations with the American west.

269 (370) THE TWENTIETH CENTURY WEST 3. A regional history of the trans-Mississippi West since the end of the frontier period.


273-374-375 (374) AMERICAN ECONOMIC HISTORY 3 prereq 6 or 261. (373) Economic growth since 1700; economic consequences of the Civil War; rise of Big Business; economic problems of the 20's; the challenge of a frontierless economy; welfare economics; economic theories.


280-281 (380) THE FAR EAST 4 enter either quarter. (380) The beginning of the Dharma and the Chinese reference to Mongolia. (381) Continuation to the present time, stressing international politics in the Far East.

282-283 (382) AMERICAN NEGRO HISTORY 3 enter either quarter. (382) The Negro in Reconstruction; the abolitionist movement; emancipation. (383) The Negro in Reconstruction; the "Betrayal of the Negro"; migration to the cities; the "Second Reconstruction."

282-283-284 (383) HISTORY OF SCIENCE 3. Enter any quarter. (382) Scientific thought from pre-Classical times to the age of Thomas Aquinas, stressing the development of scientific ideas within their cultural context; special emphasis upon the transfer of the rationalist doctrine from the early Greeks to the civilization of Western Europe. (383) Scientific thought from the Renaissance through the Newtonian Revolution; particular attention to the advent of the new scientific methodology of the 17th and 18th centuries, and to the appearance of the new fields of scientific endeavor. (384) The evolution of scientific thought from the 19th century to the present century, and the impact of the technological revolution of the 19th century; the relation of science to the social and political communities; the growth of the new internationalism of the scientific world.

406 MEDIEVAL INSTITUTIONS 3. Typical institutions—the Christian Church, feudalism, Roman law, the twelfth-century renaissance, the papal-parliamental system.

415-416 NINETEENTH CENTURY EUROPE 3 prereq 103. Not open to students who have had 215-216. (415) The internal developments and external relationships of the chief European powers, 1815-1871. (416) Continuation to 1900.


427 HISTORY OF COMMUNISM 2 prereq 329. The Communist movement and Communist thought in the early 19th century.

431-432-433 INTELLECTUAL HISTORY OF EUROPE 3 prereq 101-102-103. Enter any quarter. (431) The main currents of Western thought from classical times to the close of the Middle Ages. (432) Continuation to the end of the eighteenth century. (433) The nineteenth and twentieth centuries.

441 TUDOR ENGLAND 3 prereq 242. English social and political institutions from 1461 to 1603; early Tudor government; the break with Rome; the Elizabethan settlement; war with Spain; the Elizabethan political and social structure.

442 STUART ENGLAND 3 prereq 242 or 441. Social and political institutions from 1603 to 1714; constitutional conflict; Puritanism; the Civil Wars; Oliver Cromwell; the Restoration settlement; the Glorious Revolution; the emergence of political parties.

443 MODERN BRITAIN 3 prereq 243. England since 1815; reforms and reform; the rise of Labour; England's role in two world wars.

444 EIGHTEENTH CENTURY BRITAIN, 1714-1815 3. The era of Parliamentary supremacy.

445 VICTORIAN ENGLAND, 1815-1914 3. The making of the modern British state.


455 (355) THE AGE OF JEFFERSON, 1780-1815 3. The early national period: Federalists and the uses of power; Jeffersonians and the limits of power; the first American party system; The War of 1812.

456 (356) THE AGE OF JACKSON, 1815-1848 3. Nationalism and democracy; the second party system; political, social, and economic aspects of Jacksonianism; expansion and the Mexican War.

457 (357) CIVIL WAR AND RECONSTRUCTION 3 prereq 261. American history in the mid-nineteenth century, detailing the causes, events and aftermath of the Civil War.

458 THE GILDED AGE 3 prereq 262. American history 1870-1900; the politics of corruption and the agrarian revolt; triumphant industrialism; emergence of the United States as a world power; cultural currents of the Gilded Age.

459 EARLY 20TH CENTURY UNITED STATES, 1900-1929 3. The Prohibition era; the five years of transition in War World I; the "Roaring '20's" and the Great Crash.

461-462-463 AMERICAN INTELLECTUAL HISTORY 3. Enter any quarter. (461) The formation of the American mind, emphasizing Puritanism and other influences of the colonial period. (462) Main currents of American thought from the founding of the nation to the close of the Civil War. (463) American thought during the past century.

472 (372) HISTORIC SITES V R-3. The location and evaluation of historic sites in Montana and the Northwest. Field trips under the joint supervision of archaeologists and historians.

473-474 HISTORY OF AMERICAN BUSINESS 3 prereq c/l. Enter either quarter. (473) American business enterprise—its organization, development, and changing marketing and labor relations—from colonial times to 1860. (474) Continuation to the present.


478-479 HISTORY OF MEXICO 3 enter either quarter. (478) An analysis of Mexican politics, international relations, society, economics, and culture from 1810 to 1917. (479) Continuation to the present.

480 HISTORY OF AMERICAN POLITICAL PARTIES AND PARTY SYSTEMS 3. Origins, political development, and decline of American party systems; ascendency and fall of the Democratic and Jeffersonian Republicans, Whigs and Jacksonian Democrats, and the three phases of rivalry between modern Republicans and Democrats.

491 EUROPEAN HISTORICAL THOUGHT 2 prereq 25 cr. in History and completion of reading 19th-century European historians to the development of modern historical analysis and interpretation.

492 PROBLEMS IN AMERICAN HISTORIOGRAPHY 2 prereq 25 cr. in History. Study of the contrasts in historical interpretation by selecting problems ranging from colonial to contemporary times.

493 PROBLEMS IN HISTORY V R-9 prereq 25 cr. in History with "B" average. Study or research in fields selected according to the needs and objectives of the individual student.

495 (385) SPECIAL STUDIES IN HISTORY 2-3 R-20 prereq c/l. Offered by different instructors under various titles.

FOR GRADUATES

510 READING IN HISTORY 2-4 R-20. Independent study and directed research.

531 FIELD COURSE IN AMERICAN COLONIAL HISTORY 3-5. Intensive reading in American colonial history.

532 FIELD COURSE IN THE AMERICAN WEST 3-5. Intensive reading in Western history.

533 FIELD COURSE IN THE CIVIL WAR 3-5. Intensive reading in the history of the American Civil War.

534 FIELD COURSE IN MODERN AMERICA SINCE 1865 3. Intensive Reading in American history since Reconstruction.

535 FIELD COURSE IN AMERICAN ECONOMIC HISTORY 3-5. Intensive reading in American economic development in the nineteenth and twentieth centuries.

536 FIELD COURSE IN AMERICAN BUSINESS HISTORY 3-5. Intensive reading in the history of American business in the nineteenth and twentieth centuries.

537 FIELD COURSE IN THE AMERICAN REVOLUTION 3-5. Intensive reading.

538 FIELD COURSE IN EARLY NATIONAL AMERICAN HISTORY, 1789-1848 3-5. Intensive reading.

541 FIELD COURSE IN MEDIEVAL EUROPE 3-5. Intensive reading in the history of the Middle Ages from the fifth to the fifteenth centuries.

542 FIELD COURSE IN MODERN ENGLAND 3-5 Intensive reading in British history since 1485.

543 FIELD COURSE IN MODERN GERMANY 3-5. Intensive reading in the history of Germany since 1870.

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 history of select European institutions since the early Middle Ages.
HOME ECONOMICS

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

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

There are three general plans available to the undergraduate major. Plan 1 prepares students for teaching. Plan 2 prepares students for work in Foods and Nutrition and for the Dietetic Internship. Plan 3 provides a program in general Home Economics. Here the student may emphasize Clothing and Textiles, Child Development or Family Relations. The general major may be combined with other offerings on the campus such as Business, Radio and TV, Psychology, Social Welfare and others. A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in Home Economics.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102 PERSONAL AND FAMILY LIVING 3 (3-0). Personal development and factors that affect family and social relationships. Open to both men and women.

105 GENERAL HOME ECONOMICS 1 (0-2). Selected subjects in Home Economics. Offered by various instructors under different titles.

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

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

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

157 INTRODUCTORY CLOTHING PROBLEMS 3 (3-0). Aesthetic and economic factors in the selection of clothing. Principles of clothing construction with emphasis upon experimentation, organization, and management in fitting and construction techniques.

158 CLOTHING PROBLEMS LABORATORY 2 (0-4) prereq or coreq 157. Basic principles applied to planning and making garments. Designed for the student who is lacking in experience in clothing construction.

200 HOME MANAGEMENT IN THEORY AND PRACTICE 2 (2-0). Resources used in daily living; principles of resource use; management in applying resources to obtain satisfaction for individuals and families.

210 HOUSEHOLD EQUIPMENT 3 (3-0) prereq 209. 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 for majors and minors only. Credit not allowed for both 141 and 241.

243 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 CLOTHING THE FAMILY 3 (3-0) prereq 157. Economic, psychological and sociological factors in selection of clothing.

264 WEAVERING 3 (1-3) prereq Art 125. Basic weaving techniques with emphasis on creativity.

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, contemporary designs and designers, plus qualities to consider in selecting home furnishings.

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

305 MEAL MANAGEMENT 3 (2-4) prereq 209, 241, 246. Nutritional and social aspects of family meals, with emphasis on time, energy, money, and equipment management.

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


521 METHODS OF TEACHING HOME ECONOMICS 3 (3-0) prereq 102, 157, 241. The fundamental principles of organization, unit planning and methods of presentation of subject matter. To be taken by majors and minors only after professional quarter. (Home Economics majors may take this course as Education 321.)

531 (431) 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.

FOR UNDERGRADUATES AND GRADUATES

542 EXPERIMENTAL FOODS 3 (1-4) prereq 241. Foods from the experimental point of view. Special problems are assigned for individual investigation.

546 FAMILY NUTRITION 3 (3-0) prereq 246 or cr/l, non-majors c/l. The science of nutrition as it applies to the growth, development, and maintenance of health in all age groups.

552 HISTORY OF CLOTHING AND TEXTILES 3 (3-0). Historical costumes and textiles and their influences on modern dress and fabrics.

559 ADVANCED CLOTHING PROBLEMS 3 (1-4) prereq 157 or cr/l. Modern principles used in the construction of tailored garments. Experimentation with a variety of techniques and fabrics.
JOURNALISM

359 CLOTHING DESIGN 3 (2-2) prereq 157 and Art 128. Art principles applied to designing clothing. Original designs created through flat pattern and draping methods.

360 RECENT DEVELOPMENTS IN TEXTILES 3 (2-2) prereq Chem 150 or c/c. Developments in fibers and finishes, developments in fiber legislation, and standardization. Comparison and evaluation of textiles.

366 CHILD DEVELOPMENT V 2-5 (3-0) prereq Psych 110. The infant, pre-school and school-age child. Observation required for majors, optional for non-majors.

367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 366. Participation in the laboratory.

368 HUMAN DEVELOPMENT AND FAMILY RELATIONSHIPS 3 (3-0) prereq Psych 110. The adolescent and young adult in home, school and community. Problems of aging.

406 NUTRITION IN DISEASE 3 (3-0) prereq 246 or c/l. The symptoms of diseases, prophylaxis and feeding in disease.

421 ADVANCED PROBLEMS IN TEACHING HOME ECONOMICS 3 (3-0) prereq 321, Educ 408. Preparation for teaching of 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.

434 NUTRITION SEMINAR 3 prereq Chem 481 or concurrent enrollment. Readings and discussion of nutritional research.

490 (501) SEMINAR IN HOME ECONOMICS V 1-3 R-4. Recent developments and research in Home Economics.

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

FOR GRADUATES

699 THESIS V R-15.

JOURNALISM

is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media. It includes instruction in the skills necessary for professional careers in newspaper work, radio and television, magazines and books, advertising and photography, public relations and promotion, free lance writing, and related fields. Approximately one-fourth of the academic work for a Bachelor of Arts degree in Journalism will be taken in the School of Journalism. The other three-fourths of the total credit required for graduation will provide a background in the liberal arts, with emphasis on history, government, economics, philosophy, literature, foreign languages, psychology, and sociology.

The degree of Master of Arts in Journalism also is offered (see Graduate School). Undergraduates specialize in a field which may be news-editorial, radio-television, advertising, or magazines. Instruction in many courses stresses ethics, legal and social responsibilities, and the opportunities for public service.

Graduates obtain positions on newspapers in Montana and in other states, including many metropolitan centers. Some are foreign correspondents. Many are editors and publishers, or hold positions on radio and television stations, with technical magazines, in public relations firms or advertising agencies, and government agencies. Some are distinguished scholars, authors and teachers.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that the high school preparation include study of a foreign language and typing.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. In addition to the general requirements the candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 29 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 100, 270, 280, 361, 371, 372, 380, 381, 491-492. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

Journ 100—Introduction to Journalism

Engl 359—Freshman Composition

H&PE 100 (3 quarters)—Health and Physical Education

Additional courses to meet University requirements

Sophomore Year

Engl 290—Intermediate Composition

Journ 290—History and Principles of Journalism

Additional courses to meet University requirements

Junior and Senior Years

Engl 360—Advanced Composition

Journ 390—Principles of Advertising

Journ 361—Advertising Sales

Journ 392—Advanced Reporting

Journ 372—Specialized Reporting

Journ 380—News Editing

Journ 491—Advanced News Editing

Journ 492—493—Senior Seminar

Journ Electives (including sequence requirements)

Additional Electives

Total recommended hours in Journalism

Total recommended hours in General Education

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 327, 390, 470, 489.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 348; Journalism 382, 363, 364.

MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 327, 332, 333, 334.

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

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-televison sequence in Journalism. The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO JOURNALISM 3. Open to non-majors. History, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper.

128 TYPOGRAPHY 2 prereq c/l. Problems of typographical design and application. Elementary work in printing and the handling of type.


227 ELEIMENTARY PHOTOGRAPHY 3 prereq c/l. Open to non-majors. Photographic equipment, materials, and facilities with practice in taking of pictures under varied conditions and processing of films and prints.

270 REPORTING 3. Open to non-majors. Groundwork in gathering, writing and evaluating news.

290 HISTORY AND PRINCIPLES OF JOURNALISM 3. Open to non-majors. American journalism from colonial times against a background of U. S. history with attention to the struggle for freedom of expression.

297 NEWS PHOTOGRAPHY 3 prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

322 MAGAZINE MAKEUP AND EDITING 3 prereq c/l. Open to non-majors. Theory and practice of editing magazines of general circulation. Practice includes editorial planning and writing.

333 MAGAZINE ARTICLE WRITING 3 prereq c/l. Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.
Semester examinations June 14, 1970.

LAW—63

is the study of the official rules and regulations under which people live in organized American society; of the methods by which such rules are made and administered; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions collected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and in legal writing. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana.

The Supreme Court of Montana admits graduates to practice without examination. Most graduates become practicing attorneys. Others enter government service, business, or finance, with or without additional studies in these latter fields. Some take advanced or more specialized studies (such as taxation) at eastern institutions; graduates with the requisite scholarship standing are readily employed in other law schools specializing in more advanced legal education. They are also found to be in the ranks of leading practitioners in many large cities of the United States.

CALENDAR

FALL SEMESTER, 1969

September 22-23, Monday and Tuesday ____________________ Orientation of new law students
September 23, Tuesday ________________________________ Classes begin at 8:00 a.m.
September 24, Wednesday ________________________________ Registration
September 29, Monday ________________________________ Classes resume at 8:00 a.m.
November 11, Tuesday ________________________________ Veterans' Day, no classes
November 26, Wednesday ________________________________ Thanksgiving; vacation begins after last class
December 1, Monday ________________________________ Classes resume at 8:00 a.m.
December 20, Saturday ________________________________ Christmas vacation begins after last class
January 5, 1970, Monday ________________________________ Classes resume at 8:00 a.m.
January 26-31, Monday through Saturday ________________ Semester Examinations

SPRING SEMESTER 1970

February 11, Wednesday ________________________________ Registration
February 12, Thursday ________________________________ Spring vacation begins at 8:00 a.m.
March 30, Monday ________________________________ Classes resume at 8:00 a.m.
June 1-6, Monday through Saturday ________________ Semester Examinations
June 14, Sunday ________________________________ Commencement

FALL SEMESTER 1970

September 21-22, Monday and Tuesday ____________________ Orientation of new law students
September 22, Tuesday ________________________________ Registration
September 23, Wednesday ________________________________ Classes begin at 8:00 a.m.
November 11, Tuesday ________________________________ Veterans' Day, no classes
November 25, Wednesday ________________________________ Thanksgiving; vacation begins after last class
November 30, Monday ________________________________ Classes resume at 8:00 a.m.
December 7, Saturday ________________________________ Christmas vacation begins after last class
January 4, 1971, Monday ________________________________ Classes resume at 8:00 a.m.
January 25 through January 30, Monday through Saturday ________________ Semester examinations

SPRING SEMESTER 1971

February 10, Wednesday ________________________________ Registration
February 11, Thursday ________________________________ Classes begin at 8:00 a.m.
March 1, Thursday ________________________________ Spring vacation begins after last class
March 29, Monday ________________________________ Classes resume at 8:00 a.m.
May 31 through June 5, Monday through Saturday ________________ Semester examinations
June 13, Sunday ________________________________ Commencement

GENERAL STATEMENT: The Law School is accredited by the American Bar Association and the Association of American Law Schools. Organization of instruction is upon the semester basis, the school year being divided into two semesters of approximately eighteen weeks each, including vacation periods. Facilities, information concerning facilities, descriptions of courses, and miscellaneous administrative regulations the applicant should consult the Law School Bulletin.

REQUIREMENTS FOR ADMISSION: The Law faculty passes on all applications for admission to the Law School. Candidates must be of good moral character and intellectually endowed. Those who have received a baccalaureate degree or its equivalent from an approved college or university prior to matriculation in the Law School. An applicant who has completed in residence at an approved college or university three-fourths of the work required for an undergraduate degree may be considered for admission as an exceptional case upon submission of a petition and evidence of high scholastic standing and outstanding...
ing aptitude for the study of law, on condition nonetheless that such an applicant is not only able to meet the requirements of the Law School but also that he has not been convicted of any felony.

Non-law courses are not allowable except for a limited number of hours which may be taken in the physical sciences, each of which must be one of the Approved courses for the degree if, in the opinion of the majority of the law faculty, he is qualified in accordance with generally accepted standards for admission to the bar.

A student may not register nor receive credit for more than 16 hours of law in a semester.

FIRST YEAR

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<tr>
<td>505</td>
<td>Civil Procedure I</td>
<td>2</td>
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<tr>
<td>510</td>
<td>Contracts I, II</td>
<td>3</td>
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<tr>
<td>515</td>
<td>Criminal Law</td>
<td>2</td>
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<tr>
<td>520</td>
<td>Civil Procedure</td>
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<tr>
<td>531-533</td>
<td>Legal Writing I, II</td>
<td>2</td>
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<tr>
<td>532-536</td>
<td>Property</td>
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<tr>
<td>543-544</td>
<td>Torts I, II</td>
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(Add 1 hour of Legal Method (Remedial) for those deficient grade points at end of first semester. No course credit.)

SECOND YEAR*

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<tr>
<td>553</td>
<td>Agency &amp; Partnership</td>
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<td>557</td>
<td>Civil Procedure II</td>
<td>3</td>
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<tr>
<td>561-562</td>
<td>Commercial Transactions I, II</td>
<td>3</td>
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<tr>
<td>564</td>
<td>Constitutional Law</td>
<td>2</td>
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<td>554</td>
<td>Corporations</td>
<td>2</td>
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<td>559-561</td>
<td>Estate Planning I, II</td>
<td>3</td>
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<td>573</td>
<td>Evidence</td>
<td>4</td>
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<td>583-584</td>
<td>Legal Writing III, IV</td>
<td>2</td>
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<td>590</td>
<td>Professional Responsibility</td>
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*(Accounting Fundamentals by course or examination required before commencement of second year.)

ALL COURSES IN THE FIRST TWO YEARS ARE REQUIRED

THIRD YEAR

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<td>691</td>
<td>Comparative Law (Seminar)</td>
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<td>610-611</td>
<td>Conflicts of Law</td>
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<tr>
<td>650-651</td>
<td>Contemporary Legal Problems I, II</td>
<td>2</td>
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<tr>
<td>681-682</td>
<td>Legal Writing I, II</td>
<td>2</td>
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<tr>
<td>685</td>
<td>The Family (Seminar)</td>
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<tr>
<td>692-693</td>
<td>Federal Tax I, II</td>
<td>3</td>
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<td>694</td>
<td>Jurisprudence (Seminar)</td>
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<td>695</td>
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<td>696-697</td>
<td>Labor Relations I, II</td>
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<td>698-699</td>
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<td>670-671</td>
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<td>Comparative Law (Seminar)</td>
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<td>610-611</td>
<td>Conflicts of Law</td>
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<td>650-651</td>
<td>Contemporary Legal Problems I, II</td>
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<td>681-682</td>
<td>Legal Writing I, II</td>
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<td>692-693</td>
<td>Federal Tax I, II</td>
<td>3</td>
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<td>694</td>
<td>Jurisprudence (Seminar)</td>
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<td>695</td>
<td>Labor Law</td>
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<td>696-697</td>
<td>Labor Relations I, II</td>
<td>2</td>
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<tr>
<td>698-699</td>
<td>Local Aid I, II</td>
<td>2</td>
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</tbody>
</table>

*Required Courses. In addition one seminar required each semester.

553 AGENCY AND PARTNERSHIP 3. The relationship of employer-employee, principal-agent, partnership, non-profit associations and other forms of business organizations.

505 CIVIL PROCEDURE I 3. Court systems, jurisdiction, and problems preliminary to trial.

557 CIVIL PROCEDURE II 3. The steps in a civil action from the pleadings to trial.
LIBERAL ARTS

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. The latter includes Anthropology, Economics, History, Political Science, Sociology and Geography.

This program permits the student to work in a combination of the above areas rather than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences. It also provides a broad background for students who decide to prepare for teaching. Those who elect to teach may qualify to do so by taking additional work in education.

Students must have completed, or be eligible for, English 150 in order to major in this program. Upperclassmen transferring into this program should have at least a C average in all credits attempted. The liberal arts curriculum is not designed for the student who is undecided as to his major.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

**University requirements**
- English 150, 250, 350
- Group I or II
- Foreign Languages
- Physical Education (3 quarters)

**Major Requirements (courses under 300)**
1. Art 200-201-202
2. Humanities 151-152-153
3. Anthropology, Economics, Geography, Psychology, Sociology, (any two)
4. History or Political Science or both (History 101-102-103 or 261-262 recommended)
5. Literature (English 211-212-213 and 231-232-233 recommended)
6. Philosophy (Philosophy 298, 299, 300 recommended)

**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:
  4. History or Political Science or both
  8. Literature or Philosophy or Humanities
  9. and 401 or any combination

**Electives**
- 30-32

**LIBRARY SERVICE.** For information on courses, minimum requirements, preparation of school librarians, and the teaching minor in Library Service, check under the School of Education. See education courses 340, 341, 342, 343, 344, 345, 346, 441, 442, 443, 444, 445, 447, 448 and 449. No degree is offered at this time in this field.

LINGUISTICS

is the science which investigates the structure of the languages and dialects which are in use, or have been in use, throughout the world. Its goal is to arrive at a body of knowledge about specific languages and about the nature of language, and ultimately to create theories of language. Linguistics has implications for many other disciplines and has various applications, particularly in teaching English and foreign languages. Although at present the University offers no degree in linguistics, a concentration in linguistics subjects would prepare a student to enter upon graduate work in linguistics and would provide him with a background to work in certain government and foundation supported language programs in the U.S. and abroad. The following linguistics courses offered by departments in the university (each is applicable to a major in the department concerned):

534 CORPORATIONS

Problems of corporate management; finance, investment, organization, and regulation of securities issues, shareholders suits, dividend and corporate distributions.

615-616 COURTROOM AND OFFICE PRACTICE I, II

Established patterns in office procedure, in uncontested legal proceedings and in trial techniques.

621 CREDITOR AND DEBTOR

The procedures and methods whereby a creditor obtains recovery from a debtor, with emphasis upon bankruptcy.

515 CRIMINAL LAW

Crimes with emphasis upon the criminal act, the requirement and character of criminal intent and limitation upon criminal responsibility.

508 CRIMINAL PROCEDURE

Investigation and prosecution of alleged offenders with emphasis upon arrest, bail, indictments, trials and post conviction remedies.

509-570 ESTATE PLANNING I, II

The will and the trust types of future interests in property as devices in the transfer of property at death or prior to death.

573 EVIDENCE

The production and presentation of evidence in the course of a trial.

695 THE FAMILY

The ways in which family relationships come into being, the various restrictions upon marriage, the problems posed by the family as an existing unit, adoption, juvenile court and the manifold legal relationships between husband and wife and parent and child.

631 FEDERAL TAXATION I

The federal income tax relating to individual trusts, partnerships and corporations.

632 FEDERAL TAXATION II

The federal estate and gift tax laws.

525 INTRODUCTION TO LAW

Legal method and the place of the legal profession in an adversary system of justice: the history of law; the development of types of remedial actions and the philosophies of the law; together with their impact upon legislation and adjudication.

696 JURISPRUDENCE

The nature and purposes of law and the nature of the judicial process.

641 LABOR LAW

The elements of collective bargaining and labor management relations.

642-643 LAW REVIEW I, II

Comprehensive research and writing in limited areas of law. Limited to members of the Law Review staff.

651-655 LEGAL AID I, II

Clinical experience under the supervision of a Montana attorney in both civil and criminal cases before the federal and state courts.

531 LEGAL WRITING I

Law books and their use and the preparation of legal memoranda and reports with emphasis upon legal writing.

522 LEGAL WRITING II

The drafting of legal instruments, moot court briefs and legal memoranda.

533-534 LEGAL WRITING III, IV

The preparation of a research paper under supervision of a member of the faculty, preparation of a brief and presentation of oral appellate argument on a major constitutional question before a faculty-student court.

647 LEGISLATION

The preparation, passage and interpretation of legislation.

655 LOCAL GOVERNMENT

The administration of government with emphasis upon local governing bodies and their relationships with their state and federal counterparts.

657 NATURAL RESOURCES

Elements of mining law and the law of public lands; selected problems of natural resources, particularly oil and gas law and water law.

661 OIL AND GAS

The production, conservation and transportation of petroleum.

590 PROFESSIONAL RESPONSIBILITY

The lawyer as counselor, advocate, citizen and public servant with emphasis on the nature and extent of professional responsibility.

535 PROPERTY I

The law of personal property, possession, and the requisites for acquiring title to land.

536 PROPERTY II

The transfer of interests in real property.

698 REGULATION OF BUSINESS

The regulation of private business with emphasis upon monopoly, anti-trust, trademarks and unfair competition.

640 REMEDIES

The judicial remedies available for injuries to persons and property, for breach of enforceable agreements, and for transactions induced by misrepresentation.

671 SECURED TRANSACTIONS

The use of real property security and the nature and foreclosure of mortgages.

603 SOCIAL LEGISLATION

Social security, workman's compensation, unemployment compensation and wages and hours legislation.

543-544 TORTS I, II

Private civil wrongs other than breach of contract for which a court of law will award damages.

688 WATER LAW

The appropriation and use of water and of the reliefs rights of federal and state governments in the use of this natural resource.
MATHEMATICS

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

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

HIGH SCHOOL PREPARATION. All mathematics courses for university credit require, as prerequisite, the equivalent of two years of high school algebra. Further, it is strongly recommended that the high school preparation include plane geometry, trigonometry and analytic geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MATHEMATICS. In addition to the general requirements for graduation listed earlier in the catalog, the following requirements must be completed for the Bachelor of Arts degree with a major in Mathematics. Math 151, 152, 153, 251, 252. A foreign language (German, French, Russian, or a combination of these) and the departmental English composition requirement are required. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 251, 311, 321, 322, 323, 351, 352, 353 and six credits in other approved Mathematics courses, including three credits in courses numbered above 300. The student must present 15 credits in at least three sciences selected from Botany, Chemistry, Geology, Microbiology, Physics, Zoology, and Mathematical Statistics (i.e., Mathematics 241, 242, 243, 441, 442, 443). An alternative is for the student to present 15 credits of French, German, or Russian and 18 credits of one of the above sciences, 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 a second major in one of the schools or departments within the University.

Option 2. Students preparing for secondary school teaching are required to take Mathematics 126, 301, 302, 303, and 5 credits in approved Mathematics courses numbered above 250, and must complete certification requirements for teaching in the secondary schools.

GRADUATE WORK. See Graduate School Bulletin and Mathematics Department Bulletin—Graduate Work in Mathematics. Additional information may be obtained from the Chairman of the Mathematics Department.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

001 (100) INTERMEDIATE ALGEBRA. A remedial course, of which the content is second year high school algebra. (Credit not allowed toward a degree.)

116 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination. The number system, coordinate operations, binomial theorem, inequalities, systems of linear equations, elementary theory of equations.

117 TRIGONOMETRY 5 prereq 116 or exemption by examination. Trigonometric functions, their graphs and equations, trigonometric identities, addition formulas, laws of sines, cosines, and tangents, exponential and logarithmic functions and their graphs, solution of triangles.

118 INTRODUCTION TO CALCULUS 5 prereq 116, 117, or exemption by examination. Limits, continuity, differentiation and integration of functions of one real variable, applications, the fundamental theorem of calculus.

121 ELEMENTARY FUNCTIONS 5 prereq high school trigonometry and 001 or exemption by examination. Properties of polynomial, rational, circular, and other elementary functions of one variable.

123 STATISTICS 5 prereq 001 or exemption by examination. Probability models, statistical independence, sampling, tests of statistical hypotheses.

130 THEORY OF ARITHMETIC 5 prereq 001 or exemption by examination. The mathematical meaning and background of arithmetic.

151-182 (118-251) ANALYTIC GEOMETRY AND CALCULUS I-II 5 prereq 121 or 117 or exemption by examination. Limits, continuity, differentiation, integration, differentiation and integration of elementary functions, applications.

153 ANALYTIC GEOMETRY AND CALCULUS III 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore levels.

220 INTUITIVE GEOMETRY 4 prereq 130 or exemption by examination. Space, plane, line and other geometric figures as sets of points, separation properties, deduction versus induction, measurements, coordinate geometry.

251 ANALYTIC GEOMETRY AND CALCULUS IV 5 prereq 153. Partial differentiation, infinite series.

252 ANALYTIC GEOMETRY AND CALCULUS V 5 prereq 251. Multiple integrals, line and surface integrals, infinite series, improper integrals.

253 ANALYTIC GEOMETRY AND CALCULUS VI 5 prereq 251. Solution of ordinary differential equations with emphasis on linear equations, Laplace transform methods, series solutions.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 201 and c/l. The elements of linear equations, inequalities, calculus logic and probability are presented with the aid of a digital computer. (271) An introduction to programming, (272) Intuitive calculus, (273) Logic and probability theory. (Credit not allowed for this course and Computer Science 271-272-273.)

FOR UNDERGRADUATES AND GRADUATES

301 THE REAL NUMBER SYSTEM 5 prereq or coreq 251. An axiomatic treatment of the construction of the real number system, beginning with the Peano postulates for the natural numbers.

302 (300) ALGEBRA FOR TEACHERS 5 prereq or coreq 251. Strongly recommended. The processes of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra. (Credit not allowed toward a degree in Mathematics.)

303 (304) GEOMETRY FOR TEACHERS 5 prereq c/l. The subject matter of high school geometry compared with that of other geometries.

305 TOPICS IN MATHEMATICS V prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to help high school teachers improve their background in Mathematics. Content varied to meet the needs of the student. (Credit not allowed toward a degree in Mathematics.)


MEDICAL TECHNOLOGY

is a combined study of chemistry, physics, physiology, and microbiology. A medical technologist is one who, by education and training, is capable of performing, under the supervision of a pathologist or other qualified physician, the various chemical, microscopic, bacteriologic, and medical laboratory procedures used in the diagnosis, study, and treatment of disease. Four years are required to earn the degree of Bachelor of Science in Medical Technology. The first two years are devoted to the study of the foundation in physics, chemistry, and biology and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico, and the Canal Zone. After successful completion of the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this certification is desirable, persons

FOR GRADUATES

Before beginning work on an M.A., a student should have an undergraduate major in natural science, two division courses in mathematics. As preparation for advanced courses, he should have Math 351-352-353 and Math 321-322-323.
receiving the B. S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratories as technicians. Medical Technologists are in demand in hospital laboratories, in physicians’ offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the first three years. It is possible then to take three years of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of Microbiology. Option I consists of four years of academic studies at the University, leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3% years of academic studies at the University and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed earlier in this catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 200, 302, 350, 430; Physics 111-112-113; Zoology 111-112-113, 202, 204, 313; Chemistry 121-122-123, 245, 261-262; Math 116, 117. A minimum total of 45 credits from Microbiology courses listed above and from the following courses in required: Microbiology 306, 307, 404, 405, 418, 419, 430; Chemistry 370, 461, 462, or any other courses approved by the advisor and the chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Option I

Freshman Year

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<tr>
<th>Course</th>
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<tr>
<td>Chem 111-112-125—College Chemistry</td>
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<tr>
<td>Zool 111-112-113—Introduction to Biology,</td>
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<td>Zoology</td>
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<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
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<td>Group III or IV Electives</td>
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<td>H&amp;PE—Physical Education</td>
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Sophomore Year

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<tr>
<th>Course</th>
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<tr>
<td>Chem 261-262—Organic Chemistry</td>
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<tr>
<td>Chem 245—Quantitative Analysis</td>
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<td>Physics 111-112-113—General Physics</td>
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<td>Microbiology 200—General Microbiology</td>
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<td>Zool 202—Human Physiology</td>
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<td>Eng2 200—Intermediate Composition</td>
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Junior Year

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<th>Course</th>
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<tr>
<td>Microbiology 302—Medical Microbiology</td>
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<tr>
<td>Microbiology 350—Microbial Physiology</td>
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<tr>
<td>Microbiology 310—Immunology and Serology</td>
<td>5</td>
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<tr>
<td>Zool 304—Comparative Vertebrate Anatomy</td>
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<td>Eng2 350—Advanced Composition</td>
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<td>Group Electives</td>
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Senior Year

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<th>Course</th>
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<tr>
<td>Microbiology 406—Clinical Microbiology</td>
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<td>Microbiology 304—Epidemiology</td>
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<td>Microbiology 415—Medical Mycology</td>
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<td>Microbiology 420—Virology</td>
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<td>Microbiology 430—Parasitology</td>
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<td>Zool 313—Vertebrate Histology</td>
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Option II

Under Option II, a student must complete a minimum of 15 elective credits in residence during the senior year. Successful completion of all hospital training in a hospital approved by the American Society of Clinical Pathologists and the Department of Microbiology are required. The student will receive the equivalent of not more than 30 credit hours toward his B.S. degree for the successful completion of the hospital internship.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY. In addition to the general requirements for graduation listed earlier in this catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 200, 302, 350, 430, 441, 418, 419, 430; Zoology 111-112-113; Chemistry 121-122-123, 245, 261-262; Physics 111-112-113; Math 116, 117. Students planning to do graduate work are recommended, in addition, the following courses: Chemistry 370, 461-462; History 392-393-394; Philosophy 310; Math 118.

A minimum of 45 credits in the major field is required to receive a baccalaureate degree. This requirement may be satisfied by a successful completion of Microbiology courses listed above and any of the following courses: Microbiology 306, 307, 404, 405, 418, 419, 430; Zoology 321; Botany 441; Chemistry 461, 482, or any other courses approved by the advisor and chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Freshman Year

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<th>Course</th>
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<tr>
<td>Chem 121-122-123—College Chemistry</td>
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<td>Zool 111-112-113—Introduction to Biology,</td>
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<td>Eng1 150—Freshman Composition</td>
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<td>H&amp;PE—Physical Education</td>
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Sophomore Year

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<td>Chem 261-262—Organic Chemistry</td>
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<td>Chem 245—Quantitative Analysis</td>
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<td>Microbiology 200—General Microbiology</td>
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<td>Eng2 350—Intermediate Composition</td>
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Junior Year

Physics 111-112-113—General Physics .................................. 5 5 5
Foreign Language .................................................. 4 4 3
Engl 380—Advanced Composition .................................. 5
Microb 320—Microbial Physiology .................................. 5
Microb 302—Medical Microbiology .................................. 5
Microb 310—Immunology and Serology ......................... 3 3 3
Group III or IV Electives ........................................... 17 17 17

Senior Year

Microb 415—Medical Mycology .................................. 5
Microb 420—Virology .............................................. 5
Microb 411—Epidemiology .................................. 3
Microb 418—Yeasts ................................................. 3
Seminar ............................................................ 1
Microb 404—Molecular Genetics ............................. 1 1 5
Group III or IV Electives .............................................. 5 5
Electives in Major ................................................. 5
Electives .......................................................... 3 3

16 17 17

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 ELEMENTARY MICROBIOLOGY 3 (3-0). The structure, function, and classification of bacteria, molds, yeasts, rickettsiae, and viruses, and their practical significance to agriculture, food, drug, persistance, and other industries. (Not allowed toward a major in microbiology.) (Students enrolling in Microb 100 are strongly urged to enroll concurrently in Microb 101—Elementary Microbiology Laboratory—which will strengthen their understanding of microbiological concepts.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 2 (0-4) prereq or coreq 100. Microbiological examination of foods, water, soil and air and experiments with microorganisms of medical importance. (Not allowed toward a major in microbiology.)

102 ELEMENTARY MEDICAL MICROBIOLOGY 3 (3-0). Infectious diseases, including concepts of virulence, resistance, prevention, and control of microbial diseases in the individual and in the community. (Not allowed toward a major in microbiology.)

200 GENERAL MICROBIOLOGY 3 (3-4) prereq Chem 123 or 160. Bacterial taxonomy, morphology, physiology, ecology, and effect of environmental factors on bacteria; microbiology of soil, water, milk and foods; and industrial microbiology. (Credit not allowed for both 100 and 200.)

300 MICROBIOLOGY FOR TEACHERS 5 (3-4). Introduction to Microbiology for high school science teachers. Not open to microbiology majors. (Credit not allowed for both 300 and 300.)

302 MEDICAL MICROBIOLOGY 5 (3-4). prereq 200 or =. The pathogenic bacteria, fungi, rickettsiae, and viruses, and the clinical, therapeutic and diagnostic aspects of the diseases they produce in man.

304 PHARMACEUTICAL MICROBIOLOGY 5 (3-4) prereq 200. Pathogenic bacteriology, immunology and chemotherapy as they apply to the field of pharmacy. (Not open to microbiology majors.)

306 APPLIED MICROBIOLOGY 5 (3-4) prereq 200 or =. The fundamental principles of food, water, sewage, soil and industrial microbiology.

307 ENVIRONMENTAL HEALTH 5 (5-0) prereq 302 or 304. Environmental health as related to food, water, housing, institutions, and recreational sanitation; sanitary disposal of liquid and solid wastes; vector control; communicable disease control; vital statistics; industrial hygiene; and environmental health administration.

310 IMMUNOLOGY AND SEROLOGY 5 (2-6) prereq 302. General principles of immunity; laboratory work in serology, animal experimentation and clinical diagnosis.

350 MICROBIAL PHYSIOLOGY 5 (3-4) prereq 200. Physiology of bacteria and related microorganisms.

404 MOLECULAR GENETICS 5 (3-4) prereq senior standing in one of the biological sciences and c/l. Biochemical mechanisms of mutation, DNA replication, nature of the genetic code, genetic recombination, genetic transcription and translation.

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


411 EPIDEMIOLOGY 3 (3-0) prereq 302 or 304. Distribution and frequency of disease; factors affecting its spread and control.

415 MEDICAL MYCOLOGY 5 (3-4) prereq 302, Bot 112 recommended. Morphology, physiology, infectivity and immunogenicity of dermatophytic and systemic fungi pathogenic for man.

410 YEASTS 3 (2-0) prereq 200, Bot 112 recommended. The classification, cytology, composition, genetics, metabolism and growth and significance of the ascosporogenous and anascosporogenous yeasts and dematiaceous yeasts.

419 MYCOPLASMA AND L-FORMS 2 (2-0) prereq 302 or 304 a/y. Physiology, immunology, pathogenesis, taxonomy, and inter-relationships of microorganisms lacking cell walls, including Mycoplasma (PPLO and PPLO), bacterial, fungal and other L-forms, and bacterial protoplasts and spheroplasts.

420 VIROLOGY 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-15 prereq 200, 302 and 3.0 average in biological sciences. Independent research.

FOR GRADUATES

500 ADVANCED TOPICS IN MICROBIOLOGY 2 (2-0) R-10.

501 SEMINAR 1 (1-0) R-4.

502 ADVANCED IMMUNOLOGY 3 (3-0) o/y prereq 310.

504 MICROBIOLOGY LITERATURE (1-0) R-4.


507 MICROBIAL CYTOL OGY 3 (3-0) o/y. Ultrastructure and function of microbial cells; methodology for study of the cytology of the cell.


509 ADVANCED VIROLOGY V 3-5 (3-5) prereq 420 or Bot 327. Relationships of animal viruses to infectious diseases; tumor induction by viruses; molecular level of viral replication; laboratory work will deal with tissue culture techniques.

510 ADVANCED MICROBIAL PHYSIOLOGY V 3-5 (3-5) a/y prereq 350 or Chem 482. The various metabolic pathways found in microorganisms, with special emphasis on the isolation, structure, function, synthesis, and control of macromolecules.

511 IMMUNOCHEMISTRY AND IMMUNOGENETICS 3 (3-3) prereq 310, Chem 481-482 a/y. Chemistry of antigens and antibodies and their reactions; phylogenetic and ontogenetic development of immunological responsiveness; antibody allotypes and immunogenetics.

590 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Also listed as Bot 280 and Chemistry 280.)

600 RESEARCH V R-25 prereq 1 quarter of residence and full graduate standing.

699 THESIS V R-15.

MUSIC

The Music Department offers to students who have demonstrated talent in music, the opportunity to continue further study of music either for a profession or an avocation, and to 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 Applied Music
with a major in Theory or Composition
Bachelor of Arts
with a major in Music.

GRADUATE WORK. See Graduate School Bulletin.

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the Music Department is by certificate from the high school, upon which the student was accepted. The fact that a chair of Music Department is more concerned with evidence of talent, conscientious achievement in music, promising future, and general capacity to succeed in college, in general, than it is in the precise content of the program which the prospective student may have followed prior to admission to college. The Music Department welcomes the opportunity to advise with students and parents during the high school period by correspondence or by interviews on the campus.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN MUSIC. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed:

1. For the Bachelor of Music Education, the course requirements in Curriculum A must be completed.
2. For the Bachelor of Music with a major in Applied Music or in Theory or Composition, the course requirements in Curriculum B must be completed.
3. For the Bachelor of Arts degree with music as a major, the course requirements in Curriculum C must be completed.
4. All students majoring in music are required to attend recitals as specified by the department.
5. All music majors seeking a B.M., B.M.E., or B.A. degree are required to participate in Band, Orchestra or a Choral Group each quarter of residence of the regular school year (with the exception of the major in Elementary music). Students who are wind instrument majors in their Applied field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter, voice majors must register for choir or choral union every quarter. Students registered in any group must participate in that group for the remainder of the academic year. Piano and organ majors must fulfill this requirement by the election of Music 140 or 106-110. Exceptions to this requirement may be made only in special cases and by the consent of the group instructor.
6. All candidates for the Bachelor of Music or Music Education degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217, Elementary music majors (Curriculum A) must complete 4 credits in piano 100.
7. Outstanding seniors in curriculum A or C may give joint senior recitals. Details will be supplied by the department on request.
8. All candidates for the B.M.E., B.M., or B.A. degree enrolled in Music 201 or 401 shall take a divisional jury in fall and winter quarters. All freshmen registered in Music 201 shall take a divisional jury at the end of Spring quarter. At the option of the division instructor, students registered in Music 201 and 401 may be required to take a divisional jury at the end of the quarter. If to be held, it will be held at the beginning of spring quarter. Students may be excused from divisional juries if (a) they have played in the applied music section (or major) of their respective band or (b) they have played a half or full recital in that quarter.

All students seeking upper-division standing shall take a full faculty jury in the spring quarter. The jury will include:

(a) Performance
(b) Sight-reading on performing instrument
(c) Sight-singing
(d) Evaluation of academic record for satisfactory completion, or current enrollment in 213, 229, 236, 217 (or functional), and sixth quarter of 201 (or the equivalent).

Failure to pass the jury will bar students from admission to music courses numbered 300 or above with the following exception: Transfer students who have been admitted to 300 or above courses with the stipulation that they will have completed all lower division requirements within their first three quarters of residence.

APPLIED MUSIC FEES

Non-Music Majors
One half-hour lesson per week $12.00
Two half-hour lessons per week 24.00
Three half-hour lessons per week 36.00

Music Majors
One half-hour lesson per week $12.00
Two or more half-hour lessons per week 20.00

For majors and non-majors who register for applied music for less than a full quarter or who withdraw before the end of the quarter, a charge for private lessons will be made. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Lessons in applied music missed by the instructor will be made up within the quarter. Lessons missed by students or lessons falling on a legal holiday will not be made up.

Music Practice Fee: students enrolled in music courses involving use of practice rooms, pianos, and other university instruments, pay a fee of $5.00 per quarter.

A. CURRICULUM FOR BACHELOR OF MUSIC EDUCATION DEGREE

For students who sincerely feel the challenge and vital service opportunity in the teaching profession, and whose high school background includes experience in music organization. The University of Montana offers the degree of Bachelor of Music Education, which meets the state requirements for certification for public school teaching (see Education).

(1) with a major in Elementary Music-Training and background preparatory to teaching and directing special and general music courses in the elementary grades (K-8).

Music course requirements for Curriculum A (Elementary) shall include a total of 66 credits as follows: 201 (Piano or voice), 6 cr.; 401, 1 cr.; 100 (Piano or voice), 4 cr.; 106-110 or 140 (with faculty approval), 3 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Operatic Literature, 4 cr.; 205, 2 cr.; 328, 3 cr.; 401, 5 cr.; 407, 3 cr.; 258 and 236, 6 cr.; 432, 3 cr.; 332, 5 cr.; 333, 5 cr.; 432, 5 cr.; 333, 7 cr. (delete 332); 328, 3 cr.; 330, 3 cr.; 6 cr.; Voice in Class, 1 cr.

In cases of a demonstrated proficiency in piano or voice other applied study may be substituted with the approval of the music faculty.

Non-music requirements in addition to general University requirements shall include the following: English 150, 250, 350, 9 cr.; Psychology 110, 5 cr.; Psychology 230, 5 cr.; General 151, 152, 153, 9 cr.; Speech 112, 2 cr.; Group I requirements shall be satisfied by Mathematics 115, 2 cr.; and Group II, 12 cr.; and 15 cr. Electives will be presented to complete a total of 82 credits, including requirements for Group I and II.

Professional courses totaling 34 credits shall include the following: Education 200, 2 cr.; Education 202, 5 cr.; Education 340, 3 cr.; Education 404, 12 cr.; Education 407, 3 cr.; Education 347, 3 cr.; and HPE 297, 3 cr.

It is recommended that elementary teachers take Health and Physical Education 115 as part of their required work in Physical Education (6 cr.) during the freshman and sophomore years.

Suggested Freshman Program: Music 201, Theory I, Aural Perception I, Introduction to Music Literature, General 125, 126, 127, English 150; Psychology 110; HPE 100 (or 115); academic electives 6 cr.

(2) with a major in Choral and Instrumental Conducting and Music Education: Preparation for conducting in elementary and choral groups, and administering a Secondary School Music Department (K-12).

Music course requirements for Curriculum A-2 shall include a total of 103 credits as follows: 201, 6 cr.; 401, 1 cr.; 100, 4 cr.; 106-110 or 140, 11 cr. (divided 7 and 4 according to applied major and minor); Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; Voice in Class, 3 cr.; Strings in Class, 6 cr.; 267, 3 cr.; 128, 129, 130, 6 cr.; 125, 4 cr.; Music History, 9 cr.; 322, 324, 325, 6 cr.; 351, 353, 333, 11 cr.; 328, 329, 4 cr.; 406, 1 cr.; upper division music electives, 6 cr.

Exceptions: Students taking piano as Secondary Applied Major will take the credits of Voice in Class, reducing the required Music credits accordingly. Students who complete an academic teaching minor need not complete the 6 credits in upper division music electives.

Non-music requirements in addition to general University requirements include the following: English Composition, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 305, 405, 407, 24 cr.

Students taking piano as Secondary Applied Major must complete Music 220, 231, Piano Methods and Materials.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; General 125, 126, 127, English 150; Psychology 110; HPE 100 (academic electives 16 cr.

(3) with a major in Choral Conducting-Training and background for conducting Secondary School choral groups, and assisting in General Music programs (K-12).

Major courses in this curriculum follow Curriculum A-2 with the following exceptions and alterations in the music course requirements:

(1) with a major in Choral and Instrumental Conducting and Music Education: Preparation for conducting in elementary and choral groups, and administering a Secondary School Music Department (K-12).

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements:

Transfer students who have been admitted to 300 or above courses with the stipulation that they will have completed all lower division requirements within their first three quarters of residence.

Piano or Voice in Class may be deleted according to area of applied major and minor. An academic teaching minor is recommended.

(4) with a major in Instrumental Conducting-Training and background for conducting High School, Junior High School, and beginning instrument groups. (K-12)

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements:

(1) with a major in Elementary Music-Training and background preparatory to teaching and directing special and general music courses in the elementary grades (K-8).

Music course requirements for Curriculum A (Elementary) shall include a total of 66 credits as follows: 201 (Piano or voice), 6 cr.; 401, 1 cr.; 100 (Piano or voice), 4 cr.; 106-110 or 140 (with faculty approval), 3 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Operatic Literature, 4 cr.; 205, 2 cr.; 328, 3 cr.; 401, 5 cr.; 407, 3 cr.; 258 and 236, 6 cr.; 432, 3 cr.; 332, 5 cr.; 333, 7 cr. (delete 332); 328, 3 cr.; 330, 3 cr.; 6 cr.; Voice in Class, 1 cr.
Piano In Class may be deleted according to area of applied major and minor. An academic teaching minor is recommended.

Double majors are possible in curriculum (A) Music Education and (B) Applied Music, Theory, or Composition, if all requirements in both curricula are completed.

B. CURRICULA FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION

The serious instrumentalist or vocalist may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music (including emphasis on piano pedagogy), Theory or Composition. Enrollment may not be completed until the student has received the recommendation of a major professor or a committee of the music faculty.

MAJOR IN PIANO OR ORGAN

Students interested in piano pedagogy follow Curriculum B with the following exceptions: (1) at least six credits in Music 140 (Piano Ensemble) must be included; (2) a half recital, Music 445, 1 credit, will fulfill the senior recital requirement. Organ majors may substitute 6 credits of upper division music elective for Piano Methods.

Music course requirements for Curriculum B with Major in Piano or Organ shall include a total of 121 credits as follows: 201, 24 cr.; 401, 24 cr.; 106-110, 140 (12 cr.); Theory I, 6 cr.

Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; 135, 4 cr.; Music History, 6 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, 106-110 or 140; Theory I, Aural Perception I, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN VOICE

Music course requirements for Curriculum B with Major in Voice shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 106 or 107, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; 135, 4 cr.; Music History, 6 cr.; Vocal Analysis, 6 cr.; Aural Perception II, 6 cr.; Upper division electives, 12 cr. and 140 (vocal repertoire), 6 credits.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, 106 or 107; Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 credits.

MAJOR IN ORCHESTRAL INSTRUMENT

Music course requirements for Curriculum B with a Major in an Orchestral Instrument shall include a total of 121 credits as follows: 201, 21 cr.; 401, 24 cr.; 106 or 107, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class. 6 cr.; 135, 4 cr.; Music History, 9 cr.; Piano (or Organ) 6 cr.; Compé Class, 6 cr.; Upper division electives, 12 cr. and 140 (vocal repertoire), 6 credits.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 150; H&PE; 100, 3 cr.; Academic Electives, 13 cr.

MAJOR IN COMPOSITION OR THEORY

Music course requirements for Curriculum B with Major in Composition or Theory shall include a total of 120 credits as follows: 201, 6 cr.; 401, 6 cr.; 106 or 107, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class. 6 cr.; 135, 4 cr.; Music History, 9 cr.; Piano (or Organ) 6 cr.; Compé Class, 6 cr.; Upper division electives, 12 cr. and 140 (vocal repertoire), 6 credits.

Non-music requirements in addition to general University requirements include a minimum of 59 credits, including English Composition, 9 credits.

Suggested Freshman Program: Music 201, Band or Orchestra, Theory I, Aural Perception I, Piano in Class, Introduction to Music Literature; English 150; H&PE; 100, 3 cr.; Academic Electives, 13 cr.

ADDITIONAL REQUIREMENTS: Students taking voice or instrument in the Music major (applied major only in Piano 100 (Piano) until a jury examination demonstrates adequate proficiency.

Theory Majors are not required to take Music 106, and Music 546.

Composition Majors: A faculty jury examination of representative work in composition must be passed at close of sophomore year. Seniors will present a recital of original music (or equivalent) for solo voice, voice and instruments, and vocal and instrumental groups including at least one composition for large ensemble.

Suggested Freshman Program: Music 201, 100, 106-110; Theory I, Aural Perception I, Composition, Introduction to Music Literature; English 150; H&PE; Academic Electives, 13 cr.

C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop substantial background in the Arts and Sciences. This degree does not qualify a student for public school teaching in Montana but does provide groundwork for further study in the fields of musical performance and scholarship in preparation for teaching careers in colleges or private schools.

Minimum credit requirements for this degree are: 180 total credits plus 12 credits in non-music courses (excluding PE) of which 95 credits must be earned in residence at the College of Arts and Sciences. Maximum music credits applicable toward this degree: Applied Music, 12 credits; Ensemble Music 1 credit; Music electives (however, Music Department requires participation in ensemble during all resident quarters).

Course requirements for Curriculum C shall include: Music 201, 6 cr.; 401, 6 cr.; Music 106-110, 6 cr.; Music 111-112-113, 6 cr.; 135, 4 cr.; 137-138-139, 6 cr.; 131, 6 cr.; upper division music electives, 13 cr.; English 150-350-350, 9 cr.; H&PE; 6 cr.; Foreign Language, 30 cr.; General, 151-152-153, 9 cr.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Introduction to Music Literature; English 150; H&PE; Academic Electives, 21 cr.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 100—Applied Minor 1-2 prereq c/l.

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

MUSIC 201, 401 (6 quarters of each course).

Applied Major V 1-4 R-24 prereq audition and c/l. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Students interested in piano pedagogy follow Curriculum B with a Major in Music Education. Secondary study is designated as a field which is secondary to their primary major, i.e., Music Education. A student entering in Music 201 should show evidence of the equivalent of two years' prior study. Students majoring in Applied Music (Curriculum B) must show talent for solo performance and evidence of the equivalent of four years' prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

105 SUMMER SESSION CHORUS V 1-2.

106 UNIVERSITY CHOIR I.

107 COLLEGIATE CHORALE I.

108 ORCHESTRA 1.

110 UNIVERSITY BAND 1.

Courses 106 through 110 are major musical organizations. Prereq c/l. Music majors must satisfy requirements as stated for each curriculum; non-music majors may apply 6 credits toward graduation.

111-112-113 THEORY I 2. 111 (Basic Theory) may be waived on basis of proficiency examination. The fundamentals and nomenclature of the science of music structure including the study of scales, keys, intervals, triad structures, rhythm, and supplemental ear training. 112-113 prereq 111, 118 for 113. Analysis of music literature to deduce principles of music construction. Application of principles through melodic and contrapuntal writing and correction with keyboard.

114-115-116 PIANO IN CLASS 1. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Harmonization: three voice parts in duple and triple meter. (Not open to music majors. 116 may be waived on basis of proficiency examination.)

122-123-124 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS A 2, W 3 (122) Keyboard Fundamentals and basic rudiments of music. (123) Fundamentals of elementary classroom. Emphasis placed on all aspects of teaching music in the elementary classroom. (124) Not open to music majors. (122 may be waived on basis of proficiency examination.)

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

134 INTRODUCTION TO CONCERT MUSIC 4 (3-2). Music in our present-day culture; illustrated lectures for the layman on forms, styles and composers of concert music. Guided listening to record- ings and sheet music at concerts. For music majors only.

135 INTRODUCTION TO MUSIC LITERATURE 4. The ele- ments of musical understanding; the place of music in history with emphasis on its relation to social change and to the history of other arts. A critical survey of music from the Renaissance through the Twentieth Century. Review of all periods of music history, with special emphasis on the music of the last 100 years. Comparison of music for non-majors with c/L. (Credit not allowed for both 134 and 135.)

138-139 AURAL PERCEPTION I 2 prereq or coreq 112-113. A laboratory course in singing and dictation to supplement Theory 1.

140 ENSEMBLE GROUPS. Any small group of two or more players may have a course outlined by the instructor. The development of sight reading and acquaintance with music literature; accompanying. Students may register for more than one ensemble course in any one quarter.

159 (159-160-161) COMPOSITION 2 R-4 prereq c/L. An intro- duction to the basic art of music composition. (May be substituted for two major electives for students not majoring in theory or composition.)

211-212-213 THEORY II 2 prereq 113 and 139, coreq 237-238-239. The study of music construction with emphasis on harmonic struct- ure; modal tetrachords and tritone chords; and keyboard composition.

215-216-217 INTERMEDIATE PIANO IN CLASS 1 prereq 3 credits in either Piano I, Music 114-115-116, or placement test. All majors and minors should take this course. Further development of har- monization, transposition, memory-ization, and sight-reading. Materials such as Helman Progressing Studies and Bartok Mikrokosmos Books I and II.

234-235-236 HISTORY OF MUSIC 3 prereq 135. Enter any quarter. The history of music in Western Civilization from its origin to modern times and its relationship to general cultural develop- ment.

237-238-239 AURAL PERCEPTION II 2 prereq 113 and 139, coreq 211-212-213. A lab course in singing and dictation to supplement the study of music literature. (See Theory II.)

247-248-249 KEYBOARD Harmony 1 prereq or coreq 213 and c/L. Practical application of theory principles to the keyboard. Exercise in modulation, transposition, and development of expository playing.

259 (259-260-261) COMPOSITION 2 R-4 prereq 6 credits of 159. Original work in composition. (May be substituted for upper divi- sion theory in music for students not majoring in theory or composition.)

211-312-313 THEORY III 2 prereq 213. Chromatic harmony; altered chords, foreign modulation; analysis and writing in Classic and Romantic styles, both instrumental and vocal.

519 PIANO FOR THE CLASSROOM TEACHER. 2. Presenting simple improvisational style, notation, altered chords, and harmonic and formal analysis correlated with keyboard application.


323-324-325 SCHOOL MUSIC 2 coreq 331. (323-324) Ele- mentary music procedures and materials for supervising and teaching music classes in grades 1 through 6. (325) Materials for general and specialized music instruction for grades 7 through 9.

329-327 CHORAL ARRANGING 2. Practical experience in ar- rangement of vocal groups including the specific problems of the untrained and changing voice.


331-332-333 CONDUCTING METHODS AND MATERIALS A 3, W 5, S 4, Su 3 or 4 prereq 10 credits in music including 113. (331) Fundamentals of conducting. (332) Choral conducting: choral meth- ods and procedures; general music classes in secondary schools. (333) Instrumental conducting: methods for elementary and junior high school. (334) Conducting of choral groups in church and school.

334-335-336 ELEMENTARY MUSIC TEACHING 3. Grade music procedures, materials, and equipment. (334) Kindergarten through Grade 3. (335) Fourth through Grade 6. (336) Seventh and eighth grades. Elementary Music Education Majors only.

337 ELEMENTARY MUSIC ADMINISTRATION AND SUPER- VISION 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 cred- its of Composition 1. Critical study of major works of Bach through contemporary composers. Comparison of music for non-majors with c/L. (Credit not allowed for both 359 and 360.)

370-380 SIXTEENTH CENTURY COMPOSITION 3 coreq 213. Writing and analysis of Renaissance vocal and instrumental style.


423 MUSIC OF THE ROMANTIC PERIOD 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 3 prereq 135 and 213. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Twentieth Century.

455 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

400 WORKSHOP IN MUSIC EDUCATION V 1-3 prereq Junior standing and enrollment in Music Education. Special workshops and clinics in elementary and secondary public school teaching problems.

309 PEDAGOGY OF STRINGS 2 prereq c/L. Procedures and materials in class string instruction utilizing clinical demonstrations with children.

441 READINGS IN MUSIC CRITICISM 3. Comparison of se- lected writings of 20th century composers, including Stravinsky, Hindemith, Schoenberg, Sessions and Copland. (For the layman as well as the music student.)

FOR GRADUATES

501 APPLIED TECHNICS I 4-15. Individual instruction in voice, piano, organ, etc. For students not majoring in music. Further study of minor applied fields may elect 1-2 credits.

511 (411) ADVANCED CONDUCTING 3 R-12 prereq 332 (Choral majors), 333 (others), and c/L. A continuation of 331-332-333. Class and choral conducting. (For individual singers and groups.)

512 LITERATURE FOR HIGH SCHOOL INSTRUMENTAL GROUPS 2 a/y. Comparative study and performance of new publica- tions.

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 per- formance of literature with attention to pedagogical use as related to style.

515 PROBLEMS IN TEACHING ELEMENTARY MUSIC 2 a/y. Evaluation of new approaches; state and city course outlines; Music in ungraded schools; Problems selected for class study.

516 PROBLEMS IN TEACHING JUNIOR HIGH SCHOOL MUSIC 2 a/y. Evaluation of new courses of study; Development of curriculum for general and special classes; Problems selected for class study.

517 ORFF AND KODALY APPROACHES TO ELEMENTARY MUSIC 2 a/y. Procedures currently in use in Germany and Hungary.

518 CHILDREN’S MUSIC LITERATURE 2. Texts, recordings, and books related to growth in musical understanding through the children’s years. For students desiring further study of minor applied fields may elect 1-2 credits.

519 TESTS AND MEASUREMENTS IN MUSIC 2. Evaluation of selected standardized tests.

520 RESEARCH IN MUSIC EDUCATION 2. Research problems; their statement, organization, techniques, tabulation of materials, concepts necessary for interpretation of data.

521 SCHOOL MUSIC ADMINISTRATION 3. School systems, plans for organizing and administering the music program in the elementary, junior and senior high school. For students whose pri- mary interest is in the administrative aspects of music, and who desire preparation for administrative or supervisory work in music education.

524 MUSIC IN HIGHER EDUCATION 3. A survey of adminis- tration problems and general content, contemporary teaching tech- niques, teaching personnel, and other areas of interest to the music teacher at the college level.

530 INDEPENDENT STUDY V R-9. Students must have proj- ects approved by the appropriate authorities before enrolling.

531 SYMPHONIC LITERATURE 3. A study of orchestral mu- sic; the Mannheim composers, the Viennese classics, the Romanticists, and contemporary European and American developments.

532 OPERATIC LITERATURE 3. Opera from its beginnings, the Baroque, 18th century French and Italian opera, Gluck’s reforms, Mozart’s dramatic works. The Romantic opera in Italy and Germany, contemporary opera trends.

533 KEYBOARD LITERATURE 3. Keyboard literature from the developments of the Baroque period 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 combina- tions. The literature is presented through the analysis of formal structure and aesthetic values are discussed.
PHARMACY—73

535 SONG LITERATURE 3. The art song from the classic period to the contemporary era including the German lied, French chanson, and related literature.

536 CHORAL LITERATURE 3. Survey of both secular and sacred music for mixed voices, with an emphasis on the music from the 16th century to the contemporary school.

538 TRENDS IN CONTEMPORARY MUSIC 3. A survey of trends in European and American music from the end of World War II to the present. Emphasis will be placed on the development of electronic music, the serial technique, and other new techniques of composition.

539 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of evolving democratic ideals on the arts, the development of various centers of performing arts and the types of music performed.

541 INTRODUCTION TO MUSICOLOGY 2. Nature, scope, and goal of musicology, its methods and history. Survey of bibliography and comparison of standard harmony texts. The application of teaching techniques, and organization of the teaching of musicology in secondary schools and in colleges.

542 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

551-552-553 ADVANCED ORCHESTRATION 3 prereq. 329. Styles in orchestral techniques from 1750 to the present.

554-555-556 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approach of leading composers from the polyphonic period to the present.

557 TECHNIQUES OF COMPOSITION 3. An introduction to composition for graduate students. Development of techniques and skills necessary to the composer.

558 PEDAGOGY OF THEORY 3. The teaching of theory, including the requirements of the University, and techniques and organization of the teaching of theory in secondary schools and in colleges.

559 COMPOSITION V R-12.

562 SEMINAR V 1-5 R-15. Investigation of research in fields of individual interest.

599 GRADUATE PROJECT IN MUSIC V R-6.

699 THESIS V R-15.

PHARMACY is the science which is concerned with the study of the physical, chemical, and biological characteristics of medicinal substances. It includes the knowledge of medicines, the art of compounding and dispensing them, their identification, selection, combination, analysis, standardization, and mode of action.

The curriculum offered by the School of Pharmacy consists of a five-year program leading to the degree of Bachelor of Science in Pharmacy. The first two years, or pre-professional portion of the curriculum, are spent in studies of the basic physical, chemical, and biological sciences, and other course work necessary to satisfy the general university requirements. During the final three years of the curriculum, the student devotes his time to the study of the several pharmaceutical sciences. This program of study is designed to prepare him to serve the pharmaceutical needs of the public. Areas of additional special study include pharmaceutical chemistry, pharmacognosy, pharmacology, and pharmacy administration. A program of selected electives allows the student to place emphasis upon an area of specialization best suited to his future plans in pharmacy.

In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete one year of "practical experience" or internship in a pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. Many graduates practice pharmacy in neighborhood, or "downtown" stores. Others work in hospital pharmacies, a particularly attractive field for women. Additional opportunities exist as representatives for pharmaceutical manufacturers, in government service, or in manufacturing pharmacy, and in pharmaceutical journalism. Those with advanced degrees are in demand in research positions and in pharmaceutical education.

The School of Pharmacy was established in 1907 at Montana State College and was transferred to the University campus in 1913.

The School of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.

A three-year professional program based on two years of general college work and leading to the degree of Bachelor of Science in Pharmacy is offered. The first two years are devoted to the pre-scribed pre-professional subjects listed below and may be taken in any accredited college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken in residence at the University of Montana. The professional curriculum of other accredited schools of pharmacy may be accepted on an advanced standing basis on the basis of credits presented, provided that they are in the accredited program. Candidates 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 hospital and institutional pharmacy. Such elective courses will be determined by the faculty of specialization and must be submitted for consideration by the faculty of the school prior to registration. Candidates will then be granted full or provisional admission, or may be denied admission.

The autumn quarter is the normal time of admission to the School of Pharmacy.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHARMACY. A candidate for admission to the professional program in the School of Pharmacy must have a cumulative grade point index of 2.0 on all college work taken, and completed credit for the time he makes application for admission to the professional curriculum may be obtained from the School of Pharmacy and must be submitted for consideration by the faculty of the school prior to registration. Candidates then will be granted full or provisional admission, or may be denied admission.

Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.

2. Complete not less than five full academic years of training, including both pre-pharmacy instruction and a minimum of three years of professional instruction. In order to meet the accreditation requirements of the American Council on Pharmaceutical Education for the Bachelor of Science degree, each candidate must complete a minimum of 136 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete at least 26 credits per year.

3. Complete not less than 225 credits of course work, plus 3 credits in required Health and Physical Education and basic ROTC courses when these are taken.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for licensure as a pharmacist in Montana must pass an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States of good moral character, at least twenty-one years of age, and shall have completed a course of instruction for a degree in the School of Pharmacy and shall be an accredited school of pharmacy. In addition, the applicant shall complete an examination by the Board of Pharmacy of the State of Montana in the following areas of knowledge: Pharmaceutical Chemistry, Pharmacology, Pharmaceutical Microbiology, and the Law of Pharmacy as listed in the catalog.

Applicants must pass the examination in both written and oral portions. Applicants should note that the School of Pharmacy at the University of Montana does not accept an applicant for licensure in Montana who has not completed the professional curriculum in the School of Pharmacy.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for licensure as a pharmacist in Montana must pass an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States of good moral character, at least twenty-one years of age, and shall have completed a course of instruction for a degree in the School of Pharmacy and shall be an accredited school of pharmacy. In addition, the applicant shall complete an examination by the Board of Pharmacy of the State of Montana in the following areas of knowledge: Pharmaceutical Chemistry, Pharmacology, Pharmaceutical Microbiology, and the Law of Pharmacy as listed in the catalog.

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GRADUATE WORK. See Graduate School Bulletin.
PHARMACY CURRICULUM

First year: English 350; Business Administration 201; Chemistry 452. Pharmacy 308, 320, 324, 330, 331; Zoology 340-341; electives.

Second year: Microbiology 200, 304; Pharmacy 404, 414-415-416, 425, 444, 452, 462, 463, and electives.

Third year: Microbiology 411; Pharmacy 503, 504, 506-508, 516, 517-518-519, 540, 541-542, 548, 570, 577, 578, 586, and electives.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 USE AND ABUSE OF DRUGS 2. The nature of drugs; their history, development and normal use in treatment of disease. Drug dependence and abuse, the special classes and types of drugs involved. (Not open to pharmacy majors.)

306 (206) ORIENTATION TO PHARMACY 1 (1-0). Career opportunities, literature, history and terminology, library orientation.

320 (220) PHARMACEUTICAL CALCULATIONS 3 (2-2). Metrology, pharmaceutical mathematics, terminology and form of the prescription, practical laboratory work using apparatus for measuring and weighing.

324 (424) PHARMACOGNOSY 4 (3-3) prereq Chem 263 or c/i. Plant and Animal Products used in Pharmacy and Medicine.

320-321 PHARMACOLOGIC PRINCIPLES 3 prereq Zoology 340, 341 or Concurrent registration. Concepts of dosimetry, and other factors governing the known functional activity of prototype drugs that influence the body or organ.

361 (461) PHARMACY 5 (3-4) prereq 220 and Chem 263. Fundamental techniques of pharmacy and the various classes of pharmaceutical preparations. Throughout the course the underlying physical and chemical principles employed or responsible for any phenomena observed are studied.

377 COMPUTER APPLICATIONS TO PHARMACY 2 (2-0) prereq CS 200 or =. Exercises in programming with reference to inventory, finances and drug activity.

404 INTRODUCTION TO DISPENSING 2 (1-2) prereq 465. The filling of non-compounded prescriptions. Laws, references and prescription reading.

414-415-416 MEDICINAL CHEMISTRY 414-415, 3 (3-0); 416, 5 (3-0), prereq Chem 263. Organic substances used medicinally with emphasis on the correlation of chemical structure with therapeutic activity.

418 MEDICINAL CHEMISTRY LABORATORY 2 (0-6 to 9) R-4 prereq 414. Synthesis, identity and purity tests of organic medicinals.

425 (325) PHARMACOGNOSY 4 (3-3) prereq Chem 263 or =. Continuation of 324.

440 DRUGS OF PSYCHOPHARMACOLOGY 3 (3-0) prereq Chem 324. Zool 341. Drugs which influence behavior and the mental state.

442 (340) RADIOPHARMACOLOGY 2 (2-0) R-6 prereq Chem 476 or c/i. Drug metabolism and internal dosimetry.

444 APPLIED PHARMACOLOGY 5 (5-0) prereq 230, 231, Chem 482. The therapeutic actions of agents which are used as drugs. The relationship of pharmacologic principles to particular disease states.

452 DRUG ANALYSIS 4 (2-4). Special and instrumental methods used in the analysis of pharmaceutical preparations.

462-463 PHARMACY 5 (3-4) prereq 320, 361 and Chem 263. Continuation of 361.

466 MEDICINAL PLANTS AND PHARMACOGNOSTICAL TECHNIQUES 3 (3-6 to 15). Collection, extraction and identification of the constituents of plants of medicinal importance, using chromatography and instrumental techniques.

468 DRUG MICROSCOPY 2 (0-4) prereq junior standing in pharmacy and c/i. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

503-504 BIOLOGICAL MEDICINAL PRODUCTS 3 (3-0) prereq Micro 304. Biologicals, antibiotics, vitamins, hormones, and other medicinals; natural products; biological and chemical methods of chemical oxidation.

505-506 DISPENSING 4 (2-6) prereq 404. Fundamental principles of prescription compounding by means of a detailed study of the common dosage forms and special forms of medication.

518 PHARMACEUTICAL LAW 3 (3-0) prereq senior standing in CS 350. State and federal laws pertaining to the practice of pharmacy.

517-518-519 PHARMACEUTICAL PRACTICE 1 (0-2) prereq senior standing in pharmacy. Students are assigned to the University of Montana Prescription Pharmacy in order to acquaint them with current practices.

540-541-542 PHARMACY 4 (3-3) prereq senior standing in pharmacy. The pharmacodynamics of drugs and its application to therapeutics.

545 APPLIED PHARMACOLOGY 5 prereq 444. Continuation of 444.

575 TOXICOLOGY 2 (2-0) prereq 416. The harmful effects of drugs, pesticides, insecticides and other chemical agents on the biological system. Antibodies and emergency measures used in the treatment of poisoning and the role of the pharmacist in poisoning prevention.

577-578 PHARMACY ADMINISTRATION AND FINANCIAL MANAGEMENT 3 (3-0) prereq senior standing in pharmacy. A detailed study of the administration of a pharmacy with emphasis on financial and personnel management.

FOR UNDERGRADUATES AND GRADUATES

555 ADVANCED PHARMACY V 3-5 (9-0 to 15) prereq 506 or =. The more complex problems involved in formulation and preparation of pharmaceuticals.

570 COSMETICS 3 (1-6) prereq 463. Theory and technique of cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 3 (1-6) prereq 452. The more involved methods of analysts as applied to pharmaceuticals.

582-583 HOSPITAL PHARMACY 1-3 (0-2/cr) prereq 505. 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, with special emphasis on the provision of professional services to small hospitals and nursing homes.

598 SEMINAR 1 (1-0) R-6 prereq senior standing in pharmacy.

599 SPECIAL PROBLEMS IN PHARMACY V 2-5 (3-0/cr) R-10 prereq senior standing in pharmacy. Research studies by conference, library and laboratory research in pharmacy, pharmaceutical chemistry, pharmacognosy, pharmacy administration or pharmacology.

FOR GRADUATES

580 ADVANCED PHARMACEUTICAL LAW 3 (3-0) prereq c/i. Federal laws affecting the pharmaceutical industry, with emphasis on the Food and Cosmetic Law and the regulations and rulings of the Food and Drug Administration.

581 DRUG DEVELOPMENT AND MARKETING 3 (3-0) prereq senior standing in pharmacy. A continuation of Drug and Cosmetic Law and the regulations and rulings of the Food and Drug Administration.

582 ADVANCED PHARMACY ADMINISTRATION 3 (3-0) prereq c/i. Analysis of the pharmaceutical industry, including economics, competitive practices, and the internal and external factors affecting the industry.

586 PARENTERAL PREPARATIONS 3 (2-6) a/y. The study and evaluation of the various methods currently used in the preparation of bulk and injectable pharmaceuticals. This course will also be stressed on drug stability when such preparations are subjected to various sterilization procedures.

587 CHROMATOGRAPHY 3 (2-6) a/y. Advanced theory and applications of the various techniques of modern chromatography. All phases, column, paper, thin-film, gas and ion exchange, will be explored and evaluated.

592 ADVANCED PHARMACOGNOSTICAL TECHNIQUES 3 (3-0) prereq 466. Techniques used in investigative pharmacognosy.

595 CHEMISTRY OF NATURAL PRODUCTS 3 (3-0) R-9 prereq 416. Alkaloids, indole derivatives, terpenes, sterols, and miscellaneous alkaloids. Methods of isolation and synthesis of alkaloids, methods of isolation, proof of structure, synthesis and chemistry.

598 PHARMACEUTICAL CHEMISTRY 3 (3-0) R-9 prereq 416. The organic medicinals with emphasis on proof of structure, synthesis, structure-activity relationships and chemistry.

611 ADVANCED MEDICINAL CHEMISTRY LABORATORY 2 (0-6 to 8) R-6. Preparation, isolation and purification of organic medicinals by advanced techniques.

619 ADVANCED PHARMACOLOGY V 3-5 (9-0 to 15) prereq 542 or =. The more involved actions of drugs upon cells and organs.

620 PHARMACEUTICAL MANUFACTURING 3 (1-6) R-6. Preparation of various pharmaceutical dosage forms in quantity. Emphasis is placed on such aspects as feasibility of the operation for large scale production and uniformity, durability or stability and acceptability of the finished product and packaging.

622 PHYSICAL PHARMACY 3 (3-0) R-6. The physico-chemical aspects of homogeneous and heterogeneous systems are examined in light of the latest concepts. Application of theory to practical pharmaceutical systems is stressed.

634 PRODUCT DEVELOPMENT AND FORMULATIONS 3 (0-9) R-6 prereq 620. The technical aspects of modern manufacturing and the theory of systems in developing new product formulations.

636 AEROSOLS 3 (2-3). The theory of formulation and production of aerosols with emphasis upon pharmaceutical applications.

640 RADIOISOTOPES IN PHARMACY 3 (2-3) prereq chem 476. Types of radiation, methods of detection and use in pharmacy as therapeutic agents and as diagnostic and research tools.

699 THESIS V R-15.
PHILOSOPHY

is the search for wisdom by carefully reasoned reflection. Philosophical inquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge and what kinds of knowledge? Are values derived from personal feelings or from standards which may be impersonal, verifiable, unchanging? Are there significant relations among phases of experience reflected in science, art, religion, morality and politics?

Courses in philosophy acquaint the students with the views of great philosophical thinkers, past and present. Discussion and written work are largely concerned with evaluating the reasoning by which each thinker develops his point of view.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits including Philosophy 110, 210, 298, 299, 300, and three or more credits in courses numbered 400 or above. Major study is expected to complete Philosophy 298, 299, 300 by the end of the sophomore year. The foreign language requirement listed earlier in the catalog must be satisfied. A major whose writing appears deficient for work in the department will be required to take an appropriate English course.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO PHILOSOPHY 5. The main problems of metaphysics, epistemology, and philosophy; the manner in which great philosophers reach their conclusions.
110 LOGIC 5. Deductive and inductive inference, kinds of definition, the detection of fallacies, and the methods of science.
120 ETHICS 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.
210 SYMBOLIC LOGIC 5. A systematic study of deductive logic using modern symbolic techniques.
298 (201) HISTORY OF ANCIENT PHILOSOPHY 5.
299 (202) HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 5 prereq 298.

FOR UNDERGRADUATES AND GRADUATES

300 (303) 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 o/y prereq c/l. The metaphysical foundations of modern classical (Newtonian) science; contemporary views on the nature and limitations of scientific "explanations," theories, models and concepts.
311 (352) PHILOSOPHY OF LANGUAGE 5 e/y prereq c/l. Structure and functions of natural and ideal languages; the relations of language to thought and to reality.
320 CONTEMPORARY ETHICAL THEORIES 5 prereq 120 and/or 360. Recent theories on the nature of moral concepts.
323 (369) POLITICAL PHILOSOPHY 3 o/y prereq 5 credits in philosophy. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to the development of liberal and conservative elements in them.
330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.
350 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 5 o/y prereq 10 credits in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology.
340 AESTHETICS 3 prereq 3 credits in Philosophy. The nature of aesthetic experience, of the standards of art criticism, and of the kinds of knowledge communicated by art. Readings from philosophers, artists, and art critics.

341 PHILOSOPHY IN LITERATURE 3 prereq 10 credits in Philosophy or Literature or =. Philosophical thought in selected masterpieces of literature.
345-346-347-348 PHILOSOPHY OF THE ARTS 3 prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature or =. Enter any quarter. (346) Music. (347) Visual arts. (348) Literature. (349) Final Examination on philosophical problems related to the particular arts and discussion of the nature of the arts.
350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the source, nature, and extent of knowledge with special attention paid to the relation of perception to the physical world, and to the concept of mind.
351 METAPHYSICS 3 prereq 10 credits in Philosophy. What are the basic questions of Metaphysics? What questions does it attempt to answer? What questions is it fitted to answer? Traditional and contemporary views.
354 PHILOSOPHY OF RELIGION 5 e/y prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.
355 ORIENTAL THOUGHT 3 o/y prereq 5 credits in Philosophy and c/l. Philosophical themes in some Hindu, Buddhist and Taoist literature.
357 THE PHILOSOPHY OF HISTORY 5 e/y prereq c/l. The development, structure, and functions of the speculative and analytic philosophies of history. The autonomy of history and the relevance of the philosophy of history for the working historian.
359 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 in philosophy and c/l. Selected readings from the philosophical works of one or more existentialist thinkers.
390 PROBLEMS IN PHILOSOPHY V prereq c/l.
403 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/l.
453 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 210 and 310 and c/l.
460 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY 400 SEMINAR V prereq c/l.

FOR GRADUATES

699 THESIS V R-15.

PHYSICAL THERAPY

is an associated medical profession which includes the use of heat, cold, light, sound, electricity, massage, exercise, and mechanical devices as aids in the diagnosis and treatment of patients.

During the first three years the student completes 135 credits plus six in required physical education. This work is to include the general requirements for graduation (the second and third years must be taken in residence at the University of Montana). The fourth or professional year of training, involving twelve to sixteen months of work, would be taken at an institution of the student's choice. The school meeting standards established by the Council on Medical Education and Hospitals of the American Medical Association. (Not all therapy schools accept students with three years of background. Some schools, for example, require a college degree for admission, while others accept only students who

PHILOSOPHY, PHYSICAL THERAPY—75
plan to obtain a degree from the school offering the therapy work.)

Course work taken at the therapy school will be evaluated by the University of Montana. This evaluation must result in an accumulation of the equivalent of forty-five quarter hours of credit and sufficient grade points to meet graduation requirements of the University of Montana. Also, the student must be eligible for a certificate in physical therapy from the therapy school. When the above requirements have been satisfied, the student is eligible to become a candidate for the degree of Bachelor of Science in Physical Therapy from the University of Montana (see course listings of the physical education department for information regarding a four-year pre-physical therapy program.)

Many therapy schools specify that the applicant must not have reached his thirty-sixth birthday.

The demand for physical therapists far exceeds the supply. Therapists may be found working in general hospitals, rehabilitation centers, children's hospitals, public health centers, geriatric hospitals, private clinics, Veterans Administration hospitals, orthopedic clinics, athletic training rooms, physicians' offices and school systems.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra. It is also recommended that the high school preparation include college preparatory courses with emphasis on the biological and physical sciences.

Following are the requirements leading to the Bachelor of Science degree with a major in physical therapy:

University and Departmental Requirements

Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English Composition</td>
<td>12</td>
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<tr>
<td>Required Physical Education</td>
<td>12</td>
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<tr>
<td>Major Requirements</td>
<td></td>
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<tr>
<td>Chemistry</td>
<td>8</td>
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<tr>
<td>Zoology</td>
<td>10</td>
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<tr>
<td>Sociology</td>
<td>10</td>
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<tr>
<td>Psychology</td>
<td>10</td>
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<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>Speech Pathology and Audiology</td>
<td>3</td>
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<tr>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>10</td>
</tr>
<tr>
<td>Elect 3 credits other than Gen 151-152-153, from Group IV</td>
<td>3</td>
</tr>
<tr>
<td>Elect an additional course in Physical Science</td>
<td>3</td>
</tr>
<tr>
<td>Elect 2 credits, other than Soc 101, 102, from Group III</td>
<td>2</td>
</tr>
<tr>
<td>Home Economics</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>10</td>
</tr>
<tr>
<td>School of Physical Therapy</td>
<td>45</td>
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</tbody>
</table>

Fourty-five hours of credit

School of Physical Therapy

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 geometry. It is also recommended that the high school preparation include advanced algebra, solid geometry, and trigonometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS. In addition to the general requirements for graduation listed earlier in the catalog, fifty-five credits in physics must be earned for the Bachelor of Arts degree with a major in physics. In preparation for advanced courses, a student should take Physics 221-222-223 in the sophomore year. Required courses offered in other departments: Mathematics 116, 117, 118, 251, 252, 253; Chemistry 121-122-123. The foreign language requirement listed earlier in the catalog must be satisfied and the departmental English composition requirement must be completed.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

111-112-113 GENERAL PHYSICS 5 (5-2-5) prereq for 111: Math 117 or 118. 111 is prereq for 112 and 113, but 112 is not prereq to 113. (111) Mechanics and wave motion. (112) Heat, electricity and magnetism. (113) Sound, light and atomic physics. Credit not allowed for both 111-112-113 and 221-222-223.

131-132 ELEMENTARY ASTRONOMY 3 (2-2) prereq high school trigonometry or c/l. Lecture, observation, and problems.

221-222-223 GENERAL PHYSICS 5 (6-4) prereq for 221: Math 119 or 122. 221 is prereq for 222 and 223, but 222 is not prereq to 223. This course satisfies medical and technical school requirements in general physics. (221) Mechanics and wave motion. (222) Heat, electricity and magnetism. (223) Sound, light, and atomic physics.

251-252-253 LABORATORY ARTS 1 (0-3) prereq. Open to upper division science majors who have completed 223. Enter any quarter. Elements of glass blowing, machine shop practice, and electronic construction techniques.

FOR UNDERGRADUATES AND GRADUATES

301 (271) VECTOR ANALYSIS 3 (3-0) prereq 222 and Math 252.

314-315-316 ELECTRICITY A W 3 (3-0), S 4 (3-3) prereq 301.

322-323-324 LIGHT 2, A W (2-0), S (1-3) prereq 223 and Math 252.

326 METHODS OF TEACHING PHYSICS 3 (2-4) prereq 221, 222, 223. Texts, demonstrations and laboratory experiments used in contemporary approaches to teaching of high school physics. (Credit not allowed toward degree in physics.)

331 MECHANICS AND HEAT 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

332 ELECTRICITY RADIATION AND ATOMIC PHYSICS 5 (5-0) prereq enrollment in the N.S.F. Summer Institute in Mathematics. Other students may enroll by special permission.

341 FUNDAMENTALS OF MODERN PHYSICS 5 (5-0) prereq one year of general physics and one year of calculus.

351 SOLAR SYSTEM AND DYNAMICAL ASTRONOMY 3 prereq 221 and Math 253.

352 ASTRONOMICAL ORBITS 3 prereq 223 and Math 253. Methods of calculation of orbits of planets and comets, and visual, spectroscopic and eclipsing binary stars.

353 STELLAR ASTRONOMY AND ASTROPHYSICS 3 prereq 253.

371-372-373 (471-472) MECHANICS 3 (3-0) prereq 301 and Math 253.

431 SELECTED TOPICS V 1-8 R-10 prereq c/l and 15 credits in Physics.

441-442 ADVANCED LABORATORY 2 (1-2) prereq or coreq 223, 453, 314. Experiments in fields of current progress in physics requiring individual student study and initiative.

446-447-448 (346-347-348) HEAT, THERMODYNAMICS, STATISTICAL MECHANICS 3 (3-3) prereq 223 and Math 253.

452-453 (352-353) ATOMIC PHYSICS 3 (3-0) prereq 223 and Math 252.

454 NUCLEAR PHYSICS 3 (3-0) prereq 453.

473 QUANTUM MECHANICS 3 (3-0) prereq 372.

480 PHYSICS SEMINAR 1 (1-0). A library and discussion course required of Physics majors.

FOR GRADUATES

501 RESEARCH V 2-10 R-18 prereq c/l.

552 RADIATION AND ATOMIC STRUCTURE 5 (5-0) prereq 453.

554-555 QUANTUM MECHANICS 5 (5-0) prereq 373 and 453.

698 THESIS V R-15.
POLITICAL SCIENCE

is the study of government and politics both in their domestic and international aspects. By meeting requirements outlined below, a student may earn a Bachelor's degree in Political Science, Political Science and Economics, or in Political Science and History. A Master of Arts degree in Political Science is also offered.

Courses offered in the Political Science department are designed to aid students in attaining the following objectives:

(1) To assist all students in securing a broad liberal education and to equip them with the foundations for effective discharge of the duties of American citizenship;

(2) To provide undergraduate preparation for those students who propose to continue the study of Political Science at the graduate level with the ultimate goal college teaching and research;

(3) To offer a broad program of training for those students who plan careers in government or politics, including training for both the foreign service and the domestic public service at the national, state and local levels;

(4) To assist in preparing students for careers in teaching at both the elementary and secondary levels;

(5) To provide a sound background for those students who intend to enroll in law and other professional schools.

The major fields of Political Science are (1) American Government and Politics with national, state and local government, politics, public law and public administration as sub-fields, (2) Political Theory, (3) Comparative Government, and (4) International Relations, Organization and Law.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In order to graduate, the general requirements for graduation listed earlier in the catalog, the following special requirements which are in addition to the requirements for the Bachelor of Arts degree with a major in Political Science: a minimum of 45 credits in Political Science with 30 credits from courses numbered over 300.

A student who wishes to major in Political Science should consult with a member of the Political Science staff before the end of his 6th quarter about a proposed course program which will satisfy the 45-hour minimum requirement.

Courses required of all majors in Political Science are Political Science 201, 202, and 465. Majors will also present at least one additional course in each of the four major fields listed above, as well as Economics 201, 202, and 203. The economics courses will not count toward the 45 minimum requirement.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 30 credits must be selected from courses numbered over 300.

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines; at least 27 credits must be in each discipline. Required courses are: Political Science 201, 202, and Economics 201, 202, 203, 301, and 311. At least 12 additional credits will be chosen from upper division economics courses and 18 additional credits from Political Science. Twelve hours of the Political Science work must be in upper division courses.

Either the completion of five quarters of a foreign language or the demonstration of a satisfactory reading knowledge of historical, legal or political science materials in such a language is required. With the consent of the Chairman of the Department the student may fulfill the language requirement by completing three quarters of a foreign language, including public opinion, interest groups, political parties, and elections, or by completing 15 credits from courses numbered over 300 in Political Science.

The major fields of study are:

American Government and Politics-

American Constitutional and Public Policy-

Comparative Government and Politics-

International Relations, Organization and Law-

Comparative and International Studies-

Graduate Work. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101 INTRODUCTION TO POLITICAL SCIENCE 5. Issues and problems confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 2 prereq or coreq 101. Law as a system of social control; legal systems and law-making institutions.

201 (205) AMERICAN GOVERNMENT 5. Constitutional principles of the national government; democratic political processes, including public opinion, interest groups, political parties, and elections; structure of the national government, congress, the presidency, and the courts.

202 (206) AMERICAN GOVERNMENT 5 prereq 201. Functions of the national government, including finance, business, labor, agriculture, conservation, welfare, national defense, foreign policy, and selected problems of public policy.

230 INTRODUCTION TO INTERNATIONAL RELATIONS 5. The nature of the international system; diplomatic, economic, and political relations of nation-states, blocs, and groups; international organizations; factors affecting stability and change in the international system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICS 5 prereq 201. Structure and politics of democratic forms of government other than the United States, with emphasis on the parliamentary and modified parliamentary types of government in Great Britain and France.

322 COMPARATIVE GOVERNMENT AND POLITICS 5 prereq 201. The comparative study of government and politics with an emphasis on the Soviet Union.

323 THE POLITICS OF MODERNIZATION 5 prereq 231. The process of political change, the role of violence, the nature of revo­lution, and the impact of government-engineered changes. Special reference to underdeveloped countries.

325 POLITICS OF LATIN AMERICA 3 prereq 231. Structure of politics, government and authority in the developing area of Latin America.

326 POLITICS OF AFRICA 3 prereq 231. Structure of politics, government and authority in the developing area of Africa.

327 POLITICS OF ASIA 3 prereq 231. Structure of politics, government and authority in the developing area of Asia.

331 THEORIES OF INTERNATIONAL RELATIONS 3 prereq 231. An exploration of basic theoretical approaches to international relations and their application to selected problems.

332 (331) INTERNATIONAL ORGANIZATIONS 3 prereq 231. The machinery of international cooperation with particular reference to the United Nations.

335 AMERICAN FOREIGN POLICY 3 prereq 202 and 231. American diplomatic, economic, and defense policies since World War II and their significance in international politics.

341 (341) POLITICAL PARTIES 4 prereq 201. Nature and organization of political parties; conduct of nominations and political campaigns; role of parties in various political systems, with special emphasis on the American system.

342 (341) POLITICAL INTEREST GROUPS 3 prereq 341 or c/l. Interest groups in the political system; interaction of interest groups with decision-makers; role of parties, legislative bodies, executives, administrators, and the courts.

343 VOTING BEHAVIOR 3 prereq 341. The electorate and the election process; attitudes and behavior of voters; the significance of election results for the political system.

351 CLASSICAL POLITICAL PHILOSOPHY 3 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Plato to Machiavelli through John S. Mill.

352 EARLY MODERN POLITICAL THEORY 5 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Machiavelli through John S. Mill.

353 AMERICAN POLITICAL THOUGHT 3 prereq 351 or 352. An exposition and critical analysis of selected ideas and political thinkers relevant to politics in the United States.

354 *LATE MODERN AND CONTEMPORARY POLITICAL THEORY 3 prereq 351 or 352. An exposition and critical analysis of the major political philosophers in the twentieth and twentieth centuries.

361-362 PUBLIC ADMINISTRATION prereq 201. (361) 5. Legal and institutional setting of the administrative system; dynamics of organization and processes of public management. (362) 3. Problems and techniques of administration illustrated by case materials and field investigation.

365 *GOVERNMENT AND THE ECONOMIC ORDER 3 prereq 201. Structure as regulator, promoter, and participant in the economic order.

366 THE AMERICAN PRESIDENCY 3 prereq 201. The constitutional foundation and evolution of the executive branch, the structure of the office, executive functions and powers. Case studies of the problems of decision-making in the White House.

381 STATE GOVERNMENT 3 prereq 202. Structure, functions, and operations of state governments; position of state governments in the federal system as an example.


385 *LEGISLATIVE PROCESS 3 prereq 201. Structure, politics, personnel and processes of national and state legislative bodies.

386-389 *LEGISLATIVE PROCESS (Offered Winter and Spring quarters of legislative years.) (386) 3 prereq 387 or c/l. Structure, processes, and political dynamics of the Montana Legislative Assembly; visits to the state legislature. (389) 2. Research topics on selected aspects of the legislative process.
PRE-MEDICAL SCIENCES

The Pre-medical Sciences curriculum is designed to provide the basic training required of students who plan careers in Dentistry, Medicine, Veterinary Medicine, and medically related fields. It is a four year program leading to a Bachelor of Arts degree with a major in the Pre-medical Sciences. The Pre-medical Science student should normally, however, major in an ancillary field and simultaneously satisfy the major department requirements and the Pre-medical Sciences curriculum requirements.

Requirements for admission to medical and dental schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their program profitably 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. By the time accepted by a School of Medicine the pre-med student must place high on the Medical College Admittance 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 Admittance Test. Superior scholarship is of importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. High school students who are contemplating a career in the Pre-medical Sciences curriculum at the University should plan on a program of high school studies which will include 3-4 years of mathematics, one year of Latin, several years of a modern foreign language, experience in Chemistry and Physics, and considerable background in literature and social science.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements in the Pre-medical Sciences, demonstrates a high level of competency, and is relatively well balanced.

Applicants for entrance to Schools of Medicine exceed the number that can accept for admission, and those who are admitted must be well qualified, and competent students are admitted to Schools of Medicine. Well qualified students from the University are usually accepted into Medical Schools.

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choice. However, he should make sure that he can satisfy within the time available (1) the University requirements for graduation, (2) the minimum pre-medical science requirements listed below, and (3) the major requirements in his chosen major field. The student should consult with the pre-medical sciences adviser during the freshman year, and consult with both the pre-medical sciences and the major adviser beginning not later than the sophomore year in residence.

The Western Interstate Commission for Higher Education was designated to provide financial aid to Medical, Dental, Veterinary Medical, and other professional students attending Western professional schools.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES: A student must complete a four year program of study in the pre-medical sciences adviser and the major adviser beginning not later than the sophomore year in residence.

It is possible for the Pre-medical Sciences student who has satisfied course requirements specified above to earn a Bachelor's degree in some other field than Pre-medical Sciences. A degree in a related field such as Chemistry, Mathematics, Microbiology or Zoology may be earned by completing the course work in his area selected as approved by the Chairperson of the major department concerned. Social Science, Chemistry and Zoology for degrees in those areas with the Pre-med Option.

PRE-MEDICAL SCIENCES CURRICULUM

(Dentistry, Medicine, Veterinary Medicine)

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Engl 150</td>
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<td>Cr.</td>
<td>Cr.</td>
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<tr>
<td>Mth 116, 117, 118</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>Chem 121-122-123</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Phys 110</td>
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<tr>
<td>Electives</td>
<td>4</td>
<td>2</td>
<td>7</td>
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<tr>
<td>H&amp;P</td>
<td>E (see below)</td>
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Sophomore Year

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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Engl 250</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Zool 111, 112, 304</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 281, 282, 270</td>
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<tr>
<td>For Lang or elective</td>
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<tr>
<td>Group requirements</td>
<td>2</td>
<td>4</td>
<td>2</td>
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<tr>
<td>H&amp;P</td>
<td>E (see below)</td>
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Junior Year

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<th>Course</th>
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<td>Chem 245, 481, 482</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Physics 221, 222, 223 or 111, 112, 113</td>
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<tr>
<td>For Lang or electives</td>
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Senior Year

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<tr>
<th>Course</th>
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<tr>
<td>Zool 404, 485</td>
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<tr>
<td>For Lang or elective</td>
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<td>Science sequence</td>
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<tr>
<td>Elective</td>
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<tr>
<td>H&amp;P</td>
<td>E (3 quarters)</td>
<td>193</td>
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196
PRE-NURSING

The School of Nursing at Montana State University, Bozeman, accepts transfer students from the University of Montana who have completed one of two Pre-Nursing programs listed below. (The three-quarter sequence is intensive and is recommended for only the best students.) Students with sophomore standing who desire admission to the School of Nursing, Montana State University, Bozeman, must plan to enter during Summer Quarter after completion of their freshman year. Students with sophomore standing wishing admission to a school of nursing other than that of Montana State University should consult the catalog of the school of their choice for the selection of a freshman program.

PSYCHOLOGY

is the science concerned with principles of behavior of living organisms. It deals with such processes as learning, motivation, emotion, perception, problem solving, personality, intelligence and group behavior.

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

Minimum preparation for professional work in psychology requires an M.A. degree, and full professional competence requires the Ph.D. degree. The fully trained student may select from a variety of positions in laboratories, clinics, hospitals, schools and colleges, business and industry, and governmental agencies. At present and in the foreseeable future, the number of jobs far exceeds the number of trained psychologists who can fill them.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in psychology: at least 45 credits in psychology, including Psychology 110, 220, 310, 311 and 411, with at least 25 credits in psychology courses numbered 200 and above, including at least 2 credits in 390 in the senior year. Mathematics 125 and Zoology 111-112 or 111 and 202. The foreign language requirement should be fulfilled with one or two modern languages, preferably Russian, German or French. Other courses recommended for psychology majors include Philosophy 110 and 210, Mathematics 116, 244 and 245, Speech 111, Anthropology 153 and at least one course in Sociology. For many career-oriented graduate work in psychology, the following departmental courses are recommended in addition to those which are required: Psychology 206, 212, 230, 312, 361, 390. With appropriate background, such students may take a restricted number of graduate level courses in their senior year.

RECOMMENDED COURSE SEQUENCE

Freshman Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Psych 110</td>
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<tr>
<td>For Lang 101-102-103</td>
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<tr>
<td>Zool 111-112-113</td>
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<tr>
<td>Soc 101</td>
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<tr>
<td>Engl 150</td>
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<td>5</td>
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<tr>
<td>Psych 190 or electives</td>
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<tr>
<td>H&amp;PE</td>
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Sophomore Year

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<th>Course</th>
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<tr>
<td>Psych 220</td>
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<tr>
<td>Psych 206, 212, 230, 240 (take 2)</td>
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<tr>
<td>For Lang 211-212</td>
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<td>Speech 111</td>
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<tr>
<td>Philosophy 110</td>
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<td>Engl 220</td>
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<tr>
<td>Anthro 153</td>
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<tr>
<td>Electives</td>
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Junior Year

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<th>Course</th>
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<tbody>
<tr>
<td>Psych 310, 311</td>
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<tr>
<td>Psychology electives (206, 212, 230, 240, 312, 361, 390)</td>
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<td>0-5</td>
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<tr>
<td>Math 116, 302, 303 (or electives)</td>
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<tr>
<td>Philosophy 210</td>
<td>5</td>
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<td>5</td>
</tr>
<tr>
<td>Engl 330</td>
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Senior Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Psych 411</td>
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<tr>
<td>Psych 390</td>
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<tr>
<td>Psychology Electives (400 level)</td>
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<tr>
<td>Electives</td>
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</table>

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

110 INTRODUCTION TO PSYCHOLOGY 5 (5-0). Introduction to the scientific study of behavior in man and animals, with emphasis on psychological processes such as sensation, perception, learning, motivation, etc.

111 INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY 5 (4-2) prereq 110. Advanced general psychology. Experimental and quantitative methods employed in laboratory approaches to the scientific study of behavior.

190 PSYCHOLOGICAL INVESTIGATION V 1-3 R-5 prereq 110 and c/1. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. The origins and significance of the behavior of present life forms.

212 (412) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111. Survey of basic chemical and nervous regulatory mechanisms underlying behavior.

220 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 110 and Math 125. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 5 (5-0) prereq 110. Behavioral development through adolescence, with emphasis on the research literature.

249 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Effects of social environment upon human behavior.

360 (490) PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/1.

FOR UNDERGRADUATES AND GRADUATES

310 SENSORY PROCESSES AND PERCEPTION 5 (4-2) prereq 111. Concepts, principles and methods of sensory function and perceptual phenomenon.

311 LEARNING 5 (4-2) prereq 111. Principles involved in modifying behavior.

312 MOTIVATION 5 (4-2) prereq 111. Conditions which influence basic drives, incentives, and the development of complex motives.
342 PERSONNEL PSYCHOLOGY 3 (3-0) prereq 110. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 5 (5-0) prereq 110. Applications of psychology in industry.

361 ABNORMAL PSYCHOLOGY 5 (5-0) prereq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

411 SYSTEMATIC PSYCHOLOGY 5 (5-0) prereq 310-311. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis.

420 (300) PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/i. Principles of motivation, frustration, conflict, and the mechanisms for defense. Major emphasis on psychoanalytic dynamics.

451 INDIVIDUAL DIFFERENCES 3 (3-0) prereq 110. Nature and extent of individual and group differences.

480 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prereq 220 and 311 or c/i. Derivation and evaluation of some of the less complex models of learning, choice behavior, and signal detection.

491 TOPICAL SEMINAR V R-6 prereq 15 credits in psychology and c/i. Topics of current interest with critical examination of the literature.

FOR GRADUATES

501-502-503 PROSEMINAR 8 prereq graduate standing in psychology. The basic science fields of psychology, designed as a foundation for advanced training in specialized areas of general and applied psychology. Required of all graduate students in psychology. (501) Learning, motivation, and thought processes. (502) Perception, physiological psychology, comparative psychology. (503) Personality, psychopathology, social psychology.

505 (505-506-507) PROFESSIONAL PROBLEMS IN PSYCHOLOGY 2 (2-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search: forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

510 (410) HISTORY AND SYSTEMS OF PSYCHOLOGY 4 (4-0) Development of concepts, systems, and theories in psychology.

512 THEORIES OF LEARNING 4 (4-0). Critical review of current learning theories based on analysis of fundamental concepts, experimental data, and theoretical implications.

513 ADVANCED LEARNING 4 (4-0). Principles and methods pertaining to the acquisition and retention of new behaviors.

514 (414) THOUGHT PROCESSES 4 (4-0) prereq 10 credits from 310, 311, 312 and 220. Experimental and theoretical analysis of problem solving, concept formation, and other complex symbolic behavior.

515 ADVANCED MOTIVATION 4 (4-0). Drive, incentive and other affect variables as they influence performance.

516 ADVANCED COMPARATIVE 4 (4-0) Directed towards a synthesis of existing data from various life forms into universal principles of behavior.

518 LABORATORY INSTRUMENTATION 4 (2-4). Discussion and experience in the design, construction, and use of instrumentation in psychology.

521-522 (511) ADVANCED PSYCHOLOGICAL STATISTICS 4 (4-0). Application of statistical procedures to the design of experiments; assumptions underlying techniques of sampling and measures of association and significance.

530 ADVANCED CHILD PSYCHOLOGY 4 (4-0). Selected topics in learning and motivation of children, with emphasis on analysis of experiments and theoretical interpretations.

540 INTERVIEW AND CASE HISTORY TECHNIQUES 2 (1-2). Interpersonal dynamics in the gathering of personal data from individuals; types of case histories; the critic evaluation in educational, industrial and clinical situations.

544 (444) ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.

550-551-552 (571-572, 576-577) PSYCHOLOGICAL EVALUATION 4 (3-0) prereq c/i. Administration, scoring, and interpretation of standard tests, with supervised practice. (555) Individual and group tests of aptitudes and intellectual abilities. (551) Objective measures of personality functioning; introduction to projective techniques, TAT and related tests. (552) Rorschach and other projective approaches.

560 (460) THEORIES OF PERSONALITY 4 (4-0). Current theories of personality and the experimental evidence on which they are based.

561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiology, diagnostic criteria and treatment of the major functional and organic disorders; research literature.

562 ADVANCED PERCEPTION 4 (4-0). Current literature and theoretical models of perception.

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior; electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field; types of case, analyzed by the clinical; techniques in evaluation and therapy; contributions in consultation and research.

586 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychotherapy.

590 INDEPENDENT RESEARCH V R.

599 THESIS V R-10.

600 TOPICAL SEMINAR V 1-3 R. Advanced treatment of highly specialized topics of current interest.

601 SEMINAR IN MEASUREMENT V 1-3 R. Selected topics from the field of measurement and quantitative methods in psychological research.

602 SEMINAR IN EXPERIMENTAL V 1-3 R. Survey of current literature dealing with selected aspects in learning motivation, sensory processes, and perception.

603 SEMINAR IN SYSTEMATIC V 1-3 R. Topics in history, systems, and theories in psychology, including theory construction.

604 SEMINAR IN CLINICAL V 1-3 R. The study of significant research investigations in psychopathology, diagnosis, psychotherapy and other related aspects of clinical psychology.

605 SEMINAR IN PHYSIOLOGICAL AND COMPARATIVE V 1-3 R. Selected topics in physiological and comparative psychology from the recent literature. Extensive work in the original literature.

606 SEMINAR IN PERSONALITY AND SOCIAL V 1-3 R. Selected topics in personality or social psychology.

670 CLINICAL PRACTICUM 2 (0-4) R-12 prereq c/i. To be taken during first year of graduate study. Supervised practice of clinical techniques in a professional setting.

685 (689) CLINICAL INTERNSHIP 9 prereq acceptable proficiency in clinical techniques. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

686 ADVANCED PSYCHOTHERAPY V 2-4 R-6 prereq 420, 586, 685 and 572. A continuing and intensive study of the psychotherapeutic relationship and the various therapeutic techniques including supportive, client-centered, analytic, hypnotherapeutic.

699 DISSERTATION V R-30.
RADIO AND TELEVISION

Courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio-television specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. Production of programs for broadcast from the University's radio station, KUFM, and closed circuit television studio is included in the course of study.

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism.

The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree in Radio-Television.

University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English Composition 150, 250, 250</td>
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<tr>
<td>Physical Education 100 (3 quarters)</td>
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<td>Group I and II</td>
<td>15</td>
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<tr>
<td>Group III</td>
<td>12</td>
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<tr>
<td>Group IV</td>
<td>12</td>
</tr>
</tbody>
</table>

51 51

Additional Requirements:

| Group III                             | 13      |
| Group IV                              | 13      |
| Foreign Language                      | 25-25   |
| English 450                           | 3       |

52-54 52-54

Major Requirements:

<table>
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<tr>
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<tbody>
<tr>
<td>32</td>
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<table>
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<th>Course</th>
<th>Credits</th>
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<tr>
<td>Radio-Television 140, 241-242, 243</td>
<td>36-39</td>
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<tr>
<td>Journalism</td>
<td>225</td>
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<td>Drama 121, 131</td>
<td>7</td>
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<td>Journalism 270, 397</td>
<td>6</td>
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</table>

45 45

Free Electives

47-45 195

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

140 INTRODUCTION TO RADIO AND TELEVISION 3. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.

341-342-343 (240, 242, 345) RADIO PRODUCTION 2 prereq 140 for 341; prereq 342 and Journ 270 for 342; prereq 342 for 343. Work on faculty-directed University radio station. (341) Operation of broadcasting equipment, F.C.C. regulations and writing for radio. (342) Planning and production of news and special affairs. (343) Advanced training in areas of broadcasting.

346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 3 prereq 140. Planning and broadcasting of advertising campaigns. Station management and sales principles.

FOR UNDERGRADUATES AND GRADUATES

369 ADVANCED RADIO-TELEVISION PROBLEMS V prereq consent of the dean. Training and research.

440 CINEMATOGRAPHY (see Journalism).

441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses. Preparing, producing and directing television programs. Preparation of news and special affairs programming for television.

494 RADIO-TELEVISION SEMINAR 3 prereq or coreq 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.

RELIGIOUS STUDIES

A new Department of Religious Studies is being developed under new direction and a complete description of this department will appear in the next catalog. There will be religious studies courses offered for the coming year. Consult the class schedule.
RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both departments offer a two-year or a four-year program. The satisfactory completion of either program and being awarded a degree from the University results in a Reserve Commission in the Army or Air Force. The commission is tendered upon satisfactory completion of either program and being awarded a degree from the University.

The four-year program requires completion of aerospace studies, during four years of attendance at the University. Also a four-week Training Unit is required upon completion of the junior or third year of AFROTC. The two-year program encompasses Aerospace Studies during the junior and senior or last two years at the University. In addition a six-week Field Training Course is required during the summer immediately prior to enrollment in the two-year program. Completion of the appropriate summer training is a prerequisite for receiving a Reserve Commission in the United States Air Force. A monthly retainer fee (currently $50) is paid to cadets formally enrolled in Aerospace Studies 300 and 400 series. A number of Financial Assistant Grants are available at colleges and universities within the United States. A cadet should consult the Professor of Aerospace Studies or the Professor of Military Science.

FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY COURSE

101-102-103 WORLD MILITARY SYSTEMS 2. The U.S. Department of Defense and the doctrine, mission and functions of the U.S. Air Force. Nature and principles of war; factors of national power; organization of the Department of Defense. Background and organization of the U.S. Air Force and its role as part of the National Defense Team. Continuation of National Security and the United States Army Reserve. Four weeks at an Army Reserve Command Post and two years of the advanced course, six weeks at an Army Reserve Command Post and six weeks, or one hour of Corps Training per week. (102) The Advanced Course is identical to the four-year program except field training is a six-week summer camp following the sophomore year. A monthly retainer (currently $50) is paid to cadets interested in acquiring a commission in the United States Air Force Reserve. Successful completion leads to FAA Private Pilot License and entry into the U.S. Air Force Pilot Training program.

ADVANCED COURSE: PROFESSIONAL OFFICER COURSE

In the four-year program, completion of the Basic Course is a prerequisite for admission into the Advanced Course. In the four-year program, a cadet must enlist in the Air Force Reserve (this enlistment may be canceled if student withdraws from the University or for other specific reasons, pass physical examination and the Air Force Officer Qualifying Test.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 2. The development of aerospace power, and the beginnings of manned flight to 1961. (302) Aerospace Power today, the future of manned aircraft, and history of astronautics and space operations. Attention is devoted to developing the command abilities of the cadet officer. There are classroom hours and one hour of Corps Training per week. Corps Training includes experience as junior officers in the Cadet Corps.

304 SUMMER TRAINING UNIT No Credit. Four weeks at an Air Force Basic Training center following completion of Aerospace studies 202-203. Organization and functions of an Air Force Base, air crew and aircraft, indoctrination, officer orientation, military fundamentals, physical training and individual weapons.

401-402-403 THE PROFESSIONAL OFFICER 3. (401) Foundations and responsibilities of the military profession and the military justice system. Professional ethics and commands, and command positions, with primary responsibility for the preparation and command of corps in that Come through the two year program should consult the Professor of Aerospace Studies if he/she is interested in acquiring a commission in the United States Air Force Reserve. Successful completion leads to FAA Private Pilot License and entry into the U.S. Air Force Pilot Training program.

TWO YEAR PROGRAM

The two year program requires attendance at one summer training and one year of Air Force ROTC at the University. Admission into the Advanced Course under this program does not require the two basic years of AFROTC as a prerequisite. In lieu of this, a six-week summer training session at an Air Force Base is required during the summer immediately prior to entering the Advanced Course. Following that initial summer training period, students interested in acquiring a commission in the United States Air Force Reserve. Four years of attendance at the University. In addition the program and university requirements for a baccalaureate degree.

250 FIELD TRAINING COURSE No Credit. Prerequisite for entry into Advanced Course. Six weeks at an Air Force Base. Stressing drill, military fundamentals, physical training and Air Force orientation.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 2. (Same as for the four year program.)

THE PROFESSIONAL OFFICER 3. (Same as for the four year program.)

ARMY ROTC

The Department of Military Science offers a two and a four-year program leading to a commission in the United States Army Reserve. The commission is tendered upon satisfactory completion of either program and university requirements for a baccalaureate degree.

The four-year program requires completion of Military Science courses during four years of attendance at the University. Admission into the Advanced Course is required upon completion of the three-year program. The four-year program and encompasses the on-campus portion of the last two years of the four-year program, and the six-week summer camp following the sophomore year of ROTC. However, as a prerequisite to beginning this course, the student must attend a six-week summer training camp following the sophomore year. A monthly retainer (currently $50) is paid to cadets enrolled in Military Science 300 and 400 series. An option flight training program for qualifying cadets is offered during the last year of ROTC training. A limited number of scholarships are available for students enrolled in the four year program.

FOUR YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION


201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 2. (201) A survey of the origins of the American Army to the present with emphasis on the factors which lead to organizational, tactical, logistical, operational, strategic, and political changes. (202) Doctrine of the United States Army. Leadership, drill and command with emphasis on the duties and responsibilities of the junior leaders. (203) Topography, topographic techniques with emphasis on the use of military maps. Continuation
of leadership, drill and command. (303) Principles and tactics of operations of the U.S. Army with emphasis on small unit activities. Continuation of leadership, drill and command.

ADVANCED COURSE: OFFICER TRAINING

In the four year program, completion of the Basic Course is a prerequisite for admission to the Advanced Course. An applicant must pass a physical examination and the mental screening test prescribed by Department of the Army. In lieu of the physical examination, an applicant must be recommended by both the President of the University and the Professor of Military Science. In the Army, the student is required to enlist in the U. S. Army Reserve. This enlistment may be canceled if the student withdraws from the University or for other specific reasons.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (301) Principles and techniques of the military leader with emphasis on problems of leadership and military teaching methods. Leadership, drill and command command. Continuation of leadership, drill and command. (303) Principles and techniques of tactical operations with emphasis on small unit operations. Continuation of leadership, drill and command.

304 SUMMER CAMP. No credit. Six weeks at an Army Training Center taken after completion of 303. Practical military training and tactical exercises with emphasis on the development of discipline and leadership. Student is reimbursed to and from camp for travel performed at a rate of 60 per mile, and receives pay of $257.40.


404 FLIGHT TRAINING. No credit. This elective is offered to selected qualified students. Flight training is in connection with the Department of Military Science. Successful completion of course leads to FAA private license and assignment to Army Aviation duty upon graduation.

TWO-YEAR PROGRAM

The two year program requires attendance at two summer camps and the two years of the Army ROTC Advanced Course. Admission into the Advanced Course under this program does not require the two years of ROTC Basic Course that is required that a student complete a six-week summer camp at a U. S. Army Training Center and with practical application and exercises designed to develop the junior officer. (402) Military tactical operation with emphasis on duties and functions of staff officers. Leadership, drill and command. (403) Survey of world change and military implications. Military law.

250 SUMMER CAMP No credit. Prerequisite for entry into Advanced Course. Six weeks at a U. S. Army facility. Training consists of leadership and military fundamentals, physical training, and U. S. history. Student is paid at the monthly rate of $46 during the camp period.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3. (Same as for the four year program.)

304 SUMMER CAMP. (Same as for the four year program.)

401-402-403 MILITARY MANAGEMENT 3. (Same as for the four year program.)

404 FLIGHT TRAINING. (Same as for the four year program.)

SOCIAL WELFARE

explores the ways in which social problems affect people; the agencies which help people deal with these problems; and the methods used in such endeavor. Social Welfare covers case records and social field work or observation in addition to regular class work. Broad studies in other social sciences are recommended.

Those seriously considering a career in the field should plan on the completion of the two year program. This course is a prerequisite for the two year program. It is recommended that all students planning a career in social welfare take this course. The two year program is intended for students planning to enter graduate schools of social work. Students are urged to take a wide variety of courses in the social and behavioral sciences. Members of the departmental staff are prepared to help achieve the individual needs and goals of students. The departmental English composition requirement must be completed.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

181 THE FIELD OF SOCIAL WELFARE 5. Social welfare focuses on development of programs of social welfare and the distinctive features of the profession.

200 INTRODUCTION TO SOCIAL WORK PRACTICE 4 prereq 181. Social work as a professional practice concerned with helping individuals, groups, and communities; its goals; guiding philosophy, and basic assumptions. A review of the four major processes in social work practice: casework, group work, community organization, and social work administration.

FOR UNDERGRADUATES AND GRADUATES

371 (301) GROUP DYNAMICS IN SOCIAL WELFARE 4 prereq 181. An exploration of the group process; techniques of group leadership; the definition of group; and the application of group processes and techniques for the achievement of social objectives. The student must complete a minimum of 100 hours of supervised group work in a social welfare agency. Further, he must be recommended by the Director of Social Work at the University. This course is required of all candidates for the professional degree.

372 (422) COMMUNITY RELATIONS 4. Su 3 a/y prereq 200. The place of the professional person in community decision making. The role of the profession in resolving community problems.

373 CASEWORK PROCESS 4 prereq 200. The purpose, philosophy, and method of casework. Its practice as one of the major social work processes.

374 THE ADMINISTRATIVE PROCESS IN SOCIAL WORK PRACTICE 4 prereq 372. The place of the professional person in the administration of social welfare programs. The definition of social work organization. The role of administrative functions. Development of modern social welfare and the distinction of social work as a profession.

375 (488) THE HISTORY OF SOCIAL WELFARE 5 a/y prereq 181. The development of social welfare in the United States with special attention given to policy questions; poverty, handicap, sickness, emotional disorders, family breakdown, delinquency, juvenile crime, mental illness, wars, civil rights, and community development.

471-472-473 SOCIAL WORK PRACTICE IN SPECIAL SETTINGS V 1-2 R-6 prereq 181 and 200. The practice of social work in a specialized setting such as child welfare, corrections, family welfare services, working with people with particular handicaps, and school social work. The specific setting and its unique characteristics. The identification and analysis of problems unique to the setting, and the development of procedures for solving them.

483 SOCIAL WORK LABORATORY V 2-4 R-12 prereq 181. A course of supervised field work in a social welfare agency. The student is placed in a social welfare agency to work under the supervision of a professional social worker. The field worker is expected to develop the necessary skills and knowledge to conduct an effective social work practice.

SOCIAL WORK PRACTICUM V 2-4 R-12 prereq 181. A program of self-help project experiences in dealing with community needs and resources. Theoretical analysis of experienced situations. Learning by means of the laboratory method.

485 ADVANCED PROBLEMS V 1-2 R-6 prereq c/l.

486 COMMUNITY DEVELOPMENT 3 a/y prereq 181. Community and area self help as procedures in achieving a vital balance between community needs and services. Effective use of community resources.

487 INTERNATIONAL SOCIAL WORK 3 a/y prereq 181. Community and area self help as procedures in achieving a vital balance between community needs and services. Effective use of community resources.

499 FIELD WORK PRACTICUM V 2-4 R-12 prereq 181. A course of supervised field work in a social welfare agency. The student is placed in a social welfare agency to work under the supervision of a professional social worker. The field worker is expected to develop the necessary skills and knowledge to conduct an effective social work practice.

For Explanation see Course Descriptions (Index)

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200 INTRODUCTION TO SOCIAL WORK PRACTICE 4 prereq 181. Social work as a professional practice concerned with helping individuals, groups, and communities; its goals; guiding philosophy, and basic assumptions. A review of the four major processes in social work practice: casework, group work, community organization, and social work administration.

FOR UNDERGRADUATES AND GRADUATES

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471-472-473 SOCIAL WORK PRACTICE IN SPECIAL SETTINGS V 1-2 R-6 prereq 181 and 200. The practice of social work in a specialized setting such as child welfare, corrections, family welfare services, working with people with particular handicaps, and school social work. The specific setting and its unique characteristics. The identification and analysis of problems unique to the setting, and the development of procedures for solving them.

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499 FIELD WORK PRACTICUM V 2-4 R-12 prereq 181. A course of supervised field work in a social welfare agency. The student is placed in a social welfare agency to work under the supervision of a professional social worker. The field worker is expected to develop the necessary skills and knowledge to conduct an effective social work practice.
SOCIETY

is a social science concerned with relationships which link man with his institutions and his society. Sociology is also a profession which offers various services to business, governmental, and other agencies seeking help in developing desired relationships among their members. The degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy are offered in sociology.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, the following courses are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) The 45 credits in sociology must include the following courses: Soc 101, 201, 207 or 208, 310, 401 and 402. In addition, Anthropology 310 or 414 and an upper division anthropology course must be taken. Students must take Math 601 or be exempt through advanced placement. Students planning to undertake graduate work should also take Sociology 205 and 314 and Anthropology 372. The departmental English composition requirement must be completed.

COMBINED MAJOR. For the combined major leading to the degree of Bachelor of Arts in Sociology and Economics the following courses in addition to general departmental requirements must be completed: Soc 304 and at least 12 additional credits of upper division sociology: Econ 201-202-203, 311, and at least 12 additional upper division credits of economics.

GRADUATE WORK. See Graduate School Bulletin.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTORY SOCIOLOGY 5.

102 SOCIAL PROBLEMS 5.

200 AMERICAN SOCIETY 3 prereq 5 credits in sociology or c/i. Structure and function of contemporary American society.

201 (303) SOCIAL SCIENCE METHODS 5 prereq 10 credits in social sciences. The methodology, techniques and instruments of measurement used in the social sciences.

204 COURTSHIP AND MARRIAGE 2. Factors in courtship and marriage decision and the elements involved in socialization 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.

207 INTRODUCTION TO SOCIAL CHANGE 5 prereq 5 credits in sociology or c/i. Analysis of creation and development of social organizations and relationships.

208 (301) INDIVIDUAL AND SOCIETY 5 prereq 5 credits in sociology or c/i. The class system in contemporary society in terms of social class theory, class behavior, and current research in social stratification in American society.

204 POPULATION 4 prereq 10 credits in social sciences. A quantitative and qualitative analysis of world population; vital statistics and population change; migration and immigration.

205 (402) THE FAMILY 5 prereq 10 credits in sociology or c/i. Comparative, historical and analytical study of the family.

206 CRIMINOLOGY 5 prereq 10 credits in sociology or c/i. The causes of criminality, the criminal act, and control of crimes.

207 SOCIALIZATION 3 prereq 10 cr. in Sociology including 206 or c/i. Processes and products of social learning.

208 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 208 and Anth 208.)

209 INTRODUCTION TO COMPLEX ORGANIZATIONS 4 prereq 10 credits in sociology or c/i. Bureaucracies and bureaucratization in modern society.

310 DEVELOPMENT OF SOCIAL THOUGHT 5 prereq 10 credits in sociology or c/i. Social thought from earliest times to the establishment of sociology.

311 (S 281) JUVENILE DELINQUENCY 5 prereq 10 credits in sociology or c/i. Nature and extent of the problem. The role of courts and other agencies in prevention and treatment.

312 (206) 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. Characteristics of rural life. Organization and social relationships of rural life. Special emphasis on Montana and the Northwest.

314 FIELD OBSERVATION 3 prereq 10 credits in sociology or c/i. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.

315 HUMAN ECOLOGY 3 prereq 10 credits in sociology or c/i. The organization of population and land units through processes of social interaction. The spatial patterns of human communities.

316 SOCIOLOGY OF EDUCATION 5 prereq 10 credits in sociology or c/i. A sociological consideration of the structure and operation of the American educational system.

371 CULTURE AND PERSONALITY (See Anthropology)

400 PROBLEMS IN SOCIAL ORGANIZATION V R-15 prereq 15 credits in sociology or c/i. Theories of current interest in sociology.

401 FOUNDATIONS OF MODERN SOCIOLOGY 5 prereq 15 credits in sociology including 310 or c/i. Selected sociological problems arising from the theories of Durkheim, Weber, and contemporary writers.

402 INSTITUTIONAL DYNAMICS 3 prereq 15 credits in sociology including 207, or c/i. Interrelationships of institutions in process of change.

404 (402) COLLECTIVE BEHAVIOR 3 a/y prereq 15 credits in sociology including 208 or c/i. Theories relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

405 SOCIOLOGY OF WORK 5 prereq 15 credits in sociology or c/i. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

406 MEDICAL SOCIOLOGY 5 prereq 15 credits in sociology or c/i. The sociological analysis of medical phenomena in terms of such sociological concepts as complex organization, adult socialization, institutions, and social change.

407-408-409 SEMINAR V 2-5-10 prereq 15 credits in sociology or c/i. Enter any quarter.

410 PENOLOGY 5 a/y prereq 15 credits in sociology including 306 or 311 or c/i. Theory and practice of penal methods in correctional institutions. Probation and parole.

411 PERSONALITY AND SOCIAL STRUCTURE 3 prereq 15 credits in sociology or c/i. The sociological analysis of medical phenomena in terms of such sociological concepts as complex organization, adult socialization, institutions, and social change.

499 FIELD WORK PRACTICUM (See Social Welfare)

FOR GRADUATES

501 GRADUATE RESEARCH V R-15 prereq graduate standing in sociology or c/i.

502 ADVANCED METHODS 5 prereq 201 or = and graduate standing in sociology or c/i. 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.

505 (411) ADVANCED GENERAL SOCIOLOGY 4 prereq 401 and graduate standing in sociology or c/i. Review and analysis of major sociological theory and research.

507-508-509 SEMINAR V R-15 prereq graduate standing in sociology or c/i.

587-588-589 SEMINAR IN URBAN STUDIES 3 prereq graduate standing in sociology or c/i. Selected topics in urban affairs. (Also listed as Pol. Sci. 587-588-589.)

599 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and consent of department chairman. Supervised internship.

607-608-609 SEMINAR V R-15 prereq graduate standing in sociology or c/i.

699 THESIS OR DISSERTATION V. R-9 for M.A.; R-15 for Ph.D.

SPEECH COMMUNICATION (See Communication)
WILDLIFE BIOLOGY

is the study of wild vertebrate animals and their conservation. It is based on the natural sciences, with particular emphasis in the biological sciences. It constitutes a preparation for professional work in fish and game conservation.

Within the broad designation of Wildlife Biology, there are three optional curricula: Terrestrial Wildlife Biology, Aquatic Wildlife Biology, and Wildlife Science. As indicated below, each has the same schedule of courses for the first two years and a different curriculum for the last two years. Each leads to the Bachelor of Science in Wildlife Biology. Many graduates will continue their education through the Master's degree. The Wildlife Science curriculum is designed particularly for students with strong academic records who intend ultimately to work toward a doctorate.

This university is particularly well suited for instruction in this area of learning because of the excellent opportunities for field instruction and research, and the presence of such facilities as the Biological Station, the Montana Forest and Conservation Experimental Station, and the Montana Cooperative Wildlife Research Unit.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student should elect four years of mathematics in high school.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN WILDLIFE BIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the student must complete the requirements as listed for one of the three options indicated below. Note that a study of foreign language is required only in the Wildlife Science option.

CURRICULA IN WILDLIFE BIOLOGY

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A Cr.</th>
<th>W Cr.</th>
<th>S Cr.</th>
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<tbody>
<tr>
<td>Botany-Zoology 111-General Botany</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Botany 114, 115-General Botany</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<td>Chemistry 101, 102, 103-General, Survey, Organic or College Chemistry</td>
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<td>English 150-Freshman Composition</td>
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<td>Math 116, 117-College Algebra, Trigonometry</td>
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<td>Group Requirements</td>
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<td>H&amp;PE—Physical Education</td>
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### Sophomore Year

<table>
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<tr>
<th>Course</th>
<th>A Cr.</th>
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<tbody>
<tr>
<td>Zoology 112, 113-General Zoology</td>
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<tr>
<td>Botany 325, 326-Plant Physiology, Systematic Botany</td>
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<tr>
<td>Math 125—Statistics</td>
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<td>English 250—Intermediate Composition</td>
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<tr>
<td>Zoology 250-Principles of Animal Ecology</td>
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<td>Forestry 210—Elementary Soils</td>
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<td>Physics 111: 112 or 113-General Physics</td>
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### Terrestrial Option

#### Junior Year

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<th>Course</th>
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<tbody>
<tr>
<td>Zoology 369, 368-Mammalogy, Ornithology</td>
<td>5</td>
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<tr>
<td>Zoology 340, 341-Mammalian Physiology</td>
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<tr>
<td>Botany 366, Agrostology</td>
<td>5</td>
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<tr>
<td>Forestry 250-General Range Management</td>
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<tr>
<td>English 350-Advanced Composition</td>
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<td>Botany 355-Plant Ecology</td>
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<td>Group requirements and electives</td>
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#### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A Cr.</th>
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</tr>
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<tbody>
<tr>
<td>Forestry 470, 471, 472-Advanced Wildlife, Management, Big Game Management, Habitat Management</td>
<td>5</td>
<td>3</td>
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</tr>
<tr>
<td>Forestry 460, 353-Range Techniques, Aerial Photography</td>
<td>4</td>
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<td>5</td>
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<tr>
<td>Zoology 410-Advanced Animal Ecology</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Zoology 405-Animal Behavior</td>
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<td>Group requirements and electives</td>
<td>8</td>
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<tr>
<td>Group requirements and Zoology-Botany-Forestry 391, 498, 499—Senior Wildlife Seminar</td>
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<tr>
<td>Suggested electives: Any courses in Aquatic Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.</td>
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</table>

### Aquatic Option

#### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A Cr.</th>
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<tbody>
<tr>
<td>Zoology 310, 306—Ichthyology, Field Zoology</td>
<td>5</td>
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<tr>
<td>Zoology 340, 341-Mammalian Physiology</td>
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<tr>
<td>Zoology 365—Entomology</td>
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<tr>
<td>Botany 355—Plant Ecology</td>
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<td>English 350—Advanced Composition</td>
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<td>Group requirements and electives</td>
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#### Senior Year

<table>
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<th>Course</th>
<th>A Cr.</th>
<th>W Cr.</th>
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</thead>
<tbody>
<tr>
<td>Zoology 307, 413, 429—Aquatic Biology, Fisheries, Science, Invertebrate Ecology</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Forestry 460—Hydrology</td>
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<tr>
<td>Botany 441—Phyiology</td>
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<td>Zoology 405—Animal Behavior</td>
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<td>Group requirements or electives</td>
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<td>10-12</td>
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<tr>
<td>Zoology—Botany-Forestry 491, 492, 493—Senior Wildlife Seminar</td>
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<tr>
<td>Wildfire Seminar</td>
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<td>Suggested electives: Any courses in Terrestrial Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.</td>
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</table>

#### Wildlife Science Option

#### Junior Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Zoology 485—Genetics</td>
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<tr>
<td>English 350—Advanced Composition</td>
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<tr>
<td>Foreign Language 101, 102, 103—French, German or Russian</td>
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<tr>
<td>Math 125, 126—Statistics, Analytical Geometry and Calculus</td>
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<td>Advanced courses from selected list</td>
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<td>Suggested electives: Any courses in Terrestrial Option not required in Terrestrial Option, any courses from list of appropriate additional courses shown below.</td>
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#### Senior Year

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<tr>
<td>Foreign Language 211-212—French, German or Russian</td>
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<td>Advanced courses from selected list</td>
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<tr>
<td>Senior seminar</td>
<td>15-17</td>
<td>15-17</td>
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An approved series of courses from either option to be worked out with adviser. Minimum courses for students interested in Aquatic Wildlife: Zoology 206, 307, 310, 413 and for the students interested in Terrestrial Wildlife: Zoology 306, 309, Forestry 470, 471, 472.

Appropriate additional courses for Wildlife students to select in any option aside from those shown above include: Chemistry 261, 262, Botany 333, 334, 335, 361, 370, 386, 465, Economics 201, 202, Forestry 311, 336, 413, Geography 370, Geology 110, 120, 361, Microbiology 200, 202, Math 344, 345, Political Science 382, Speech 111, Zoology 303, 304, 404.
ZOOLOGY

is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.

In addition to the Bachelor’s degree, the Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and conservation agencies. Many, with further training, enter medical or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: Zoology 111, 112, 113, and at least one course from each of the following 6 groups: (1) Morphology, 304, 305, 313, 404; (2) Invertebrate Zoology, 306, 307, 308, 309, 366; (3) Vertebrate Zoology, 308, 306, 309, 316; (4) Physiology, 330, 340, 341; (5) Ecology, 250, 307, 405, 410, 428, 461; (6) Genetics, 465.

Students may substitute Chem 261, 262 for either group 3 or 4. The following must also be completed: Botany 114-115, Chemistry 116, 123; Mathematics 116, 117, 118; Physics 111-112-113 or 121-122-123; English 101-102-103.

The foreign language requirement listed earlier in the catalog must be satisfied. Normally Zoology majors take 5 quarters of French, German or Russian. Other languages or combinations must be approved by the department.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 35 credits in Zoology or related fields as follows: Zoology 111, 112, 113, 365, 366, 410, 428, 461; any one course from Microbiology or from Botany or one course from Zoology 303, 304, 313, 322, 323, 324, 346, 341.

Senior examinations are given only to candidates for honors.

GRADUATE WORK. See Graduate School Bulletin.

SUGGESTED CURRICULUM IN ZOOLOGY

Freshman Year

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<tr>
<th>Course Code</th>
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<td>English 150</td>
<td>Freshman Composition</td>
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<tr>
<td>Math 116, 117, 118</td>
<td>College Algebra, Trig, and Introduction to Calculus</td>
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<tr>
<td>Zoology 111, 112, 113</td>
<td>Introduction to Biology, General Zoology</td>
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<td>H&amp;PE 100</td>
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Sophomore Year

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<td>Intermediate Composition</td>
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<td>Foreign Language 101-102-103</td>
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Junior Year

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<td>Foreign Language 211-212</td>
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<td>Physics 111-112-113 or 221-222-223</td>
<td>General Physics</td>
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<td>Zoology Advanced Courses</td>
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<td>Senior Year</td>
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Botany 114, 115 | General Botany | 5 |
Zoology 429 | Biological Literature | 5 |
Zoology Advanced Courses or Chem 261, 262 | | 5 |
Electives | | 9-10 |

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


111 INTRODUCTION TO BIOLOGY 5 (3-4). Introduction to the basic principles of biology, including aspects of cell structure and reproduction, evolution, and adaptation. (Credit not allowed for both Bot 111 and Zool 111.)

112-113 GENERAL ZOOLOGY 5 (3-4) prereq 111 or Bot 111 or 112. A comparison of more function, and life histories of selected invertebrates and vertebrates. (Generally taken as a sequence including 111, 112-113.)

202 HUMAN PHYSIOLOGY 5 (3-4) prereq sophomore standing with at least one science course or two years of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) prereq 113.

250 | BASIC CONCEPTS OF ECOLOGY 5 (3-0) prereq one year of college biology. Introduction to ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Bot 250.)

251 ELEMENTARY ECOLOGY LABORATORY 2 (0-4) prereq coreq 250.

FOR UNDERGRADUATES AND GRADUATES

301 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) prereq 113. A comparison of early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

303 ANIMAL PARASITOLOGY 5 (3-4) e/y prereq Zool 112-113. Parazites; a brief introduction to parasitism, adaptations and life cycles, parasites and their environment, host parasite interrelationships, and parasite metabolism will be emphasized.

304 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) prereq 113. The comparative morphology of the vertebrates.

305 ANIMAL MICROTECHNIQUE 5 (3-4) prereq 113. Preparation of smears and squashes, clearing and staining wholemounts, paraffin sectioning, frozen sections with clinical microtome and cryostat microtome, polyester embedding and histochemical methods. A brief introduction to tissue types will be given at the start of the course. May be taken concurrently.

306 HERPETOLOGY 3 (2-3) prereq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 5 (3-7) prereq 206 and Bot 265. The biota of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY 5 (3-6), Su 6 at Biological Station, prereq 113. The structure, classifications and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

309 MAMMALOLOGY 5 (3-4), Su 6 at Biological Station, prereq 113. The classification, identification and life histories of mammals. Saturday field trips.

310 ICHTHYOLOGY 5 (3-4) prereq 113. The systematics and distribution of the invertebrates, fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

313 | 305 VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic animal cytology, tissue types and organology are studied. May be taken concurrently with 305.

321 PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoans.

322 LOWER METAZOANS 5 (3-4) prereq 113. Structural ecological and phylogenetic relationships among sponges, coelenterates, acelomates and nematodes.

333 MIDDLE METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the mollusks and annelids and certain invertebrate phyla.

334 ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

330 CELLULAR PHYSIOLOGY 5 (3-4) o/y prereq two courses in Physics, Chem 232 or 160, one course in Botany, Microbiology or Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. As listed as Botany 330.

331 COMPARATIVE PHYSIOLOGY 5 (3-4) prereq 330. The physiology of the major animal phyla. Special attention is paid to those functions related to the environment.
340-341 MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three hours of correlation: General Animal Physiology 1. Properties of protoplasm; blood, body fluids, metabolism; respiration; excretion. (341) Digestion, nutrition and intermediary metabolism; excitation, response, sensitivity and reproduction.

356 INVERTEBRATES OF THE MOUNTAINTON REGION 3 (5-12) prereq 115. The ecology, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

357 ENTOMOLOGY V (3-5) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution, and ecology of insects.

366 AQUATIC INSECTS 4 (3-12) prereq 113. The insect fauna, both immature and adult, in aquatic habitats of Western Montana.

403 BIOLOGICAL ILLUSTRATIONS 2 (4-0) prereq 1 year of biology and c/i. Introduction to the basic techniques and producing illustrative materials relevant to the biological sciences. (25$ special supplies fee. Credit not allowed for this course and Bot 460.)

404 (302) VERTEBRATE EMBRYOLOGY 5 (3-4) prereq 304. The early stages of development of the vertebrates including organogenesis, with emphasis on birds (chick) and mammals (pig).

405 ANIMAL BEHAVIOR 5 (3-4) prereq 25 credits in Zoology or c/i. Normal behavior of animals under natural conditions, description, adaptiveness, and evolution. Observation and recording of animal behavior.

410 (510) ADVANCED ANIMAL ECOLOGY 5 (2-8) prereq Math 125, and 4 courses in Zoology, including 250. The influence of physical and biotic factors on the population structure, density, productivity, and organization of natural communities. Theoretical as well as practical aspects are considered. Weekend field trips.

413 FISHERY SCIENCE 3 (3-6) prereq 307, 210. The problems involved in investigating fisheries biology with an analysis of some actual field experience in methods employed in attacking these problems. Field trips.

428 (328) INVERTEBRATE ECOLOGY 5 (3-8) e/y prereq 266, Bot 266, Bot 461. Zoology and botany students, faculty, and guests speakers on current topics in wildlife. An orientation course for all new graduate students in zoology.

500 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 (3-4) prereq 460 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.

505 ACAROLOGY 5 (3-4) o/y prereq 324 or 365 and c/i. Comparative adaptive morphology, biology and current taxonomic concepts.

515 ZOOGEOGRAPHY 4 (3-1) prereq 2 courses in advanced vertebrate zoology. Past and present distribution of animals, with special emphasis on vertebrates. Influence of climate, place of origin, dispersal routes, and faunal composition. Geological and botanical evidence considered.

516 CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 5 (3-4) prereq 25 hours in zoology including 250 and 465. Selected topics relating to evolution, speciation and the various philosophies influencing systematic zoology.

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

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

531 (402) COMPARATIVE PHYSIOLOGY-INVERTEBRATE 5 (3-4) prereq Botany 113 and one animal physiology course. Physiological processes of the organ systems of the major invertebrate phyla in relation to environment.

532 (402) COMPARATIVE PHYSIOLOGY-VERTEBRATE 5 (3-4) prereq Botany 403 or 410, and one animal physiology course. Physiological processes of the organ systems of the five vertebrate classes in relation to environment.

533 ENDOCRINOLOGY V 4 prereq Zool 113 and one animal physiology course. The physiology of the glands of internal secretion of the vertebrates with a survey of those of the invertebrates.

551 GENERAL ECOLOGY 5 (5-15) prereq Bachelor's degree; major preparation in Botany, Biology or Zoology. Community concepts including succession, stratification, periodicity and energy relationships; introduction to population problems.

561 LIMNOLOGICAL METHODS 3 (3-12) prereq 481, Chem 123. Practice in standard procedures employed. Field work.

580 MOLECULAR BIOLOGY SEMINAR 1 R (1-0) prereq graduate standing. Molecular biology and biochemistry. (Cross-listed with Botany, Chemistry, and Zoology.

600 ADVANCED ZOOLOGICAL PROBLEMS V 1-5. Students with sufficient preparation and ability pursue original investigations.

699 THESIS V R-15. 

486 (340) CYTOGENETICS 5 (3-2) prereq 485 or =. The structure and function of chromosomal material in vertebrates and higher organisms. Chromosome behavior and changes and their role in development and evolution. Cross-list with Botany. 

497 (345) GENETICS 5 (3-4) prereq 113 or Bot 225. The mechanism of heredity, involving consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their structure and function. Credit not given for both Zool 485 and Bot 485.
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