1968-1969 Course Catalog

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1968-69
CATALOG
ISSUE
UNIVERSITY OF MONTANA
MISSOULA, MONTANA 59801
MAY, 1968

UNIVERSITY OF MONTANA BULLETIN
The Montana University System...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
TIM BABCOCK, Governor, Ex-Officio President
BORNEST H. ANDREWS, Attorney General, Ex-Officio
HARRIET E. MILLER, Supt. of Public Instruction, Ex-Officio
CHARLES P. MOORE, 1969
JOHN E. O'NEILL, 1970
A. A. ARTHUR, 1971
MAURICE E. RICHARD, 1972
MRS. JOE C. KING, III, 1973
BOYNTON S. FAIGE, 1974
JOHN D. FRENCH, 1975
C. D. RILEY-BLONDEN, 1976
Glendive

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

UNIVERSITY OF MONTANA, MISSOUA
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 and Conservation
The School of Business Administration
The School of Education
The School of Fine Arts
The Summer Session
The Graduate School
Robert T. Pantzer, President

MONTANA STATE UNIVERSITY, BOZEMAN
Established February 16, 1893, and consisting of:
The College of Agriculture and Home Economics
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

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 Chemical 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 Summer Quarter
The Teacher Service Division
The Graduation Division
James E. Short, President

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

NORTHERN MONTANA COLLEGE, Havre
Established March 8, 1929, and consisting of:
The Four-Year Course in Teacher Education, Elementary, Secondary and Vocational-Technical
The Three-Year Associate Degrees Program in Engineering Technology
The Two-Year Associate Degree Program in Nursing
Joseph R. Crowley, President

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

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.

CATALOG USERS NOTE... The fee for taking the ACT examination on campus will be $8 (page 11 under TESTING).

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UNIVERSITY OF MONTANA BULLETIN
Number 527
May, 1968
Published at Missoula, Montana. Issued four times yearly, February, March, April and May. Entered as second-class matter at the post office at Missoula, Montana 59801, under Act of Congress, August 24, 1912.
**calendar 1968-1969**

**UNIVERSITY OF MONTANA**

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

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<th>Year</th>
<th>Quarter</th>
<th>Dates</th>
<th>Events</th>
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</thead>
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<tr>
<td>1968</td>
<td>AUTUMN</td>
<td>September 23-26</td>
<td>Orientation Week and Registration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>September 27-28</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>September 30</td>
<td>Instruction begins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 11</td>
<td>Veterans' Day, a holiday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 26</td>
<td>Thanksgiving Day, a holiday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December 15-19</td>
<td>Monday through Friday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December 20, 5:20 p.m.</td>
<td>Christmas recess begins</td>
</tr>
<tr>
<td>1969</td>
<td>WINTER</td>
<td>January 6, Monday</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>January 7, Tuesday</td>
<td>Instruction begins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>March 31, Monday through Friday</td>
<td>Winter Quarter ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>March 21, 5:20 p.m.</td>
<td>Spring recess begins</td>
</tr>
<tr>
<td></td>
<td>SPRING</td>
<td>March 31, Monday</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>April 1, Tuesday</td>
<td>Instruction begins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May 30, Friday</td>
<td>Memorial Day, a holiday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>June 9-12, Monday through Friday</td>
<td>Examinations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>June 13, 5:20 p.m.</td>
<td>Spring Quarter ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>June 15, Sunday</td>
<td>Commencement</td>
</tr>
<tr>
<td></td>
<td>SUMMER</td>
<td>June 22, Monday (9 weeks and First Half-Session)</td>
<td>Instruction begins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>July 23, Wednesday</td>
<td>First Half-Session ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>July 24, Thursday</td>
<td>Second Half-Session begins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>August 22, Friday, 5:20 p.m.</td>
<td>Summer Quarter ends</td>
</tr>
<tr>
<td></td>
<td>AUTUMN</td>
<td>September 22-27, Monday through Saturday</td>
<td>Orientation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>September 29, Monday</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 11, Tuesday</td>
<td>Veterans' Day, a holiday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 28, Thursday</td>
<td>Thanksgiving Day, a holiday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December 15-19, Monday through Friday</td>
<td>Examinations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December 19, 5:20 p.m.</td>
<td>Autumn Quarter ends</td>
</tr>
</tbody>
</table>

**THE FACULTY**

**EXECUTIVE BOARD**

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mrs. Robert A. Haugen, Missoula</td>
<td>President</td>
</tr>
<tr>
<td>Theodore Jacobs, Missoula</td>
<td>President's Office</td>
</tr>
<tr>
<td>Alex M. Stepanoff, Missoula</td>
<td>Professor Emeritus, President's Office</td>
</tr>
</tbody>
</table>

**ADMINISTRATIVE OFFICERS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert T. Pantele, LL.B.</td>
<td>President</td>
</tr>
<tr>
<td>Earl C. Lory, Ph.D.</td>
<td>Acting Academic Vice President</td>
</tr>
<tr>
<td>Norman E. Taylor, Ph.D.</td>
<td>Acting Academic Vice President</td>
</tr>
<tr>
<td>Calvin L. Murphy, B.A.</td>
<td>Business Manager and Controller</td>
</tr>
<tr>
<td>Donald J. Emblen, Ph.D.</td>
<td>Acting Dean, School of Business Administration</td>
</tr>
<tr>
<td>Nathan B. Blumers, Ph.D.</td>
<td>Dean, School of Journalism</td>
</tr>
<tr>
<td>Charles W. Bolen, Ph.D.</td>
<td>Dean, School of Fine Arts</td>
</tr>
<tr>
<td>Arnold W. Bolte, D.P.A.</td>
<td>Dean, School of Forestry</td>
</tr>
<tr>
<td>J. Francis Rimmer, Ph.D.</td>
<td>Dean, School of Education</td>
</tr>
<tr>
<td>Robert W. Cook, Ph.D.</td>
<td>Dean, College of Arts and Sciences</td>
</tr>
<tr>
<td>Fred S. Haukka, Ph.D.</td>
<td>Dean, Graduate School</td>
</tr>
<tr>
<td>Robert E. Sullivan, LL.B.</td>
<td>Dean, School of Law</td>
</tr>
<tr>
<td>Robert L. Van Horne, Ph.D.</td>
<td>Dean, School of Pharmacy</td>
</tr>
<tr>
<td>Earl C. Thompson, M.S.</td>
<td>Dean of Library Services</td>
</tr>
<tr>
<td>Walter C. Schwank, Ph.D.</td>
<td>Coordinator of Summer Session</td>
</tr>
<tr>
<td>Andrew C. Coovert, M.A.</td>
<td>Dean of Students</td>
</tr>
<tr>
<td>Maurine Cough, Ph.D.</td>
<td>Associate Dean of Students</td>
</tr>
<tr>
<td>Robert B. Curry, M.D.</td>
<td>Director of Health Service</td>
</tr>
<tr>
<td>Robert E. Gorman, Ed.D.</td>
<td>Director of Counseling Center</td>
</tr>
<tr>
<td>Charles E. Hoo, M.A.</td>
<td>Director of Placement</td>
</tr>
<tr>
<td>Leo Smith, M.A.</td>
<td>Registrar</td>
</tr>
<tr>
<td>Homer E. Anderson, M.A.</td>
<td>Director of Admissions</td>
</tr>
<tr>
<td>Robert E. Blakely, B.S.</td>
<td>Director of Food Services</td>
</tr>
<tr>
<td>James A. Brown, M.S.</td>
<td>Director of Housing</td>
</tr>
<tr>
<td>Keith T. Larson, B.A.</td>
<td>Manager of Family Housing</td>
</tr>
<tr>
<td>Thomas J. Collins, B.S.</td>
<td>Administrative Assistant to the President; Director of Public Service</td>
</tr>
<tr>
<td>H. D. Edwards, M.E.</td>
<td>Executive Secretary, Alumni Association</td>
</tr>
<tr>
<td>James F. Hall, Ed.D.</td>
<td>Coordinator, Extension and Continuing Education</td>
</tr>
<tr>
<td>James A. Parker, B.S.</td>
<td>Director of Physical Plant</td>
</tr>
<tr>
<td>Lawrence D. Stuart, B.A.</td>
<td>Director of Information Services</td>
</tr>
<tr>
<td>Jack Swarthout, B.A.</td>
<td>Director of Athletics</td>
</tr>
</tbody>
</table>

**THE FACULTY**

- Acree, 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
- Aimi, Alfred C. (Major), B.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
- Altz, David D., Ph.D., University of Texas; Associate Professor of Geology
- Ammons, R. B., Ph.D., State University of Iowa; Professor of Psychology
- Anderson, C. LeRoy, Ph.D., Ohio State University; Associate Professor of Sociology (part-time)
- Anderson, 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)
- Andrus, Eugene, M.A., University of Wisconsin: Professor of Music
- Angwin, Keith (Lt. Col.), B.A., University of Wyoming; Chairman and Professor of Military Science (Faculty Affiliate)
- Arakawa, Monton L., Ph.D., University of Wyoming; Associate Professor of Social Welfare
- Armbrst, 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
BRAUN, HAROLD A., M.D., Harvard University; Lecturer in Zoology (Faculty Affiliate)
BREALEY, PAUL C. (Major), B.S., Oregon State University; Associate Professor of Aerospace Studies (Faculty Affiliate)
BRENTHAM, HUBERT R., M.B.A., University of Texas; C.P.A., Missouri; Associate Professor of Business Administration (Accounting)
BRIER, WARREN J., Ph.D., State University of Iowa; Professor of Journalism
BRIDGES, EDWIN W., LL.M., Harvard University; Professor of Law
BREESE, EMMA H. (Mrs.), M.S., Colorado State University; Chairman and Associate Professor of Home Economics
BROCK, ROBERT R., M.A., University of Washington; Assistant Professor of Foreign Languages
BROWN, GORDON, Ph.D., University of North Carolina; Professor of Sociology; Executive Director of the Institute for Social Science Research
BROWMAN, LUDVIG G., Ph.D., University of Chicago; Professor of Zoology
BROWN, FREDERICK H., JR., Ph.D., University of Wisconsin; Chairman and Professor of Drama
BROWN, TIMOTHY A., M.S., University of Illinois; Reference Librarian (Assistant Professor)
BROWN, WALLACE E., M.A., University of Idaho; Assistant Football Coach
BROWN, WALTER L., Ph.D., University of California; Professor of English
BRUNN, ROYAL B., Ph.D., University of Michigan; Professor of Zoology
BRYAN, CHARLES A., Ph.D., University of Arizona; Assistant Professor of Mathematics
BRYAN, GORDON H., Ph.D., University of Maryland; Professor of Pharmacy
BUICK, HENRY G., Ph.D., University of California; Chairman and Professor of Philosophy
BUNSE, DONALD L., M.F.A., University of Washington; Assistant Professor of Art
BUNN, WILLIAM S., Ph.D., Johns Hopkins University; Associate Professor of Philosophy
Burdick, Robert M., Ph.D., University of California at Los Angeles; Professor of Foreign Languages
BURRE, JAMES L., M.A., University of Missouri; Instructor in English
CABANIS, ALBERT G., Ph.D., Oregon State University; Assistant Professor of Zoology
CAMELL, DONALD H., Ph.D., University of Wisconsin; Associate Professor of Pharmacy
CARD, GEORGE L., Ph.D., University of Nebraska; Assistant Professor of Microbiology
CARMICHAEL, LINUS J., Ed.D., University of Oregon; Professor of Education
CARRIE, WARREN P., Ph.D., Occidental College; Chairman and Professor of English
CARSON, H. M., M.A., State University of Iowa; Lecturer in Speech Pathology and Audiology
CERINO, RICHARD, Ph.D., University of California; Clinical Instructor in Physical Therapy (Faculty Affiliate)
CHAPFFY, DOUGLAS C., Ph.D., University of Wisconsin; Assistant Professor of Political Science
CHANDLER, DEVON, M.S., University of Oregon; Director of Instructional Materials Service (Assistant Professor)
CHRANEY, ROBERT B., JR., Ph.D., Stanford University; Assistant Professor of Speech Pathology and Audiology
CHAPMAN, RICHARD A., M.A., San Jose State College; Instructor in Political Science
CHARE, SAMUEL B., JR., Ph.D., University of California; Professor of Economics
CHRISTOPHERSON, JOAN (Mrs.), M.A., Teachers College, Columbia University; Assistant Professor of Home Economics
CHYATAL, DONALD P., M.S.L.S., University of Illinois; Director of Public Service, Library (Assistant Professor)
CLAY, MARGARET, Ph.D., St. Mary's University; Associate Dean of Students; Professor of Psychology
CLUSE, MESSER D., JR., Ph.D., University of Michigan; Professor of English
COGRISWELL, ANDREW C., M.A., University of Minnesota; Dean of Students; Professor of Journalism
COLEMAN, RUPUS A., Ph.D., Boston University; Professor Emeritus of English
COOK, ALLEN D., M.F.A., University of Utah; Assistant Professor of Drama
COONEY, ROBERT F., B.S.F., University of Montana; Research Associate in Forestry (Faculty Affiliate)
COOSON, ROBERT W., Ph.D., Stanford University; Dean of the College of Arts and Sciences and Professor of History
OFFICIAL DIRECTORY—5

HANSSEN, BERT, M.A., University of Washington; Professor Emeritus of Speech

HANSSEN, DANIEL L., M.S., Michigan State University; Instructor in Mathematics (part-time)

HANSON, KURT A., M.A., University of Montana; Instructor in Foreign Languages

HARBY, CHARLES E., M.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

HARBY, MARSELLA G. (Mrs.), M.A., University of Montana; Instructor in Social Welfare (part-time)

HARRIS, JERRY L., M.A., University of Montana; Instructor in English

HARRIS, JOHN T., Ph.D., University of Michigan; Assistant Professor of Wildlife Management

HARRY, LEROY H., Ph.D., University of Michigan; Professor of Botany and Curator of the Herbarium

HARVEY, MARIA (Mrs.), M.A., University of Michigan; Lecturer in Foreign Languages

HAPPE, JEROME L. (Captain), B.S., Gonzaga University; Assistant Professor of Military Science (Faculty Affiliate)

HAYDEN, RICHARD J., Ph.D., University of Chicago; Professor of Physics

HERBERT, EUGENE L., M.A., University of Oregon; Instructor in Foreign Languages

HERLING, ALBERT T., Ph.D., Johns Hopkins University; Professor of Business Administration (Management)

HELKER, GEORGE B., Ph.D., University of Michigan; Professor of Economics

HEMINGWAY, PETER, Ph.D., University of Michigan; Associate Professor of Psychology

HENDRICKSON, STEPHEN S., Ph.D., University of Washington; Professor Emeritus of Botany

HENNIGSEN, RUDOLPH O., Ph.D., Eastman School of Music; Associate Professor of Music

HODGE, LAWRENCE W., M.A.L.S., University of Michigan; Assistant Professor of Education

HOFMANN, ROBERT S., Ph.D., University of California; Professor of Zoology and Director of Environmental Biology

HOGAN, HENRY W., M.D., Jefferson Medical College; Lecturer in Psychology (Faculty Affiliate)

HONKALA, FEID S., Ph.D., University of Michigan; Dean of the Graduate School; Director of Research for the University of Montana Foundation; Professor of Geology

HOOB, CHARLES E., M.A., University of Montana; Director of Placement; Assistant Professor of Education

HOOK, WILLIAM F., M.A., University of New Mexico; Professor of Art

HOROWITZ, SAMUEL, M.H.L., Jewish Institute of Religion; Lecturer in Religion (Spring Quarter) (Faculty Affiliate)

HOWARD, ALBERT T., M.A., University of Montana; Instructor in English

HUCUL, WALTER C., Ph.D., University of California; Visiting Lecturer in History

HUFF, THOMAS P., Ph.D., Rice University; Assistant Professor of Philosophy

HUGO, RICHARD M., University of Washington; Assistant Professor of Education (on leave 1967-68)

HUMMEL, J. GEORGE, M.A., Columbia University; Professor of Music

HUNT, JOHN J., Ed.D., Colorado State College; Associate Professor of Education

HUNT, LAWRENCE J., B.B.A., University of Oregon; Assistant Professor of Business Administration (Management) (on leave 1967-68)

HUSS, MICHELA M. (Mrs.), Instructor in Foreign Languages

HUT, LUCIAN (Lucien) M.M., Royal Conservatorium, Rotterdam; Assistant Professor of Music

HYMAN, DONALD W., Ph.D., University of California; Assistant Professor of Geology

JACOBSON, NORMAN, M.A.T., Washington State University; Assistant Professor of Education

JACOBSON, MARK J., Ph.D., University of California; Professor of Physics

JAMES, RICHARD H., M.A., Northwestern University; Associate Professor of Drama

JARVA, HORST, Ph.D., University of Vienna; Associate Professor of Foreign Languages

JAY, ROBERT H., Ed.D., University of Oregon; Associate Professor of Education

JELIBOR, WILLIAM L., Ph.D., University of Minnesota; Lecturer in Zoology (Faculty Affiliate)

JENNY, DONALD A., Ph.D., University of Florida; Associate Professor of Zoology

JENKINS, JOSEPH W., Jr., Ph.D., Michigan State University; Assistant Professor of Psychology

JEFFREY, C. RULON, Ph.D., University of California, Chairman and Professor of Physics

JEPSEN, RANDOLPH H., M.S., University of Illinois; Assistant Professor of Physics

JOHNSON, MAXINE C. (Mrs.), M.A., University of Montana; Assistant Director of the Bureau of Business and Economic Research and Assistant Professor of Business Administration (Management)

JOHNSON, Philip C., M.S., Oregon State University; Research Associate in Forestry (Faculty Affiliate)

JOHNSON, ROBERT H., J.E., Ed.D., Colorado State College; Professor of Education and Director of Educational Research and Service Administration

JOHNSON, THOMAS G., Ph.D., University of Chicago; Chairman and Professor of Management (Business Administration)

JONES, DONALD O., Ph.D., Eastman School of Music; Associate Professor of Music

JONES, ROBERT G., M.M., University of Wichita; Visiting Assistant Professor of Music

JUDAY, RICHARD E., Ph.D., University of Wisconsin; Professor of History

KARLIN, JULES A., Ph.D., University of Minnesota; Professor of History

KEMPNER, JACK J., Ph.D., Ohio State University; C.P.A.; Montana; Chairman and Professor of Accounting (Business Administration)

KIRKSEN, FRED, Ph.D., New School for Social Research; Assistant Professor of Philosophy

KIRKSEN, RAQUEL (Mrs.), Ph.D., New York University; Lecturer in Foreign Languages

KING, WALTER N., Ph.D., Yale University; Professor of English

KIRKPATRICK, THOMAS O., Ph.D., Ohio State University; Associate Professor of Business Administration (Management)

KNEELAND, DONALD, Ph.D., University of Wisconsin; Chairman and Professor of Business Education and Office Administration (Business Administration)

KONIESTRIK, RICHARD L., Ph.D., University of Chicago; Professor of Chemistry

KOTOK, EDWARD S., M.S.F., University of Michigan; Research Associate in Forestry (Faculty Affiliate)

KRABE, JOSEPH, Ph.D., University of Nebraska; Professor Emeritus of Botany

KREE, JOHN P., Ph.D., Yale University; Professor of Forestry

KUHN, BARCLAY, M.A., Northwestern University; Professor of Political Science

LACH, LAWRENCE, B.S., University of Michigan; Professor of Forestry (Faculty Affiliate)

LACKMAN, DAVID A., Ph.D., University of Pennsylvania; Lecturer in Immunology, Department of Microbiology (Faculty Affiliate)

LACKMANN, GERTRUD (Mrs.), Ph.D., Goettingen University (Germany); Associate Professor of Foreign Languages

LACEY, EDWARD T., M.A., University of Montana; Instructor in English

LANCE, ROBERT W., M.F., Colorado State University; Assistant Professor of Chemistry

LAPITKEN, PETER P., Ph.D., University of California; Professor of Foreign Languages

LARSON, CARL L., M.D., University of Minnesota; Director of the Stella Duncan Memorial Institute; Professor of Microbiology

LAWYER, JOHN F., Ph.D., Harvard University; Associate Professor of Psychology

LAWYER, JOHN D., M.A., Columbia University; Visiting Professor of Health and Physical Education (Winter and Spring Quarters)

LEA, MURIEL JANE (Mrs.), M.Mus., College Conservatory of Music, Cincinnati; Assistant Professor of Music
WALLACE, Robert F., Ph.D., University of Minnesota; Chairman and Professor of Economics

WALTERS, H. A., Ph.D., University of Wisconsin; Associate Professor of Psychology

WEBB, Richard N., M.A., Pennsylvania State University; Assistant Professor of Psychology

WEBBER, J. F., M.A., University of Minnesota; Assistant Professor of Psychology

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

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

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

WHINDELL, William J., University of Colorado; Associate Professor of Forestry

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

WILSON, Edwin, Ph.D., University of Wisconsin; Visiting Lecturer in English (Part-time)

WILLIAMS, John M., Ph.D., University of Illinois; Professor of Geology

WILSON, Brenda F. (Mrs.), M.A., University of Southern California; Associate Professor Emeritus of History

WILSON, Edward M., Ph.D., University of Illinois; Professor of Psychology

WILSON, Robert B., Washington State University; Institute in Foreign Languages

WRIGHT, Phil L., Ph.D., University of Wisconsin; Assistant Professor of Zoology

WYATT, E. J., M.A., University of Kansas; Professor of Sociology

YATES, Leroy, Ph.D., Washington State University; Associate Professor of Chemistry (in charge of the storeroom)
The University of Montana was chartered February 17, 1893, by the Third Legislative Assembly. Later legislation changed the name to the State University of Montana and Montana State University. On July 1, 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 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.

The main University campus spreads over 116 acres on the east side of Missoula. There are an additional 624 acres on Mt. Sentinel. A few blocks south of the main campus is a 154-acre site with 394 married student housing units and a nine-hole golf course. Approximately six miles southwest of the main campus is Fort Missoula where the University owns a parcel of 285 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.

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

The University Biological Station is located at Yellow Bay on the east shore of Flathead Lake, 90 miles north of Missoula. The University controls 160 acres, including two islands, and has permission to carry on investigation on Wild Horse Island, an area of approximately 2,000 acres.

Facilities include an administration-recreation building, a four-room laboratory, three one-room laboratories, a kitchen and dining hall, three bath houses, thirty-five one-room and eleven two-room cabins, and various maintenance buildings. Construction of the facility is a $240,000 reproduction of a 19th-century log cabin in honor of Morton J. Elrod, began during the summer of 1966. Supported by an NSF grant, the laboratory was dedicated in August, 1967.

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 in the form of general interest on 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; the Montana Trade Association Directory, issued annually; and various monographs. Contributors include members of the bureau staff, the faculty, and on occasion, students.
TELEST 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 purposes of the station are:

"To study the growth and the utilization of timber ... To determine the relationship between the forest water conservation and water supply regulation; the forest and pasturage for domestic livestock and wildlife; the forest and recreation and those other direct and indirect benefits that may be secured by the maintenance of or the establishment of forest or natural watersheds. Study and develop the establishment of windbreaks, shelter belts and windbreaks on the farms of the State ... To study logging, lumbering and milling operations and other operations dealing with the products of forest soils with special reference to their improvement ..."

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

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

The station is supported by funds appropriated by the congress and the State of Montana, income from the sale of forest products, grazing, mining and special leases, and by private grants. Research is concentrated on the 27,000-acre Lubrecht Experimental Forest and at appropriate locations throughout the state—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 organization clearinghouse with collections of state legislative materials and publications of governmental agencies and similar bureaus. Publications include a bimonthly series entitled the Montana Government Information Clearinghouse and a series of pamplets and monographs prepared by the bureau staff, the University faculty and other professionals in the field.

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

The purpose of the Cooperative Wildlife Research Unit is stated in the Memorandum of Understanding signed jointly by representatives of the above cooperating agencies as follows: ... "to provide full active cooperation in the advancement, organization and operation of wildlife education, research, extension and demonstration programs ..."

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

Graduate work in wildlife may be taken with the area of concentration either in wildlife management or in wildlife biology. It ordinarily will require two years work beyond the bachelor's degree to fulfill the requirements for a degree of Master of Science in Wildlife Biology. Concentration in the area of wildlife management ordinarily will lead to the degree of Master of Science in Wildlife Management.

The Cooperative Wildlife Research Unit allocates funds for four or more graduate research fellowships for students working toward the degree of Master of Science in Wildlife Biology, or Master of Science in Forestry with the area of concentration in wildlife management. Candidates may work for the Ph.D. in zoology through the Wildlife Research Unit. Candidates for fellowships should submit formal applications with a transcript of college credits and letters of reference by March 1.

For further information with regard to curricula and requirements for graduate work in the wildlife field, write to the Unit Leader of the School of Forestry or Chairman of the Department of Zoology.

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

EXTENSION, CONTINUING EDUCATION AND PUBLIC SERVICE are the agencies through which the University carries on off-campus studies and services. These agencies work directly with communities in surveys, institutes, forums, short courses, conferences and community action programs. Included are the School for Administrative Leadership and the Division of Indian Services. The Division of Indian Services is a cooperative effort of the University and the United States government and the Division of Continuing Education and Public Service could provide to the Indian community.

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

THE INSTITUTE FOR SOCIAL SCIENCE RESEARCH offers facilities and personnel for basic and applied research in all areas of human behavior, consultation and other professional services. The institute's specialization is in the capacity to provide research and professional services anywhere and for any required duration, assistance in the preparation of all types of community surveys, evaluation or organizational programs and preparation of evaluation reports.

admission ...

HIGH SCHOOL PREPARATION. Although general admission to the University is granted as indicated below, additional units of high school work are 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 attended while in military service, carrying a statement of honorable dismissal from the last college attended; (c) a Montana State Superintendent of Public Instruction form signed by a qualified physician and mailed by him directly to the University Health Service.

ADVANCE REGISTRATION FEE . . . For all new applicants, except graduate students, a registration fee of $15 ($22.50 semester) must accompany the application for admission. If the student registers, this fee is credited to him as payment of the registration fee for the quarter (semester) for which application was made (see STUDENT FEES), but it is not refundable if the student fails to register for the term indicated for entrance. This fee will be refunded if admission is refused.

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 preferably in October or December. The 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 potential for high college potential who may be seeking scholarships, for placement in English and as part of the information used to determine non-resident admissions.

New freshmen who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance and have the results sent to the University will pay a $6 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."

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 all 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 residents and have a high school transcript proving a C average on all college work attempted.

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

ADVANCED PLACEMENT: High school students who took college level courses agreed upon in advance by the high school and the University may be admitted with advanced placement. Validation will be determined by the University from scores earned by the student on University-constructed examinations or on the advanced placement section 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 31 years of age or over who are not graduates of high schools, who cannot meet all the requirements for admission and who are not candidates for degrees, may be admitted upon passing general aptitude and English placement tests. The University may accept students who show satisfactory evidence that they are prepared to pursue successfully college courses.

Special students may acquire status as regular students and become candidates for degrees either (a) by taking entrance examinations or (b) by transferring to entrance credit sufficient credits earned in the University to make up all entrance requirements for admission to regular standing. A special student who is not registered 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 in which the student is to pursue his major study may issue the degree recommendation.

O R I E N T A T I O N W E E K . . . 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 adviser. An "F" will be assigned for a withdrawal after the third week unless a petition has been granted. All exceptional requests are reviewed by the faculty Graduation Committee. The committee's decision is final. Advisers are required to meet with the Graduation Committee or supply the committee with a written statement in support of their advisee's petition for exceptional consideration.

WITHDRAWALS FROM THE UNIVERSITY . . . Students who withdraw from the University during a quarter are required to fill out withdrawal forms in the Registrar's Office. If this is not done, the student will not be entitled to certification of honorable dismissal, and "F" grades are assigned. When withdrawal forms signed by the dean or associate dean of students are filed before the end of the ninth week of a quarter, grades of "W" are assigned. After the ninth week, the student who withdrawal 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
- Economics
- Economics-Political Science
- Economic-Sociology
- English
- French
- Geography
- Geology
- German
- Health and Physical Education
- History
- History-Political Science
- Home Economics
- Latin
- Liberal Arts

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

Bachelor of Science in Medical Technology, Physical Therapy and Wildlife Technology

PROFESSIONAL SCHOOLS

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

ADVANCED PROFESSIONAL DEGREES

Bachelor of Laws
Juris Doctor

academic requirements . . .

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

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

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

All requests for credits beyond the maximum must be approved by the student's major dean (professional schools) or department chairman (College of Arts and Sciences).

MINIMUM SCHOLASTIC REQUIREMENTS . . . A student may be dropped from the University or placed on probation any quarter if his record is very unsatisfactory.
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 entering autumn quarter 1962 and thereafter 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 the probationary quarter will allow such student to be continued on probation for an additional quarter.

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 or pre-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 other courses in the 500-600 series stressing independent work, which are designated by the department or school and announced in advance. The P grade must apply to all registrants in the course. The grade I—incomplete, is given if all the work in the 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 earned by the total number of hours undertaken, excluding non-credit courses and courses assigned W, P, I or N.

QUALITY OF WORK... A minimum grade-point average of 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, 6 quarters (6 credits), required of all students unless excused for cause. Discharged veterans and students 27 or more years of age are excused from this requirement.

(2) English composition. Unless exempted by the English department, all students are required to complete the English 150-250-350 sequence (3 quarters, 9 credit). All students, unless exempted by the English department, must take English 150 during their freshman year. English 250 and 350 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 6 of the 12 credits in one discipline; and an additional course of at least 3 credits in the other group.

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

Groups III and IV. At least 12 credits in each of Groups III and IV; in each group at least 8 of the required 12 credits must be in one discipline.
requirements for graduation . . .

CATALOG GOVERNING GRADUATION . . . A student may graduate under University requirements for the year in which he completes graduation requirements within a continuous six-year period. If a student interrupts his attendance a year or more, he must reestablish residence hereafter and complete graduation requirements within the time remission granted. 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 department or dean, 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 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 in Official University Notices. Applications must be filed at least one quarter preceding the quarter in which requirements are to be completed.

CREDITS REQUIRED FOR A DEGREE . . . Normally credits assigned to a course are equated in the following way: one credit for each one hour of lecture with two hours of laboratory or for the lecture plus one hour of laboratory. Credit granted for laboratory work is normally one credit per hour for two or three hours laboratory session. A total of 180 credits plus six credits earned in required physical education courses is necessary in all courses for graduation with a bachelor's degree except that more are required in forestry, law and pharmacy. Candidates for the degree of Bachelor of Science in Forestry must complete 192 credits in addition to regular requirements in physical education. 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 93 credits in that college, except that credits in art and drama may be included.

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 70 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. Exclusions 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 70 credits in one foreign language and not more than 90 credits in all foreign languages may be counted toward graduation in that area. 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, 101 through 403, 151 through 453, 114 through 118, 125, 126, 127, 129) nor 6 credits in ensemble music (Music 140 through 110, and 140) may be counted toward graduation.

Only students majoring in business administration or those taking a teaching major or minor in business administration are allowed to present more than 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 requirement announced under a particular curriculum, in addition to meeting the general requirements listed here under requirements for graduation.

SENIOR EXAMINATIONS . . . Some departments and schools in the University require a senior comprehensive examination as part of graduation requirements. This examination does not in any way replace the regular quarterly examinations except that departments adopting or using these senior examinations may excuse their major students during the senior year from regular quarterly examinations in major department subjects. The examination is a written examination of at least three hours length, and additional oral or written examinations may be given. Examinations are given the last quarter of senior residence and are arranged in each department or school at the convenience of the persons concerned. If the student fails to pass this special examination, he shall be given another opportunity within the next six months without the necessity of taking additional courses. In case of a second failure, further opportunity will be granted at the discretion of the department or school concerned and the committee on graduation. For details, check under the alphabetically listed curricula in the catalog.

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

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

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

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

summer session . . .

The summer session consists of two 4 1/2 week half-sessions and a concurrent nine-week session. Students may attend either half-session or the full nine-week session. The 1969 summer session will open June 24 and close August 22; the first half-session, June 23 to July 23; the second half-session, July 24 to August 22.

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

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

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

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

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

Full information regarding the summer session may be obtained from the individual department or school of instruction or from the coordinator of summer 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. The University does not accept non-bankable paper in payment of bills. Personal checks are not cashed except in payment of University bills.

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 $60 to $101.50 a month depending on the size and type of apartment.

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

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*Includes $2 Student Identification Card, first quarter of attendance (paid once each year). A motor vehicle registration fee of $3 per quarter is paid in full each year for the quarters remaining when the student first enrolls during the school year (fall, $9; winter, $6; spring, $6). Refunds are made for quarters paid for, but not attended.

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 1967-68 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.
Building Fee

For support of activities sponsored by the Associated Students of the University of Montana. (Optional to students who have a B.A. or B.S. degree and to students registered for less than seven credits.)

Health Service Fee

(Required of all students enrolled for class work.)

Student Identification Card (paid once a year) ________ $2.00
Motor Vehicle Registration Fee (drivers only) 3.00

Total first quarter in attendance Non-resident fee is based on a charge of $180.00 plus $22.50 building fee) $202.50

(If registered for less than 7 credits, the non-resident fee is based on a charge of $26.00 per credit, plus an $11.25 non-resident building fee.)

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

WAR SERVICE FEE EXEMPTIONS... The registration and incidental fees are waived for honorably discharged persons who served with United States armed forces in any of its wars and who were bona fide residents of Montana at the time of their entry into the armed forces. This is in accordance with an act of the Legislature of 1943 as amended by the Legislature of 1945. These exemptions are not available to students who are eligible to qualify for benefits under federal laws. Students must apply for these war service exemptions, at which time the original or certified copy of discharge must be submitted for identification purposes.

REGISTRATION UNDER P.L. 624 or $15... Subsistence payments from the Veterans' Administration are based on the number of hours of work for which the student is registered. A minimum of 14 credit hours is required for full payment.

LIMITED REGISTRANTS (students registered for less than seven credits): registration fee $15; incidental fee $25; building fee $10; Student Union Building $5; Health Service $12; student activity $15 (optional). Non-residents pay (in addition to other fees stated here) $26 per credit, plus $11.25 additional non-resident building fee. Students who are enrolled as regular students who wish to drop to limited registrants should see statements under regular refund schedule.

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

GRADUATE STUDENTS pay the same fees as undergraduate students except that graduate students whose programs require expensive equipment, laboratory supplies and additional books may be required to pay a graduate laboratory- incidental fee not to exceed $50 per quarter. The student activity fee is optional to students who have a B.S. or B.A. degree.

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

FEES FOR SPECIAL PURPOSES...

LATE REGISTRATION: 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. ($5 for the first day, plus $2 per day thereafter to a maximum of $15.)

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 are refunded to students who withdraw before the beginning of classes. No fee refunds are made after the fourth week of instruction (except music). Students who withdraw after the beginning of classes but before the end of the fourth week will be refunded according to the refund schedule published below.

Applied music refund is based on a charge of $1.75 per ½-hour lesson for the number of weeks elapsed since the beginning of the quarter.

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 close of quarter for which the fees were charged.

REGULAR STUDENTS

Week of Instruction

First
Second
Third
Registration None None None
Incidental 75% 50% 50%
Building 100% 50% 50%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service 100% 50% 50%

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

Non-Resident Tuition 80% 60% 40%

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

REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS

Registration None None None
Incidental 40% 20% 20%
Building 50% 25% 25%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service None None None
Non-Resident Tuition Varies with number of credits

student organizations and services...

At the University of Montana, student services are coordinated through the offices of the dean and associate dean of students. Satisfactory student growth—socially, emotionally and educationally—is the purpose of the program. Student services concerned with the welfare of students include the Counseling and Testing Center, Health Service, Placement Service, Student Housing, Student Union, Financial Aid Office and the Food Service.
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 OFFICE OF THE DEAN OF STUDENTS** has general supervision over all student welfare. The associate dean has specific responsibility for the social and academic welfare of women students.

**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, mention of its activities in campus publications 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.

**STUDENT ORGANIZATIONS**... The State Board of Education has made the following rule: "No contract shall be entered into and no financial obligation 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. Intercollegiate athletics may be given only in conformity with the regulations of the National College Athletic Association and the Big Sky Athletic Conference, of which the University is a member.

**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 academic and the use of remedial procedures when indicated; and (4) selection of appropriate vocational area.

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

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

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

The services provided are comprehensive and include medical attention and advice from the University's full-time physicians and from certain consulting specialists in the local medical society. Each 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 plan which is inexpensive and extends protection to the student through the vacation periods between quarters and during the summer. This insurance is offered at the time of registration.

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

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

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

Hospitalization in local hospitals is provided when necessary through the Student Health Service. The Health Service may pay for 15 days hospitalization at $15 per day, and $100 may be applied to extras (medicine, X-ray and laboratory work). The Health Service Building also houses the State Mental Hygiene Clinic and the Speech Pathology and Audiology Clinic which are operated separately.

**THE OPTIONAL BLUE CROSS SUPPLEMENTAL HEALTH PLAN** has been worked out through the Faculty-Student Health Committee to make it possible for students to obtain low-cost year-around health care protection during the four or more years they are undergraduates at the University. Montana and to allow Montana students health care protection for their dependents. Under this plan, which costs the single student $3 per quarter for the autumn, winter and spring quarters and $4.50 for the summer, the student may protect himself against the costs of illnesses that exceed 15 days per quarter of hospitalization (the limit under the Student Health Service Plan) and illnes and accidents occurring between quarters and during the summer months. The married student, under this optional plan, can gain health care protection for his dependents, who cannot be covered under the University plan, at a cost of $16.95 per quarter for the autumn, winter and spring quarters and for the summer session. Details of the plan are available from Montana Blue Cross, 5360 10th Avenue South, Great Falls, from the Dean of Students Office and from the University Health Service.

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

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

Interview schedulings, employer information and vacancy listings are available for students in colleges, business, industry and government service. The Placement Center also assists University graduates in later years in finding new positions for which both a degree and experience are required.

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

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

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

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

Junior women (minimum 90 credits) who have parental permission and senior women (minimum 155 credits) may choose to live in a "no-hours" residence hall.

Women students whose twenty-first birthday occurs during the current academic year are required to live in the residence halls or with approved living groups until the end of that quarter. Thereafter, they may move to other quarters if they so wish.

Women between the ages of 21 and 24, inclusive, may live in the residence halls only as space is, or becomes, available. Women students over 21 who are admitted to the residence halls will be required to remain there for all quarters of the academic year.

Women students 25 years of age or over, or married women, must have special permission of the associate dean of students to live in residence halls.

All students who contract to live in the residence halls do so for the entire academic year or that portion of it for which they are enrolled.

**RESIDENCE HALLS AND FOOD SERVICE**

Application forms and detailed information may be obtained by writing to the Admissions Office, University of Montana. A prepayment on board and room, as announced in the residence halls bulletin, must accompany each room application. If a room reservation is canceled, notice in writing must be received by the manager of residence halls on or before September 21 for fall quarter, January 2 for winter quarter and March 25 for spring quarter. Students who live in the residence halls are required to board at the Food Service. See Residence Halls Bulletin for board and room rates.

Dormitory charges must be paid in advance at the beginning of the quarter or in installments as arranged with the University of Montana TREASURER.

An installment payment plan is available to aid students who might not be able to enroll by making available a schedule of payments throughout the year in lieu of the usual large initial payment each quarter for regular fees and board and room. An additional charge of $7 a year is assessed to those who wish to use the installment plan. Inquiries regarding this plan should be addressed to the Business Office, University of Montana, Missoula, Montana 59801.

Social life in the halls is encouraged through residence hall clubs and numerous activities. Adult counselors cooperate with the students in making living in the halls enjoyable and beneficial. A fee of $2 per quarter is assessed the residents in each hall. This fund is expended for social activities which are planned by the group.

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

All University food and housing operations are conducted on a self-sustaining basis. Land is acquired, buildings are built and maintenance and operation are financed out of payments for such housing or meals. When costs go up, charges for these services must go up unless the services themselves are to be allowed to suffer unduly in quality or quantity. New or additional services, when demanded, also require additional charges. Such charges are fixed from time to time, effective on the dates similarly specified.

**FAMILY HOUSING**

Married students may apply to the Family Housing Office for accommodations in modern, moderately priced apartment-type units located within walking distance of the main campus. Studio apartments, with one, two, three and four bedrooms are available.

**THE WOMEN'S COOPERATIVE HOUSE**

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

**FRATERNITY AND SORORITY HOUSES**

Nine national fraternities and six national sororities maintain their own residences under University supervision. Membership in these organizations is by invitation, and 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.

**STUDENT UNION**

During the 1968-69 academic year, the new $4 million University Center will replace the Lodge as the center of student life and activities. This new center will house significantly expanded student social and governmental activities. It will include student legislative chambers, offices, lounges, work areas, music listening rooms, coffee shops, bowling lanes, billiard areas and food services. In addition, students have access to a nine-hole golf course and a large modern swimming pool.

**FINANCIAL AID**

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

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

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

**FINANCIAL NEED ANALYSIS:** The University of Montana participates in the College Scholarship Service (CSS) and the ACT Student Need Analysis Program, which assist colleges and universities in determining the student's need for financial assistance. Entering freshmen seeking financial help through loans, grants or the Work-Study program should submit a copy of the Parent's Confidential Statement (PCS) form to the College Scholarship Service or the Family Financial Statement to ACT by March 1. The student should indicate on the statement that he intends to enroll at the University of Montana. The forms may be obtained from a secondary school or the University Financial Aid Office.

**SCHOLARSHIPS AND PRIZES:** The University offers many rewards for outstanding academic achievement. Many 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 college. The halls and residence halls are 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 the 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 selective 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 indecency, be inconsiderate 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 society and law-abiding 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 other charges are not permitted to register for the succeeding quarter, secure transcript of record or obtain diplomas until the obligation is paid or satisfactorily adjusted. Similar action is taken when students owe bills to student organizations whose books are kept in the Business Office of the University of Montana, including charges for board and room in fraternity and sorority houses.

USE OF MOTOR VEHICLES . . . Students who bring motor vehicles to the University campus must register them with the Traffic Security Office of the University. Regulations relative to the use of motor vehicles on the campus may be obtained there. (See Student Fees.)

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

LIQUOR . . . The use or possession of intoxicating liquor (including beer) in the buildings and on the grounds of the University or in residence halls and quarters of other University-approved living groups or at functions of University students. The University has a right to prohibit use of stimulants or depressants. The use of stimulants and other non-narcotic drugs with similar effects on the central nervous system is forbidden. Students violating this regulation are liable to suspension. Furthermore, University students are expected to abide by state and federal laws in the use or possession of intoxicating liquor or drugs.

DRUGS . . . Use, sale or possession of various drugs including opium, heroin, cannabis, marijuana, Indian hemp, peyote, mescaline and others are made illegal under both federal and state laws. The punishment for violating these laws is very severe with conviction resulting in long-term imprisonment (usually two to forty years) and with special limitations on the convicted drug offender's right to probation and parole. Further, with the advent of LSD and STP and the increasing use of stimulants or depressants, the federal law has been broadened to include barbiturates, amphetamines and other non-narcotic drugs with similar effects on the central nervous system. The penalties for illicit traffic in these drugs is less severe, 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. The University may refer the student drug offender to professional rehabilitation services. If a student is on probation, he may suspend him, he may expel him or may take such other action as it deems justifiable under the circumstances of the case. However, the action taken by the University will in no case be directed toward punishing the drug offender but only toward achieving the fundamental University objectives of helping the individual student and providing the best possible educational environment for the entire student body.

STUDENT MARRIAGES . . . The Montana Statutes on marriage require (a) parents' (or guardian's) consent for men under 21 and women under 18 years of age; (b) a five-day waiting period between the times of application and issuance of the marriage license; and (c) a blood test for both partners. 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 falsification of advisers' signatures on program request cards.

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

The Board of Judicial Review is made up of four full-time faculty members selected by the Faculty Senate and three student members chosen by Central Board, governing body of The Associated Students. If three members of the board agree that the case should be reviewed, the student is given a hearing. His status as a student does not change during the period of the review.

After hearing the case, the board reports its recommendation to the dean of students, who either accepts the recommendation or, in the event he disagrees, refers it to the president of the University for final decision.

A complete outline of the organization, functions and procedures of the Board of Judicial Review may be obtained from the office of the dean of students.

Occasionally a student has a disagreement with a University staff member concerning which he feels he should have a right to appeal. In such an event, he should consult the office of 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 assemblage 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. In all cases, students must fill out a leave of absence card obtained from either the Dean of Students Office or the person in charge of the activity. This card must be presented to the students' instructors for their signatures before being returned to the Dean of Students Office.

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

LEAVES OF ABSENCE: A student who is compelled for personal reasons to be absent from the University should obtain a leave of absence in advance from the Dean of Students Office and from his instructors. In case of emergency when it is not possible for the student to see his instructors, the student should notify the Dean of Students Office or the Registrar's Office of his intended absence.

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

organization of instruction . . .

For administrative purposes, various courses and curricula are organized within departments, schools or colleges as shown immediately following. The detailed listing and includes combined curricula. The curricula are organized within departments, schools or colleges.

COLLEGE OF ARTS AND SCIENCES

Anthropology
Biology
Botany
Chemistry
Computer Science (no major)
Economics
English
Foreign Languages
French
German
Greek (no major)
Italian (no major)
Latin
Russian
Spanish
Geography
Geology
Health and Physical Education
History
Home Economics
Liberal Arts

Library Service (no major)
Mathematics
Medical Technology
Microbiology
Philosophy
Physical Therapy
Physics
Political Science
Pre-Medical Sciences
Psychology
Reserve Officers Training Corps
Air Science (no major)
Military Science (no major)
Sociology and Social Welfare
Speech-Communication
Speech Pathology and Audiology
Speech Communication
Wildlife Biology
Zoology

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

Accounting
Business Education
Finance
General Business

Management
Marketing
Office Management

SCHOOL OF EDUCATION

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

SCHOOL OF FINE ARTS

Art
Drama
Music
Music Education
Music Education
Music Education
Music Education
Music History and Literature

Music (continued)
Applied Music
Organ
Piano
String Instruments
Voice
Wind Instruments
Theory or Composition

SCHOOL OF FORESTRY

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

Conservation
Watershed Management
Soil and Water Conservation
Wildlife Conservation
Range Conservation

course numbering system . . .

001-099 Courses below college level. No college credit given.
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 500 or 400 series. Courses under the second heading may be taken for graduate credit if the student secures proper authorization from the Graduate School. Courses under the last heading may be taken by graduate students only.

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

course descriptions . . .

When reading course descriptions, please note the following:

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

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

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

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

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

LECTURE AND LABORATORY: (3-4) illustrates a class with 3 hours of lecture 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, prereq, 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.

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

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

courses of instruction . . .

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE: In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in anthropology courses or approved cognate courses listed below are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) Credits taken in anthropology must include the following courses: Anth 152, 153, 350, 371, 372, and 380. In addition, one course in ethnology and one course in archaeology must be taken. The following sociology courses must be completed: Soc 101, 201, and 205. General 290, Geography 335, Religion toward a major in anthropology. A minimum of 35 of the 50 credits required must be in anthropology courses.

GRADUATE WORK. See Graduate School

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

152 MAN AND HIS CULTURE 5. The origin and development of man and his culture, and the processes involved in culture change, e.g., acculturation, diffusion.

153 CULTURAL ANTHROPOLOGY 5. The social life of man; his family structures, his groups and institutions—economic life, religion, political forms, education, and arts.

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

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

FOR UNDERGRADUATES AND GRADUATES

*Course offered every other year

308 *RACE AND ETHNIC RELATIONS 3 prereq 154 and Soc 101. Racial and ethnic differentiation and its social consequences. (Credit may be followed for this course and (Sociology 390).

325 *MUSEUM TECHNIQUES 3. A general course in cataloging, repairing, and displaying archaeological, ethnological and historical materials and small museum operation.

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

351 *PREHISTORIC CULTURES 3 prereq 152 or 153 or =. Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.

352 *ARCHAEOLOGY OF MONTANA 3 prereq 152 or 153 or =, and c/i. The origins and distribution of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field trips in which actual archaeological sites will be excavated and techniques demonstrated.

333 ARCHAEOLOGICAL SURVEY Any quarter in which field parties are organized. V 3-9 R-18 prereq 152 or 153 or =. A field course in Montana archaeology.

354 *OLD WORLD ARCHAEOLOGY 4 Su 3 prereq 152 or 153 or =. The development of civilization from the Neolithic Age to the dawn of written history.

355 *ARCHAEOLOGY OF NORTH AMERICA 4 prereq 152 or 153 or =. The origins, backgrounds and development of pre-Columbian North American peoples and cultures.

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 material.

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

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

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

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

366 NORTHWEST ETHNOLOGY Any quarter in which field parties are organized. V 1-5 R-15. The peoples of the Northwest 152 or 153 or =. A field course. Indian tribes of Montana and related areas.

367 *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.

368 *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.

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

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

380 *HISTORICAL LINGUISTICS 4 prereq 152 or 153 or =, and Gen 260. Some significant theories and methodological assumptions of selected schools of linguistic theory.

383 LANGUAGE AND CULTURE 3 prereq 152 or 153 or =. Analysis of relationships between languages and cultures of the world.

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

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


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

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

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

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

480 *LINGUISTIC METHODS 3 prereq 152 or 153 or =, and Gen 260 or Spch 118. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant.

FOR GRADUATES

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

551 RESEARCH V.


699 THESIS V R-9.
ART

ART is man's visual means of communication and expression in two- and three-dimensions 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 somewhat 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: 55 or more credits (up to a maximum of 70) including Art 128 (9 cr.), 125-126-127, 200-201-202, 235 (9 cr.), 340 (9 cr.), and 323 (4 cr.). The foreign language requirement listed earlier in the catalog must be satisfied.

The Bachelor of Fine Arts is a professional degree which requires a minimum of 90 credits in art, including the courses listed for the B.A., and 30 credits outside the department. A foreign language is not required. The degree is planned for a limited number of students of superior ability. A student may apply at the beginning of the Sophomore year and is expected to have a 3.0 index in Art and 2.5 in academic work. A portfolio or slides must be presented for a staff jury.

Specific requirements may be obtained from the Art Department upon request.

Suggested first year program:

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GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)


125-126-127 DESIGN 2. Creative design and use of color theories, methods, and problems.

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

160 LAYOUT AND LETTERING 2. Pen and brush lettering, layout, and design techniques.


201 SURVEY OF WESTERN ART: EARLY CHRISTIAN TO MANNERISM 3 prereq 200. Early Christian and Byzantine, Middle Ages, Renaissance.

202 SURVEY OF WESTERN ART: MANNERISM TO PRESENT 3 prereq 201. Mannerism, baroque, modern world.

229 INTERMEDIATE CERAMICS 2 prereq 4 credits of 129.

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

235 (135) SCULPTURE 3 R-9 prereq 9 credits of 123. Methods and techniques.

239 (139) WATERCOLOR 3, Su 2 R-6 prereq 9 credits of 123. Offered by extension for one credit. Watercolor techniques and expressive use of subject matter.

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. Individual criticism of technique and expression.

FOR UNDERGRADUATES AND GRADUATES

Courses 260, 281, 282, 283, 284, 285, 286, 287, 288, 289, 293 and 294 are offered on a 3-year cycle.

300 INTRODUCTION TO ART EDUCATION 2. Concepts, history, procedures of art education.

303-304 ELEMENTARY SCHOOL ART 3. Variable credit by extension. (303) Art education at elementary school level, philosophy, history, theories and practice in media. (304) Continued practice in media and material used in public schools.


315 PHOTOGRAPHY V 2-6 R-6 prereq 127. Photography as design experience; darkroom procedures; techniques.

325 ADVANCED DESIGN V 2-6 R-6 prereq 125-126-127. Advanced problems of a specialized nature in design, photography and crafts.

326 CRAFTS DESIGN 2 prereq 127. Two dimensional experiences in textiles, leather, weaving.

327 CRAFTS DESIGN 2 prereq 127. Three dimensional experiences in textiles, leather, weaving.

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

333 (334) ADVANCED PRINTMAKING V 2-6 R-6 prereq 6 credits of 233. Advanced work in printing media.

335 ADVANCED SCULPTURE V 2-6 R-6 prereq 9 credits of 335. Advanced problems in sculpture media.

340 ADVANCED PAINTING V 2-6 R-6 prereq 9 credits of 240. Advanced work outside the department.

380 ANCIENT NEAR EAST, GREECE 3 prereq c/l. Ancient Near East, Aegae and Greek Art.

381 HELLENISTIC TO BYZANTINE ART 3 prereq c/l.

383 ROMANESQUE, GOTHIC 3 prereq c/l.

383 EARLY RENAISSANCE 3 prereq c/l (to be offered 1967-68).

384 HIGH RENAISSANCE 3 prereq c/l (to be offered 1967-68).

385 NORTH AND SOUTH.

385 BAROQUE AND ROCOCO ART 3 prereq c/l (to be offered 1967-68). Rubens through Fragonard.

386 EUROPEAN ART 1750-1825 3 prereq c/l.

387 EUROPEAN ART 1825-1870 3 prereq c/l.

388 EUROPEAN ART 1870-1900 3 prereq c/l.

389 MODERN EUROPEAN ART 1900-1914 3 prereq c/l.

393 AMERICAN ART—19TH CENTURY 3 prereq c/l.

394 AMERICAN ART—20TH CENTURY 3 prereq c/l (to be offered summer 1968).


414 ART IN SPECIAL EDUCATION 2. Philosophy and scope of art coupled with directed activities and problems.

415 INDEPENDENT WORK IN PHOTOGRAPHY V 2-6 R-6 prereq 6 credits of 315. Advanced techniques, procedures.

425 INDEPENDENT WORK IN DRAWING, 2 R-6 prereq 4 credits of 229.

425 INDEPENDENT WORK IN DESIGN 2-6 R-15 prereq 6 credits of 325. Design, photography and crafts.

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

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

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

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

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

FOR GRADUATES

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

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

529 SPECIAL PROBLEMS V 2-6 R-30 prereq c/l. Specialized advanced work in ceramics.
BIOLOGY, BOTANY—23

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 inter-disciplinary 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 the Bachelor of Arts degree with a major in Biology: 55 or more credits in Biology including Botany or Zoology 111 (Introduction to Biology), Botany 112 (General Botany), Botany 265 (Plant Physiology), Botany 437 (CytoLOGY), Microbiology 200 (General Microbiology), Zoology 112-113 (General Zoology), Zoology or Botany 485 (Genetics), and 10 additional credits in 300 or 400 level courses in biological sciences. Zoology 330 (Cellular Physiology) recommended.

The foreign language requirement listed earlier in the catalog must be satisfied.

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 a better understanding of his environment and a greater comprehension of general biological principles. It is a basic science for many professional fields such as forestry, pharmacy, agriculture, horticulture, plant pathology and plant breeding. A degree in botany will also prepare the student to make satisfying use of such leisure time activities as gardening, landscaping and other forms of outdoor recreation.

Employment opportunities for both men and women trained in botany are available in numerous fields. Graduates in botany may find employment as biology teachers in high schools, or in research institutes and government agencies such as the Forest Service, experimental stations, Park Service and plant quarantine, or in industrial establishments such as pharmaceutical, food, drug, paint, seed and oil companies, florists and nurseries. Good students are encouraged to go into graduate work. The better positions in the field require a master's or doctor's degree. For most 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 should have completed for the high school preparation in one year: a course in English; 2 years of mathematics; 3 years of a foreign language; 4 years of a general science (one in biology); a course in art; a course in history. Half a course in biology is required. The student should also have completed for the high school preparation in three years: 1 year of a language other than English; 2 years of chemistry; 2 years of a physical science (one year of algebra is required); 2 years of social studies; a course in biology or agriculture; a course in government; a course in health; and a course in music. (Given for 4 cr at the Biological Station.)

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, 112, 113, 114; 2 credits of 695 and at least one course from each of the following groups: (1) Botany, 265, 310, 311; (2) Botany, 265, 300, 303, 305, 310, 311, 437; (3) Ecology 250, 355; (4) Anatomy-Cytology 435, 436, 437; (5) Taxonomy 265, 365, 366, 368, 467, and (6) Genetics, 483, 486.

Also required are: Zoology 112, 113; Mathematics 116; Microbiology 200; Chemistry 160 or 261; Physics 111-112, 115 or 221, 222, 223. Retenification electives: Geography 360, 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, 355, 365, 370, 375, 411, 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:

For explanation see Course Descriptions (Index)

100 FIELD BOTANY 3 (0-6). The collection, preservation and identification of plants and consideration of where they grow. 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.

112 (122) GENERAL BOTANY 5 (3-4) prereq 111 or =. An introduction to the anatomy, physiology and ecology of higher plants.

113 GENERAL BOTANY 5 (3-4) prereq 112 or =. A survey of the morphology, reproduction and evolutionary relationships of the various plant groups.

250 BASIC CONCEPTS OF ECOLOGY 3 (3-4) one year of college biology. Introduction to ecological principles with emphasis on the ecosystem. (Credit not allowed for this course and Zool. 251.)

251 ELEMENTARY ECOLOGY LABORATORY 3 (0-4) prereq 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 (2-6) prereq 112. An introduction to the identification of flowering plants.

FOR UNDERGRADUATES AND GRADUATES

235 (225) PLANT PHYSIOLOGY 5 (3-4) prereq 112 and Chem 160 or 163. 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) prereq 15 cr. in Botany. Techniques of preparing cleared whole mounts, cytological squashes, and sections of plant material; use of freezing, sliding and rotary microtomes.

355 PRINCIPLES OF PLANT ECOLOGY 5 (3-4) prereq 250, 251 and 252. Plants and plant communities in relation to their physical and biotic environment.

365 SYSTEMATIC BOTANY 5 (3-4) prereq 112 or =. The identification, classification, phylogenetic relationships of vascular plants. (Credit not given for both 365 and 366. Grade of 12 cr. at the Biological Station.)

366 AGROBOTANY 5 (2-6) prereq 250 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) prereq 265 or =. Identification, classification and ecological distribution of the higher aquatic plants.
24—BOTANY

370 FOREST PATHOLOGY 4 (2-4) prereq 250 or 335, and For 280-291. The agencies of disease and decay of trees and structural timbers.

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

403 BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology and c/l. Introduction to the basic principles and skills of producing descriptive materials relevant to the biological sciences. (325 special supplies fee. Credit not allowed for this course and Zool 403).

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

422 PHYSIOLOGY OF PLANT WATER RELATIONS 5 (3-4) e/y prereq 325. Water metabolism, plant-soil relationships with emphasis on experimental techniques.

423 (335) RESPIRATORY METABOLISM IN PLANTS 5 (3-4) e/y prereq 325, Chem 292 and Phys 113 or 114. The respiratory mechanism in plants, relationships of respiration to other processes in the plant, photosynthesis, nitrogen metabolism.

427 PLANT VIRUSES 4 (2-4) prereq 112 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 typical photosynthetic bacteria and algae with special emphasis on the algae and their relationships to both the bacteria and higher plants.

439 (339) PROBLEMS IN PLANT PHYSIOLOGY 1-6 (0-3/cr) R-4 prereq 325 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant physiology not taken up in regular courses.

433 (333) MORPHOGENESIS 5 (4-5) e/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 or Bot 115-116. Training in techniques such as photomicrography, pho-tography, audio-radiography, in vitro culture, etc.

435 (335) PLANT ANATOMY 5 (2-6) o/y prereq 113 or =. The origin of organs and tissues and the anatomy of vascular plants.

437 (337) CYTOLOGY 5 (2-4) e/y prereq 113 and Chem 180 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-c. 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 cytotogy not taken up in regular courses.

441 (361) PHYSIOLOGY 5 (2-6) e/y prereq 113 or =. Morphology, taxonomy and ecology of the algae, especially of the Northern Rocky Mountains (given for 6 credits at the Biological Station).

442 (362) BRYOLOGY 5 (2-6) o/y prereq 113 or =. The morphology, taxonomy and ecology of the bryophytes, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

443 PTERIDOLOGY 5 (2-6) o/y prereq 113 or =. The morphology, taxonomy and ecology of the pteridophytes, especially of the Northern Rocky Mountains (given for 3 credits at the Biological Station).

445 (345) SPERMATOPHYTES 5 (2-6) e/y prereq 113 or =. The morphology and life histories of the gymnosperms and angiosperms.

448 (348) PROBLEMS IN PLANT MORPHOLOGY V 1-6 (0-3/ cr) R-6 prereq 441, 442, or 443 or 445 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant morphology not taken up in regular courses.

450 (350) PROBLEMS IN PLANT ECOLOGY V 1-6 (0-3/cr) R-6 prereq 250 or 385 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.

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

459 (359) PROBLEMS IN PLANT TAXONOMY V 1-8 (0-3/cr) R-6 prereq 250 or 355 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of plant taxonomy not taken up in regular courses.

475 (375) MYCOLOGY 5 (3-4) o/y prereq 113 or =. The morphology, taxonomy, and ecology of the fungi, especially of the Northern Rocky Mountains (given for 6 credits at the Biological Station).

478 (378) PROBLEMS IN MYCOLOGY AND FOREST PATHOLOGY V 1-6 (0-3 cr) R-4 prereq 370 or 475 and c/l. Individual or group work consisting of research problems, special readings or discussions dealing with aspects of mycology and plant pathology not taken up in regular courses.

483 PALEOBOTANY 5 (3-4) o/y prereq 113 or =. An introduction to the study of fossil plants.

485 (385) GENETICS. (See Zoology.)

496 (396) EVOLUTION 3 (3-0) prereq 295, 485; Zool 112. The nature of and processes by which evolution occurs. (Credit not allowed for this course and Zool 496.)

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

491-493 SENIOR WILDLIFE SEMINAR (See Forestry)

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

FOR GRADUATES

503 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prereq graduate standing in a biological science. (Credit not allowed for this course and Zool 503.)

522 BSCS BIOLOGY 6 prereq Bachelor's degree: major preparation in Biology, at least 2 years' teaching experience in Biology at the secondary level. Basic concepts of 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 (3-4) prereq 330. The interaction between non-ionizing radiation and biological systems including photosynthesis, vision, photoperiodism, bioluminescence; methods for studying effects of light on plants, animals, and microorganisms. (Credit not allowed for this course and Zoology 523.)

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

551 GENERAL ECOLOGY 6 (6-15) prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Community concepts including succession, stratification, periodicity and energy relationships, introduction to population problems. 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 or =. Field and laboratory analysis of theories and methods used in the description and interpretation of plant and environmental relationships.

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

564 EXPERIMENTAL TAXONOMY 4 (2-4) e/y prereq 437, 468, 563. Modern concepts in taxonomy with emphasis on cytological, chemotaxonomy and other modern approaches to the problems of plant classification.

565 (465) PHYTOGEOGRAPHY 4 (4-0) e/y prereq 355, 468, 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 370 or 475. Mycorrhizal, rust and defoliating fungi and dwarf mistletoes of the forest.

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


999 THESIS V R-15.

COURSRS OFFERED AT THE BIOLOGICAL STATION

Many of the courses listed are offered during the summer session at the Biological Station at Flathead Lake. In the past, these have traditionally been Bot 365, 366, 368, 369, 441, 442, 449, 465, 470, 490, 549, 551, 566, 600, 699.
BUSINESS ADMINISTRATION

The School of Business Administration, founded in 1914, is the largest professional school of the University of Montana. It is accredited by the American Association of Collegiate Schools of Business; its curriculum, therefore, is similar to those of other recognized schools of business.

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

The curriculum of the School of Business Administration provides particular preparation in a variety of fields in addition to the core of basic courses. The areas of concentration in which the student may specialize are: accounting, finance, business education, 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 course 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 (6 credits), English 150, 250 and English 300 (taken in the junior or senior years), requirements from Group I; requirements from Group II including Mathematics 116; requirements from Group III including Economics 201-202-203; requirements from Group IV; Speech 111 or 112; Business Administration 201-202 and 206. 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 standing, completion of the pre-business requirements, and a minimum grade point average of 2.0 on all credits attempted. To continue work in the School of Business Administration the student must maintain a grade point average of at least a "C" 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.


c. Select before the beginning of the third quarter of the junior year an area of concentration from the following: Accounting, Business Education, Finance, 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 as indicated by the appropriate curriculum of the area of concentration below.

e. Offer not less than a total of 75 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credits required include: all courses offered by the Department of Economics; English 460; 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 180 credits plus 6 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:

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Bus. Ad. 203—Elementary Accounting</td>
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<tr>
<td>Bus. Ad. 303-304—Cost Accounting</td>
</tr>
<tr>
<td>Bus. Ad. 401-402—Income Tax</td>
</tr>
<tr>
<td>Bus. Ad. 409—Advanced Accounting</td>
</tr>
<tr>
<td>Bus. Ad. 412—Accounting Theory</td>
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</tbody>
</table>

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

<table>
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<tr>
<th>Course</th>
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<tr>
<td>Bus. Ad. 305—Governmental Accounting</td>
</tr>
<tr>
<td>Bus. Ad. 370—Electronic Information Processing</td>
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<tr>
<td>Bus. Ad. 403-404—Auditing</td>
</tr>
<tr>
<td>Bus. Ad. 410—Advanced Accounting</td>
</tr>
<tr>
<td>Bus. Ad. 418—C.P.A. Review</td>
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</tbody>
</table>

BUSINESS EDUCATION

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

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Bus. Ad. 183—Advanced Typewriting</td>
</tr>
<tr>
<td>Bus. Ad. 184-185-186—Stenography</td>
</tr>
<tr>
<td>Bus. Ad. 194—Beginning Secretarial Practice</td>
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<tr>
<td>Bus. Ad. 294—Records Management</td>
</tr>
<tr>
<td>Bus. Ad. 295—Office Machines Practice</td>
</tr>
<tr>
<td>Bus. Ad. 381—Methods of Teaching Typewriting</td>
</tr>
<tr>
<td>Bus. Ad. 384—Methods of Teaching Bookkeeping and Accounting</td>
</tr>
<tr>
<td>Bus. Ad. 385—Office Management</td>
</tr>
</tbody>
</table>

*Business Education students are not required to take Speech 111 or 112, Bus Ad 322, 340, 342, 350, 370, or 446.

FINANCE

This program is designed to give a broad understanding of the role of finance in our economy including private and public financial institutions, money, credit, and security markets and the technical training necessary for managerial positions in financial work in large and small scale business.

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Bus. Ad. 330—Principles of Insurance</td>
</tr>
<tr>
<td>Bus. Ad. 420—Investments</td>
</tr>
<tr>
<td>Bus. Ad. 421—Analysis and Forecasting of Business Conditions</td>
</tr>
<tr>
<td>Bus. Ad. 423—Analysis of Financial Problems</td>
</tr>
<tr>
<td>Bus. Ad. 430—Financial Seminar</td>
</tr>
<tr>
<td>Econ. 311—Intermediate Economic Analysis</td>
</tr>
<tr>
<td>Bus. Ad. 347—Managerial Economics</td>
</tr>
</tbody>
</table>

*Students are advised to take Econ 311 before Bus Ad 347.

GENERAL BUSINESS

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

Bus. Ad. 301—Administrative Accounting 4 cr.
Bus. Ad. 347—Managerial Economics 3
cr.
Bus. Ad. 383—Analysis of Marketing Communication 3
cr.
of
Bus. Ad. 400—Marketing Management I 3
cr.
Bus. Ad. 421—Analysis and Forecasting of Business
Conditions 3
Bus. Ad. 441—Personnel Management 4
Bus. Ad. 444—Regulation of Industry 4

22

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 cr.
Bus. Ad. 441—Managerial Economics 4
cr.
or
Bus. Ad. 421—Analysis and Forecasting of Business
Conditions 3
Bus. Ad. 444—Regulation of Industry 4

Econ. 321—Labor Economics 4

or

Econ. 322—Labor Economics 4

Econ. 324—Industrial Relations 4

21-22

Option B. Personnel Management and Human Relations

Bus. Ad. 301—Administrative Accounting 4 cr.
Bus. Ad. 441—Managerial Economics 4
cr.
or
Bus. Ad. 421—Analysis and Forecasting of Business
Conditions 3
Bus. Ad. 444—Regulation of Industry 4

Econ. 321—Labor Economics 4

or

Econ. 322—Labor Economics 4

Econ. 324—Industrial Relations 4

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MARKETING

The curriculum in Marketing is designed to equip the student with the analytical 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 cr.
Bus. Ad. 383—Analysis of Consumer Behavior 3
Bus. Ad. 387—Analysis of Marketing Communication 3
Bus. Ad. 430—Marketing Management I I 3
Bus. Ad. 465—Marketing Management II 3
Bus. Ad. 466—Marketing Research 3
Engl. 450—Problems in Composition 3

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OFFICE ADMINISTRATION

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

Bus. Ad. 183—Advanced Typewriting 2 cr.
Bus. Ad. 184-185-186—Stenography 15
Bus. Ad. 187-188—Advanced Stenography 10
Bus. Ad. 190-191—Advanced Shorthand Transcription 2
Bus. Ad. 192—Beginning Secretarial Practice 2
Bus. Ad. 194—Records Management 3
Bus. Ad. 203—Elementary Accounting 3
Bus. Ad. 204—Office Machines Practice 3
Bus. Ad. 208—Office Machines Practice 3
Bus. Ad. 303—Secretarial Practice 3
Engl. 450—Problems in Composition 3

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*Office Administration students are not required to take Speech 111
or 112, Bus. Ad. 322, 340, 342, 350, 370, or 446.

REAL ESTATE

The curriculum in Real Estate is designed to equip the student with the basic understandings necessary for application in the real estate industry.

Bus. Ad. 324—Real Estate Law 3
cr.
Bus. Ad. 424—Money and Capital Markets 3
Bus. Ad. 425—Real Estate Finance 3
Bus. Ad. 427—Property Management 3
econ. 385—Land Economics 3
Econ. 387—Property Valuation Theory 3
Soc. 587-588-589—Seminar in Urban Studies 3

(any one of the three) 3

49 SEMINAR V R-4.

BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

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

ACCOUNTING

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)


202 ACCOUNTING PRINCIPLES 3 prereq. 201. Continuation of 201.


FOR UNDERGRADUATES AND GRADUATES

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

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

303 COST ACCOUNTING 3 prereq. 203. The methods of accounting of 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. 306. 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 filling 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. 207. The general scope and purpose of auditing, encompassing generally accepted auditing standards and procedures, the audit program, and analysis of internal control. Procedures for verifying the reliability of balance sheet 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. The theory and preparation of consolidated statements.

412 ACCOUNTING THEORY 3 prereq. 307. A critical examination of accounting postulates and principles underlying current 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/l. Students are placed with public accounting firms to receive training during the winter quarter. Written reports are required.

418 C.P.A. REVIEW 5 prereq. 304, 404, 409, 410. Primarily for students preparing to take the examinations for the certificate of Certified Public Accountant. Comprehensive review of questions and problems in practice, theory, and auditing given by the American Institute of Certified Public Accountants.
329 PERSONAL INVESTMENTS 3. Savings accounts, purchasing a home, purchasing insurance, securities, investment trusts. The basic facts with which a layman should be acquainted. (Not open to Business Administration credit for Education degrees.)

322 BUSINESS FINANCE 3. prereq all pre-business requirements. Forms of organization; financial aspects of promotion and management; sources of financial income; failure and reorganization. (Graduate credit available for non-business majors only.)

323 COMMERCIAL BANKING 4. prereq Econ 301. Liquidity, loan and investment policy, credit analysis, loan administration, interbank borrowing, bank operating costs, bank earnings, and relations with customers, state and federal regulation. (Graduate credit available for non-business majors only.)

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

330 PRINCIPLES OF INSURANCE 3. prereq Econ 203. Basic risk analysis; introduction to fire, casualty, life and health coverage; business and personal insurance needs; company organizations and industry practices; the liability peril; automobile insurance laws; claims procedure; government regulation. (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 the impact of taxation; business continuation agreements and assignments; cancellations and annuities for business and individual retirement programs.

332 PROPERTY AND CASUALTY INSURANCE 3. prereq 330. Concentrated analysis of coverages; insurance management problems facing public and private insurance companies; total-loss and guaranteed-restitution policies; legal interpretation and analysis; practical case problems in liability and direct loss situations.

420 INVESTMENTS 3. prereq Econ 301. Selection of risk assets, and evaluating the income and capital gains of alternative investment opportunities under conditions of uncertainty.

421 ANALYSIS AND FORECASTING OF BUSINESS CONDITIONS 3. prereq Econ 301. Investigation of determinants of over-all business conditions as background for business and investment decisions, analysis of proposals for controlling business fluctuations and evaluation of new economic techniques.

423 ANALYSIS OF FINANCIAL PROBLEMS 4. prereq 322. Problems of asset management, financing, and capital budgeting, and current problems of financial management created by changing economic conditions through case analysis.

424 MONEY AND CAPITAL MARKETS 3. prereq Econ 301. Developments in and appraisals of money and capital markets and their influence on financial institutions and selected sections of the economy associated with monetary and fiscal policy.

425 REAL ESTATE FINANCE 3. prereq 322, 424. Sources and availability 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.

437 PROPERTY MANAGEMENT 3. prereq 324. Management principles; feasibility of commercial, industrial or residential properties; acquisition, promotion, development and physical maintenance of properties; owner, tenant and personnel relations; accounting and records; and creative management.

439 FINANCE SEMINAR 2. prereq senior standing. Selected topics in finance with emphasis on individual study and research.

509 RESEARCH V R-6. Special research problems.

505 ADMINISTRATIVE ACCOUNTING CONTROLS 3. 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 costing, capital budgeting, transfer-pricing and return on investment as a measure of profitability.

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

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

699 THESIS V R-9. FINANCE FOR UNDERGRADUATES

522 SECURITY ANALYSIS 3. prereq 521. Principles and technical techniques. Preparation for security analysis work with financial organizations (banks, insurance companies, trust institutions, investment companies, investment banking firms, security dealers and brokers, and others).

523 FINANCIAL MANAGEMENT 3. prereq Econ 510-511-512. A study of the 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.

598 RESEARCH V R-6. Special research problems.

681 PROBLEMS IN FINANCIAL MANAGEMENT 3. Internal and external aspects of financial planning and their impact on the financial manager, resource allocation in relation to the investment and financing process, theories and practices applicable to capital budgeting and the cost of capital, the impact of economic environment on financing and investment decisions.

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

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

699 THESIS V R-9. MANAGEMENT FOR UNDERGRADUATES


251 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 3. prereq 250. An introduction to the problems in the industrial purchasing and traffic management areas of: materials procurement, inventory controls, warehousing, materials handling.

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

258 LEGAL ENVIRONMENT OF BUSINESS 3. prereq 357. Legal principles relating to business transactions: contracts, agency law, services, evidences, commercial paper, security instruments, real and personal property and security devices.

359 C.P.A. LAW REVIEW 3. prerel 358. The legal theory and principles relating to bankruptcy, unfair competition, suretyship, secured transactions, and the accounting profession.

371 INTRODUCTION TO COBOL PROGRAMMING 2. prereq Math 001 or 120. 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 102.)

340 PRODUCTION MANAGEMENT 3. prereq all pre-business requirements. Management process applied to 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, the role of standards, physical facilities, materials management, process design, production planning and control. (Graduate credit available for non-business majors only.)
28—BUSINESS ADMINISTRATION

342 ORGANIZATIONAL HUMAN RELATIONS 3 prereq all pre-business requirements. Selected general behavioral models, with emphasis on the perception motivation, role, and status concept. Application of psychological and social psychological concepts to management. Study of the role of people in the firm: their analysis, organizational analysis, problems of delegation of authority and acceptance of responsibility. (Graduate credit available for non-business majors only.]

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

347 MANAGERIAL ECONOMICS 4 prereq 340. The application of economic analysis to the operation of a business. Demand and supply analysis, cost-profit analysis, price-quantity pricing, and mult-line production and marketing problems.

350 QUANTITATIVE MODELS FOR GUIDING BUSINESS DECISIONS 3 prereq all pre-business requirements. Formulation and analysis of quantitative models for management decision-making. Problem to achieve objectives; organization of executive personnel to implement programs; coordination of organization, appraisal and adjustments of the organization to changes in environment.

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

599 RESEARCH V R-6. Special research problems.

646 ADVANCED MANAGEMENT PROBLEMS 3. Interdisciplinary approach to the analysis of problems encountered by senior management and decision making concerning organizational policies and procedures. Analysis of organization, to achieve objectives; organization of executive personnel to implement programs; organization of the coordination, appraisal and adjustments of the organization to changes in environment.

680 BUSINESS AND ITS ENVIRONMENT 3. Institutional and cultural factors, both national and international, which influence business operations. The social-economic setting; the impacts and significance of population growth, economic-geographic influences, and technological development. Analysis of education's relationship to scientific and technological development, innovation and the socio-managerial implications of education. (Graduate credit available for non-business majors only.)

685 INTERNATIONAL ASPECTS OF BUSINESS 3. Trends and contemporary problems in international operations management, business relations with foreign governments, economic policies, and related subjects. The significance and effect on foreign operations of different institutions and political, social, and economic conditions.

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

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

699 THESIS V R-9.

MARKETING

FOR UNDERGRADUATES AND GRADUATES

360 MARKETING 3. prereq all pre-business requirements. Product, channel, pricing, advertising, and marketing institutions, marketing functions, pricing, government regulation. (Graduate credit available for non-business majors only.)

361 INDUSTRIAL MARKETING 4 prereq 360. Economic factors affecting marketing policy are analyzed. Deals with buying practices, channels, sales organization, industrial distributors, price, marketing estimates and applications.

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

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

368 INTERNATIONAL MARKETING 4 prereq 360 (prereq waived for seniors majoring in Political Science). Theories, principles and methods of international marketing, including marketing institutions, marketing functions, pricing, government regulation.

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

461 MARKETING MANAGEMENT II 3 prereq 460. Individual and class analysis of case studies in marketing management.

462 PRICING POLICIES AND PRACTICES 4 prereq 461. The role of pricing strategy in operation in marketing decision making. Administrative marketing problems related to elasticity of demand, cost curves, marginal analysis and competitive price behavior. Marketing policies and strategies as they relate to competition.

469 MARKETING RESEARCH 3 prereq 362, 363. Research techniques and methods including statistical analysis, quantitative economics. Experimental applications of the research practices in marketing and participation in class field project.

468 MARKET ANALYSIS AND PLANNING 3 prereq 466 Utilization of statistical techniques and sample surveys to develop marketing strategies.

499 SEMINAR V R-4.

FOR GRADUATES

562 MARKETING MANAGEMENT 3. The business activities involved in the marketing of goods and services; the techniques, problems and policies of marketing management. Marketing institutions, functions, costs, regulation, and current issues are appraised with special emphasis on the decision-making processes.
588 COMMUNICATION PRACTICES 2. Spoken communication in the organizational setting: theories, principles and techniques of public speaking and small-group interaction, with emphasis on the latter area.

599 RESEARCH V R-6. Special research problems.

600-601-602 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.

607 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. l.c. 186-189, and 190-191 may be applied toward graduation by students not majoring in Business Administration or earning a teaching major or minor in Business Administration. To register for any course in stenography or secretarial practice a student must have passed the English entrance examination, completed English 150 or its equivalent, or be concurrently registered in English 150.

FOR UNDERGRADUATES

180-181-182 ELEMENTARY TYPEWRITING 2 prerequisite placements for 181-182. Development of basic skills in office machines. 1 H.S. entrance unit, no credit in 180; 2 units, no credit 180, 181.

183 ADVANCED TYPEWRITING 2 prerequisite; or placement. Application of basic skills to production jobs.

184-185-186 STENOGRAPHY 5. Theory, dictation, transcription. With 1 H.S. entrance unit, no credit in 184; 2 units, no credit 185, 186.

187-188-189 ADVANCED STENOGRAPHY 5 prerequisite 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 prerequisite 186 or placement. Concurrent enrollment in 187-188 required.

193 BEGINNING SECRETARIAL PRACTICE 2 prerequisite 182. Duplicating, dictating and transcribing machines.


202 OFFICE MACHINES PRACTICE 2. Calculators and Adding.

FOR UNDERGRADUATES AND GRADUATES

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

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

302 ADVANCED SECRETARIAL PRACTICE A/Y prerequisite 183, 187, 190, 193, 194, 292; English 450; or c/l. Practical application to typical secretarial activities. Required for office administration majors.

303 OFFICE MANAGEMENT 3. Principles of scientific office management.

304 METHODS OF TEACHING SHORTHAND AND TRANSCRIPTION 2 prerequisite 186 or teaching experience in business subjects. Required of teaching majors and minors in Business Administration.

305 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.

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

307 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.

FOR GRADUATES

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

501 IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE 3 prerequisite 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.

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

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

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

505 UNIT COURSES IN BUSINESS EDUCATION V R-10 prerequisite 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 in chemistry and these graduates are certified to the American Chemical Society as meeting these standards. The Bachelor, 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 their philosophy. It is desirable that the student complete two years of Algebra, Chemistry, German or French.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Science degree with a major in chemistry: a total of 160 credits excluding Phys. Ed. and basic R.O.T.C. 70 Chemistry credits including Chem 121-122-123, 240, 295-296-297, 371-372-373, 375-376-377, 431-432-433, 446, 452, 453, 466, and 6 credits selected from Chem 455, 463, 464, 474, 490, graduate courses in Chemistry with the consent of the department, Geol 427, Geol 428, Geol 445, Geol 528, and advanced courses in Mathematics or Physics. (Chemistry courses 455 and 490 may not be used to satisfy all of these 6 elective credits.) At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or five quarters of German. College Physics and Mathematics through 201, 251-253, 283-285, and 289 are required. Every student, except those in the Pre-Med Option, is required to pass a senior comprehensive examination in Chemistry. The requirements for the Bachelor of Arts degree with a Major in Chemistry are the same except that the Bachelor of Science degree except for the deletion of Chemistry 466, 6 credits of advanced Chemistry, Chem 453, Mathematics 252 or 253. (See also Pre-Med Sciences option.)
CHEMISTRY CURRICULUM FOR THE B.S. DEGREE

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>Chem. 121-2-3</td>
<td>5</td>
<td>5</td>
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</tr>
<tr>
<td>Math 121-151-152</td>
<td>5</td>
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</tr>
<tr>
<td>English 150</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>2-3</td>
<td>4-6</td>
<td>4-6</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>R.O.T.C. 101-2-3 (Optional)</td>
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(Sophomore Year)

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<tr>
<td>Chem. 205-5-7</td>
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<tr>
<td>Math 153, 261</td>
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<tr>
<td>Physics 211-2-3</td>
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<td>Chem. 245</td>
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<td>Electives, or Engl. 250</td>
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<td>Phys. Ed. 100</td>
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<td>R.O.T.C. 201-2-3 (Optional)</td>
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(Senior Year)

<table>
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<tr>
<td>Chem. 431-2-3</td>
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<td>German 211, 212</td>
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<td>Chem. 446</td>
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<td>Chem. 452</td>
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<td>Chem. 466</td>
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<td>Electives (must include 6 cr. of Advanced Chem.), Engl. 350</td>
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<td>7-10</td>
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</table>

(For Undergraduates)

Chemistry Curriculum for the B.S. Degree

Freshman Year

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<tbody>
<tr>
<td>Chem. 121-2-3</td>
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<tr>
<td>Math. 121, 151, 152</td>
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<td>English 150</td>
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<tr>
<td>Electives</td>
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<td>4-6</td>
<td>4-6</td>
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<tr>
<td>Phys. Ed. (and Mil. Sci.—optional)</td>
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Sophomore Year

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<tr>
<td>Chem. 261-2-3 (or 265-4-7)</td>
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<td>Zool. 111-2-3</td>
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<td>Chem. 245</td>
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</tr>
<tr>
<td>Psychology 110</td>
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<tr>
<td>Electives</td>
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<td>2-3</td>
<td>2-3</td>
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<tr>
<td>Phys. Ed. (and Mil. Sci.—optional)</td>
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Junior Year

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<tbody>
<tr>
<td>Phys. Ed. 221-2-3</td>
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<td>For. Lang. 101, 102, 103</td>
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<td>Zool. 4</td>
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<tr>
<td>Electives (e.g., Zool. 304) or Engl. 350</td>
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<tr>
<td>Chem. 370</td>
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Senior Year

<table>
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<tbody>
<tr>
<td>For. Lang. 211, 212</td>
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<tr>
<td>Chem. 445</td>
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<td>Chem. 452</td>
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<tr>
<td>Chem. 481, 482</td>
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<tr>
<td>Electives or Engl. 350</td>
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</table>

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

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101-102 General Chemistry 4 (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 (5-1-2). 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 (5-2). Normally to be followed by Chemistry 113-114 as the third year of familiarizing prospective high school chemistry teachers with texts, demonstrations and laboratory experiments used in newer approaches to teaching of high school chemistry (CHA and CHEMS). Credit not allowed toward bachelor's degree in chemistry.

245 Quantitative Analysis 5 (3-6) prerequisite 122. 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) prerequisite 102 or 122. Credit not allowed for both Chem 160 and 261.

265-266-267 Organic Chemistry 5 (4-5) prerequisite 123. Designed for chemistry majors.

For Undergraduates and Graduates

329 Methods of Teaching High School Chemistry 3 (2-4) prerequisite 113 or 122. Designed to familiarize chemistry majors with the problems of teaching chemistry in high school. Credit not allowed toward bachelor's degree in chemistry.

370 Survey of Physical Chemistry 5 (3-4) prerequisite 102 or 122, 160, 261, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medicine.

371-372-373 Physical Chemistry 3 (3-0) prerequisite Math 251 and Physics 225. The more important methods, results and problems of theoretical chemistry.

375-376-377 Physical Chemistry Laboratory 1 (0-4) prerequisite 245, and 371-372-373 or concurrent enrollment.

384 Physiological Chemistry 4 (3-0) or 5 (4-4) prerequisite 160, 262 or 266. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

390 (351) Chemistry of Plant Constituents 4 (3-4) prerequisite 245, 122, 267, and 15 credits of college chemistry. An introduction to research in the chemistry of carbohydrates, glycosides, polysaccharides, lignin and extractives. (Same as Bot. 390 and For. 390).

391 (361) Chemistry of Wood Products 3 (3-0) prerequisite 261. The chemistry of pulp, paper, cellulose derivatives, wood stores, industrial polymers, flame retardants, modified woods, and other wood products. (Same as For. 381).

431-432-433 Seminar 1 (0-2) prerequisite prerequisite 263, and 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) prerequisite 245, 371 and 375. The theory and practice of chemical instrumentation and instrumental analysis.

448 Advanced Instrumental Methods and Physical Measurements 5 (4-4) prerequisite 371, 372 and 446. Advanced instruction in modern electronic instrumentation.

452 Inorganic Chemistry 3 (3-0) prerequisite 123, 263 or 267. The principles of systematic inorganic chemistry.

453 Chemistry of the Representative Elements 3 (3-0) prerequisite 452.

455 Inorganic Chemistry Laboratory 2 (0-6) prerequisite 123, 263 or 267 and c/i. The techniques in preparation of inorganic compounds.

461 Carbohydrates 3 (3-0) prerequisite 263, 361, 362. Theoretical, reactions, derivatives and biochemical aspects of carbohydrate compounds.

463-464 Theoretical Organic Chemistry 3 (4-0) prerequisite 263.

466 Organic Qualitative Analysis 3 (3-4) prerequisite 263 or 267. Systematic methods of identification of pure organic compounds and mixtures. General classification of organic chemistry.

474 Chemical Thermodynamics 3 (3-0) prerequisite 372. The principles of thermodynamics and their application to chemical systems.

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

481-482 Elementary Biochemistry 5 (4-4) prerequisite 262 or 266. Primarily for science majors.

490 Problems and Research V R-10 prerequisite c/i. Independent laboratory and library work under the guidance of a staff member. An introduction to research methods.
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.

100 INTRODUCTION TO COMPUTERS I prereq Math 601. A simplified programming language (e.g., FORTRAN or FORGO) will be used to introduce students to computers and their capabilities.

101 FORTRAN II 2 prereq Math 601. Introduction to FORTRAN programming and the coding of problems. Use of flow charts and subprograms. A terminal course for students not intending further study of computers. (Credit not allowed for this course and 200.)

102 INTRODUCTION TO COBOL PROGRAMMING 2 prereq Math 601. 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.)

200 BASIC PROGRAMMING I 3 (3-4) prereq Math 601. Structure and use of a formal procedure language (FORTRAN). Algorithms for the solution of logical and numerical problems. (Credit not allowed for both 101 and 200.)

201 ASSEMBLY AND MACHINE LANGUAGE PROGRAMMING 3 (3-4) prereq 200 or 101 with C/. Computer structure, the logic of computer instruction sets, and assembly and machine representation of information. (Credit not allowed for both 101 and 200.)

202 INTERMEDIATE PROGRAMMING 3 (3-4) prereq 200 or C/. Computer programming using a current scientifically oriented language (e.g., FORTRAN IV, ALGOL, and/or LISP). Data collection and organization, processing scientific information.

271-272-273 COMPUTING AND MATHEMATICS 3 (3-4) prereq Math 601 and C/. 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 271-272-273.)

301 PROGRAMMING SYSTEMS I 3 (3-4) prereq 201. Construction of assemblers, compilers, and interpreters. Design of trace and debugging programs.

302 PROGRAMMING SYSTEMS II 3 (3-4) prereq 201. Major features of executive programs and monitor control. Input and output control, system environment, and operation of digital complexes.

303 ORGANIZATION OF COMPUTER SYSTEMS 3 (3-4) prereq 202. Integration of hardware and software components to accomplish a given system design and to optimize throughput efficiency.

370 COMPUTER METHODS 4 (3-4) prereq Math 252. Computer programming and a survey of elementary numerical methods. Problems in connected to secondary school teaching. Introduction to programming for those enrolled in NSF Summer Institute. Others may enroll by special permission. Credit not allowed for this course and Math 370.

374 APPLICATION OF DIGITAL COMPUTERS 4 (3-4) prereq Math 116, CS 101, and one of CS 102, 103, 104, 105. An introduction for the programming of problems occurring in the physical sciences, life sciences, and social sciences. Design of programs with the aid of a digital computer. (Credit not allowed for this course and Math 471-472-473.)

471-472-473 NUMERICAL ANALYSIS 4 (3-4) prereq Math 252 and CS 101 for 471; CS 200 recommended: c/i for 472 and 473. Error analysis, approximation and interpolation, numerical solution of linear and non-linear equations, numerical integration of ordinary and partial differential equations, numerical solution of integral equations, and selected topics. Assign work on digital computer. (Credit not allowed for this course and Math 471-472-473.)

DRAMA

study design 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 degree and the Master of Arts degree in drama.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DRAMA. In addition to the four general requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree with a major in drama: Drama 101, 121-122-123, 131-132-133, 201-202-203, 244, 311, 301-302-303, 491 (4 cr.), plus a minimum of 12 additional elective credits in Drama. All requirements must be satisfied by the spring of the senior year; students are required to enroll in Drama 200 or 300, Drama Workshop, for three years.

The following courses outside the drama department are required: Speech, 3 hrs.; English 345.

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

Senior comprehensive examinations are required for all graduating students.
Seniors must submit for graduation an original play, or a prompt book for the production of a play and also must direct a play.

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. If the teaching major chosen is English (high school recommended) the student should follow the English requirements in the English broad fields major listed under Education. The English electives should be met in part by English 307-308 and 309 (10 hours). A teaching major will not be required to include Drama 301-302 or five credits of drama electives, as part of their drama degree.

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

First year program for the B.A.:

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<th>Quarter</th>
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<tr>
<td>Drama 101</td>
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<td>Drama 121-122</td>
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<tr>
<td>Drama 131-132-133</td>
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<td>3</td>
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<tr>
<td>Speech</td>
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<tr>
<td>English 150</td>
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<td>Language (French recommended) or Electives from Groups I, II, III</td>
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<td>H. &amp; P.E. 100 (Dance or fencing)</td>
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18-18-18

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 (101) REHEARSAL AND PERFORMANCE 1 R-6. Enter any quarter. Prereq c/l. Students engaged in any aspect of production including acting, directing, lighting, stagecraft, makeup, costumes, properties, business and publicity, are eligible for this course. A teaching major will not be required to include Drama 301-302 or five credits of drama electives, as part of their drama degree.

101 (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. Enter any quarter. Principles of pantomime, movement, stage voice.

200 BEGINNING THEATER WORKSHOP V 0-4 R-12. Study and experience in the arts of theater according to the needs of the beginning theater student. Emphasis upon laboratory production, including all arts of the theater.


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

241-251 STAGE MAKE-UP 2. Principles of and practice in theatrical make-up. Students will work on make-up for major productions.

FOR UNDERGRADUATES AND GRADUATES

300 (394) WORKSHOP IN THEATER V 2-10 R-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, preferences, and desires of the students; costumes, make-up, lighting, stagecraft, backstage organization, stage design, acting, directing, rehearsal and performance, business, and house organization and management.


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

307-308-309 THE DRAMA (see English)

311-312-313 (223, 423) 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 (351) ADVANCED ACTING 3 prereq 231-222-223 or c/l. Historic and contemporary styles of acting.

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

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

335-336 (348) STAGE LIGHTING 3 prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment, instruments and their use. Students will work on lighting for major productions.
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 the department. This familiarizing with extensive work in the other liberal arts and sciences, is intended to instill breadth of intellectual interest, critical habits of thought, a problem-solving attitude, and facility of expression. (3) To help meet, through graduate work, the increasing demands for competent professional economists in industry, commerce, government and education.

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

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

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.

Unless circumstances peculiar to the student's best interest indicate otherwise, the student shall take the sophomore or junior year, Economics 201-202-203; Mathematics 116 (or equivalent), 125; Computer Science 101; Political Science 201-202-203; History 361-362; 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 136. 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 311, History 347-348-349, 370-374-375, 473-474; Political Science 362, Mathematics 118 or 133, 344-345-346; Business Administration 360, 421, 460. It is recommended that the student take Business Administration 201-202.

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

COMBINED MAJORS. Minimum of 60 credits. Combined majors in economics and political science may be earned by meeting the following requirements with the remainder of credits selected according to the student's interests.

Economics 301-302-303, Mathematics 125; Economics 301, 311, and at least 12 additional credits in upper division courses. Political Science 201-202 and 18 additional credits of which 12 must be in upper division courses. A comprehensive examination is required of seniors with a major in the Economics-Political Science concentration.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

101 CULTURAL ECONOMICS 5, Su 3. Institutional development of economic society; nature, origins and problems of modern capitalism.


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; commercial banking; monetary theory, history and policy.


305 STATE AND LOCAL TAXATION 3 prereq 204. 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, Su 3 prereq 203, 315 Economic ideas from early times to 1890. (316) Economic theories from 1890 to the present.


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


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.

374 COMPARATIVE ECONOMIC SYSTEMS 4, Su 3, prereq 203. Capitalism, fascism, socialism, communism; evaluation.

375 THE RUSSIAN ECONOMY 4, Su 3 prereq 203.

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

382 CONTEMPORARY ECONOMIC PROBLEMS 3 prereq 203.

385 LAND ECONOMICS 3 prereq 203. 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.

387 PROPERTY VALUATION THEORY 3 prereq 385. 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.

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) Input-output analysis, general equilibrium and programming, utility theory and game theory models.

490 ADVANCED PROBLEMS V 1-3 R-6 prereq 12 credits in economics and c/f.

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

FOR GRADUATES

501 GRADUATE RESEARCH V R-6.

510-511-512 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 MIB and MRA students.)

699 THESIS V R-15.
EDUCATION

Teacher education at the University of Montana prepares for teaching in any of the twelve grades. Prospective elementary and secondary teachers must have earned a bachelor's degree, have satisfactorily completed certain specified courses, and have demonstrated competence in student teaching before they become eligible for recommendation by the University of Montana for state certification. The required 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 doctorate degrees.

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

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

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

Students preparing to teach in the elementary grades should major in Education; those preparing to teach particular subjects, either in junior or senior high schools, major in the principal subject to be taught or in Education; those preparing for library work major in Education, take courses in Library Service; those preparing for counseling, supervising, administering, or research work usually major in Education.

Other areas in which courses are acceptable for Education credit include Art, Business Administration, Chemistry, English, Foreign Languages, General, Geology, Health and Physical Education, Home Economics, Journalism, Mathematics, Music, Physics, Religion, and Speech.

ADMISSION TO TEACHER EDUCATION. All students preparing for admission to teacher education at the time they enroll for Education 200, or no later than the beginning of the junior year. To be admitted to teacher education, a student must have at least a "C" or 2.0 average in all courses attempted. To continue in teacher education, a student must maintain a "C" or 2.0 average in all courses undertaken in (1) Education, and (2) all other courses. (Please note below Under Admission to Professional Quarters.)

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

ADMISSION TO PROFESSIONAL QUARTER AND STUDENT TEACHING. During the spring quarter of the student's junior year for application for student teaching, an assignment for a full quarter's work in professional education must be made on forms obtained from the Dean of Teacher Education. Normally, the professional quarter occurs during the student's senior year.

Elementary: to qualify for this assignment, the student must (1) be eligible to continue in teacher education, (2) have a minimum of grade point average on all courses attempted in the teaching major, and (3) have the consent of the Director of Student Teaching. The professional quarter for the student preparing for elementary certification entails student teaching for an entire day for one full quarter (15 credits) and enrollment in Education 407, Problems in Teaching (3 credits).

Secondary: to qualify for this assignment, the student must (1) be eligible to continue in teacher education, (2) have completed % of the work in the teaching major, and if an A, a minimum grade point average of 2.3 on all courses attempted in the teaching major (and minor, if any) and a minimum overall grade point average of 2.3 in all courses attempted, and (3) have the consent of the Director of Student Teaching.

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

Preparation for Teaching in the Secondary Grades: Candidates must earn a minimum of 30 credits in Education, including the following required courses totaling 35 credits: Education, 200, 205, 305, 342, 405 (10 credits); 497, 498, 499 or their equivalents, and elective courses totaling 5 credits selected from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 48 or more credits in a teaching major and 30 or more credits in a teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in Elementary Education:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sex</th>
<th>Cr.</th>
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<tr>
<td>Eng. 150—Freshman Composition</td>
<td>A</td>
<td>Wh</td>
<td>S</td>
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<tr>
<td>Group Requirements, Life Sciences</td>
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<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>Electives</td>
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Sophomore Year

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<tr>
<td>Eng. 250—Intermediate Composition</td>
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<td>Group Requirements, Physical Sciences and Mathematics</td>
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<td>Educ. 200—Orientation to Education</td>
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<td>Educ. 205—Educational Psychology</td>
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<td>HPE 100 or 115—Physical Education or Prof. Activities</td>
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Junior Year

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<tr>
<td>Eng. 350—Advanced Composition</td>
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<tr>
<td>Edu. 542—The School Library in Teaching</td>
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<td>Edu. Electives (Special Area Methods or Others)</td>
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Senior Year

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<tr>
<td>Eng. 365—Secondary School Teaching Procedures</td>
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<td>Edu. 405—Student Teaching: Secondary</td>
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<td>Edu. 407—Problems in Teaching</td>
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<td>Edu. 450—Secondary School Guidance</td>
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<td>Edu. 452—Educational Measurement</td>
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<td>Electives or Courses to complete Teaching</td>
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<tr>
<td>Major and/or Minor</td>
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</table>

Preparation for Teaching in the Elementary Grades. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 40 credits: Education 200, 205, 305, 360, 390, 405, 406, 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, 10 credits; Art, 6 credits; and Music, 6 credits.

For elementary teachers, Group I and II requirements may be satisfied by the following: General 125, 126, 127, and Mathematics 130, 220.

It is recommended that elementary teachers take Health and Physical Education 115 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. Groups of electives are: Art, Music (vocal only), Foreign Language, Health and Physical Education, Special Education. Approved minor patterns are available at the School of Education Office.

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

Suggested Curriculum in Elementary Education:
### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td><strong>Engl. 150--Freshman Composition</strong></td>
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<tr>
<td><strong>Gen. 128-129-131--Science for Elementary Teachers</strong></td>
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<tr>
<td><strong>Speech 111--Introduction to Public Speaking</strong></td>
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<tr>
<td><strong>Psych. 110--Introduction to Psychology</strong></td>
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<tr>
<td><strong>Gen. 151-152-153--Introrduction to the Humanities</strong></td>
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<tr>
<td><strong>Geol. 101--Physical Elements of Geography</strong></td>
<td>5</td>
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<tr>
<td><strong>Music 123-124--Music Elective in the Elementary Schools</strong></td>
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### Sophomore Year

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<td><strong>H &amp; PE 100 or 115--Physical Education or Elective Courses</strong></td>
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### Junior Year

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<td><strong>Educ. 200--Orientation to Education</strong></td>
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<tr>
<td><strong>Educ. 209--The Elementary School Child</strong></td>
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<tr>
<td><strong>Engl. 250--Intermediate Composition</strong></td>
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<tr>
<td><strong>H &amp; PE 109--First Aid</strong></td>
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<td><strong>Hist. 261-262--United States History</strong></td>
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<tr>
<td><strong>Math. 130--Theory of Arithmetic</strong></td>
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<td><strong>Math. 230--Intuitive Geometry</strong></td>
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<td><strong>Psych. 230--Child and Adolescent Psychology</strong></td>
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<td><strong>Pul. Sci. 201--American Government</strong></td>
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<tr>
<td><strong>Social Sciences--Elective Courses</strong></td>
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### Senior Year

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<tr>
<td><strong>Educ. 404--Student Teaching: Elementary</strong></td>
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<tr>
<td><strong>Educ. 401--Problems in Teaching</strong></td>
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<tr>
<td><strong>Electives</strong></td>
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</table>

### RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATES

The University of Montana recommends its graduates to complete certification requirements to the State Department of Public Instruction. All such recommendations must be approved by the Dean of the School of Education. Those with teaching experience who cannot secure the necessary prerequisite courses and developmental characteristics may consult the library service. The student must complete 45 quarter credits in approved courses beyond the bachelor's degree. Students intending to qualify for this certificate must be enrolled at the beginning of the program to outline such programs with the Dean of the School of Education.

### 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.

The University of Montana does not offer a two-year diploma program leading to provisional elementary certification. Variations from these patterns of required courses for elementary certification are permissible only with the approval of the Dean of the School of Education.

### PREPARATION FOR PROFESSIONAL CERTIFICATION

The Montana Professional Certification Program is designed to train school and teacher-librarians to meet the requirements of the National Association of Secondary and High Schools and of the state of Montana. The minimum requirements for schools of junior and senior high schools do not include this certification.

### GRADUATE WORK

See Graduate School.

### FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

### 310 ORIENTATION TO EDUCATION 1 prereq Psych. 110. Teaching as a profession. The American public school and its purposes. Problems, issues, and trends in education today.

### 205 THE ELEMENTARY SCHOOL, CHILD 5 prereq 200 and Psych. 100. Principles of child 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.

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

### 310 OUTDOOR EDUCATION 2. Outdoor activities and materials to enrich the elementary science program.

### 305 SECONDARY SCHOOL TEACHING PROCEDURES 5 prereq 200 and 205. Methods of planning, presentation, evaluation, and development of the materials in classroom teaching. The preparation, observation, and related activity involving student participation.

### 301 TEACHING ELEMENTARY SCHOOL READING AND OTHER LANGUAGE ARTS 5 prereq 202.

### 302 TEACHING ELEMENTARY SCHOOL MATHEMATICS 3 prereq 202, Math 150, 220.

### 303 (304) TEACHING ELEMENTARY SCHOOL SCIENCE AND SOCIETY STUDIES 4 prereq 205.

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

### 322-324-325 SCHOOL MUSIC. (See Music.)

### 330 PRINCIPLES OF RELIGIOUS EDUCATION. (See Religion.)

### 341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 4 prereq c/l. Objectives of library service, library routines and procedures, library buildings and equipment, the library's place in governmental organization.

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

### 402 OBSERVATION AND PARTICIPATION: (ELEMENTARY) 5, Su only, prereq 300, 309, 310 or c/l. Observation and participation in teaching of elementary class of grade school students. For students with teaching experience who cannot secure the regular course in student teaching.

### 403 OBSERVATION AND PARTICIPATION: (SECONDARY) 5, Su only, prereq 300 or c/l. 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 2 prereq 200, 302, 303, 304, 310, 340 and consent of Director of Student Teaching.

### Classroom teaching. Student teaching is a full day's work for a complete quarter, and although some observation and participation are included, the main emphasis is upon the responsibilities of a teacher as can be included.
### Course Requirements in Teaching Major and Minor Fields

Students who wish to qualify for the Montana Secondary State Teaching Certificate must, according to the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete a minimum of 45 credits in a major teaching field 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 departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits, but still not meet requirements for graduation as a major in the University department. Students who graduate with a major in a subject field taught in Montana high schools will ordinarily qualify for the certificate, provided other requirements are met. Students should keep in mind that a course may not be counted in more than one teaching major or minor.

#### ART

<table>
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<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (31 credits)</th>
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</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Art 123—Drawing</td>
<td>9</td>
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<tr>
<td>Art 125, 126, 127—Design</td>
<td>6</td>
</tr>
<tr>
<td>Art 139—Framing</td>
<td>2</td>
</tr>
<tr>
<td>Art 160—Layout and Lettering</td>
<td>2</td>
</tr>
<tr>
<td>Art 201, 202—Survival of Western Art</td>
<td>3</td>
</tr>
<tr>
<td>Art 233—Printmaking</td>
<td>2</td>
</tr>
<tr>
<td>Art 235—Sculpture</td>
<td>3</td>
</tr>
<tr>
<td>Art 239—Water Color</td>
<td>3</td>
</tr>
<tr>
<td>Art 240—Painting</td>
<td>3</td>
</tr>
<tr>
<td>Art 263—Elementary School Art</td>
<td>3</td>
</tr>
<tr>
<td>Art 307—Methods of Teaching Secondary Art</td>
<td>3</td>
</tr>
<tr>
<td>Art 225—Advanced Design</td>
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</tr>
<tr>
<td>Photography</td>
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<tr>
<td>Crafts</td>
<td>3</td>
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#### BUSINESS ADMINISTRATION

<table>
<thead>
<tr>
<th>Teaching Major (45-47 credits)</th>
<th>Teaching Minor (34 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>*Bus. Ad. 163—Advanced Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>**Bus. Ad. 194, 195, 196—Stenography</td>
<td>15</td>
</tr>
<tr>
<td>Bus. Ad. 197—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 198—Records Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 201, 202—Accounting Principles</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 203—Elementary Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 292—Office Practice</td>
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<tr>
<td>Bus. Ad. 350—Methods of Teaching Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 350—Methods of Teaching Bookkeeping and Basic Business</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 383—Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 390—Methods of Teaching Short-hand and Transcription</td>
<td>2</td>
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<tr>
<td>Electives from the following:</td>
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<tr>
<td>Bus. Ad. 330—Principles of Insurance</td>
<td>3</td>
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<tr>
<td>Bus. Ad. 357, 358—Legal Environment of Business</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 360—Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 385—Issues in Vocational Business Education</td>
<td>3</td>
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<tr>
<td>Bus. Ad. 386—Instructional Theory in Vocational Business Education</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 397—Vocational Education Programs</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 397—Electronic Information Processing</td>
<td>3</td>
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<tr>
<td>Econ. 291, 292, 293—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>Econ. 301—Money and Banking</td>
<td>4</td>
</tr>
<tr>
<td>*Bus. Ad. 180, 181, 182 are not required in the major or minor area.</td>
<td></td>
</tr>
<tr>
<td>**Bus. Ad. electives must be taken in place of any of these courses which may be waived.</td>
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#### DRAMA (Minor only)

<table>
<thead>
<tr>
<th>Teaching Minor (30 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
</tr>
<tr>
<td>Drama 101, 102—Introduction to the Theater</td>
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<tr>
<td>Drama 111—Elementary Acting</td>
</tr>
<tr>
<td>Drama 112, 113—Elementary Stagecraft (any 2)</td>
</tr>
<tr>
<td>Drama 224—Stage Make-up</td>
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<tr>
<td>Drama 201, 202, 203—Dramatic Literature (any 2)</td>
</tr>
<tr>
<td>Drama 205, 206, 207—Directing</td>
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<tr>
<td>Electives: Any courses in Drama except 100</td>
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#### ECONOMICS (Minor only)

<table>
<thead>
<tr>
<th>Teaching Minor (30 credits)</th>
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</thead>
<tbody>
<tr>
<td>Required Courses:</td>
</tr>
<tr>
<td>Econ. 201, 202, 203—Principles of Economics</td>
</tr>
<tr>
<td>Econ. 301—Money and Banking</td>
</tr>
<tr>
<td>Econ. 311—Intermediate Economics Analysis</td>
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<tr>
<td>Electives: Economics courses</td>
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</tbody>
</table>

#### ENGLISH

<table>
<thead>
<tr>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (30 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
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</tr>
<tr>
<td>Eng. 161, 162—World Literature</td>
<td>6</td>
</tr>
<tr>
<td>Eng. 211, 215—Introduction to Major British Writers</td>
<td>6</td>
</tr>
<tr>
<td>Eng. 222, 223—Introduction to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Eng. 392, 393—Shakespeare</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 373—The Structure of Modern English</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 382—Methods of Teaching English</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 497—Problems in Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 482—Literature for the High School Teacher</td>
<td>3</td>
</tr>
<tr>
<td><strong>Electives:</strong></td>
<td></td>
</tr>
<tr>
<td>Speech 118—Practicum in Oral Expression</td>
<td>3</td>
</tr>
<tr>
<td>Electives:</td>
<td>24</td>
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</tbody>
</table>

Among the elective courses there must be at least one advance course in American literature and one advanced course in British literature. General 309 and other courses in General Literatures may also be taken. Additional electives from the related fields of Drama, Journalism, and Speech are strongly recommended. (English 150, 250, and 350 may not be included in the teaching major or minor.)

#### ENGLISH (Broad Fields Major only)

<table>
<thead>
<tr>
<th>Teaching Minor (73 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
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<tr>
<td>Eng. 211, 212—Introduction to Major British Writers</td>
</tr>
<tr>
<td>Eng. 292, 293—Introduction to Major American Writers</td>
</tr>
<tr>
<td>Eng. 392, 393—Shakespeare</td>
</tr>
<tr>
<td>Eng. 373—The Structure of Modern English</td>
</tr>
<tr>
<td>Eng. 382—Methods of Teaching English</td>
</tr>
<tr>
<td>Eng. 497—Problems in Composition</td>
</tr>
<tr>
<td>Eng. 482—Literature for the High School Teacher</td>
</tr>
<tr>
<td><strong>Electives:</strong></td>
</tr>
<tr>
<td>Speech 118—Practicum in Oral Expression</td>
</tr>
<tr>
<td>Electives:</td>
</tr>
</tbody>
</table>

*English majors must substitute Eng. 306 for Eng. 450 if desired.

**English electives must include one upper division course in British literature and one in American literature. English electives may include General Literature courses and General 309, but a minimum of 45 credits in English must be taken. (English 150, 250, and 350 may not be included in the major.)

#### FOREIGN LANGUAGES

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

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

#### FRENCH

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

#### GERMAN

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

#### ITALIAN (Minor only)

<table>
<thead>
<tr>
<th>Teaching Minor (35 credits)</th>
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</thead>
<tbody>
<tr>
<td>Required Courses:</td>
</tr>
<tr>
<td>Ital. 100, 101—Elementary Italian</td>
</tr>
<tr>
<td>Ital. 211, 212—Italian Literature</td>
</tr>
<tr>
<td>Ital. 211—Italian Grammar Review and Composition</td>
</tr>
<tr>
<td>Ital. 311, 312, 313—Survey of Italian Literature</td>
</tr>
<tr>
<td>For. Lang. 300—Methods of Teaching Foreign Languages</td>
</tr>
</tbody>
</table>
EDUCATION—37

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

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

549 ADMINISTRATION OF AUDIOVISUAL COMMUNICATION PROGRAMS 4 prereq basic courses in field or c/l. Management of an integrated program and administration of communications media for elementary and secondary school programs.

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

551 GUIDANCE AND VocATIONAL SCHOOL 4 prereq 308, 309, 310 or 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 data; analysis of standardized tests; construction and use of teacher-made tests.

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

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

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

568 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 3 prereq 360 or c/l. The development and growth of education in its broadest sense as found in the religion, the economic system, the family, the estate, and other social institutions.

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

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

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

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

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

575 SCHOOL SUPERVISION 4. Su 3 prereq teaching experience. Administrative and responsibilities of assigned leaders for improving instruction and promoting in-service growth of personnel.

576 SCHOOL FINANCE 3 prereq teaching experience. Sources of school revenues; related costs, inequalities, legal limitations, and proper expenditures; relationship of foundation programs and district organizational structure.

577 SCHOOL FACILITIES PLANNING V 2-4 prereq 570 and c/l. Procedures in determining school facility needs and planning for facilities through preparation of educational specifications.

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

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

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

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

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

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

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

586 VOCATIONAL DEVELOPMENT THEORY 3 prereq 584. A comparison of current theories of vocational development. Special attention given to current literature.

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

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

594 SEMINAR V 10-10 prereq c/l. Group analysis of problems in specific areas of education.

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

597 EDUCATIONAL STATISTICS 4 prereq Math 125, Educ 452 and 569 or concurrent registration therein and c/l.

599 RESEARCH V 15 prereq c/l.

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

670 THE AMERICAN JUNIOR COLLEGE 3 prereq c/l.

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

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Major (48 credits)</th>
<th>Minor (36 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
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</tr>
<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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<td>Latin 496—Major Latin Writers</td>
<td>22</td>
<td>10</td>
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<tr>
<td>Russian</td>
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<td><em>Teaching Major</em></td>
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<tr>
<td>Rus. 101, 102, 103—Elementary Russian</td>
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</tr>
<tr>
<td>Rus. 201, 202, 203—Intermediate Russian</td>
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</tr>
<tr>
<td><em>Teaching Minor</em></td>
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</tr>
<tr>
<td>Rus. 301—Applied Linguistics</td>
<td>3</td>
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<tr>
<td>Rus. 402—Russian Composition and Conversation</td>
<td>3</td>
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<tr>
<td>Rus. 311, 312, 313—Survey of Russian Literature</td>
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<tr>
<td>For. Lang. 290—Methods of Teaching Foreign Languages</td>
<td>3</td>
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<tr>
<td>Electives: Russian courses numbered over 300</td>
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**SPANISH**

<table>
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<tbody>
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<td>Required Courses:</td>
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<tr>
<td>Span. 101, 102, 103—Elementary Spanish</td>
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<td>Span. 201, 202, 203—Intermediate Spanish</td>
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<tr>
<td>Span. 301—Applied Linguistics</td>
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<td>3</td>
</tr>
<tr>
<td>Span. 402—Spanish Composition and Conversation</td>
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<td>3</td>
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<tr>
<td>Span. 311, 312, 313—Survey of Spanish Literature</td>
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<tr>
<td>For. Lang. 290—Methods of Teaching Foreign Languages</td>
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<tr>
<td>Electives: Spanish courses numbered over 300</td>
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**GEOGRAPHY (Minor only)**

<table>
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<th>Course</th>
<th>Teaching Minor (35 credits)</th>
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<tbody>
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<td>Required Courses:</td>
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<tr>
<td>Geog. 101—Physical Elements of Geography</td>
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<tr>
<td>Geog. 102—Introductory Human Geography</td>
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<tr>
<td>Geog. 201—Map Interpretation</td>
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<tr>
<td>Geog. 401—Geographic Geography</td>
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<tr>
<td>Geog. 402—Cultural Geography</td>
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<tr>
<td>Geog. 403—Climatology</td>
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</tr>
<tr>
<td>Geog. 406—Landform Analysis</td>
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<tr>
<td>Electives: Geography courses numbered over 300</td>
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</table>

**HEALTH AND PHYSICAL EDUCATION**

<table>
<thead>
<tr>
<th>Course</th>
<th>Major (46 credits)</th>
<th>Minor (34 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
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</tr>
<tr>
<td>H &amp; PE 200—History and Principles of Physical Education</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 338—Teaching Physical Education in Elementary Schools</td>
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<tr>
<td>H &amp; PE 405—Organization and Administration of Physical Education</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 407—Methods in Teaching Health</td>
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<td>3</td>
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<tr>
<td>H &amp; PE 398—Applied Anatomy</td>
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<td>H &amp; PE 407—First Aid</td>
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<tr>
<td>H &amp; PE 409—Seminar</td>
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<tr>
<td>H &amp; PE 450—Measurement and Evaluation in Physical Education</td>
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<td>H &amp; PE 490—Teaching Physical Education Activities</td>
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<tr>
<td>For Men:</td>
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<td></td>
</tr>
<tr>
<td>H &amp; PE 200, 213, 214, 223, 310, 321—Coaching</td>
<td>9</td>
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</tr>
<tr>
<td>H &amp; PE 211, 311—Officiating</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>H &amp; PE 240—Care and Prevention of Athletic Injuries</td>
<td>3</td>
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<tr>
<td>H &amp; PE 356—Methods and Materials in Folk and Square Dancing</td>
<td>2</td>
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<tr>
<td>For Women:</td>
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<tr>
<td>H &amp; PE 324, 325, 326—Methods</td>
<td>4</td>
<td>3</td>
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<tr>
<td>H &amp; PE 327—Officiating Basketball</td>
<td>2</td>
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<tr>
<td>Electives:</td>
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</table>

**HISTORY AND POLITICAL SCIENCE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Major (50 credits)</th>
<th>Minor (33 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
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</tr>
<tr>
<td>Hist. 101, 102, 103—Modern European</td>
<td>9</td>
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</tr>
<tr>
<td>Hist. 201, 202, 203—Survey of Ancient and Medieval History</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Hist. 261, 262—United States History</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Pol. Sci. 201, 202—American Government</td>
<td>8</td>
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</tr>
<tr>
<td>Pol. Sci. 364—Government in Montana</td>
<td>2</td>
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<tr>
<td>Pol. Sci. 421—Introduction to International Relations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Educ. 425—Methods of Teaching Social Studies in Secondary Schools</td>
<td>3</td>
<td>(3)</td>
</tr>
<tr>
<td>Electives: Courses in History</td>
<td>14</td>
<td></td>
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</tbody>
</table>

**HOME ECONOMICS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (55-62 credits)</th>
<th>Teaching Minor (36-40 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H Ec. 301, 302, 303—Home Management in Theory and Practice</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>H Ec. 210—Household Equipment</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>H Ec. 245—Principles of Food Preparation</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H Ec. 245—Nutrition</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>H Ec. 250—Clothing for the Family</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 200—Home Planning</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 303—Interior Design and Furnishings</td>
<td>5</td>
<td>5</td>
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<tr>
<td>H Ec. 304—Meal Management</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 300—Family Finance</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H Ec. 310—Home Living Center</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 321—Methods of Teaching Home Economics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H Ec. 305—Advanced Clothing Problems</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H Ec. 325—Child Development</td>
<td>2-3</td>
<td></td>
</tr>
<tr>
<td>H Ec. 326—Advanced Problems in Child Development</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H Ec. 400—Human Development and Family Relationships</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H Ec. 421—Advanced Problems in Teaching Home Economics</td>
<td>3</td>
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<tr>
<td>H Ec. 490—Problems in Home Economics</td>
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**JOURNALISM (Minor only)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Minor (30 credits)</th>
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<tbody>
<tr>
<td>Required Courses:</td>
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</tr>
<tr>
<td>Jour. 100—Introduction to Journalism</td>
<td></td>
</tr>
<tr>
<td>Jour. 227—Elementary Photography</td>
<td></td>
</tr>
<tr>
<td>Jour. 316—Reporting</td>
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<tr>
<td>Jour. 406—History and Principles of Journalism</td>
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<tr>
<td>Jour. 418—School Publications</td>
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<tr>
<td>Jour. 425—Principles of Advertising</td>
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<tr>
<td>Jour. 500—Advanced Reporting</td>
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<tr>
<td>Jour. 495—News Editing</td>
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<tr>
<td>R &amp; TV 140—Introduction to Radio and Television</td>
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</tbody>
</table>

**LIBRARY SERVICE (Minor only)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Minor (30 credits)</th>
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</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
</tr>
<tr>
<td>Educ. 345—Organization and Administration of the Library</td>
<td>3-4</td>
</tr>
<tr>
<td>Educ. 346—Cataloging and Classification</td>
<td>3-4</td>
</tr>
<tr>
<td>Educ. 410—Materials Selection and Bibliography</td>
<td>3-4</td>
</tr>
<tr>
<td>Educ. 411—Library Reference Materials</td>
<td>3-4</td>
</tr>
<tr>
<td>Electives: From the following courses</td>
<td>14-18</td>
</tr>
<tr>
<td>Educ. 349—Surveys of Children’s Literature</td>
<td>3</td>
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<tr>
<td>Educ. 347—Audiovisual Communication</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 410—Evaluation of School Library Services and Materials</td>
<td>2</td>
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<tr>
<td>Educ. 442—Library Work with Children</td>
<td>3</td>
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<tr>
<td>Educ. 444—Library Seminar</td>
<td>3-10</td>
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<tr>
<td>Educ. 445—Library Practice</td>
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<tr>
<td>Eng. 428—Literature for the High School Teacher</td>
<td>3</td>
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</table>

**MATHEMATICS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (50 credits)</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math. 121—Elementary Functions (College Algebra and Trigonometry)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 122—Analytic Geometry and Calculus I</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 123—Analytic Geometry and Calculus II</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 124—Analytic Geometry and Calculus III</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 223—Analytic Geometry and Calculus V</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 302—Algebra for Teachers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 303—Geometry for Teachers</td>
<td>5</td>
<td>5</td>
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</table>
### BIOLICAL SCIENCE

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bot. Zool. 111—Introduction to Botany</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot. 112, 113—General Botany</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Bot. 235—Local Flora</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Zool. 206—Field Zoology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bot. or Zool. 250—Basic Concepts of Ecology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bot. 355—Principles of Plant Ecology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zool. 112, 113—General Zoology</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bot. 225—Plant Physiology</td>
<td>5</td>
<td></td>
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<tr>
<td>Zool. 202—Human Physiology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot.—Zool. 408—Genetics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Gen. 222—Methods of Teaching Biology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gen. 139—Evolution, Genetics, and Man</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bot. 265—Local Flora</td>
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<td></td>
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<tr>
<td>Bot. or Zool. 290—Basic Concepts of Ecology</td>
<td>3-4</td>
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</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives—Upper division Biology courses</td>
<td>5-7</td>
<td></td>
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</tbody>
</table>

**Supporting work required for major:**

**CHM 101, 102, 103 or Physics 111, 112, 113...10-12**

Math 116 ... 5

*Allowed only if accompanied by a teaching major in Chemistry or Earth Science.

**Students minoring in Chemistry should substitute CHM 121, 122, 123.

### CHEMISTRY

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (49 credits)</th>
<th>Teaching Minor (33 credits)</th>
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</thead>
<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
<td></td>
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</tr>
<tr>
<td>Chem. 121, 122, 123—College Chemistry</td>
<td>14</td>
<td>15</td>
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<tr>
<td>Chem. 245—Quantitative Analysis</td>
<td>3</td>
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<tr>
<td>Chem. 261, 262—Organic Chemistry</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 258—Methods of Teaching High School Chemistry</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 370—Survey of Physical Chemistry</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 371—Physical Chemistry</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Chem. 452—Inorganic Chemistry</td>
<td>3</td>
<td></td>
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<tr>
<td>Chem. 481—Elementary Biochemistry</td>
<td>5</td>
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<tr>
<td>Electives—Chemistry courses numbered over 300 3-5</td>
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<td></td>
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*In the minor the following substitutions will be allowed: Chem. 160 for Chem. 261, and Chem. 262 for Chem. 370. Chem. 370 or 371 is prerequisite for Chem. 452.

### EARTH SCIENCE

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (60 credits)</th>
<th>Teaching Minor (34 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
<td></td>
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</tr>
<tr>
<td>Geol. 101—Physical Elements of Geography</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Geol. 110—Physical Geology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Geol. 120—Introduction to Geologic Maps and Aerial Photos</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Geol. 201—Map Interpretation</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Phys. 130—Field Methods</td>
<td>4</td>
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<tr>
<td>Phys. 131—Introduction to Astronomy</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol. 260—General Paleontology</td>
<td>4</td>
<td></td>
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<tr>
<td>Geol. 263—Historical Geology</td>
<td>4</td>
<td></td>
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<tr>
<td>For 210—Elementary Soils</td>
<td>4</td>
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<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>
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<tr>
<td>Geol. 310—Geomorphology</td>
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<tr>
<td>Geol. 350—Landform Analysis</td>
<td>3</td>
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<tr>
<td>Geol. 306—Methods of Teaching Earth Science</td>
<td>3</td>
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<tr>
<td>Geol. 396—climatology</td>
<td>5</td>
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<tr>
<td>Electives:</td>
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<tr>
<td>Phys. 115—General Physics</td>
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<tr>
<td>Geol. 262—Principles of Stratigraphy</td>
<td>3</td>
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<tr>
<td>Bot. or Zool. 250—Basic Concepts of Ecology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gen. 330—Structural Geology</td>
<td>3</td>
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<tr>
<td>Geol. 360—Field Geology for Natural Science Teachers</td>
<td>3</td>
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<tr>
<td>Geol. 301, 302—Physiography of North America</td>
<td>3-6</td>
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<tr>
<td>Geol. 401—Introduction to Vertebrate Paleontology</td>
<td>3</td>
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<tr>
<td>Geol. 440—Introduction to Geophysics</td>
<td>3</td>
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*GENERAL SCIENCE (Broad Fields Major only)

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (75 credits)</th>
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<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
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</tr>
<tr>
<td>Micro. 100—Elementary Microbiology</td>
<td>3</td>
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<tr>
<td>Bot. 112—Zool. 111—Introduction to Biology</td>
<td>5</td>
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<tr>
<td>Bot. 112—General Botany</td>
<td>5</td>
</tr>
<tr>
<td>Bot. 255—Local Flora</td>
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<tr>
<td>Chem. 101, 102—General Chemistry</td>
<td>15</td>
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<tr>
<td>Chem. 151—Survey of Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>Gen. 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Geol. 101—Introduction to Geology</td>
<td>15</td>
</tr>
<tr>
<td>Physics 111, 112, 113—General Physics</td>
<td>15</td>
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<tr>
<td>Zool. 112, 113—General Zoology</td>
<td>15</td>
</tr>
<tr>
<td>Zool. 296—Field Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 250—Methods of Teaching Secondary Science</td>
<td>3</td>
</tr>
<tr>
<td>Electives—Courses from Geology, Botany, Chemistry, Physics, Zoology</td>
<td>6</td>
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</tbody>
</table>

*Does not qualify for teaching Chemistry or Physics.

### PHYSICS

<table>
<thead>
<tr>
<th>Course</th>
<th>Teaching Major (45 credits)</th>
<th>Teaching Minor (33 credits)</th>
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</thead>
<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
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<td></td>
</tr>
<tr>
<td>Phys. 221, 223—General Physics</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Phys. 301—Vector Analysis</td>
<td>3</td>
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<td>Phys. 314—Electricity</td>
<td>3</td>
<td></td>
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<tr>
<td>Phys. 322, 323—Light</td>
<td>4</td>
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<tr>
<td>Phys. 335—Methods of Teaching Physics</td>
<td>4</td>
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<tr>
<td>Phys. 441—Fundamentals of Modern Physics</td>
<td>5</td>
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<tr>
<td>Phys. 371—Mechanics</td>
<td>3</td>
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<tr>
<td>Phys. 441—Advanced Laboratory</td>
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<tr>
<td>Phys. 486—Physics Seminar I</td>
<td>1</td>
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<tr>
<td>Electives—From Physics courses</td>
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</tbody>
</table>

Math courses must be taken to satisfy requirements of the various physics courses.
ENGLISH—41

SOCIAL SCIENCES (Broad Fields Major only)  
Teaching Major (75 credits)  
Required Courses:  
Econ. 201, 202, 203—Principles of Economics  
         9  
Geog. 351—Political Geography  
         3  
Hist. 101, 102, 103—Modern European Civilization  
         6  
Hist. 201, 202, 203—Survey of Ancient and Medieval History  
         6  
Hist. 261, 262—United States History  
         8  
Pol. Sci. 201, 202—American Government  
         8  
Pol. Sci. 306—Government in Montana  
         2  
Soc. 101—Introductory Sociology  
         5  
Soc. 426—Methods of Teaching Social Studies in Secondary Schools  
         3  
Elecives—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  

SOCIETY (Minor only)  
Teaching Minor (22 credits)  
Required Courses:  
Anthro. 152—Man and His Culture  
         5  
Anthro. 158—Cultural Anthropology  
         5  
Soc. 200—American Society  
         5  
Soc. 206—Introduction to Social Change  
         5  
Soc. 208—The Individual and Society  
         5  
Soc. 307—Socialization  
         3  
Soc. 306—Introduction to Complex Organizations  
         4  

SPEECH  
*Teaching Major Teaching Minor (50 credits) (35 credits)  
Required Courses:  
Sph. 116—Introduction to Systems of Communication  
         3  
Sph. 111—Introduction to Public Speaking  
         3  
Sph. 112—Argumentation  
         3  
Sph. 118—Practicum in Oral Expression  
         3  
Sph. 222, 233, 234—Introduction to Communication  
         13 (234 only)  
Sph. 285—Psychology of Speech  
         3  
Sph. 314—Discussion and Small Groups  
         3  
Sph. 330—Introduction to Speech Pathology  
         3  
Sph. 385—General Semantics  
         3  
Sph. 355—Speech Composition  
         3  
Sph. 361—Performance of Literature  
         3  
Sph. 422—Teaching Speech in the Secondary School  
         3  
Sph. 445—History of American Public Address  
         3  
Elecives—Courses in Speech  
         9  

*The teaching major is available only if accompanied by a teaching minor in English or by another teaching major.

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 a thorough 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 units in English. The major but not more than 66 credits in the department. 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 assume such a core curricu­ulum and build from that.

CORE CURRICULUM  
I. All prospective English majors are expected to take, in the junior year, English 181, 182—World Literature.

II. All students are expected to take, in addition, two quarters in one sequence and one in the other from English 211-212-213, and 231-232-233; English 34 1, 342; 3 credits from General 360 or English 371, 372, and English 450.

III. The foreign language requirement listed earlier in the catalog must be satisfied. Courses in Art, History, Philosophy, Psych­ology, and the Social Sciences are recommended.

SCHEDULE A: LITERATURE  
Students who hope to 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 English 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 substitutet 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, 383, 482; Speech 118.

Elecives: Other electives may be chosen from courses in the department of English, from courses in General Literature and from the Related Fields. Among electives there must be at least one ad­vanced course in English Literature and one advanced course in British Literature. Additional electives in Drama, Speech, and Jour­nalism are strongly recommended.

Option 2  
English 371, 382, 482; Speech 118.

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 General 360.)

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

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

GRADUATE WORK. See Graduate School.

COMPOSITION  
FOR UNDERGRADUATES  
For Explanation see Course Descriptions (Index)

NOTE: Unless exempted by the English Department, all students are required to complete the English 150-250-350 Composition sequence. All students, unless exempted by the English Department, must take English 150 during their freshman year. English 250 and 350 may be taken during any 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.
42—ENGLISH

NOTE: English 001 PREPARATORY COMPOSITION. All students who fail to achieve acceptable performance on the entrance examination must register for this course and must receive a "pass" in it before they will be allowed to enter English 150.

150 (101) FRESHMAN COMPOSITION 3. Introduction to the problems of exposition.

250 (102) INTERMEDIATE COMPOSITION 3 prereq 150. Continuation of English 150. (See Creative Writing 202, permissible as substitute.)

350 (103) ADVANCED COMPOSITION 3 prereq 250. Continuation of English 250. (See Creative Writing 302, permissible as substitute.)

360 (301) ADVANCED COMPOSITION 3. English majors may substitute this course for English 360. Non-majors c/i.

FOR UNDERGRADUATES AND GRADUATES

450 (304) PROBLEMS IN COMPOSITION 3. Required of all English majors, open to non-majors. Critical and expository writing (intended to improve a student's use of language in his own professional area).

CREATIVE WRITING

FOR UNDERGRADUATES

202 INTRODUCTION TO CREATIVE WRITING 3 prereq 150. Practice in creative writing at the introductory level. May be substituted for English 350.

301-302-303 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.)

352 (106) CREATIVE WRITING 3. English majors may substitute this course for English 351. Non-majors c/i.

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.

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

441 (306) 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.)

450 INDEPENDENT STUDIES 2 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. (See General Courses.)

371 THE STRUCTURE OF MODERN ENGLISH 3. Phono­

logical and grammatical structure from a modern linguistic point of view.

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

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


496 THE TEACHING OF ENGLISH AS A FOREIGN LAN­

GUAGE 3 prereq General 360 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 (English) 360 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 practice teaching. Objectives, materials and organization of the curriculum from grades 7 to 12; observation of expert teachers; some practice in teaching and correcting of student themes. Does not count in curricular A and B. Credit is not allowed for this course and the identical course Educ 382.

FOR GRADUATES

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

LITERATURE

FOR UNDERGRADUATES

161, 162 WORLD LITERATURE 3. Enter any quarter. A reading of selected masterpieces of world literature.

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. Representative plays from Everyman through Ford and Shirley, plus a few early plays of Shakespeare.

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

344 THEORIES OF DRAMA 3 o/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 "new" poetry of Spenser, 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 writers from 1660 to 1700 with emphasis upon Dryden.

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


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

393 BRITISH LITERATURE: MIDDLE AND LATE NINE­

TEENTH 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.)
FOREIGN LANGUAGES

provide instruction and practice in speaking, reading, and writing the tongues of other peoples for commercial, governmental, or cultural purposes. Intercommunication among the nations of the world depends upon the knowledge of modern languages, and such understanding is particularly necessary as the importance of the United States increases in global affairs. Educated men and women find language skills not only important for social reasons, but as equipment for research in many fields of humanistic and scientific inquiry. Knowledge of a foreign language is also recognized as contributing greatly to the student's ability to use correctly his own tongue. Study of the modern languages is given an opportunity to supplement their classroom instruction with practice in an up-to-date language laboratory.

Language majors may find employment as teachers, interpreters, translators, airline hostesses, in commercial and scientific fields, and in various branches of the government.

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

HIGH SCHOOL PREPARATION. A student who has received credit for a foreign language in high school (but not in a college or university) and who wishes to continue that language at this University will enroll as follows: four years in high school, courses numbered 300 and above; three years in high school, 212 or 202; two years in high school, 211 or 201; one year in high school, 102, or if some time has intervened, 101.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. Not more than 90 credits in all foreign languages may be counted toward the Bachelor of Arts degree. 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. Specific requirements are set forth below under the various languages.

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 courses entitled Introduction to the Humanities (Humanities 101-102-103) and Classical Mythology (Humanities 100).

GRADUATE WORK. See Graduate School.

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 21 credits of upper division work in French.
3. Four quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following: History 215, 216, 309, 310, 314, 315, 327, 328, 329.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101-102-103 ELEMENTARY FRENCH 5.

111 FRENCH FOR ELEMENTARY TEACHERS 2 prereq c/i.

Grammar, conversation, and methods of teaching French in the elementary school.

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 APPLIED LINGUISTICS 3 prereq 203.

302 FRENCH COMPOSITION AND CONVERSATION 3 prereq 301 or c/i.

303 FRENCH CIVILIZATION AND CULTURE 3 prereq 203.

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

421 (311) MEDIEVAL FRENCH LITERATURE 3 prereq 203.

422 (321) FRENCH RENAISSANCE 3 prereq 203.

425 (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

500 DIRECTED READINGS V 1-3 R-9. Prereq undergraduate major in French.

590 GRADUATE SEMINAR 3 R-9.


GERMAN

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

1. German 101 to 203, or equivalent.
2. At least 21 credits of upper division work in German, which must include 311-312-313. (Teaching majors may substitute the Teaching of Foreign Languages 390 for 3 credits of upper division German.)
44—FOREIGN LANGUAGES

3. Four quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following:
   History 215, 216, 209, 310, 320, 321, 322.

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 210-202 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 UNDERGRADUATES AND GRADUATES

301 APPLIED LINGUISTICS 3 prereq 203. An introduction to
   the phonology, morphology, and syntax of standard High German.

302 (300) GERMAN CONVERSATION AND COMPOSITION 3
   prereq 301.

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

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

431 (341) THE AGE OF GOETHE 3 prereq 311-312-313, or
   concurrent registration and c/i.

432 (341) FAUST 3 prereq 311-312-313, or concurrent
   registration and c/i.

441 (351) 19TH CENTURY REALISM 3 prereq 311-312-313, or
   concurrent registration and c/i.

442 (351) THE NOVELLE 3 prereq 311-312-313, or
   concurrent registration and c/i.

451 20TH CENTURY GERMAN LITERATURE 3 prereq 311-312-
   313, or concurrent registration and c/i.

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

480 (481) SEMINAR 3 R-18 prereq 311-312-313. Studies in ma-
   jor authors, periods, or genres.

FOR GRADUATES

111-112 ELEMENTARY READING GERMAN 0. An introduction
   to the structure of German with full emphasis on reading.
   Presently offered through Extension only, when demand is sufficient.

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

180 (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 require-
   ments 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 101-105 may be substi-
   tuted 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

300 (375) INTRODUCTION TO ROMANCE PHILOLOGY 3 pre-
   req 203 or 211 (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 Bache-
   lor of Arts with a major in Russian must meet the following require-
   ments in addition to the general requirements for graduation listed
   earlier in the catalog.

1. Russian 101 to 203, inclusive, or equivalent.
2. At least 21 credits of upper division work in Russian, which
   must include 311-312-313. (Teaching majors may substitute the
   Teaching of Foreign Languages 390 for 3 credits of upper division
   Russian.)
3. Four quarters, or equivalent, of another foreign language.
4. Two quarters in history of Europe, chosen from the following:
   History 218, 216, 305, 324, 325, 326.

FOR UNDERGRADUATES

101-102-103 ELEMENTARY RUSSIAN 5.

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

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

FOR UNDERGRADUATES AND GRADUATES

301 APPLIED LINGUISTICS 3 prereq 203. An introduction to
   the phonology, morphology, and syntax of standard (Moscow-
   Leningrad) Russian.

302 RUSSIAN COMPOSITION AND CONVERSATION 3 prereq
   301.

303 RUSSIAN CIVILIZATION AND CULTURE 3 prereq 203.

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

421-422 19TH CENTURY RUSSIAN LITERATURE 3 prereq
   311-312-313 or concurrent registration and c/i. Enter either quarter.

423 20TH CENTURY RUSSIAN LITERATURE 3 prereq 311-
   312-313 or concurrent registration and c/i.

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

SPANISH

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

1. Spanish 101 to 203 inclusive, or equivalent.
2. At least 27 credits of upper division work in Spanish, which
   must include 311-312-313 and 321-322-323. (Teaching majors may sub-
   stitute The Teaching of Foreign Languages 390 for 3 credits of upper
   division Spanish.)
3. Four quarters, or equivalent, of another foreign language.

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

FOR UNDERGRADUATES

101-102-103 ELEMENTARY SPANISH 5.

111 SPANISH FOR ELEMENTARY TEACHERS 2 prerequisite c/i. Grammar, conversation, and methods of teaching Spanish in the elementary school.

201-202-203 INTERMEDIATE SPANISH 4 prerequisite 103 or 211-212. Aural, informal 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 301-302 and 211-212.

211-212 (213-215) SPANISH READINGS 4 prerequisite 103 or 211-212. 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 prerequisite 203. An introduction to the phonology, morphology, and syntax of standard Spanish.

302 (300) SPANISH COMPOSITION AND CONVERSATION 3 prerequisite 301.

303 CONTEMPORARY HISPANIC CIVILIZATION AND CULTURE 3 prerequisite 203.

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


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

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

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

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

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

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

441 (381) SPANISH POETRY 3 prerequisite 311-312-313, or concurrent registration and c/i.

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

490 (491) SEMINAR 3 R-9 prerequisite 311-312-313. Studies in major authors, periods, or genres.

FOR GRADUATES

500 DIRECTED READINGS 1-3 R-9 prerequisite 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 prerequisite Foreign Language 203 or 217. Fundamental principles, concepts, objectives, and methods involved in the teaching of a modern foreign language. Required of teaching majors and minors in modern languages.

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, sociological, and economic problems involved in the continued production and utilization of these resources.

Forestry education provides a background of knowledge of soils, vegetation, water, and wildlife and the use of forest lands for sustained production of timber and related products, grazing by domestic and wild animals, watershed protection, and outdoor recreation. It is directed toward an understanding of the relationship of these elements to human institutions.

The four-year curricula lead to the degrees of Bachelor of Science in Forestry or Bachelor of Science in Resource Conservation. Masters degrees offered as: Master of Forestry, Master of Science in Forestry, Master of Science in Resource Conservation, Master of Science in Wildlife Management 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, but all students spend the sophomore spring quarter on the Lubrecht Experimental Forest. Senior students work on field problems involving extended trips and camps. In addition, 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 sound high-school background in English, mathematics, social studies, and the sciences. A minimum of one and one-half years of algebra and one year of geometry are desirable.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY. A minimum of 192 credits, plus required work in physical education is required. 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 requirements for foresters. There are two majors: forest resource management and forest science. Within the forest resource management major there are several options with specific course requirements. Courses common to all options constitute the core curriculum.
## CORE CURRICULUM

(Courses required of all options in both Majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot 111—Introduction to Biology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 112—General Botany</td>
<td>5</td>
</tr>
<tr>
<td>Bot 250—Plant Ecology</td>
<td>6</td>
</tr>
<tr>
<td>Engr 101—Intermediate Composition</td>
<td>3</td>
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<tr>
<td>For 50—Slide Rule</td>
<td>0</td>
</tr>
<tr>
<td>For 200—Forest Mensuration</td>
<td>4</td>
</tr>
<tr>
<td>For 211—Forest Ecology</td>
<td>3</td>
</tr>
<tr>
<td>For 253—Surveying</td>
<td>2</td>
</tr>
<tr>
<td>For 290—Dendrology</td>
<td>2</td>
</tr>
<tr>
<td>PE 100—Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

### (Second Year)

| Bot 326—Plant Physiology | 5 |
| Bot 250—Plant Ecology | 3 |
| Engr 350—Advanced Composition | 3 |
| For 300—Forest Statistics | 4 |
| For 361—Silviculture | 4 |
| For 340—Wood Technology (or alternate For 343) | 4 |
| For 390—General Range Management | 4 |
| *For—Forest Protection | 3 |

### (Third Year)

| Eeon 201-202-203—Principles of Economics | 3 |
| Engr 350—Advanced Composition | 3 |
| For 300—Forest Statistics | 4 |
| For 361—Silviculture | 4 |
| For 340—Wood Technology (or alternate For 343) | 4 |
| For 390—General Range Management | 4 |

### (Fourth Year)

| For 401—Timber Management | 4 |
| For 420—Resource Policy and Administration | 4 |
| For 486—Integrated Forest Resource Management | 4 |

### FOR UNDERGRADUATES

*For Explanation see Course Descriptions (Index)*

50 SLIDE RULE 0 (1-6) prereq Math 117 or concurrent registration. Use of the slide rule in the solution of mathematics problems.

190-191 SURVEY OF FORESTRY 1 (1-0). Enter either quarter. General survey of the field and subject matter of forestry and introduction to the practice of forest resource management and the principles of his advisor and approval of the Dean of the School of Forestry.

### SPECIFIC REQUIREMENTS FOR THE FOREST SCIENCE MAJOR

The core curriculum is required. The remainder of the curriculum must be chosen by the student in consultation with his advisor and the Director 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, reforestation, soil and water conservation. 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 B.S. 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.
340 WOOD TECHNOLOGY  4 (3-2) prereq 261. Wood identification and anatomy; introducing the relationships of the physical, chemical and mechanical properties to specific uses.

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

363 RANGE LIVESTOCK PRODUCTION  2 (2-0) prereq 360 and c/l. Selection, production, and management of range livestock.

FOR UNDERGRADUATES AND GRADUATES

300 FOREST STATISTICS  4 (3-3). The application of statistical methods of forest measurement.

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


341 CHEMICALLY DERIVED WOOD PRODUCTS  3 (3-3) prereq Chem 117 or Chem 231. Generalized chemistry of wood. Survey of chemically derived products and processes including naval stores, pulp, paper and plywood.

350 ADVANCED SURVEYING  4 (2-4) prereq 350, 352, Mth 116. Route surveys and design, forest transportation, system planning, and selected topics in land surveying.

351 AERIAL PHOTOGRAMMETRY  3 (3-3). The elements of photogrammetry, photogrammetric measurement, planimetric and topographic mapping, introduction to remote sensing and air photo analysis. Emphasis on applications to forestry.

360 GENERAL RANGE MANAGEMENT  4 (3-3) prereq c/l. An introduction to the field of range management, class of stock, 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/l. Economic range forage plants; forage value to different kinds of range animals; management problems in their use.

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

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

380 THE RENEWABLE RESOURCES AND THEIR CONSERVATION  3 (4-2) prereq 210 and Bot 250. The interrelationships of resource conservation problems and programs. Management of their development and use to meet the needs of the public. Appreciation of natural landscape values. State, national parks and wilderness areas.

383 WOOD RECREATION  3 (3-4) prereq 380. Physical development, objectives and planning in the recreational use of forest and other wild lands.

389 CHEMISTRY OF PLANT CONSTITUENTS. (See Chem 361 and Bot 360.)

391 CHEMISTRY OF WOOD PRODUCTS. (See Chem 387.)

400 FOREST MANAGEMENT  4 (2-0) prereq senior standing in Forestry. Inventory and analysis of a forest property.

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

402 FOREST MANAGEMENT  3 (2-0) prereq 400, 401. Organization and writing of a management plan for a forest property.

410 REGIONAL AGRICULTURE 2 (0-Field) prereq 410 and 311. Application of agricultural methods to the principal commercial forest species, types and regions of the United States.
GENERAL COURSES

are offered as surveys or introductions to broad fields of learning, but there is no "general course" in which a degree is offered. Any University student is compelled to study in many fields as a matter of general education, and specialization in one curriculum, although required for a degree is strictly limited (see Graduation Requirements). But it has been found advisable to provide certain degrees 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 one of these courses when you have completed 9 or more credits in literature indicated in the 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.)

230 (221) FOREIGN LITERATURES IN TRANSLATION. (See Foreign Languages.)

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.

440 STUDIES IN COMPARATIVE LITERATURE 3. The origins and dissemination of important literary ideas, trends, and movements.
GEOGRAPHY—49

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 achievement of an 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 30 credits in Geography including Geography 101, 102, 201, 311, 300, 360, 370, 380, 390, and one of four Geography courses 331, 335, 345, and 406; Economics 201-203; Sociology 101 or Political Science 201-202; and Sociology 101 or Anthropology 135.

The following courses with the consent of the advisor may be counted toward a major in Geography: Botany 250 or 355, Business Administration 280, Physics 131-132, Geology 310, Sociology 304, and Forestry 380.

The foreign language requirement listed earlier in the catalog must 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.

FOR UNDERGRADUATES

FOR EXPLANATION SEE COURSE DESCRIPTIONS (INDEX)

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

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

103-104-105 WORLD GEOGRAPHY. Enter any quarter. The peoples and places of the world today. Place-to-place differences in the quality of human life and landscape. (103) The Americas; (104) Europe, Africa, Oceania; (105) Asia, Australia, and Oceania.

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

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

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

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

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 3 prereq 101 or =. An analysis of the cultural areas of Canada and the United States with emphasis on differences in regional development.


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 distribution and analysis of geographic features. Contemporary problems and developments.

310 GEOGRAPHY OF SOUTH AMERICA 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 geographic 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.

FOR GRADUATES

300-301-302 INTRODUCTION TO THE LEADING OF LITERATURE 3. Enter any quarter. (100) Fiction. (102) Drama. (103) Poetry. (May be substituted for English 101-103. For English majors, substitute English 300-301-302.)

348-420 GENERAL ARTS.
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.

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

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

CLIMATOLOGY 3 prereq 101 or =. Elements and controls of weather and climate. Classification and distribution of climatic types.

LANDFORM ANALYSIS 3 prereq 101 or =. Topographic elements of the earth’s surface with emphasis on processes of morphologic change.

PHYSICAL GEOGRAPHY OF ARID LANDS 3 prereq 101, Geol 110 or =. Landform development in the desert environment.

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

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

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

POPULATION AND RESOURCE GEOGRAPHY 3 prereq c/l. Geographic aspects of problems arising from the relationships between human populations and their resource use.

ADVANCED REGIONAL GEOGRAPHY 3 prereq c/l. Analysis in depth of a specific area.

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

SEMINAR IN GEOGRAPHY V R-6 prereq 16 credits in Geography including 101, or =.

FOR GRADUATES

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

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

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

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

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.

The Bachelor of Arts degree, the Master of Arts (or Master of Science), and the Ph.D. degrees are offered (see Graduate School). Instruction involves the use of mineral, rock and fossil collections, geological and topographic maps, aerial photographs, optical and chemical methods, X-ray methods, geophysical methods and many others. Nearly all courses include field work. Students are trained in mapping methods and general field investigation under actual working conditions. Such studies are accompanied by theoretical work as well as courses in other basic sciences.

Petroleum companies, 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 earlier in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 130, 200, 202, 203, 310 (or Geography 570 with consent of advisor), 311-312, 315, 429, 3 credits of 323, 530-531. Also required are Mathematics 116, 117, 118, or Mathematics 121, 116; Chemistry 111-122, 113; Physics 111-112-115 or 251-252-253; English 460; 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 advisor. This will, for example, allow special curricula planned for special areas of interests as geochemistry, geophysics or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.

The grade of "F" or "P" is given for all work in Geography 590, 595, 600, and 695.

FIELD TRIP EXPENSES. Students enrolled in courses which include field trips share equally the cost of transportation. Students should consult the University Business Office or at the Department of Geography office for a statement of expenses connected with Geology 429, Field Geology.

SUGGESTED CURRICULUM IN GEOLOGY

Freshman Year

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<th>Course</th>
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<td>Chem 121-122-123</td>
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<tr>
<td>Geol 110, 120, 130</td>
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<tr>
<td>Group III or IV courses</td>
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<td>Zool 111, 112</td>
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Summer Session

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<td>Summer Field Camp</td>
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Junior Year

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<tr>
<td>Engl 350</td>
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<tr>
<td>Physics 111-112-113 or 221-222-223</td>
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<tr>
<td>Geol 311-312, 315</td>
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<td>For Lang 101-102-103</td>
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<td>Group III or IV courses or electives</td>
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Senior Year

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<tr>
<td>Geol 330-331</td>
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<td>Geol 325</td>
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<td>For Lang 211-212</td>
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<td>Engl 456</td>
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<tr>
<td>Electives</td>
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</table>

Analysis of Requirements

2. Geology academic year course requirements 46
3. Other departmental requirements (Math 15 cr.; Chem 20 cr.; Physics 18 cr.; Zool 10 cr.; Engl 3 cr.) 63
4. Health and Physical Education 6
5. Electives                             13
6. Geology summer field camp (between Soph-Jr years) 8

GRADUATE WORK. See Graduate School.
FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

*Courses offered alternate years.

101 INTRODUCTION TO GEOLOGY 4 (2-4). Description and theories of the origin of the universe and solar system; origin of the earth, energy and time in geology; the crust and interior of the earth; description and origin of minerals and rocks. One or two 101-102 sections.

102 INTRODUCTION TO GEOLOGY 4 (2-4) prereq 101. Metamorphism and the origin of mountains; paleomagnetism and continental drift; the major features of development and principles of the time scale; the ideas of evolution. Five days of on-campus instruction, ten days in the field with evening discussion periods. Enrollment limited to 22 students. Not allowed toward a degree in geology.

306 METHODS OF TEACHING EARTH SCIENCE 3 (2-4) prereq 203, 211. Conventional and innovative teaching techniques, laboratory experiments, and field procedures needed in developing an earth science curriculum. Credit (Not allowed toward a degree in geology. Credit does not satisfy group requirements.

408 *INTRODUCTION TO VERTEBRATE PALEONTOLOGY 4 (2-4) prereq 400 or =. Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representatives of fossil and Recent vertebrates. 200, Zoool 111 or concurrent registration. (410) Principles of biogeography with emphasis on historical and modern biogeographic associations of major animal and plant microfossil groups.

425-426 PETROGRAPHY/PETROLOGY 4 (2-6) prereq 315, 420, 480. Descriptive and interpretative study in thin section of igneous minerals and rocks. (426) Similarly treats metamorphic rocks. Advanced petrologic considerations included in both quarters.

427-428 GEOCHEMISTRY 3 (2-0) prereq 315, Chem 125, 127. Origin of chemical elements. Distribution of the elements in space and earth, and earth's crust. Principles of inorganic and crystal chemistry are applied to allocate minerals. Description and explanation of the distribution of elements in igneous rock units. Solution chemistry as applied to sedimentary deposits with emphasis on chemical and mineral environments.

323 SEDIMENTATION 4 (2-3) prereq 110, 315. Interpretation of depositional environments using both sedimentary structures and grain size and shape analysis; labs include statistical techniques and field trip.

440 INTRODUCTION TO GEOPHYSICS 3 (2-0) prereq Physics 115, 123, Math 115 or concurrent registration. Geol 302. Theory of commonly applied geophysical methods, including gravimetric, magnetic, seismic, electrical and radiometric; emphasis on the interpretation of geophysical anomalies and geologic structure. Geophysics and its relation to other sciences.

445 X-RAY ANALYSIS 3 (2-2) prereq Physics 223. Theory of x-rays; their use in the identification of polycrystalline materials using powder camera and diffractometer methods.

*GEOLOGY—51


451 GROUND WATER GEOLOGY 4 (3-2) prereq 203, 315. Physics 115 or 225. Geologic and hydraulic conditions controlling occurrence and development of ground water.

450 HISTORY OF GEOLOGY 2 (4-0) prereq junior standing with major in one of the physical sciences. Historical and philosophical analysis of the development of geology and related sciences from their beginnings to the 20th century.

FOR GRADUATES

500 SEDIMENTARY PETROLOGY 4 (4-2) prereq 420, 540. Conventional and classification of terrigenous sedimentary rocks and interpretation of their provenance, transport and tectonic setting from thin section examination.

505 ADVANCED GEOCHEMISTRY 3 (3-0) prereq 428. Application of physical chemistry to study of origin, internal structure and chemical composition of earth.

507 CARBONATE PETROLOGY 4 (2-0) prereq 240, 420, 540. Description, classification and environmental interpretation of carbonates; chiefly from thin section examination.

510 GEOTECTONICS 3 (2-0) prereq 331. Analysis, synthesis of regional structural features including geosynclines, island arcs, compressional mountain systems, structure of plateaus, and broad wind and sea conditions within and adjacent to the earth; possible causes of deformation.

511 METALLIC MINERAL DEPOSITS 4 (3-2) prereq 205, 315, 331. Theoretical and descriptive aspects of nature, origin, classification and geologic environments of metallic mineral deposits; field trips.

513 NON-METALLIC MINERAL DEPOSITS 4 (3-2) prereq 205, 315, 331. Description and theoretical aspects of the origin, distribution and classification of non-metallic and chemical materials; emphasis on geochemistry and tectonic localization of occurrence; field trips.

514 GEOLoGY OF SOLID FUELS 3 (3-2) prereq 213, 315, 331. Description and theoretical aspects of coal and related minerals; emphasis on geochemistry and tectonic changes. Mineralogy and geology of radioactive materials. Field trips.

515 STRUCTURE OF MINERAL DEPOSITS 3 (3-0) prereq 311, 513 recommended. Classification of mineral deposits according to structural features; special reference to origin as related to tectonic control.
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 participation and preparation 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 through the Department: Bachelor of Arts which requires that the foreign language requirement listed earlier in the catalog be satisfied, and Bachelor of Science, which requires no course in foreign language. Students electing either degree will fulfill the requirements listed below. Upper division students are expected to maintain a cumulative grade-point average of at least 2.0 in order to continue as majors in the department.

**General Education (59 crs.):**
- Group I Life Sciences (to include Zool 111 and 302, Micr 102):
- Group II Physical Sciences or Math (to include Chem 101, Physics 111; Math 311 or Chem 101):
- Group III Social Sciences (to include Soc 101):
- Group IV Electives; and in addition English, Home Ec 146, Psych 110 and 290, H&PE 115-120 (6 crs. fulfills H&PE requirement), and Speech 111.
- Teacher certification (54 crs.): Required only of students who desire teaching certificate: sequence of courses in Education plus teaching minor.

**Professional Physical Education (31 crs.):**

**AREAS OF SPECIALIZATION** (student selects one area for specialization):
- Physical Education, Men: Required (19 crs.): H&PE 330, 358, 381, 373, 330, 490; Electives (6 crs.): H&PE 311, 311, 320, 436, 238 or 336, maximum of 9 credits from 210, 213, 223, 310, 321, 311.
- Physical Education, Women: Required (23 crs.): H&PE 322, 301, 302, 324, 329, 373, 375, 380, 460, 490; Electives (9 crs. required): H&PE 213, 303, 326, 356, 238 or 336, maximum of 3 credits from 361, 362, 386.
- Dance: Required (31 crs.): H&PE 324, 335, 334, 327, 328, 401, 402, 490, Art 123, Drama 131, Music 134; Electives (7 crs. required): H&PE 211, 236, 301, 302, 305, 326, Art 372, Drama 201, 300, 341; Music 111, private lessons.

**Pre-Physical Therapy:** Required (40 crs.): H&PE 240, 386, 388, 390, 460, 486, 585; Math 116, 117, SPA 330; plus 4-5 additional credits in Chemistry or Physics; Electives (30 crs.) to be selected with consent of advisor.

**Recreation Leadership:** Required (Women 29 crs., Men 30 crs.):
- H&PE 320, 338, 358, 367, 361, 362, 436, 460, 490; in addition men students also take H&PE 322 and 2 courses from Human Rec 101, 302, 303. Participants also take 10 credits of Dance, Drama, Music, Speech; excluding 8 credits elected from Social Welfare; 7 credits elected from Sociology. Electives: 10 credits required from H&PE 213-120 (women) or 1 or 2 coaching courses (men), H&PE 250, 335, 386.

**Suggested first-year program:**

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<th>A</th>
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<td>Engl 150, Psych 110, Speech 111</td>
<td>5</td>
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<td>Group III Soc. 101</td>
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<td>Zoell 101, Home Ec. 146, Micro 102</td>
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<td>Group IV</td>
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<td>H&amp;PE 115, 116, 117</td>
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Suggested:

17 18 17
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN RECREATION: Two degrees are offered: Bachelor of Arts with major in Recreation which requires that the foreign language requirement listed in the catalog be satisfied, and Bachelor of Science with major in Recreation, 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 (85 crs.): Group I Life Sciences (to include Zool 111 and 112, Micb 105): Group II Physical Sciences or Math; Group III Social Sciences (to include Soc 101, 202, 206): Group IV Humanities; and in addition English 150, 250, 255; Psych 110 and 230; Speech 111 and 314.

General Professional Preparation (17 crs.): HPE 115 - 120 (6 cr. fulfills H&PE requirement) and HPE 199, 240, 301, 303, 339, 465, 490.


Requirements from other Departments (30 crs.): Educ 247; For 385, 386; Jour 270; S W 181; Art 4 (crs. required) 123, 125, 126, 127, 129, 160; Drama 4 (crs. required) 121, 377, 574; Music 134.

Electives: 35 crs. of which no more than 20 crs. may be from H&PE.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES
For Explanation see Course Descriptions (Index)

PHYSICAL EDUCATION 1. All students except those exempt under the rules, who have completed six quarters of Physical Education 100 in addition to the 180 credits required for graduation. (See Required Courses earlier in the catalog.) Only one credit per quarter may be used to meet the requirement. A student may not repeat at the beginning level an activity in which he has previously received a grade of C- or B.

Program offerings are divided into 5 groups:
2. PHYSICAL FITNESS: Apparatus, gymnastics, physical conditioning, slim gym, tumbling, weight training.
3. DANCE: Folk, Latin American, modern, social, square.
4. INDIVIDUAL AND DUAL SPORTS: Archery, badminton, bowling, fencing, golf, judo, recreating sports, riflery, skiing, tennis, track and field, wrestling.
5. TEAM SPORTS: Baseball, basketball, field hockey, football, soccer, softball, speedball, volleyball, water polo.

Within the six quarters of Physical Education 100, a student is required to complete the six hours of activity unless exempted by the department.

1. Participate for at least 1 quarter in 2 of the 3 following areas:
   a. Dance
   b. Individual and dual sports
   c. Team sports

2. Electives to fulfill the 6 quarter requirement. Within the 6 cr. credit requirement a maximum of 3 quarters may be taken in one activity.

PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS
1. Six quarters required of all H&PE majors and minors in place of P.E. 100.


Women (115) Soccer, Speed Ball. (116) Modern Dance. (117) Soft Ball. (118) Volley Ball, Speed Ball. (119) Gym (120) Track.

FIRST AID 2. Red Cross Standard and Advanced courses and Medical Self-Help. Certification may be secured upon completion of the requirements.

HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION 3. Historical, philosophical and scientific backgrounds as related to physical education today.

ADVANCED COACHING TECHNIQUES 1. Intensive training in special techniques of coaching various sports.

COACHING OF FOOTBALL 3.

COACHING OF DANCE 2.


GYMNASTICS AND TUMBLING 3 prerequisite 115 (Men), 119 (Women), and cr. I. History, values, facilities, equipment, principles, safety and conditioning, warm-up and conditioning, nomenclature, skills, judging, competitive gymnastics.

COACHING OF WRESTLING 3 prerequisite cr. I. History, values, principles, warm-up and conditioning, weight divisions, terminology and rules, skills, and officiating.

ADVANCED PROFESSIONAL PREPARATION FOR MAJORS AND MINORS 4. Physical Education 100 R-6. Preparation in advanced techniques, theories and practices.

COACHING OF BASEBALL 3.

RECREATION SPORTS OFFICIATING—THEORY AND PRACTICE 3. Principles, rules, techniques and practical experience in officiating team and individual indoor and outdoor recreational sports. Football and basketball officiating will be optional.

OFFICIATING BASKETBALL (WOMEN) 2. Theory, principles, rules and techniques. Practical experience in officiating intramural basketball. Certification will be awarded by Women's Activities Rating Committee upon successful completion of requirements.

DANCE HISTORY 3. Dance from its primitive beginning through modern expressions.


THEORY AND PHILOSOPHY OF DANCE 2. A philosophical foundation for dance as related to other arts in historical development and style.

WATER SAFETY INSTRUCTOR 2 prerequisite 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.


SKI INSTRUCTORS QUALIFICATION PROGRAM 3. Pre­ requisite 10 credits to all students with above average skiing ability. Techniques of Teaching Skiing including finished technical forms, teaching methods, ski school progress, and ski mechanics. Preparation for potential ski instructors for certification by the Professional Ski Instructors of America.

INTRODUCTION TO RECREATION 3 prerequisite 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 W 361.

HUMAN ANATOMY 3. The systems of the body and the structure of organs concerning these systems.

METHODS OF TEACHING PHYSICAL EDUCATION ON THE SECONDARY LEVEL 1. Experience in teaching; class organization, analysis of techniques, development of units of instruction in seasonal sports.

COACHING OF BASKETBALL (MEN) 3.

THEORY OF OFFICIATING BASKETBALL (MEN) 1. Principles, rules, techniques, practical experience.

COACHING OF TRACK 3. Theory and practice in track and field events.

COACHING OF COMPETITIVE SWIMMING AND DIVING 3 prerequisite c. I. Coaching and analysis of competitive strokes and techniques. Development of training program on age group, school and college level. Officiating and meet management.

METHODS AND MATERIALS IN SOCIAL AND LATIN DANCE 2.

METHODS AND MATERIALS IN MODERN DANCE 2 prerequisite 116 (Women).

METHODS AND MATERIALS IN FOLK DANCING AND SQUARE DANCING 2.


AQUATIC PROGRAM MANAGEMENT 3 prerequisite Senior Life Saving or. Group methods of teaching swimming for various age groups. Organization and operation of programs in competitive swimming. SCUBA diving, swimming for the handicapped, staging water shows. Swimming pool and waterfront management.

TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS 3 prerequisite PE majors and minors, junior standing, PE 200 and Ped 115-120; Group instruction in physical education majors, junior standing and Educ 202. Principles and foundations of elementary school physical education; the.WebDriver school swimming and teaching and teaching activities for children in grades one through six.

PROGRAMMING IN RECREATION 3. Principles of program planning for organized offerings in recreation. Selection, adaptation, evaluation of activities. Translation of needs and interests into programs.

CAMP COUNSELOR 3. Qualifications and professional preparation for camp counselors. Duties and functions as a group leader, craft skills and techniques. Practical applications of techniques.


RECREATION LEADERSHIP (SOCIAL RECREATION) 3 prerequisite Soc 101. Principles and practice in group leadership, program skills for various age groups and for special groups, such as the handicapped. Credit not allowed for this and Soc W 363.
54—HISTORY

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 3 prereq 145 and 146. Principles and procedures for group leadership of outdoor activities; skills and understandings essential to organized camping. Credit not allowed for this and Soc Wel 363.

394 FIELD WORK IN RECREATION 2, 3 to 5 V R-8. Supervisory and related experiences, methods to be used in conducting recreation programs in outdoor recreation, community, social agency and institutional situations. Laboratory given in various activities. Activities are coordinated to outdoor activities of the season and group activities available for leadership training.

385 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION PROGRAMS 3 prereq 300. Principles and policies for the organization and operation of high school physical education departments. Management of the physical plant.

375 (372, 375) METHODS IN TEACHING HEALTH 3 prereq PE 202. Methods of teaching health, minor or EdEd 211. Use of guidance in planning for instruction; methods and techniques in direct, corrective, preventive and remedial phases of health instruction; material aids and their sources, evaluation in health instruction.


388 INTRODUCTION TO PHYSICAL THERAPY 3 prereq or coreq 306. Theory and practice of massage. The treatment of defects which come within the field of physical education.

390 CLINICAL TRAINING IN PHYSICAL THERAPY V 1-4 R-4 prereq 388 and c/l. Practical experience in local physical therapy centers.

391 FIRST AID 3. Red Cross Standard, Advanced and Instructor’s Course and Medical Self-Help. Certification at Instructor level may be awarded from completion of course.

400 TEACHING PHYSICAL EDUCATION ACTIVITIES 2-4 prereq 115-120 and c/l. Assigned teaching projects in college classes, under supervision.

FOR UNDERGRADUATES AND GRADUATES

329 ADVANCED TECHNIQUES IN MODERN DANCE 2 prereq c/l. Advanced study of modern dance techniques contributing to flexibility, strength, and control in dance expression.


338 THE HIGH SCHOOL INTRAMURAL PROGRAM 2. Problems of organizing and administering the intramural sports in the high school.

373 THE SCHOOL HEALTH PROGRAM 3. Required of Physical Education majors and minors. Function and scope of health services; appraisal, preventive and remedial aspects of common health problems; school and classroom aspects of healthful school living; school safety program.

385 KINESIOLOGY 2 prereq 380. Advanced study of muscle action and joint mechanics of the body and their relation to health and physical education.

396 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 3 prereq 380. Prevention and detection of common physical defects frequently encountered by the physical educator; follow-up procedures in goal accomplishment. Laboratory given in community, social agency and institutional situations. Laboratory given in community, social agency and institutional situations.


402 DANCE PRODUCTION 3 prereq 401. Choreography, staging, lighting, makeup, costuming and other problems of dance in public performance including concert dance and dance demonstrations. Performance in dance concert required.

440 RECREATIONAL AREAS AND FACILITIES 3. The planning, construction and maintenance of urban recreation areas and facilities as they relate to organized activities in public and private parks, playgrounds, play areas, all-purpose and specific use parks, community centers, and day camps. Methods and techniques for financing, Tax programs and possibilities. Federal support programs for area and facility development.

460 SEMINAR V 1-3 R-12. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

464 ORGANIZATION AND ADMINISTRATION OF RECREATION 3 prereq H&PE (Soc W) 381 or c/l. Personnel, finance, facilities, programs and interrelations. Coordination with youth-serving institutional and municipal agencies. (Credit not allowed for this and Soc Wel 494.)

465 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION 2 prereq 362. Orientation to and application of statistical and administrative use of tests, elementary statistical techniques and procedures.

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

470 PHYSICAL EDUCATION AND RECREATION FOR THE SPECIAL STUDENT 3 prereq 339, and 361 or Soc W 361. Concepts and activities related to physical activity and leisure time needs of the special child. Laboratory experience in leading games, rhythms and social recreation activities.

478 (378) PHYSIOLOGY OF EXERCISE 3 prereq Zool 202. The physiological effects of the different types of exercise on the functions of the human body.

486 ADVANCED CORRECTIVE PHYSICAL EDUCATION PROCEDURES 3 prereq 368. Survey of orthopedic conditions which fall in the province of the corrective physical education and physical therapy specialist; recommended therapeutic procedures; organization of corrective physical education programs in schools and colleges.

491 PRACTICUM IN RECREATION V R-4 prereq 464 and c/l. Supervised field work. Experience in conducting recreation programs in community, social agency, and institution situations.

FOR GRADUATES

501 RESEARCH METHODS 3 prereq or coreq 502 or =. Research methods and techniques used in health, physical education and recreation; their application in conducting and interpreting individual studies.

502 RESEARCH IN RECREATION 3. Independent directed research.

503 STATISTICAL MEASUREMENTS IN PHYSICAL EDUCATION 4 prereq 485 or =. Specific tests for evaluation of organic, neuro-muscular, psychological and social outcomes. Practice in construction and application of tests, and interpretation of results.

521-522-523 FOUNDATIONS FOR HEALTH, PHYSICAL EDUCATION, AND ATHLETICS 3 prereq undergraduate major in PE or Education. (521) Advanced Physiology of Exercise: (522) Psychological-Sociological bases; (523) Philosophical-Historical background.

531 ADVANCED ADMINISTRATION OF PHYSICAL EDUCATION AND ATHLETICS 3 prereq 368 or =, and c/l. Problems in the administration of high school and college physical education and athletic programs; relations of physical education to community, social agency, and institutional situations.

532 (468) SUPERVISION IN PHYSICAL EDUCATION 3 prereq 363 or =. Roles and responsibilities of supervisors in exerting effective leadership.

535 SEMINAR IN THE ADMINISTRATION OF PUBLIC RECREATION PROGRAMS 3. Administrators of organized recreation, activity programs in municipal, state and national park systems and recreation departments.

536 SEMINAR IN THE ADMINISTRATION OF RECREATION 3. Problem areas in recreation.

537 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, 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 389, 478. The medical aspects of sports and physical training. The etiology and management of injuries, drug use and therapy, nutrition, fatigue, problems of training 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 skeletal and muscular movement.

591 INDEPENDENT STUDY V R-5 prereq c/l. Investigation of problem areas in Physical 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 background and ramifications of the present local, national, and world affairs. Many students combine the fields of History and Political Science.

The department helps to prepare men and women occupationally for either the domestic or the foreign service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and businessmen with a basis for the pursuit of their chosen professions, but also furnishes knowledge and perspective for intelligent leadership in community affairs.
tific methodology of the 18th and 17th centuries, and to the appear-
ance of a new field of scholarly inquiry: the Enlightenment. The
scientific doctrine from the age of the Enlightenment through the
technological revolution of the 19th century; the relation of science
to the religious and political communities; the growth of the new
internationalism of the scientific world.

406 MEDIEVAL INSTITUTIONS 3. Typical institutions—the
Christian Church, feudalism, Roman law, the twelfth-century
renaissance, the papal-imperial struggle.

415-416 NINETEENTH CENTURY EUROPE 3 prereq 103. Not
open to students who have had 215-216. (415) The internal develop-
ments and external relationships of the chief European powers, 1815-
1870. (416) Continuation to 1900.

424-425 DIPLOMATIC HISTORY OF RUSSIA 2 prereq 324-
325. (424) Russian foreign relations from Kievan times to the end
of the 19th century. (425) Continuation since 1800.

427 HISTORY OF COMMUNISM 2 prereq 326. The Commu-
nist movement and Communist thought since 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 nine-
teenth and twentieth centuries.

441 TUDOR ENGLAND 3 prereq 242. English social and politi-
cal institutions from 1485 to 1603; early Tudor government; the break
with Rome; the Elizabethan settlement; war with Spain; the Eliza-
abethan political and social structure.

442 STUART ENGLAND 3 prereq 242 or 441. Social and politi-
cal 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; re-
form movements; the rise of liberalism; the changing empire; 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.

453 CONFEDERATION AND CONSTITUTION 3 prereq 261.
An analytical view of the beginnings of central government in the
United States.

454 (354) THE AMERICAN REVOLUTION 3. Causes and de-
velopment of the American Revolution; the Declaration of Indepen-
dence; organization of state governments; the Confederation period,
western lands, finance, commerce; The Constitutional Convention.

455 (355) THE AGE OF JEFFERSON 1789-1815 3. The early
national period: Federalists and the uses of power; Jeffersonians
and the limits of power; the first American party system; The War of
1812.

456 (356) THE AGE OF JACKSON, 1815-1848 3. Nationalism
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 1876-
1900; the politics of complacency; the agrarian revolt; triumphant
industrialism; emergence of the United States as a world power;
cultural currents of the Gilded Age.

459 THE PROGRESSIVE ERA 3 prereq 262. Reform move-
ments and the progressive impulse in American history, 1900-1920.

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) Major
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 evalua-
tion 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/i.
Enter either quarter. (473) American business enterprise—its organi-
ization, capitalization, and marketing and labor relations—from col-
onial times to 1880. (474) Continuation to the present.

477 (377) AMERICAN BIOGRAPHY 3. Studies in the lives of
leading Americans.

480 HISTORY OF AMERICAN POLITICAL PARTIES AND
PARTY SYSTEMS 3. Origins, political development, and decline of
American party systems: Federalists 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. The contributions of leading 19th-century European his-
torians to the development of modern historical analysis and inter-
pretation.

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.
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 as  
sures 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 work in Foods and Nutrition and for  
the Dietetic Internship. Plan 2 provides a program in general Home Economics. Here the student may emphasize Clothing and Textiles, Child Care, or Family Relations. The general major may be combined with other offerings on the campus such as Business, Radio and TV, Social Welfare and others.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 90 credits in Home Economics selected as follows:


The following additional courses are required according to the plan selected by the student:

1. Preparation for Teaching: Home Economics 157, 210, 258, 362, 303, 305, 310, 321, 358, 367, 368, 421, 460 (311 and 421 may be taken in either Education or Home Economics); Art 125; Chemistry 101; Education 241, 305, 405, 467; Microbiology 100, 101, 306. These courses plus electives combined with a teaching minor will prepare for the  
certificate to teach Home Economics in secondary schools.

2. Foods and Nutrition and Dietetic Internship: Home Economics 157, 205, 206, 208, 209, 212, 241; Chemistry 211, 212, 261, 262, 268; Microbiology 200, 306; Zoology 202, Education 205, Business Administration 201, 441; Psychology 343. For further requirements consult advisor.

3. General Home Economics: Home Economics 102, 157, 210, 258, 302, 303, 304, 305, 368, 490, plus additional Home Economics credits to 
make a total of 50 and Chemistry 101.

Clothing and Textiles emphasis: General Home Economics requirements plus Home Economics 254, 302, 358, 365, 380; Art 125, 200, 201, 202; Chemistry 101. Students should satisfy the foreign language requirement. Those planning a career in retailing should take Clothing 201, 202, 203; Business Administration 360, 362.

Child Care emphasis: General Home Economics requirements plus Home Economics 310, 331, 346, 367; Chemistry 101; Sociology 305; Social Welfare 181, 385; Psychology 320, 460.

Family Relations emphasis: General Home Economics requirements plus Home Economics 310, 346, 367; Chemistry 101; Sociology 201, 204, 205, 305; Social Welfare 181; Psychology 230, 240; Education 340.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

102 PERSONAL AND FAMILY LIVING 3 (3-0). Personal development and factors which affect family and social relationships. 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.

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

146 ELEMENTARY NUTRITION 4 (4-0). 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 (6-0) prereq or concurrent. Major principles applied in planning and instruction but also serves as service course. Designed for the student who is lacking in experience in clothing construction.

300 HOME MANAGEMENT IN THEORY AND PRACTICE 2 (2-0). Resources used in living. Emphasis of practical and applied home 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 5 (3-4). The selection, storage, and preparation of food. Methods of food conservation. Majors and minors only. Credit not allowed for both 141 and 241.


264 WEAVING 2 (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 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. 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.


321 METHODS OF TEACHING HOME ECONOMICS 3 (3-0) prereq 102, 157, 241. The fundamental principles of organization, unit planning and methods of demonstration of subject matter. To be taken by majors and minors before professional quarter. (Home Economics majors may take this course as Education 321.)

341 (431) QUANTITY FOOD PRODUCTION AND SERVICE 4 (2-4) prereq 210, 241. Application of principles of food preparation and food management to institutional situations. Menu planning for institutions.

FOR UNDERGRADUATES AND GRADUATES

342 EXPERIMENTAL FOODS 3 (1-4) prereq 241. Foods from the experimental point of view. Special problems are assigned for individual investigation.

346 FAMILY NUTRITION 3 (3-0) prereq 146 or 246, non-majors only. The science of nutrition as it applies to the growth, development, and maintenance of health in all age groups.

352 HISTORY OF CLOTHING AND TEXTILES 3 (3-0). Historic costumes and textiles and their influences on modern dress and fabrics.

358 ADVANCED CLOTHING PROBLEMS 3 (1-4) prereq 258. Modern principles used in the construction of tailored garments. Experimentation with a variety of techniques and fabrics.

369 CLOTHING DESIGN 3 (2-2) prereq Art 125. Art principles applied to designing clothing. Original designs created through flat pattern and draping methods.

360 RECENT DEVELOPMENTS IN TEXTILES 3 (2-2) prereq 155 and Chem 160 or c/i. Developments in fibers and finishes, legislation and standardization. Comparison and evaluation of textiles.

366 CHILD DEVELOPMENT V 2-3 (3-0) prereq Psych 110. The infant, pre-school and school-age child. Observation required for majors, for non-majors observation optional.

367 ADVANCED PROBLEMS IN CHILD DEVELOPMENT 3 (1-4) prereq 246. Participation in the laboratory. Open to non-majors only.

385 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 4 (4-0) prereq 246 or c/i. The symptoms of diseases, prophylaxis and feeding in disease.

412 ADVANCED PROBLEMS IN TEACHING HOME ECONOMICS 3 (3-0) prereq 241. Participation in the laboratory. Open to non-majors only. (Home Economics majors may take this course as Educ 412.)

432 LARGE QUANTITY BUYING 3 (3-0) prereq 241. Selection, purchase and storage of foods for institutions.

433 INSTITUTION ORGANIZATION AND MANAGEMENT 3 (3-0) prereq 342. Efficient organization and administration of food service units, employment procedures, personnel schedules, records, food cost, and maintenance.

HOME ECONOMICS—57
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 credits 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 65 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journs 100, 270, 290, 390, 391, 371, 372, 380, 381, 491-492-493. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

Jour 100—Introduction to Journalism ........................................ Cr. 3
Engl 290—Intermediate Composition ........................................... 3
Engl 150—Freshman Composition ........................................... 3
H&PE 100 (3 quarters)—Health and Physical Education ................. 3
Additional courses to meet University requirements ...................... 20-46

Total 48-55

Sophomore Year

Engl 350—Advanced Composition ........................................... 3
Jour 360—Advanced Reporting ........................................... 3
Jour 351—Advising Sales ........................................... 3
Jour 371—Advanced Reporting ........................................... 3
Jour 372—Specialized Reporting ........................................... 3
Jour 380—News Editing ........................................... 3
Jour 381—Advanced News Editing ........................................... 3
Jour 491-492-493—Senior Seminar ........................................... 6
Jour Electives (including sequence requirements) .......................... 15-35
Additional Electives .................................................................. 9-30

Total recommended hours in Journalism .................................... 135
Total recommended hours in General Education ............................ 155

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be taken from Journalism 327, 340, 470, 485.

ADVERTISING SEQUENCE: An additional 9 hours required to be taken from Journalism 326, 327, 330, 331, 332, 333, 334.

MAGAZINE SEQUENCE: An additional 9 hours required to be taken from Journalism 327, 332, 333, 334.

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

NOTE: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO JOURNALISM. Open to non-majors. History, organization, techniques and responsibilities of the media of mass communication. Students may select for study special problems in Journalism. Offered by various instructors.

128 TYPOGRAPHY 2 prereq c/l. Problems of typographical design and application. Elementary work in printing and the handling of type.

130 CURRENT AFFAIRS 1. Open to non-majors. Current history of the world and its background, relationships and probable influence.

237 ELEMENTARY PHOTOGRAPHY 3 prereq c/l. Open to non-majors. Photography equipment, materials, and facilities with practice in taking and processing 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.

327 NEWS PHOTOGRAPHY 3 prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

332 MAGAZINE MAKEUP AND EDITING 3 prereq c/l. Open to non-majors. Theory and practice of editing magazines of general circulation. Practice includes editorial planning and writing.

333 MAGAZINE ARTICLE WRITING 3 prereq c/l. Open to non-majors. Preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.

334 TRADE AND TECHNICAL JOURNALISM 3 prereq c/l. Open to non-majors. The writing and editing of trade and business journals, technical and specialized publications.

355 PROMOTION AND PUBLIC RELATIONS 3 prereq c/l. Open to non-majors. The techniques and theories of promotion and public relations.

346 RADIO-TELEVISION PUBLIC AFFAIRS 3. Radio and television special events and information programs, commentaries, interviews and interpretation.


352 NEWSPAPER MANAGEMENT 3 prereq 360. Problems of operation of daily and weekly newspapers.

360 PRINCIPLES OF ADVERTISING 3. Open to non-majors. Theory and techniques with emphasis on the role of advertising as it applies to the producer, consumer, and distributor.

361 ADVERTISING SALES 2 prereq 360 or concurrent registration. Preparation in promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 3 prereq c/l. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.
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 study in these latter fields. Some take advanced or more specialized studies (such as taxation) at eastern institutions; graduates with the requisite scholarship standing are readily accepted by other law schools specializing in advanced legal education. They are also to be found in the ranks of leading practitioners in many large cities of the United States.

**CALENDAR**

**FALL SEMESTER, 1968**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 23-24, Monday and Tuesday</td>
<td>Orientation of new law students Registration</td>
</tr>
<tr>
<td>September 24, Tuesday</td>
<td>Classes begin at 8:00 a.m.</td>
</tr>
<tr>
<td>September 25, Wednesday</td>
<td>Classes begin at 8:00 a.m.</td>
</tr>
<tr>
<td>November 11, Monday</td>
<td>Veterans Day, no classes</td>
</tr>
<tr>
<td>November 27, Wednesday</td>
<td>Thanksgiving vacation begins</td>
</tr>
<tr>
<td>December 2, Monday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>December 21, Saturday</td>
<td>Christmas vacation begins</td>
</tr>
<tr>
<td>January 6, 1969, Tuesday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>January 27-February 1, Monday through Saturday</td>
<td>Semester Examinations</td>
</tr>
</tbody>
</table>

**SPRING SEMESTER 1969**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 12, Wednesday</td>
<td>Registration</td>
</tr>
<tr>
<td>February 12, Thursday</td>
<td>Classes begin at 8:00 a.m.</td>
</tr>
<tr>
<td>March 22, Saturday</td>
<td>Spring vacation begins after last class</td>
</tr>
<tr>
<td>March 23-24, Monday and Tuesday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>June 2-7, Monday through Saturday</td>
<td>Semester Examinations</td>
</tr>
<tr>
<td>June 15, Sunday</td>
<td>Commencement</td>
</tr>
</tbody>
</table>

**FALL SEMESTER 1969**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>September 22, Tuesday</td>
<td>Registration</td>
</tr>
<tr>
<td>September 24, Wednesday</td>
<td>Classes begin at 8:00 a.m.</td>
</tr>
<tr>
<td>November 11, Tuesday</td>
<td>Veterans Day, no classes</td>
</tr>
<tr>
<td>November 27, Wednesday</td>
<td>Thanksgiving vacation begins after last class</td>
</tr>
<tr>
<td>December 1, Monday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>December 20, Saturday</td>
<td>Christmas vacation begins after last class</td>
</tr>
<tr>
<td>January 5, 1970, Monday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>January 26-31, Monday through Saturday</td>
<td>Semester Examinations</td>
</tr>
</tbody>
</table>

**SPRING SEMESTER 1970**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>February 11, Wednesday</td>
<td>Registration</td>
</tr>
<tr>
<td>February 13, Thursday</td>
<td>Classes begin at 8:00 a.m.</td>
</tr>
<tr>
<td>March 21, Saturday</td>
<td>Spring vacation begins after last class</td>
</tr>
<tr>
<td>March 30, Monday</td>
<td>Classes resume at 8:00 a.m.</td>
</tr>
<tr>
<td>June 1-6, Monday through Saturday</td>
<td>Semester Examinations</td>
</tr>
<tr>
<td>June 14, Sunday</td>
<td>Commencement</td>
</tr>
</tbody>
</table>

**GENERAL STATEMENT:** The Law School is accredited by the American Bar Association and the State of Montana. Its curriculum is based upon the semester system, and the law school year being divided into two semesters of approximately eighteen weeks each, including vacation periods. For detailed information concerning facilities, descriptions of the various courses, and admission requirements the applicant should consult the Law School Bulletin.

**REQUIREMENTS FOR ADMISSION:** The Law Faculty places on all applications for admission to the Law School. Candidates must be of good moral character and intellectual promise who have received a baccalaureate degree or its equivalent from an approved college or university prior to matriculation in the 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 satisfactory evidence of high scholastic standing and of outstanding aptitude for the legal profession. In no case will the Law School admit a candidate who does not have a grade point average of at least A average (B+) in the last two years of college. In the case of candidates who are graduates of two-year college programs, the grade point average of the last two years of college must be at least A average (B+). The Law School does not admit any candidate who is not a U.S. citizen or a permanent resident of the United States.

Prior to registration for courses in the second year of Law School, a student who has not received college credit in accounting fundamentals must pass an examination approved by the Law School. The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the preceding one for which admission is sought. Information concerning the course and application forms may be obtained from the Educational Testing Service, P. O. Box 302, Princeton, New Jersey 08543.

Special students are not admitted to the Law School. Students otherwise qualified for admission may register for special courses in law with the approval of the Dean of the Law School and the instructor of the course.
SECOND YEAR

553—Agency & Partnership .................................................. 3
557—Civil Procedure II ....................................................... 3
561-566—Commercial Transactions I, II .......................... 3
564—Constitutional Law ....................................................... 3
554—Corporations ................................................................. 1
569-570—Estate Planning I, II ............................................. 3
573—Evidence ................................................................. 4
583-584—Legal Writing III, IV ........................................ 1
590—Professional Responsibility ........................................... 2

(Accounting Fundamentals by course or examination required before commencement of second year.)

ALL COURSES IN THE FIRST TWO YEARS ARE REQUIRED

THIRD YEAR

690—Administrative Law (Seminar) ................................. 2
691—Comparative Law ......................................................... 2
610—Conflicts of Laws ......................................................... 4
694—Contemporary Legal Problems (Seminar) ................. 2
696—Contemporary Legal Problems (Seminar) ..................... 2
616-619—Court Room & Office Practice I, II .................... 2
621—Credit and Bankruptcy Law ......................................... 2
628—The Family (Seminar) ................................................ 2
631-632—Federal Tax I, II ..................................................... 4
639—Jurisprudence (Seminar) ............................................. 2
641—Labor Law ................................................................. 1
642-643—Law Review I, II .................................................. 1
651-652—Legal Aid I, II ....................................................... 1
647—Legislation ................................................................. 1
655—Local Government ....................................................... 3
657—Natural Resources (Seminar) ...................................... 3
610—Oil & Gas ................................................................. 3
698—Regulation of Business (Seminar) ............................ 2
640—Remedies ................................................................. 2
671—Secured Transactions ................................................ 2
680—Social Legislation (Seminar) ....................................... 2
688—Water Law ................................................................. 3

*Required Courses. In addition one seminar required each semester.

COURSES

553 AGENCY AND PARTNERSHIP The relations of employers-employees, non-profit and non-profit associations and other forms of business organizations.

556 CRIMINAL LAW I. The nature, the extent and the review by courts of proceedings by agencies, commissions and bureaus of government.

564 AGENCY AND PARTNERSHIP The relations of employers-employees, non-profit and non-profit associations and other forms of business organizations.

500 CRIMINAL LAW 1. The nature, the extent and the review by courts of proceedings by agencies, commissions and bureaus of government.

590 ADMINISTRATIVE LAW 2. The nature, the extent and the review by courts of proceedings by agencies, commissions and bureaus of government.

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LIBERAL ARTS

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. The latter includes Anthropology, Economics, History, Political Science, Sociology and Geography.

This program permits the student to work in a combination of the above areas rather than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences. It also provides a broad background for students who decide to prepare for teaching. Those who elect to teach may qualify to do so by taking additional work in education.

Students must have completed, or be eligible for, English 150 in order to major in this program. Upperclassmen transferring into this program should have at least a C average in all credits attempted. The liberal arts curriculum is not designed for the student who is undecided as to his major.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

University requirements

<table>
<thead>
<tr>
<th>Group I or II</th>
<th>Foreign Languages (6 quarters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 150, 250, 350</td>
<td>23-30</td>
</tr>
<tr>
<td>Group 1 or II</td>
<td>6</td>
</tr>
<tr>
<td>90-100</td>
<td></td>
</tr>
</tbody>
</table>

Major Requirements (courses under 300)

1. Art 200-201-202
2. Humanities 101-102-103
3. Anthropology, Economics, Geography, Psychology, Sociology, (any two)
4. History or Political Science or both (History 101-105-105 or 251-291-291 recommended)
5. Literature (English 211-212-213 or 231-232-233 recommended)
6. Philosophy (Philosophy 298, 299, 300 recommended)

Electives

<table>
<thead>
<tr>
<th>Group I or II</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities 351-352-353-354</td>
<td>18-11</td>
</tr>
<tr>
<td>100-110</td>
<td></td>
</tr>
</tbody>
</table>

LIBRARY SERVICE. For information on courses, minimum requirements, preparation of school librarians, and the teaching minor in Library Service, check under the School of Education. See education courses 340, 341, 342, 343, 344, 345, 346, 441, 442, 443, 444 and 445. 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 languages, 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 graduate work in linguistics and would provide him with a background to work in certain government and foundation supported language programs in the U. S. and abroad. The following is a list of linguistics courses offered by departments in the university (each is applicable to a major in the department concerned:
Ananthropology 380—Historical Linguistics
Anthropology 480—Linguistic Methods
English or General 380—Introduction to Linguistics
English 371—The Structure of Modern English
English 372—The History of the English Language
English 373—Old English
English 495—The Teaching of English as a Foreign Language
English 497—Problems in English Linguistics
German 301—Applied Linguistics
German 490—History of the German Language
Romance Philology 300—Introduction to Romance Philology
Spanish 301—Applied Linguistics
Spanish 490—History of the Spanish Language
Speech 119—Phonetics
Speech 223—Introduction to Communication (Phonology)

MATHEMATICS

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 101, 152, 153, 251, 252. A foreign language (German, French, Russian, or a combination of these) is required. Students must select one of the following two options.

Option 1. Students planning to enter graduate work or industry are required to take Mathematics 253, 311, 321, 323, 325, 351, 352, 353, and six credits in other approved Mathematics courses, including three credits in courses numbered above 300. The student must present 33 credits in at least six sciences selected from Botany, Chemistry, Geology, Microbiology, Physics, Zoology, and Mathematical Statistics (i.e., Mathematics 341, 342, 345, 441, 442, 443). An alternative arrangement for these credits is to have 18 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 253, 301, 302, 303, and 5 credits in approved Mathematics courses numbered above 352, 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 0. A remedial course, of which the content is second year high school algebra.

116 COLLEGE ALGEBRA 5 prereq 001 or exemption by examination. The number of algebraic operations, binomial theorem, inequalities, systems of linear equations, elementary theory of equations.

117 TRIGONOMETRY 5 prereq 116 or exemption by examination. Trigonometric functions and their graphs, Pythagorean identities, addition formulas, laws of sines, cosines, and tangents, exponential and logarithmic functions and their graphs, solution of triangles.

118 INTRODUCTION TO CALCULUS 5 prereq 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.

125 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.

181-183 (118-215) 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.

182 ANALYTIC GEOMETRY AND CALCULUS III 5 prereq 152. Vector spaces, determinants, matrices, applications in geometry.

199 UNDERGRADUATE SEMINAR V R-15. This course provides for special instruction in mathematics at the freshman and sophomore level.

INTUITIVE GEOMETRY 4 prereq 130 or exemption by examination. Space, point, line and other geometric figures as sets of points, separation properties, deduction versus induction, measurements, coordinate geometry.


262 ANALYTIC GEOMETRY AND CALCULUS V 5 prereq 252. Multiple integrals, line and surface integrals, infinite series, improper integrals.

263 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 (8-4) prereq Math 121 or 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 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. The recommended reading of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra.

303 (304) GEOMETRY FOR TEACHERS 5 prereq c/i. The subject matter of high school geometry compared with that of other geometries.

305 TOPICS IN MATHEMATICS V prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to help high school teachers improve their background in mathematics content and to assist them in teaching the subject. (Credit not allowed toward a degree in Mathematics.)

306 HISTORY OF MATHEMATICS 4 prereq 15 credits in Mathematics. History 101-102 strongly recommended. An historical study of mathematics with emphasis on contributions from the Egyptian and Babylonian eras to the nineteenth century.


327-328 (315-316) MODERN ALGEBRA 5 prereq 252 and c/i. Groups, rings, integral domains, fields, and vector spaces. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)
MATH 341-342-343 MATHEMATICAL STATISTICS 3 prereq 252 and c/l. Development of mathematical probability, random variables and distribution functions, sampling, testing hypotheses, confidence intervals.

344-345-346 (302-303) STATISTICAL METHODS 3 prereq a course in college algebra and c/l. Prerequisites for those who find need for statistical techniques. Probability theory as a model for random phenomena, sample spaces, the algebra of events, expectations, the weak law of large numbers and the frequency interpretation of probability, the nature of statistical inference. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

351-352-353 MODERN ADVANCED CALCULUS 3 coreq 252 or c/l. Probability theory as a model of random phenomena, sample spaces, the algebra of events, expectations, the weak law of large numbers and the frequency interpretation of probability, the nature of statistical inference. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

357-358 (317-318) PRINCIPLES OF ANALYSIS 5 prereq 252 and c/l. Limits, continuity, differentiation, integration, series. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

370 COMPUTER METHODS 4 (2-2) prereq 252. Computer programming and survey of numerical methods. Problems of interest to secondary school teachers. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission. Credit not allowed for this course and computer science 371.)


382 (322) NON-EUCLIDEAN GEOMETRY 3 prereq 153. A short history of geometry, non-Euclidean geometries, projective geometry, finite geometries, Riemannian geometry.

383 DIFFERENTIAL GEOMETRY 3 prereq 253. Curves and surfaces in three space, the Frenet formulas for a curve, first and second fundamental forms of a surface, Christoffel symbols and covariant differentiation on a surface, geodesics.

387-388 (327-328) FOUNDATIONS OF GEOMETRY 4 prereq 252 and c/l. Axiomatic systems for and selected theorems from Euclidean geometry, projection and axioms of Euclidean geometry, introduction to topology. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission.)

391-392 (324) ELEMENTARY NUMBER THEORY 5 prereq at least 20 credits in Mathematics with a grade of C or better. Congruences, Diophantine equations, properties of primes, quadratic residues, continued fractions, algebraic numbers.

399 SEMINAR V R-15 prereq c/l. Guidance in special work for advanced students.

411-412-413 (415-417-419) MATHEMATICAL METHODS OF SCIENCE 3 prereq 252. Physical, chemical, and biological equations, existence theorems, Fuchs' theorem, method of Frobenius, complete and closed sets of orthonormal functions, Fourier series, Sturm-Liouville systems and boundary value problems, partial differential equations, numerical solution of linear and non-linear equations, numerical integration of ordinary and partial differential equations, numerical solution of integral equations, and selected topics. (Intended primarily for those enrolled in NSF Summer Institute. Other students may enroll by special permission. Credit not allowed for this course and computer science 411-412-413.)

441-442-443 ADVANCED STATISTICS 3 prereq 252, 253, 352. Multivariate distributions, characteristic functions; limit theorems, stochastic processes, design of experiments, further topics to meet the needs of students.

451-452-453 REAL ANALYSIS 3 prereq 352. Lebesgue measure and integration. Lp spaces, elementary point set topology, metric spaces, and selected topics.

461-462-463 (468-411-412) COMPLEX ANALYSIS 3 prereq 353. Complex numbers and functions, analytic functions, Cauchy Integral theorem and formulas, conformal mapping, theory of residues, analytic continuation, and selected topics.

471-472-473 NUMERICAL ANALYSIS 4 (3-3) prereq 253 and 249 for 471; and 472, 473 is 472. Approximation and interpolation, numerical solution of linear and non-linear equations, numerical integration of ordinary and partial differential equations, numerical solution of integral equations, and selected topics. Assigned work on the digital computer. (Credit not allowed for this course and computer science 471-472-473.)

FOR GRADUATES

Before beginning work on an M.A., a student should have an undergraduate major in mathematics with a B average in upper division courses. Students who have completed courses, he should have Math 351-352-353 and Math 351-352-353.

511-512-513 ADVANCED MATHEMATICAL METHODS 3 prereq 413 or c/l. Theory of approximate solutions to equations including steepest descent, replacement of integrals and differential equations by algebraic equations.

512 THEORY OF GROUPS 3 prereq 323. Symmetry and applications to finite groups. Series decompositions and selected topics.

522 THEORY OF FIELDS 3 prereq 323. Algebraic and transcendental extensions. Topics from Galois theory, algebraic functions, and/or ordered fields.

525 STRUCTURE OF RINGS 3 prereq 332. Radicals and the Wedderburn theorem. Group rings, tensor products, and selected topics.

526 COMMUTATIVE RINGS 3 prereq 323. Noetherian rings, integral domains, unique factorization domains, and related topics.

527 MODULES 3 prereq 3 credits from 521, 522, 523, or 524 or c/l. The students will present a selection of topics from advanced linear algebra and module theory. A letter grade is given for the total module.

531-532-533 TOPOLOGY 3 prereq 333. Set theory, topological spaces, metricizable, continuous mappings, topological mappings, and selected topics.


561-562-563 FUNCTIONAL ANALYSIS 3 prereq 333 and c/l. Topological linear spaces, including boundedness, Hahn-Banach theorem, closed graph theorem, weak topologies, continuous linear operators, elementary spectral theory.

564-565-566 SPECTRAL THEORY 3 prereq 563. Spectral representation, spectral resolution, Hilbert-Schmidt operators, Riesz operators, differential operators, invariant subspaces.

600 GRADUATE SEMINAR V prereq c/l. This course provides guidance in graduate subjects on research work.

610 GRADUATE SEMINAR IN APPLIED MATHEMATICS V prereq c/l.

630 GRADUATE SEMINAR IN ALGEBRA V prereq c/l.

630 GRADUATE SEMINAR IN TOPOLOGY V prereq c/l.

640 GRADUATE SEMINAR IN PROBABILITY AND STATISTICS V prereq c/l.

650 GRADUATE SEMINAR IN ANALYSIS V prereq c/l.

660 GRADUATE SEMINAR IN FUNCTIONAL ANALYSIS V prereq c/l.

670 GRADUATE SEMINAR IN NUMERICAL ANALYSIS V prereq c/l.

680 GRADUATE SEMINAR IN GEOMETRY V prereq c/l.

699 THESIS V R-15.

MEDICAL TECHNOLOGY—63

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 physician or other qualified physician, the various chemical, medical, microbiological and pathological procedures used in the diagnosis, study and treatment of disease. Four years are required to earn the degree of Bachelor of Science in Medical Technology. The first two years are devoted to the development of a sound foundation in physics, chemistry and biology and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of the internship, the technologist receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this certification is desirable, persons receiving the B. S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratories as technicians. Medical technologists are in demand in hospital laboratories, in physicians' offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the...
first three years. It is possible then to take three years of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of Microbiology. Option I consists of four years of academic studies at the University, leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3½ years of academic studies at the University and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 121, 122, 130, 200, 202, 302, 310, 319; Physical 411, 412, 413, 414, 420; Zoology 111-112-113; Zoology 205, 209, 313; Chemistry 121-122-123, 245, 261-262; Math 116, 117. A minimum total of 45 credits from Microbiology and ancillary fields, and any other courses approved by the advisor and chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Option I  
Freshman Year

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<thead>
<tr>
<th>Cr.</th>
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<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
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<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
<td>5</td>
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<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
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<tr>
<td>Engl 150—Freshman Composition</td>
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<td>Group III or IV Electives</td>
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<tr>
<td>H&amp;PE—Physical Education</td>
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Sophomore Year

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<tr>
<td>Chem 261-262—Organic Chemistry</td>
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<tr>
<td>Physics 111-112-113—General Physics</td>
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<tr>
<td>Microb 200—General Microbiology</td>
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<td>Zool 202—Human Physiology</td>
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<td>Group III or IV Electives</td>
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Junior Year

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<tr>
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<tbody>
<tr>
<td>Microb 302—Medical Microbiology</td>
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<tr>
<td>Microb 350—Microbial Physiology</td>
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<tr>
<td>Microb 310—Immunology and Serology</td>
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<tr>
<td>Zool 304—Comparative Vertebrate Anatomy</td>
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<td>Engl 350—Advanced Composition</td>
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<td>Group Electives</td>
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Senior Year

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<th>Cr.</th>
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<tr>
<td>Microb 400—Clinical Microbiology</td>
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<td>Microb 411—Epidemiology</td>
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<tr>
<td>Microb 415—Medical Mycology</td>
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<tr>
<td>Microb 420—Virology</td>
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<td>Microb Electives</td>
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<td>Zool 313—Vertebrate Histology</td>
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<tr>
<td>Electives</td>
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Option II

Under Option II, a student must complete a minimum of 15 elective credits in residence during the senior year. Successful completion of the hospital training in a hospital approved by the American Society of Clinical Pathologists and the Department of Microbiology are required. The student will receive the equivalent of not more than 30 credit hours toward his B.S. degree for the successful completion of the hospital internship.

MICROBIOLOGY is the study of microorganisms, including the bacteria, yeasts, molds, rickettsiae, viruses and protozoa. Special emphasis is placed on their structure, function, interactions, and relationships with man. Subtopics within the field of microbiology are listed under courses offered.

A Bachelor of Arts degree is granted upon completion of the curriculum in Microbiology. The initial work in this curriculum is intended to provide the student with a working knowledge of the basic principles of the physical and biological sciences and mathematics. The remaining study is devoted to a more intense and broadened training in Microbiology and ancillary fields, and may include independent study. This latter experience provides the student with an opportunity to prepare adequately for graduate studies.

Graduates are employed in clinical and research laboratories, in industrial and pharmaceutical laboratories, in county and state health offices, in various federal offices and laboratories, and in many other advantageous positions. The opportunities for employment are currently exceptionally good.

Highly capable graduates often complete their education in Microbiology at the graduate level. The Department of Microbiology offers the Master of Arts, Master of Science, and Doctor of Philosophy degrees. These degrees require an independent research project culminating in a thesis. Opportunities for persons holding graduate degrees in Microbiology are numerous and varied. The Department of Microbiology has available, for qualified graduate students, a number of research assistantships. (For general requirements of all graduate students and for information regarding graduate study in Microbiology, see Graduate School Bulletin.)

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation includes Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 200, 202, 302, 310, 319, 411, 415, 420; Botany 112; 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, 481-482; 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, 405, 406, 410, 418, 430; Zoology 301; Botany 411; Chemistry 306, 405, 406, 418, 430; any other courses approved by the adviser and chairman of the Department of Microbiology.

SUGGESTED CURRICULUM

Freshman Year

<table>
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<tr>
<th>Cr.</th>
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<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
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<tr>
<td>Zool 111-112-113—Introduction to Biology, General Zoology</td>
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<tr>
<td>Engl 130—Freshman Composition</td>
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<td>Math 116, 117—College Algebra, Trigonometry</td>
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<tr>
<td>History 392-393-394; Philosophy</td>
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<td>Group III or IV Electives</td>
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Sophomore Year

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<tbody>
<tr>
<td>Chem 261-262—Organic Chemistry</td>
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<tr>
<td>Chem 245—Quantitative Analysis</td>
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<td>Microb 200—General Microbiology</td>
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<td>Engl 250—Intermediate Composition</td>
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<tr>
<td>Foreign Language</td>
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<td>Group III or IV Electives</td>
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<tr>
<td>H&amp;PE—Physical Education</td>
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Junior Year

Physics 111-112-113—General Physics .......................... 5 5 5
Foreign Language ................................................. 4 4 3
Engl 350—Advanced Composition .................................. 5
Microb 350—Microbial Physiology .................................. 5
Microb 302—Medical Microbiology .................................. 5
Microb 310—Immunology and Serology ................................. 3 3 4
Group III or IV Electives ............................................. 17 17 17

Senior Year

Microb 415—Medical Mycology ........................................ 5
Microb 420—Virology ................................................. 5
Microb 411—Epidemiology .............................................. 3 3
Microb 418—Yeasts ..................................................... 1 1 5
Seminar ................................................................. 1 1 5
Microb 404—Molecular Genetics ..................................... 5 5
Group III or IV Electives ............................................. 5 5
Electives in Major .................................................... 3 3
Electives .............................................................. 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 in agriculture, food, drug, fermentation and other industries. (Not allowed toward a major in microbiology.) (Students enrolling in Microb 100 are strongly urged to enroll concurrently in Microb 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 5 (3-4) prereq Chem 123 or 100. Bacterial taxonomy, morphology, physiology, and ecology; effect of environmental factors on bacteria; microbiology of water, food, milk and foods; and industrial microbiology. (Credit not allowed for both 100 and 200.)

FOR UNDERGRADUATES AND GRADUATES

300 MICROBIOLOGY FOR TEACHERS 5 (3-4). Introduction to Microbiology for high school science teachers. Not open to microbiology majors. (Credit not allowed for both 200 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. (Note: No credit will be given for both 304 and 302.)

306 APPLIED MICROBIOLOGY 5 (3-4) prereq 200 or =. The fundamental principles of food, water, sewage, soil and industrial microbiology.

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 completion of prerequisites. 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 MICROLOGY 5 (3-4) prereq 302, Bot 112 recommended. Morphology, physiology, infectivity and immunogenicity of dermatophytic and yeast fungi and rickettsiae.

418 YEASTS 3 (3-0) prereq 200, Bot 112 recommended. The classification, cytology, competition, genetics, metabolism and growth and significance of the ascomycetous and basidiomycetous yeasts.

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

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
for 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.

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the Music Department is by certificate from the high school from which the student graduates. The faculty of the Music Department is more concerned with evidence of talent, conspicuous achievement in music, than it is in the precise content of the program which the prospective music student has followed prior to admission to college. The Music Department welcomes the opportunity to advise with students and parents during the high school period by correspondence or by interviews on the campus.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREES IN MUSIC. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed:

1. For the Bachelor of Music Education, the course requirements in Curriculum A must be completed.
2. For the Bachelor of Music with a major in 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 in residence (it is recommended that the upper division year (with the stipulation that they will have completed all lower division music courses numbered 100-110) or voice), major must register for chorus 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 the requirements by the election of Music 140 or 106-110. Exceptions to this requirement may be made only by action of the music faculty.

6. All candidates for the Bachelor of Music or Music Education degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217, Elementary music majors (Curriculum A-1) must complete 4 credits of piano 100.

7. Outstanding seniors in curriculum A or C may give joint senior recitals. Details will be supplied by the department on request.

8. All candidates for the B.M., B.M.E., or B.A. degree enrolled in Music 201 or 401 shall take a departmental jury in fall and winter quarters of the senior (4th) year. The following will be required: (a) students who 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, 239, 266, 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 above the following exception: Transfer students who shall be admitted to 300 or above courses with the stipulation that they will have completed all lower division requirements within their first three quarters of residence.

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, the following discounts 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, 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 musical organizations, the University of Montana offers the degree of Bachelor of Music with a major in Music Education, which meets the state requirements for certification for public school teaching (see education).

(1) with a major in Elementary Music-Training and background preparatory to teaching and directing special and general music classes in the elementary grades (K-6).

Music course requirements for Curriculum A (Elementary) shall include the following: English 190, 200, 201, 300, 301, 302, 401, 1 cr.; 100 (Piano or voice), 4 cr.; 106-110 or 140 (with faculty approval), 3 cr.; Theory 1, 6 cr.; Theory II, 6 cr.; Aural Perception 1, 6 cr.; Aural Perception II, 6 cr.; 201, 6 cr.; 3 cr.; 236, 6 cr.; 321, 322, 323, 11 cr.; 320, 3 cr.

In cases of a demonstrated proficiency in piano or voice other applied study may be substituted with the approval of the music faculty.

Non-music requirements in addition to general University requirements shall include the following: English 190, 200, 300, 9 cr.; Psychology 101, 6 cr.; Education 100, 101, 152, 153, 9 cr.; Speech 119, 2 cr.; Group I requirements shall be satisfied by Mathematics 126 and 220, 9 cr.; and General 125, 126, 127, 15 cr. Electives may be used to complete a total of 82 credits, including requirements for Group III.

Professional courses totaling 34 credits shall include the following: Education 200, 2 cr.; Education 202, 5 cr.; Education 340, 3 cr.; Education 401, 12 cr.; Education 407, 3 cr.; Education 467, 3 cr.; and H&PE 327, 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.) for the freshman and sophomore years.

Suggested Freshman Program: Music 201, Theory I, Aural Perception I, Introduction to Music Literature; General 125, 126, 127; English 150; Psychology 110; H&PE 100 (or 115); academic electives 6 cr.

(2) with a major in Choral and Instrumental Conducting and Music Administration-Training and background for conducting instructional 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 (with faculty approval), 3 cr.; Theory 1, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Piano in Class, 6 cr.; Voice in Class, 3 cr.; Strings in Class, 3 cr.; 129, 130, 6 cr.; 135, 4 cr.; Music History, 9 cr.; 325, 324, 334, 6 cr.; 331, 332, 333, 11 cr.; 329, 329, 4 cr.; 468, 1 cr.; upper division music electives, 6 cr.

Exceptions: Students taking piano as Secondary Applied Major will not take the 6 credits of Piano in Class and those with Voice as Secondary Applied Major will not take the 3 credits of Voice in Class. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Non-music requirements in addition to general University requirements include the following: English Composition, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 405, 407, 4 cr.

Students taking piano as Secondary Applied Major must complete Music 320, 321, Piano Methods and Materials.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Piano in Class, Strings in Class, Introduction to Music Literature; English 100; H&PE, academic electives, 18 cr.

(3) with a major in Choral Conducting-Training and background for conducting Secondary School choral groups, and assisting in General Music programs (K-12).

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements: English Composition, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 405, 407, 24 cr.

Students taking piano as Secondary Applied Major must complete Music 322, 323, 324, Piano Methods, and Materials.

Suggested Freshman Program: Music 201, 106-110; Theory I, Aural Perception I, Piano in Class, Strings in Class, Introduction to Music Literature; English 100; H&PE, academic electives, 18 cr.

(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: English Composition, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 405, 407, 24 cr.

Majors in this curriculum follow curriculum A-2 with the following exceptions and alterations in the music course requirements: English Composition, 9 cr.; Psychology 110, 5 cr.; Education 200, 205, 405, 407, 24 cr.

Piano or Voice 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. CURRICULUM 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. Requirements for enrollment in Music, Theory, Composition are the same as for all music majors. Students interested in degree of Bachelor of Music with a major in Applied Music 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 completed; (2) a half recital; Music 446, 1 credit, will fulfill the senior recital requirement. Major 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 in addition to the following requirements: Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 6 cr.; Music History, 9 cr.; Keyboard Harmony, 3 cr.; Piano Methods, 3 cr.; 329, 329, 329, 4 cr.; Electives to complete a total of 82 credits, including requirements for Group III.

Non-music requirements in addition to general University requirements include the following: 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.
MUSIC 201, 401 (6 quarters of each course).

Applied Major V 1-4 R-24 prereq audition and c/i. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum A must have an applied major in voice or instrumental music as secondary to their primary major, i.e., Music Education. A student entering in Music 201 should show evidence of the ability to perform at least one year of two of the applied major areas. Students in Curriculum B must show talent for solo performance and evidence of the equivalent of four years' prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

105 SUMMER SESSION CHORUS V 1-2.

106 UNIVERSITY CHOIR 1.

107 CHORAL UNION 1.

108 ORCHESTRA 1.

110 UNIVERSITY BAND 1.

Courses 108 through 110 are major musical organizations. Prereq c/i. Music majors must satisfy requirements as stated for each curriculum; non-majors may take 6 credits.

111-112-113 THEORY I 2. 111 (Basic Theory) may be waived on basis of proficiency examination. The fundamentals and nomenclature of music to include the study of scales, tones, and modes, major and minor scales, triads, and harmonies. Scales, theory, and analysis. 112-113 prereq 111, 118 for 113. Analysis of music literature to include the study of the principles of melody and harmony as a foundation for composition and the principles of constructive compositions. Application of principles through melodic and contrapuntal writing and with correlation with keyboard technique. 114-115-116 PIANO IN CLASS 1. All major and minor scales 2 octaves. All major and minor triads in all positions. Harmonization of simple tunes with 1st IV V chords. Materials such as Oxford and Barrows Adult Beginners books. Transposition, memorization, and sight-reading.


123-124-125 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS A 2, W 3 (122) Keyboard Fundamentals and basic rudiments of music. (123-124) Integration of materials into the elementary classroom. Choir emphasis placed on all aspects of teaching music creatively in the elementary school. (Not open to music majors. 125 may be waived on basis of proficiency examination.)

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

128-129-130 WOODWIND BRASS PERCUSSION AND BAND 2. (128) Basic instruction in woodwinds. (129) Basic instruction in brass instruments. (130) Percussion instruction. (May be substituted for upper division electives for students not majoring in theory or composition.)

132 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 recordings and concert attendance. For non-majors only.

133 INTRODUCTION TO MUSIC LITERATURE 4. The elements of musical understanding; the place of music in history with emphasis on its relation to social change and to the history of other arts. Comparative survey of masterpieces of music from the Renaissance through the Twentieth Century. Review of all periods of music history. Study of recordings. Concert attendance required. Open to non-majors with c/i. (Credit not allowed for both 134 and 135.)

137-138-139 AURAL PERCEPTION I 2 prereq or coreq 112-113. A laboratory course in singing and dictation to supplement Theory I.

140 ENSEMBLE GROUPS 1. Any small group of two or more players or singers may have a course outlined by the instructor. The development of sight reading and aural skills with emphasis on ensemble; accompanying. Students may register for more than one ensemble group in any one quarter.

159 (159-160-161) COMPOSITION 2-6 prereq c/i. An introduction to basic art of music composition. (May be substituted for upper division electives for students not majoring in theory or composition.)

211-212-213 THEORY II 2 prereq 113 and 130, coreq 237-238-239. The study of music construction with emphasis on harmonic structure. The chorale style, modulation, altered chords, and harmonic and formal analysis correlated with keyboard application.

215-216-217 INTERMEDIATE PIANO IN CLASS 1 prereq 3 credits in either Piano I, Music 114-115-116, or placement test. All major and minor scales 2 octaves. Further development of harmonic and contrapuntal writing skills. Sight-reading. Materials such as Feiden Progressive Studies and Bartok Mikrokosmos Books 1 and II.

254-255-256 HISTORY OF MUSIC 3 prereq 135. Enter any quarter. The history of music in Western Civilization from its origin to modern times and its relationship to general cultural development.

MAJOR IN ORCHESTRAL INSTRUMENT

Music course requirements for Curriculum B with a Major in an Orchestral Instrument include a total of 121 credits as follows: 201, 211, 241, 242, 106-110, 122-123-124, Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 4 cr.; Piano in Class, 6 cr.; 331, 3 cr.; 445, 2 cr.; Upper division electives, 12 cr.

MAJOR IN COMPOSITION OR THEORY

Music course requirements for Curriculum B with a Major in Composition or Theory include a total of 120 credits as follows: 201, 6 cr.; 401, 4 cr.; 106-110, 6 cr.; 108-110, 12 cr.; Theory I, 6 cr.; Theory II, 6 cr.; Aural Perception I, 4 cr.; Aural Perception II, 4 cr.; Piano in Class, 6 cr.; 331, 3 cr.; 356, 229, 4 cr.; Music History, 9 cr.; 159, 6 cr.; 259, 6 cr.; 259, 9 cr.; 459, 9 cr.; 331, 3 cr.; 356, 229, 4 cr.; 379, 3 cr.; 580, 3 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 cr.; and Foreign Language, 15 cr.

Suggested Freshman Program: Music 201, 106 or 107; Theory I, Aural Perception I, Piano in Class. Introduction to Music Literature; English 150; H&PE: Academic Electives, 13 credits.
512 LITERATURE FOR HIGH SCHOOL INSTRUMENTAL GROUPS 2 a/y. Comparative study and performance of new publications.

513 LITERATURE FOR HIGH SCHOOL CHORAL GROUPS 2 a/y. Comparative study and performance of new publications.

514 CURRENT LITERATURE FOR HIGH SCHOOL SOLO AND SMALL ENSEMBLE ENRICHMENT 2 a/y. Comparative study and performance of literature with attention to pedagogical use as related to voice.

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; study of development of curriculum for general and special classes; Problems selected for class study.

517 ORFF AND KODALY APPROACHES TO ELEMENTARY MUSIC 2 a/y. Previews currently in use in Germany and Hungary.

518 CHILDREN'S MUSIC LITERATURE 2. Texts, recordings, and books related to growth in musical understanding through the child's reading and listening.

519 TESTS AND MEASUREMENTS IN MUSIC 2. Evaluation of selected standardized tests.

520 RESEARCH IN MUSIC EDUCATION 2. Research problems; the statement, collection, techniques, and evaluation of materials, concepts necessary for interpretation of data.

521 SCHOOL MUSIC ADMINISTRATION 3. School systems, planning, organization, funding, selection and purchase of music equipment, personnel, and other areas of interest to the music teacher at the college level.

522 INDEPENDENT STUDY V R-9. Students must have projects approved by a music staff member before enrolling.

523 SYMPHONIC LITERATURE 3. A survey of orchestral music; the Mannheim composers, the Viennese classics, the Romanticists, and contemporary European and American developments.

524 OPERATIC LITERATURE 3. Opera from its beginnings, the Florentine Camera, 16th and 17th century French and Italian opera, Gluck's reforms, Mozart's dramatic works. The Romantic opera in Italy and Germany, contemporary opera trends.

525 KEYBOARD LITERATURE 3. Keyboard literature from the developments of the Baroque era to the contemporary period, including the suite, sonata, character pieces, etc.


527 LITERATURE 3. The art song from the classic period to the contemporary era including the lied, French chanson, and related literature.

528 CHORAL LITERATURE 3. Survey of both secular and sacred music for chorus; emphasis on music for mixed voices, especially sacred music from the 16th to the 19th century.

529 TRENDS IN CONTEMPORARY MUSIC 3. A survey of trends in European and American music from the end of World War II to the present. Emphasis on the development of electronic music, the serial technique, and other new techniques of composition.

530 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of an evolving democratic state on the arts, the development of various centers of performing arts and the types of music performed.

531 INTRODUCTION TO MUSICOLOGY 2. Nature, scope, and goal of musicology, its methods and history. Survey of bibliography, different approaches and styles of scholarly writing. Formats and techniques of writing.

532 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

533 ADVANCED ORCHESTRATION 2 prereq 339. Styles in orchestral techniques from 1750 to present.

534 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approach of leading composers from the late Baroque period to the present.

535 TECHNIQUES OF COMPOSITION 2 a/y. Comparative study for graduate students. Development of techniques and skills necessary to the composer.

536 PEDAGOGY OF THEORY 3. The teaching of theory, including techniques, procedures and sequences of materials and their statement, organization, techniques, teaching personnel, and other areas of interest to the music teacher at the college level.

537 TEACHING ELEMENTARY MUSIC 2 a/y. Evaluation of new approaches; state and city course outlines; Music in ungraded schools; Problems selected for class study.

538 PROBLEMS IN TEACHING JUNIOR HIGH SCHOOL MUSIC 2 a/y. Evaluation of new courses; study of development of curriculum for general and special classes; Problems selected for class study.

539 INDEPENDENT STUDY V R-9. Students must have projects reviewed by a teacher of elementary music as a basis of skill, toward a wider utilization of the piano in classroom and school situations.


541 KEYBOARD LITERATURE 3. Keyboard literature from the developments of the Baroque era to the contemporary period, including the suite, sonata, character pieces, etc.


543 LITERATURE 3. The art song from the classic period to the contemporary era including the lied, French chanson, and related literature.

544 CHORAL LITERATURE 3. Survey of both secular and sacred music for chorus; emphasis on music for mixed voices, especially sacred music from the 16th to the 19th century.

545 TRENDS IN CONTEMPORARY MUSIC 3. A survey of trends in European and American music from the end of World War II to the present. Emphasis on the development of electronic music, the serial technique, and other new techniques of composition.

546 HISTORY OF AMERICAN MUSIC 3. The development of American music from its antecedents. The effect of an evolving democratic state on the arts, the development of various centers of performing arts and the types of music performed.

547 INTRODUCTION TO MUSICOLOGY 2. Nature, scope, and goal of musicology, its methods and history. Survey of bibliography, different approaches and styles of scholarly writing. Formats and techniques of writing.

548 MEDIEVAL AND RENAISSANCE MUSIC 3. Survey of music from monophony to the 16th century.

549 ADVANCED ORCHESTRATION 2 prereq 339. Styles in orchestral techniques from 1750 to present.

550 ANALYTICAL TECHNIQUES 2. A survey of the theoretical approach of leading composers from the polyphonic period to the present.

551 TECHNIQUES OF COMPOSITION 2 a/y. Comparative study for graduate students. Development of techniques and skills necessary to the composer.

552 PEDAGOGY OF THEORY 3. The teaching of theory, including techniques, procedures and sequences of materials and their statement, organization, techniques, teaching personnel, and other areas of interest to the music teacher at the college level.

553 TEACHING ELEMENTARY MUSIC 2 a/y. Evaluation of new approaches; state and city course outlines; Music in ungraded schools; Problems selected for class study.

554 PROBLEMS IN TEACHING JUNIOR HIGH SCHOOL MUSIC 2 a/y. Evaluation of new courses; study of development of curriculum for general and special classes; Problems selected for class study.
PHARMACY—69

PHARMACY is the science which is concerned with the study of the physical, chemical, and biological characteristics of medicinal substances. It embraces a knowledge of medicines, the art of compounding and dispensing them, their identification, 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 preprofessional portion of the curriculum, are spent in studies of the basic physical and biological sciences, and in other course work necessary to satisfy the general university requirements. During the final three years of the curriculum, the student devotes his time to the study of the several pharmaceutical sciences. This program of study is designed to prepare him to serve the pharmaceutical needs of the public. Areas of additional special study include pharmaceutical chemistry, pharmacognosy, pharmacology, and pharmacy administration. A program of selected elective allows the student to place emphasis upon an area of specialization best suited to his future plans in pharmacy.

In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete one year of "practical experience" or internship in a pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. Many graduates practice pharmacy in neighborhood, or "downtown" stores. Others work in hospital pharmacies, a particularly attractive field for women. Additional opportunities exist as representatives for pharmaceutical manufacturers, in government service, in manufacturing pharmacy, and in pharmaceutical journalism. Those with advanced degrees are in demand in research positions and in pharmaceutical education.

The School of Pharmacy was established in 1907 at Montana State College and was transferred to the University campus in 1913.

The School of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.

A three-year professional program based on two years of general college work and leading to the degree of Bachelor of Science in Pharmacy is offered. The first two years are devoted to the prescribed pre-professional subjects listed below and may be taken in any accredited college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken in residence at the University of Montana, although students transferring from other accredited schools of pharmacy may be admitted to an advanced standing determined on the basis of credits presented, providing that they are in good academic standing. Transfer credit for required professional courses taken at other institutions will not be accepted from students who previously received the grade of F on those courses at the University of Montana.

Upper class students may choose approved elective courses designed to prepare them specifically for other community pharmacy sales and management, research and teaching, or for hospital and institutional pharmacy. Such elective courses will be determined by the area of specialization chosen by the student, and must be approved by the faculty advisor.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry. It is also recommended that the high school preparation include advanced algebra, trigonometry, biology, chemistry, physics, and particularly if the student may pursue advanced studies in pharmacy, a foreign language.

REQUIREMENTS FOR ADMISSION TO THE PROFESSIONAL CURRICULUM:

1. The general requirements for admission to the University of Montana as listed earlier in the catalog.

2. At least two years as prescribed in the pre-pharmacy curriculum (may be transferred from accredited colleges):

First year: Chemistry 121-122-123, English 150, Physical Education 100 (3 cr.), Math 116, 117, Botany 112, Zoology 111, 113, and electives.


Applicants presenting two years of satisfactory college work but with certain deficiencies in the above list may be admitted, but such deficiencies must be removed.

Each applicant for admission to the professional curriculum must have a cumulative grade point index of 2.0 on all college work taken, and completed for credit, unless otherwise approved by the application for admission to the first professional year. Application forms for admission to the professional curriculum may be obtained from the School of Pharmacy and must be submitted for consideration by the faculty of the school prior to registration. Applicants then will be granted full or provisional admission, as may be determined by the faculty.

The autumn quarter is the normal time of admission to the School of Pharmacy.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHARMACY. A candidate for admission to the senior year in the professional curriculum must not have a grade point deficiency score of more than 10. If he has a greater deficiency, he will not be granted senior standing but will be required to retake such courses, as the faculty may direct, in which he has received grades of "D" or "F" until he has reduced his deficiency to 10 or less. The student must fulfill all required courses for the first four years of study before he may enter the fifth year of the program. Then he may be admitted to the senior year if he has a cumulative grade point index of 2.0 upon the satisfactory completion of the senior year.

Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.

2. Complete not less than five full academic years of training, including both pre-pharmacy instruction and a minimum of three years of professional instruction. In order to meet the accreditation requirement of a minimum of three full years of professional instruction for the Bachelor of Science degree, each candidate must complete a minimum of 135 credits in professional or approved elective courses during the three academic years in the professional program. To meet this requirement, each candidate should expect to complete an average of 45 credits per year.

3. Complete not less than 225 credits of course work, plus six credits of required Health and Physical Education and basic ROTC courses when these are taken.

REQUIREMENTS FOR LICENSURE IN MONTANA. An applicant for licensure as a Registered Pharmacist in Montana must pass an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States, of good moral character, at least twenty-one years of age, and shall be a graduate of an accredited school of pharmacy. However, such an applicant shall not receive a license until he has completed an internship of at least one year following graduation, in an approved pharmacy in the state of Montana.

GRADUATE WORK. See Graduate School.

PHARMACY CURRICULUM

First year: English 150; Business Administration 201, 202; Chemistry 245, 481, 482; Pharmacy 306, 320; Zoology 340-341; electives.


Third year: Pharmacy 503, 504, 505-506, 516, 517-518-519, 540-541-542, 577, 578, 596, and electives.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

220 PHARMACEUTICAL CALCULATIONS 3 (2-2), Metrology, pharmaceutical calculations; credit may be given for the course, practical laboratory work using apparatus for measuring and weighing.

306 (206) ORIENTATION TO PHARMACY 3 (3-0). Career opportunities, literature, history and terminology, library orientation.

340 RADIOPHARMACOLOGY 2 (2-0) prerequisite Chem 476 or c/l. Drug metabolism and internal dosimetry.

414-415-416 MEDICINAL CHEMISTRY 414-415, 3 (3-0); 416, 5 (5-0), prerequisite Chem 263. Organic substances used medicinally with emphasis on the correlation of chemical structure with therapeutic activity.

418 ORGANIC MEDICINAL PRODUCTS LABORATORY 2 (0-6 to 9) R-4 prerequisite 414. Synthesis, identity and purity tests of organic medicinals.

424-425 (324-325) PHARMACOLOGY 4 (3-3) prerequisite Bot 112 and Chem 263 or - Plant and animal products used in pharmacy and medicine.
PHILOSOPHY

is the search for wisdom by carefully reasoned reflection. Philosophical enquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, or is it a web of personal experiences and events? What is the meaning of life and in social relations.

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, 288, 298, 300, and three or more credits in courses numbered 400 or above. Normally students are expected to complete Philosophy 288, 298, 300 by the end of their sophomore year. The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

100 INTRODUCTION TO PHILOSOPHY 5. The main problems of metaphysics, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

110 LOGIC 5. Deductive and inductive inference, kinds of definition, the distinction between analysis and synthesis, 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 300. Recent theories on the nature of moral concepts.

323 (369) POLITICAL PHILOSOPHY 3 o/y prereq 5 credits in Philosophy or Literature and c/l. Political problems with respect to representative theories in Psychology, History, Sociology.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.

331 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 5 prereq 10 credits in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology, and c/l. Reading from philosophers, artists, and art critics.

341 PHILOSOPHY IN LITERATURE 5 prereq 10 credits in Philosophy or Literature and c/l. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature, art history or c/l. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to Democratic forms of government and to the balance of liberal and conservative elements in them.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 5 prereq 10 credits in Philosophy.

331 PHILOSOPHICAL FOUNDATIONS OF THE SOCIAL SCIENCES 5 prereq 10 credits in Philosophy and c/l. Philosophical problems with respect to representative theories in Psychology, History, Sociology, and c/l. Reading from philosophers, artists, and art critics.

341 PHILOSOPHY IN LITERATURE 5 prereq 10 credits in Philosophy or Literature and c/l. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature, art history or c/l. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to Democratic forms of government and to the balance of liberal and conservative elements in them.

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 5 prereq 10 credits in Philosophy or Literature and c/l. Philosophical thought in selected masterpieces of literature.

345-346-347-348 PHILOSOPHY OF THE ARTS prereq 3 credits in Philosophy or 3 credits in music, visual arts, literature, art history or c/l. Basic concepts, ideals, and principles which underlie the political theories and programs of the Western world. Special attention will be given to Democratic forms of government and to the balance of liberal and conservative elements in them.

350 THEORY OF KNOWLEDGE 3 e/y prereq 10 credits in Philosophy. Some traditional and contemporary views of the sources, 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? Does logic, the relations of perception to the physical world, and to the concept of mind.

354 PHILOSOPHY OF RELIGION 5 e/y prereq 5 credits in Philosophy and c/l. 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.

356 THE PHILOSOPHY OF HISTORY 5 e/y prereq c/l. The development of history, structure, and functions of the speculative and analytic philosophies of history. The autonomy of history and the relevance of the philosophical history for the works of historians.

360 PLATO 5 e/y prereq 298 or 10 credits in Philosophy in c/l. Reading and interpretation of selected works.

361 ARISTOTLE 5 e/y prereq 298 or 10 credits in Philosophy 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.

368 NINETEENTH CENTURY DIALECTICAL PHILOSOPHY 3 e/y prereq 300 or 10 credits in Philosophy and c/l. Selected reading and interpretation of Hegel and other "dialectical" philosophers.

369 NON-DIALECTICAL PHILOSOPHY IN THE NINETEENTH CENTURY 3 o/y prereq 300 and 368 or 10 credits in Philosophy and c/l. Reading and interpretation of non-Hegelian philosophers in the 19th Century.

373 EXISTENTIALISM 5 prereq 10 credits in philosophy and c/l. Selected readings from the philosophical works of one or more existentialist thinkers.

380 PROBLEMS IN PHILOSOPHY V prereq c/l.

430 SEMINAR: HISTORY OF PHILOSOPHY V prereq c/l.

453 SEMINAR: PHILOSOPHY OF SCIENCE V prereq 210 and 310 and c/l.

460 SEMINAR: RESEARCH IN PROBLEMS OF PHILOSOPHY V prereq c/l. Advanced research in problems of philosophy.

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 need that physical education. This work is to include the general requirements for graduation (the second and third years must be taken in residence at the University of Montana). The fourth or professional year of training, involving twelve to sixteen months of work, would be taken at any physical therapy school meeting standards established by the Council on Medical Education and Hospitals of the American Medical Association. (Not all therapy schools accept students with three years of background. Some schools, for example, require a college degree for admission, while others accept only students who plan to obtain a degree from the school offering the therapy work.)

Course work taken at the therapy school will be evaluated by the University of Montana. This evaluation must result in an accumulation of the equivalent of forty-five quarter hours of credit and sufficient grade points to meet graduation requirements of the University of Montana. Also, the student must be eligible for a certificate in physical therapy from the therapy school. When the above requirements have been satisfied, the student is eligible to become a candidate for the degree of Bachelor of Science in Physical Therapy from the University of Montana (see course listings of the physical education department for information regarding a four-year pre-physical therapy program.)

Many therapy schools specify that the applicant must not have reached his thirty-sixth birthday.

The demand for physical therapists far exceeds the supply. Therapists may be found working in general hospitals, rehabilitation centers, children's hospitals, public health centers, geriatric hospitals, private clinics, Veterans Administration hospitals, orthopedic clinics, athletic training rooms, physicians' offices and school systems.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra. It is also recommended that high school preparation include college preparatory courses with emphasis on the biological and physical sciences.
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 physics. 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 211-225-229. The foreign language requirement listed earlier in the catalog must be satisfied.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

111-112-113 GENERAL PHYSICS 5 (5-3) prereq for 111: Math 117, 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 INTRODUCTION TO ASTRONOMY 2 (2-0) prereq high school trigonometry or c/i. Lecture, observation, and problems.

221-222-223 GENERAL PHYSICS 5 (6-4) prereq for 221: Math 118 or 112. 111 is prereq for 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 (3-0) prereq 223. 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 253.

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 253.

328 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.

346-347-348 HEAT, THERMODYNAMICS, STATISTICAL MECHANICS 3 (3-0) prereq 223 and Math 253.

361 SOLAR SYSTEM AND DYNAMICAL ASTRONOMY 3 prereq 221 and Math 253.

362 ASTRONOMICAL ORBITS 3 prereq 223 and Math 253. Methods of calculation of orbits of planets and comets, and visual, spectroscopic and eclipsing binary stars.

363 STELLAR ASTRONOMY AND ASTROPHYSICS 3 prereq 362.

371-372-373 (471-472) MECHANICS 3 (3-0) prereq 301 and Math 253.

431 SELECTED TOPICS V 1-5 R-10 prereq e/c and 15 credits in Physics.

441-442 ADVANCED LABORATORY 2 (1-2) prereq or coreq 223, 333, 314. Experiments in fields of current progress in physics, requiring individual student study and initiative.

452-453 (302-353) ATOMIC PHYSICS 3 (3-0) prereq 223 and Math 253.

454 (354) NUCLEAR PHYSICS 3 (3-0) prereq 333.

473 QUANTUM MECHANICS 3 (3-0) prereq 472.

480 PHYSICS SEMINAR 1 (1-0). A library and discussion course required of Physics majors.

FOR GRADUATES

501 RESEARCH V 2-10 R-15 prereq e/c.

552 RADIATION AND ATOMIC STRUCTURE 5 (5-0) prereq 353.

554-555 QUANTUM MECHANICS 5 (5-0) prereq 353 and 473.

690 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 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 emphasized are American Government and Politics, Comparative and Foreign Government, International Relations, Organization and Law; and Political Theory.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts 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 48-hour minimum requirement.

Courses required of all Political Science majors are Political Science 201-202 or Political Science and Economics 201-202; Political Science 231, 351, 455 and one course in comparative government. Majors will also take at least one additional course numbered 200 or above in American Government and in International Relations.

A student may offer a combination major in Political Science and History with a minimum of 69 credits selected from the two disciplines; at least 27 credits must be in each discipline. Required courses are: Political Science 201, 202; and Economics 203, 205, 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 satisfactorily broad knowledge of historical, legal, and political science materials in such a language is required. With the consent of the Chairman of the Department the student may fulfill the language requirement by completing three quarters in each of two languages.

GRADUATE WORK. See Graduate School.

For UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTION TO POLITICAL SCIENCE 3. Issues and problems confronting the political system and the systematic study of politics as a discipline.

102 ELEMENTS OF LAW 2 prereq or coreq 101. Law as a system of social control; legal systems and law-making institutions.

201 (202) AMERICAN GOVERNMENT 5. Constitutional principles of the national government; democratic political processes, including public opinion, interest groups, political parties, and elections; structure of the national government, congress, the presidency, and the courts.

202 (203) AMERICAN GOVERNMENT 3 prereq 201. Functions of the national government; including financial, business, labor, agriculture, conservation, welfare, national defense, foreign policy, and selected problems of public policy.

205 GOVERNMENT IN MONTANA 2 prereq 201. A survey of state and local government in Montana, with emphasis on the organization and operation of state and local government in Montana. May be taken concurrently with 202.

211 INTRODUCTION TO INTERNATIONAL RELATIONS 3 prereq 201. Introductory to the nation-state system; development and organization of nation-states, blocs, international organizations; factors affecting stability and change in the system.

FOR UNDERGRADUATES AND GRADUATES

321 COMPARATIVE GOVERNMENT AND POLITICS 5 prereq 201. Structure and politics of democratic forms of government other than the United States, with emphasis on the dynamics and modified parliamentary types of government in Great Britain and France.

322 COMPARATIVE GOVERNMENT AND POLITICS 3 prereq 201. A survey of the political systems of authoritarian and totalitarian forms of government with emphasis on the Soviet Union.

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 exposition and critical analysis of selected ideas and political philosophers from the Renaissance to the modern period.

332 (331) INTERNATIONAL ORGANIZATIONS 3 prereq 231. The machinery of international cooperation with particular reference to the United Nations.

335 UNITED STATES FOREIGN POLICY FORMATION 3 prereq 202 and 231. Forces and institutions shaping United States foreign policy; relationships between domestic and foreign policy. Structure and function of the Department of State.

341 (341) POLITICAL PARTIES 3 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 public opinion, political parties, legislative bodies, executives, administrators, and the courts.

343 VOTING BEHAVIOR 3 prereq 341. The electorate and the election process; attitudes and behavior of voters; the significance of election results for the political system.

351 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 Aquinas.

352 EARLY MODERN POLITICAL THEORY 3 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Machiavelli through Burke.

353 AMERICAN POLITICAL THOUGHT 3 prereq 201. An exposition and critical analysis of selected ideas and political thinkers relevant to political thought in the United States.

356 LATE MODERN AND CONTEMPORARY POLITICAL THEORY 3 prereq 101 or any 200 level course in Political Science. An exposition and critical analysis of the major political philosophers from Marx to the present.

361-362 PUBLIC ADMINISTRATION 3 prereq 201. (361) Legal and institutional setting of the administrative system; dynamics of organization and processes of public management. (362) Problems and techniques of administration illustrated by case materials and field visitation.


381 STATE GOVERNMENT 3 prereq 202. Structure, functions, and operations of state governments; position of state governments in the federal system with Montana as an example.


387 LEGISLATIVE PROCESS 3 prereq 201. Structure, politics, personnel and processes of national and state legislative bodies.

388-389 LEGISLATIVE PROCESS (Offered Winter and Spring quarters of legislative years.) (388) 3 prereq 387 or c/l. Structure, processes, and politics of Montana Legislative Assembly; visits to the state legislature. (389) 2. Research topics on selected aspects of the legislative process.
PRE-MEDICAL SCIENCES

The Pre-medical Sciences curriculum is designed to provide the basic training required of students who plan careers in Dentistry, Medicine, Veterinary Medicine, and medically related fields. It is a four year program leading to a Bachelor of Arts degree with a major in the Pre-medical Sciences. The Pre-medical Science student should normally, however, major in an ancillary field and simultaneously satisfy the major department requirements and the Pre-medical Sciences curriculum requirements.

Requirements for admission to medical and dental schools have been standardized by the professional schools and their governing agencies in terms of the needs of the professions concerned and their licensing boards.

Students in Pre-veterinary Medicine and in Optometry are advised to plan their programs carefully at the University of Montana in order to ensure meeting the admission requirements to a School of Veterinary Medicine, or Optometry.

The successful pre-med student must do well in the basic science and other college work. He must master more than two years of college chemistry, and do well in college mathematics, physics, and zoology. To be considered by a School of Medicine the pre-med student must place high on the Medical College Aptitude Test which he ordinarily takes during his junior year. The same holds true for the pre-dent student who must do well in the American Dental Aptitude Test. Superior scholarship is of importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. High school students who are contemplating a career in the Pre-medical Sciences curriculum at the University should plan on a program of high school study which will include 3-4 years of mathematics, some Latin or several years of a modern foreign language, experience in Chemistry and Physics, and considerable background in literature and social science.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements in the Pre-medical Sciences, demonstrates a high level of competency, and is relatively well balanced.

Applicants for entrance to Schools of Medicine exceed the number that are admitted so that only well motivated, well qualified, and competent students are admitted to Schools of Medicine. Well qualified students from the University are usually accepted into Medical Schools.

The Pre-medical Sciences student is advised to get a Bachelor's degree in a field of his own choice. 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 both the pre-medical sciences adviser and the major adviser beginning not later than the sophomore year in residence.

The Western Interstate Commission for Higher Education was designed to provide financial aid to Medical, Dental, Veterinary Medical, and other professional students attending Western professional schools.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT. English, Physical Education, Group, and other University requirements listed earlier in the catalog; Chemistry through Organic, Quantitative, and Survey of Physics; one year of college mathematics; one year of college physics; Zoology through Embryology and Genetics; a reading knowledge or 23 credits in French, German or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR DEGREE WITH A MAJOR IN THE PRE-MEDICAL SCIENCES: In addition to the minimum course requirements listed immediately above the student must take Psychology 5-10 credits; 15 credits of an approved course of study in one field, and additional electives selected from the University course offerings to complete University credit requirements for graduation.

It is possible for the Pre-medical Sciences student who has satisfied course requirements specified above to earn a Bachelor's degree in 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 course work in the area selected as approved by the Chairman of the major department concerned. See Chemistry and Zoology for degrees in those areas with the Pre-med Option.

PRE-MEDICAL SCIENCES CURRICULUM
(Dentistry, Medicine, Veterinary Medicine)

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Engl 150</td>
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<tr>
<td>Math 110, 117, 118</td>
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<td>5</td>
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<tr>
<td>Chem 121-122-123</td>
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<tr>
<td>(Math 251 elective)</td>
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<tr>
<td>Electives</td>
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<tr>
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Sophomore Year

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<td>Engl 250</td>
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<td>Zool 111, 112, 113</td>
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<td>Chem 231, 235</td>
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<td>Phys 110</td>
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<td>For Lang 101 or elective</td>
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<td>Group requirements</td>
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Junior Year

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<th>Course</th>
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<tr>
<td>Engl 350</td>
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<tr>
<td>Chem 245, 270</td>
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<tr>
<td>Physics 221, 222, 223 or 111, 112, 113</td>
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<td>Zool 304</td>
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<td>Science sequence, Chem 481 recommended</td>
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<td>Elective</td>
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<tr>
<td>H&amp;PE (6 quarters)</td>
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Senior Year

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<tr>
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<tr>
<td>For Lang or elective</td>
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<tr>
<td>Science sequence, Chem 481 recommended</td>
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<tr>
<td>Elective</td>
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183
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, 212, 312, 345, 360, and 361, in psychology courses numbered above 299, including at least 2 credits of 290 in the senior year. Mathematics 125; Zoology 111-115, or 111 and 222; and a reading knowledge of five quarters (23 to 25 credits) in one modern language, preferably Russian, German or French. Other courses recommended for psychology majors include Philosophy 110 and 212. Mathematics 116, 344 and 345, Speech 111, Anthropology 103 and at least one course in Sociology. For majors preparing for graduate work in psychology, the following departmental courses are recommended; in addition to those which are required: Psychology 206, 212, 230, 340, 312, 361. With appropriate background, such students may take a restricted number of graduate level courses in their senior year.

RECOMMENDED COURSE SEQUENCE

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<thead>
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<th>Freshman Year</th>
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<tbody>
<tr>
<td>Psych 110</td>
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<td>For Lang 101-102-103</td>
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</tr>
<tr>
<td>Soc 101</td>
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<td>H&amp;PE</td>
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<th>Sophomore Year</th>
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<tbody>
<tr>
<td>Psych 210, 311</td>
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<td>Psych electives (206, 212, 230, 240, 312, 361, 390)</td>
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<td>5-5</td>
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<tr>
<td>Math 116, 302, 303 (or electives)</td>
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</tr>
<tr>
<td>Philosophy 210</td>
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<td></td>
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<tr>
<td>Engl 350</td>
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<th>Junior Year</th>
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<tbody>
<tr>
<td>Psych 411</td>
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<td>Psych 390</td>
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<tr>
<td>Electives</td>
<td>8-8</td>
<td>10-10</td>
<td>10-10</td>
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</table>

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

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/l. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 5 (4-2) prereq 111. The origins and significance of the behavior of present life forms.

212 (412) PHYSIOLOGICAL PSYCHOLOGY 5 (4-2) prereq 111. Survey of basic chemical and nervous regulatory mechanisms underlying behavior.

220 PSYCHOLOGICAL STATISTICS 5 (4-2) prereq 110 and Math 125. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 5 (5-0) prereq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 5 (4-2) prereq 111. Effects of social environment upon human behavior.

390 (490) PROBLEMS IN PSYCHOLOGY V R-9 prereq 15 credits in Psychology and c/l.

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.
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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 (360) PERSONALITY DYNAMICS 4 (4-0) prereq graduate standing or senior with c/l. 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.

460 MATHEMATICAL MODELS IN PSYCHOLOGY 4 (4-0) prereq 220 and 311 or c/l. 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/l. 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 (3-0). Open only to graduate majors in psychology. Bibliographic problems and the literature search: forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

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.

518 ADVANCED MOTIVATION 4 (4-0). Drive, incentive and other affect variables and their influences on behavior.

518 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. Organization and presentation of case history reports in educational, industrial and clinical situations.

544 (444) ADVANCED SOCIAL PSYCHOLOGY 4 (4-0). Theory and experiment in the analysis of individual behavior in relation to social stimuli.


560 (460) THEORIES OF PERSONALITY 4 (4-0). Current theories of personality and the experimental evidence on which they are based.

561 ADVANCED PSYCHOPATHOLOGY 4 (4-0). Symptoms, etiology, diagnostic criteria and treatment of the major functional and organic disorders. Open only to students in the major field of psychology.

562 ADVANCED PERCEPTION 4 (4-0). Current literature and theoretical models of perception.

563 ADVANCED PHYSIOLOGICAL PSYCHOLOGY 4 (4-0). Brain mechanisms and behavior: electrophysiological correlates of behavior.

570 CLINICAL PSYCHOLOGY 4 (4-0). A general survey of the field; types of cases handled by the clinician; techniques in evaluation and therapy; introduction to consultation and research.

598 PRINCIPLES OF PSYCHOTHERAPY 4 (4-0) prereq 561. Major theoretical and technical approaches to psychotherapy.

599 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 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.

671 CLINICAL PRACTICUM, DIAGNOSTIC 2 (0-4) R-6 prereq c/l. To be taken in conjunction with or subsequent to 550-551-552. Supervised practice of diagnostic techniques in a clinical setting.

672 CLINICAL PRACTICUM, THERAPEUTIC 2 (0-4) R-6 prereq c/l. To be taken in conjunction with 666. Supervised practice of psychotherapeutic techniques in a clinical setting.

673 CLINICAL PRACTICUM, RESEARCH 2 (0-4) R-6 prereq c/l. Supervised participation in research projects in a clinical setting.

688 (688) CLINICAL INTERNSHIP 0 prereq acceptable proficiency in clinical technique. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

688 ADVANCED PSYCHOTHERAPY 2 (2-0) R-6 prereq 420, 586, 685; coreq 672. A continuous and intensive study of the psychotherapeutic relationship and the various therapeutic techniques including supportive, client-centered, analytic, hypnotherapeutic.

699 DISSERTATION V R-30.
RADIO AND TELEVISION

Courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-telephone have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio-telephone specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism, 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-televison 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

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>English Composition 150, 250, 350</td>
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<td>Physical Education 100 (6 quarters)</td>
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<td>Group IV</td>
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Additional Requirements:

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<th>Group</th>
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<td>Group IV</td>
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<td>English 450</td>
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Major Requirements:

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<tr>
<td>Free Electives</td>
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</table>

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

118 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, 346, 347, 348, 440, 441-442-443, 494; Drama 329 (342); Speech 241; Drama 121, 131; Journalism 270, 297.

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

440 CINEMATOGRAPHY (see Journalism).

441-442-443 TELEVISION PRODUCTION AND DIRECTION 3 prereq 12 hours in radio-television courses. Advanced course in 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.

RELIGION

Courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Religion, up to 15 credits in religion courses may be counted toward graduation. The instruction covers ancient and contemporary thought and scholarship of most of the major religions of the world, including the study of the Bible and the Church. No attempt is made to indoctrinate the student in beliefs or creeds.

In addition to a director (who is not sponsored by any one group), there are three Chairs of Religion. The Judaic Lectureship, chaired on a part-time basis by a Jewish professor, is sponsored by the Jewish Chautauqua Society, the Jewish Community of Montana and its neighboring states. The second Chair on a full-time basis is sponsored by the Helena Diocese of the Roman Catholic Church. The third Chair also on a full-time basis is sponsored by the Lutheran Church and the Pacific Northwest Synod of the Lutheran Church in America. Financial support of the program is voluntary.

The Montana School of Religion was organized and incorporated as an independent organization in 1924 for the purpose of making courses in religion available to students, and of teaching religion as an academic discipline. It is affiliated with the University, under a director who is responsible to the University and to a Board of Trustees comprised of faculty, administration, laymen, and ministers, who represent the various supporting groups and the University.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

118 INTRODUCTION TO STUDY OF RELIGION 2. Comparative analysis of truths of various disciplines, religious truths, criteria of truth, and basic problems a student must face. (Open only to freshmen and sophomores.)

123 LIFE AND TEACHINGS OF JESUS 3. The origins, background, problems, occasions, and messages of the four gospels with an attempt to relate the teaching for today.

142 RELIGION IN AMERICA 3. The teachings and practices of Judaism, Protestantism, Roman Catholicism, and other representative sects found in America.


124 LIFE AND TEACHINGS OF PAUL 3. The origins, background, problems, occasions and messages of the epistles of Paul the apostle and of the book of Acts, and their application for today.

241 HISTORY OF CHRISTIANITY 3. The instruction covers the major movements of the Church from the Apostolic period through the Renaissance and presents the reciprocal influences of politics, economics, social mores, and the arts with the Church.

242 HISTORY OF CHRISTIANITY FROM 900 TO 1700 3. The growth and role of Christianity in the West; the causes and establishment of the Reformation; the influences of monasticism, rising nationalism, and humanism upon the Church.

250 BASIC CHRISTIAN CONVictions 3. The backgrounds and thoughts concerning God, man, sin, Jesus Christ, and redemption interpreted in meaningful terms for our day.

251 CHRISTIAN THINKERS BEFORE 1800 3. The contributions of Augustine, Aquinas, Luther, and Calvin through study of their writings.

252 MODERN RELIGIOUS THINKERS 2. The contributions of Kierkegaard, Buber, Marcel, Berydaev, and Tillich through study of their writings.

250 THE PROPHETS AND THEIR TIMES 3. The Hebrew prophets (Isaiah, Jeremiah, Ezekiel, and twelve others from the biblical writer's point of view and related to today.

250 PRINCIPLES OF RELIGIOUS EDUCATION 2. The objectives and curricula of the religious education of a person in relationship to home, school, university, and place of worship, according to his particular religious culture.

250 ARCHAEOLOGY AND THE BIBLE 3. The Dead Sea Scrolls of 1956, 1959 (The Bible in Aramaic Letters), and 1961-63 (Masada Scrolls), the Negev Explorations, Bet Shearim necrology, and others.

FOR UNDERGRADUATES AND GRADUATES

304 COMPARErIVE WORLD RELIGIONS 5. Seven to eight living religions of the world, their historical sequence and philosophical and theological affirmations.
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 meeting the qualifications established by the University results in a Reserve Commission in the Army or Air Force. Pursuance of either program is an elective beginning for students interested in careers in the Air Force or Army should consult the Professor of Aerospace Studies or the Professor of Military Science.

AIR FORCE ROTC

The Department of Aerospace Studies offers a two-year or four-year program leading to a Reserve Commission in the U.S. Air Force. These programs are designed to provide education that will develop skills and attitudes vital to the career professional Air Force officer. Their purpose is to qualify cadets for commissioned officer status.

The four-year program requires completion of aerospace studies, during four years of attendance at the University. Also a four-week summer training course at the U.S. Air Force Academy at Colorado Springs is required during the summer immediately prior to enrollment in the two-year program. Commission upon satisfactory completion of the two-year program is a prerequisite for receiving a Reserve Commission in the United States Air Force. In addition to the regular curriculum, one hour of time is devoted to developing the principles and techniques of the American military leader with emphasis on the factors which lead to organizational, tactical, logistical, operational, and command and control in the U.S. Air Force. Practical work as Cadet officers in staff and command positions, with primary responsibility for the preparation and conduct of cadet Corps training program. Three classroom hours and one hour of Corps Training per week. Completion of three years of AFROTC will transfer to qualified students concurrent with 401-402-403. Successful completion leads to FAA Private Pilots 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 session and the two years of the advanced course. AFROTC. AFROTC does not require the two basic years of AFROTC as a prerequisite. In lieu of the two year program, the four week summer camp at the United States Air Force Academy is required during the summer immediately prior to entering the Advanced Course. The four year advanced course, as well as the special summer training period, of the four year course identical to the four year program. Four week field training between Junior and Senior year is not required. Students interested in entering the United States Air Force Reserve through the two year program should consult the Professor of Aerospace Studies not later than fall quarter of their sophomore year.

250 FIELD TRAINING COURSE No Credit, Prerequisite for entry into Advanced Course. Six weeks at an Air Force Base. Stressing practical leadership, military fundamentals, physical training and Air Force orientation.

301-302-303 GROWTH AND DEVELOPMENT OF AEROSPACE POWER 3. (Same as for the four year program.)

401-402-403 THE PROFESSIONAL OFFICER 3. (Same as for the four year program.)

MILITARY SCIENCE

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 successful completion of either program and meeting the required qualifications established by the University.

The four year program requires completion of Military Science courses during four years of attendance at the University. In addition, a six-week summer camp is required upon completion of the two-year program. The two-year program encompasses Aerospace Systems, National Security, and a three week summer camp upon completion of the junior year of ROTC. However, as a prerequisite to beginning this three year program, the student is required to attend an advanced course in lieu of the sophomore year of ROTC training. A limited number of scholarships are available for qualified cadets are offered during the last year of ROTC training. A limited number of scholarships are available for qualified cadets.

The four year program is conducted by career military personnel. Both departments offer a two-year or a four-year program. The satisfactory completion of either program and meeting the qualifications established by the University results in a Reserve Commission in the Army or Air Force. Pursuance of either program is an elective beginning for students interested in careers in the Air Force or Army should consult the Professor of Aerospace Studies or the Professor of Military Science.

FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION PROGRAM

The academic requirements of the basic courses in the spring quarters of the sophomore and junior years are required of ROTC students. These courses include: Basic, which is also required during the summer immediately prior to enrollment in the two-year program.

FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION

101-102-103 WORLD MILITARY HISTORY 3. The U.S. Department of Defense and the doctrine, mission and functions of the U.S. Air Force. Present and future military functions of the Armed Forces of the United States. The Air Force's role in the U. S. 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 successful completion of either program and meeting the required qualifications established by the University.

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FOUR-YEAR PROGRAM

BASIC COURSE: GENERAL MILITARY EDUCATION

101-102-103 INTRODUCTION TO THE ARMY 2. (101) An introduction to the organization of the Army and an evaluation of Military Science offers a two and a four year program leading to a commission in the United States Army Reserve. The commission is tendered upon successful completion of either program and meeting the required qualifications established by the University.

The four year program requires completion of Military Science courses during four years of attendance at the University. In addition, a six-week summer camp is required upon completion of the two year program. The two-year program encompasses Aerospace Systems, National Security, and a three week summer camp upon completion of the junior year of ROTC. However, as a prerequisite to beginning this three year program, the student is required to attend an advanced course in lieu of the sophomore year of ROTC training. A limited number of scholarships are available for qualified cadets are offered during the last year of ROTC training. A limited number of scholarships are available for qualified cadets.

FOUR-YEAR PROGRAM

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FOUR-YEAR PROGRAM

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FOR UNDERGRADUATES AND GRADUATES

371 (201) GROUP METHODS 4 prereq 200. Purposes, principles, and methods of group functioning. The role of the group worker and the group member. The problem of leadership in the group, the agency and the community.

372 (482) COMMUNITY RELATIONS 4, Su 3 a/y prereq 200. The place of the professional person in community life, his responsibilities as a citizen, his philosophy and ethics, especially as they relate to the community, his contributions to community welfare and his concern for human needs and problems.

373 CASEWORK PROCESS 4 prereq 200. The purpose, philosophy, and method of social casework. Its practice as one of the major social work processes. Directed toward developing an understanding of the client, establishing and using the professional relationship, and basic interviewing and recording methods.

374 THE ADMINISTRATIVE PROCESS IN SOCIAL WORK PRACTICE 4 prereq 200. Responsibilities of staff, executive, and board in defining and carrying out agency or department purpose and function. The roles of the administrator, supervisor, and worker in the administrative process in relation to the social, cultural, psychological, and political forces operating in social welfare administration. The relation of administration to policy making, community planning, and social action. Personnel methods and standards.

375 (488) THE HISTORY OF SOCIAL WELFARE 5 a/y prereq 181. The growth and development of social services in the United States with special attention given to policy questions: poverty, handicaps, sickness, emotional disorders, family breakdown, delinquency and crime, mental illness, wars, civil rights, and community development.

471-472-473 SOCIAL WORK PRACTICE IN SPECIAL SETTINGS V, R-10 prereq 181 and 10 credits in social welfare. Topic varies. 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, including, in each case, examination of requisite specialized skills and knowledge, value systems, and principles of interprofessional collaboration.

483 SOCIAL WORK LABORATORY V 3-4 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 4 a/y prereq 181. Voluntary and public programs serving people in distressed and underdeveloped areas of the world.

489 SEMINAR V R-9 a/y prereq 15 credits in social welfare.

499 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and social welfare and consent of department chairman. Field work or internship, under supervision, in public and private agencies and institutions.

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 courses involve case records and some field work or observation in addition to regular class work. Broad studies in other social sciences are required.

Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is preparatory. Social workers are employed in staff positions as caseworkers, group workers, supervisors, and administrators in public and private social agencies, courts, hospitals, mental-health clinics and youth serving organizations.

The undergraduate major in social welfare is available for those wishing a practical orientation toward social problems. Both theory and practice are emphasized to achieve the effectiveness needed on the job. Those wishing to enter graduate schools of social work will find the program designed for this purpose as well as for effective citizen participation. This program is offered from the several social sciences to serve as a foundation for a limited number of courses which present social welfare content and method. Group methods are freely used.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 40 credits in departmental courses are required for the Bachelor of Arts degree with a major in social welfare. The following courses must be taken: SW 181, 371, 372, 375, and at least eight credits in SW 483, Social Work Laboratory. In addition, Soc. 101, 201, 205, and 314 must be taken.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

181 THE FIELD OF SOCIAL WELFARE 5. Social welfare functions and development of modern 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,
SOCIOLOGY

is a social science concerned with relationships which link man with his institutions and the 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, 50 credits in sociology courses are required for the Bachelor of Arts degree. A foreign language is required. (See foreign language requirement in the general section of the catalog.) The 50 credits in sociology must include the following courses: Soc 101, 201, 205, 310, 314, 401 and 402. In addition, the following courses in anthropology must be taken: Anth 133 and 372. Students must take Math 001 or be exempt through examination.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

101 INTRODUCTORY SOCIOLOGY 5. A general study of interhuman relations.

102 SOCIAL PROBLEMS 5 prereq 101. A general study of social behavior and personal disorganization.

200 AMERICAN SOCIETY 5 prereq 101. Structure and function of contemporary American society.

201 (303) SOCIAL SCIENCE METHODS 3 prereq 10 credits in social sciences. The methodology, techniques and instruments of measurement used in the social sciences.

204 COURTHSHIP AND MARRIAGE 2. A general consideration of factors in courtship and marriage.

205 ELEMENTARY SOCIAL STATISTICS 5 prereq Math 001 or exemption by examination. Simple statistics and graphic techniques commonly used in the social sciences.

207 INTRODUCTION TO SOCIAL CHANGE 5 prereq 101. Analysis of creation and development of social organizations and relationships.

208 (501) INDIVIDUAL AND SOCIETY 5 prereq 101. Human development through interaction of social structure, heredity, and culture.


FOR GRADUATES

302 SOCIAL STRATIFICATION 3 a/y prereq 101. The class system in contemporary society in terms of social class theory, class behavior, and current research in social stratification in American society.

304 POPULATION 4 prereq 101. A quantitative and qualitative analysis of world population: vital statistics and population change; migration and immigration.

305 (402) THE FAMILY 5 prereq 101. Comparative, historical and analytical study of the family.

306 CRIMINOLOGY 5 prereq 101 or 102. The causes, prevention, detection, and correction of crimes.

307 SOCIALIZATION 3 prereq 208. Processes and products of social learning.

308 RACE AND ETHNIC RELATIONS 3 a/y prereq 101 and Anth 154. Racial and ethnic differentiation and its social consequences. (Credit not given for both Soc 308 and Anth 308.)

309 INTRODUCTION TO COMPLEX ORGANIZATIONS 4 prereq 101 or Psyc 110. Bureaucracies and bureaucratization in modern society.

310 DEVELOPMENT OF SOCIAL THOUGHT 4 prereq 101. Social thought from earliest times to the establishment of sociology.


312 (206) URBAN SOCIOLOGY 4 a/y prereq 101. The rise and development of cities; social organization of the city; problems of urban community life.

313 RURAL SOCIOLOGY 4 Su 3 a/y prereq 101. Organization and social relationships of rural life; the rural community, problems of rural life. Special emphasis on Montana and the Northwest.

314 FIELD OBSERVATION 3 prereq 101 and 201 or 205. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.

261, 362, 365 (see Health and Physical Education).

371 CULTURE AND PERSONALITY (See Anthropology)

400 PROBLEMS IN SOCIAL ORGANIZATION V R-15 prereq 13 credits in sociology. Topics of current interest in sociology.


402 INSTITUTIONAL DYNAMICS 3 prereq 207. Interrelationships of institutions in process of change.

403 ADVANCED PROBLEMS V 1-2 R-6 prereq c/l.

504 (202) COLLECTIVE BEHAVIOR 3 a/y prereq 208. Theories relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

505 SOCIOLOGY OF WORK 5 prereq 101. Structure and function of organizations and professions. Problems of organization and relationships of work groups.

507-406-409 SEMINAR V 2-5 R-10 prereq 10 credits in sociology. Enter any quarter.


499 FIELD WORK PRACTICUM (See Social Welfare)

FOR GRADUATES

501 GRADUATE RESEARCH V R-10.

502 ADVANCED METHODS 5 prereq 201 or -. Required of all graduate students in sociology.

503 ADVANCED SOCIOLOGICAL STATISTICS 5 prereq Math 125 or Soc 205. Sampling; measures of association and significance; statistical methods in the design of experiments; sociometrics.

504 SOCIAL CHANGE V 2-5 prereq 101 and 10 upper division credits in sociology. Processes and consequences of social change in urban industrial society.

505 (411) ADVANCED GENERAL SOCIOLOGY 4 prereq 101, 10 upper division credits in sociology. Review and analysis of major sociological theory and research.


607-608-609 SEMINAR IN URBAN STUDIES 3. Selected topics in urban affairs. (Also listed as Pol. Sci. 607-608-609.)

599 FIELD WORK PRACTICUM V R-12 prereq 15 credits in sociology and consent of department chairman. Supervised internship.


699 THESIS OR DISSERTATION V R-9 for M.A.; R-15 for Ph.D.

SPEECH-COMMUNICATION

represents a discipline directly concerned with the nature and practice of communication. Study in the field is directed toward achieving a deeper understanding of the way in which people communicate with one another, and the personal, social and cultural factors that influence the process.

Three related programs of study are offered cooperatively by the Department of Speech Communication and the Department of Speech Pathology and Audiology. The student may select the particular program or combination of programs which is most relevant to his educational interests and professional goals.

The program in Foundations of Communication treats theoretical conceptions of the communicative process and their basic determinants. Research methods and procedures are emphasized. The program in Systems of Communication provides opportunity for study with emphasis on socially significant communication systems. Study and practice in Rhetoric, Public Address, Debate and Discussion exemplify the work offered in this area. The program in Disorders of Communication emphasizes the causes and remedial procedures relating particularly to disorders of speech, hearing, and language. Academic study is supplemented by extensive practicum experience in the Speech and Hearing Clinic. A more detailed description of each program, including vocational and professional opportunities will be found under each program heading below.

The Bachelor of Arts in Speech-Communication with an emphasis in either Speech Communication or Speech Path-
SPEECH COMMUNICATION—81

541 PERSUASION 3 prereq c/i. 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 230 or =. Principles and techniques of quantification and design in communication research. Practice in the techniques of professional writing.

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

600 RESEARCH V R-10 prereq c/i.

699 THESIS V R-12

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. Students who are interested primarily in systems of communication as critical factors in human relationships are required to supplement the core curriculum with the following courses: Speech-Communication 110, 214, 330, 555, 444, 445 or 446; and 11 approved electives in Speech-Communication. Students planning to teach in a speech program at the high school level are referred to the requirements listed under Education.

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. An emphasis in Systems of Communication at the graduate level leads to a Master of Arts degree with specializations in speech education, public address and rhetoric, or interpersonal and organizational communication.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

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

232-233-234 INTRODUCTION TO COMMUNICATION 5 (4-2) 232, 233, (5-0)-234. Major concepts and principles, focusing on the psychological, physiological, sociological, and cultural determinants of the production and reception of signs in human communication. (232 Phonology: the production of language. (233) Audiology: the reception and perception of language and other acoustic stimuli. (234) Process: the nature and use of signs and symbols in the total process of communication with a view to the influence of attitudes and conventions on perception and the role of signs in communication theory and research. The undergraduate program is not intended to prepare a student for employment in the communication field. Appropriate graduate study qualifies the student for employment in education, business, industrial and governmental teaching, research, and other professional programs.

GRADUATE WORK. See Graduate School.

FOR UNDERGRADUATES

For Explanation see Course Descriptions (Index)

110 INTRODUCTION TO SYSTEMS OF COMMUNICATION 3. Theory and evidence relevant to interpersonal and intrapersonal systems of communication. The role of language in human interaction.

111 INTRODUCTION TO PUBLIC SPEAKING 3. The theories and principles of public speaking. Practice speech composition, delivery and criticism.

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

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

119 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.

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

313 (113) PARLIAMENTARY PROCEDURES 2. Theory and practice relating to the rules of parliamentary procedures.

314 (214) DISCUSSION AND SMALL GROUPS 2. Study and practice in the processes of education and professional experience. Includes theory and evidence related to concepts of leadership, communication patterns, group cohesion and social pressure.

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

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; the development of the spontaneous creative and the extemporaneous types of sociodrama.

FOR UNDERGRADUATES AND GRADUATES

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

430 BUSINESS AND PROFESSIONAL INTERVIEWING 3. Theory and practice of communication behavior in dyadic situations as applied in processes of education and professional 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 Speech-Communication. Rhetorical theory from Corax to the present.

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

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 associated.

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

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

490 PROBLEMS V R-6 prereq c/i.

FOR GRADUATES

512 SEMINAR: ORGANIZATIONAL COMMUNICATION 3 a/y prereq 316 or c/i.

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

545 SEMINAR: SPEECH CRITICISM 3 a/y prereq 366 or c/i.

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

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

571 SEMINAR: SOCIODRAMA 3 a/y prereq 371.

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

600 RESEARCH V R-10 prereq c/i.

609 THESIS V R-12.

DISORDERS OF COMMUNICATION

(Speech Pathology and Audiology)

Individuals with speech and hearing disorders constitute our largest group of exceptional persons. Students interested in these problems, their causes and remedial procedures should supplement the core curriculum with the following courses: Speech-Communication 110, 111, 119, 133, 336, 338, 340, 341, 342, 343, 351, 471; Psychology 230 and 420; and Zoology 202.

Although students take the Bachelor of Arts degree in Speech-Communication, with an emphasis in Disorders of Communication, this is a pre-professional degree and is not intended to prepare a student for employment in the field of Speech Pathology and Audiology. With 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 held by the American Speech and Hearing Association. Persons thus certified are employed in a variety of settings, such as clinical 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.)

335 COMMUNICATION DISORDERS I 5 prereq 119, 232, 233, and 254. An introduction to communication disorders as an educational and clinical field. Theories, research and selected remedial procedures relating to disorders of articulation, voice and language reception.

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

337 COMMUNICATION DISORDERS III 3. Theories, research and selected remedial procedures relating to disorders of hearing.

338 (357) CLINICAL PROCEDURES FOR COMMUNICATION DISORDERS 3 prereq 336 or c/i. Principles and methods of habilitation and rehabilitation for children and adults with communication disorders.

341 (331) DIAGNOSIS AND APPRAISAL OF COMMUNICATION DISORDERS I 3 prereq or coreq 335. Clinical experiences with tools and techniques needed to assess and diagnose speech and hearing problems of the adult and child.

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

380 (340) CLINICAL AUDIOLoGY 3 prereq 233. Fundamental 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 credit 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.

332 (552) 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.

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

345 METHODS OF SPEECH AND HEARING THERAPY IN THE SCHOOL 2 prereq 338. Methods and policies related to establishing and conducting a speech and hearing program in a school system with emphasis on the elementary level.

481 DIAGNOSTIC AUDIOLoGY 3 prereq 330. 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

523 (423) ADVANCED CLINICAL PRACTICUM IN COMMUNICATION DISORDERS V R-6 prereq 4 credits of 423.

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

577 SEMINAR: STUTTERING RESEARCH AND THEORIES 3 prereq c/i.

584 SEMINAR: ANATOMICAL DEFECTS OF SPEECH 3 prereq c/i.

585 SEMINAR: NEUROMUSCULAR DEFECTS OF SPEECH 3 prereq c/i.

547 SEMINAR: LANGUAGE DISORDERS 3 prereq c/i.
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>Cr.</th>
<th>W</th>
<th>S</th>
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</thead>
<tbody>
<tr>
<td>Botany-Zoology 111—General Botany</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry 101, 102, 160—General, Survey, Organic</td>
<td>4</td>
<td>5</td>
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</tr>
<tr>
<td>Chemistry 121, 122, 123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English 500—Freshman Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116, 117—College Algebra, Trigonometry</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group requirements</td>
<td>2-5</td>
<td>0-3</td>
<td>0-3</td>
</tr>
<tr>
<td>H&amp;E—Physical Education</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
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</thead>
<tbody>
<tr>
<td>Botany 112, 113—General Botany</td>
<td>5</td>
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<tr>
<td>Botany 325, 365—Plant Physiology, Systematic Botany</td>
<td>4</td>
<td>5</td>
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<tr>
<td>English 255—Intermediate Composition</td>
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<tr>
<td>Forestry 201—Elementary Soil Physics</td>
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<tr>
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<tr>
<td>H&amp;E—Physical Education</td>
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</table>

Terrestrial Option

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
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<tbody>
<tr>
<td>Zoology 309, 308—Mammalogy, Ornithology</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Botany 366, Agrobiology</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Forestry 355—General Range Management</td>
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<tr>
<td>English 355—Advanced Composition</td>
<td>5</td>
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<tr>
<td>Group requirements</td>
<td>2-4</td>
<td>6-8</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 310, 311—Ichthyology, Field Zoology</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 355—Entomology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>Group requirements</td>
<td>2-3</td>
<td>7-9</td>
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</table>

Aquatic Option

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 307, 413, 428—Aquatic Biology, Fisheries Science, Invertebrate Ecology</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Botany 450—Hydrology</td>
<td>2</td>
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<tr>
<td>Botany 490—Wildlife Management</td>
<td>5</td>
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</tr>
<tr>
<td>Zoology 450—Animal Behavior</td>
<td>5</td>
<td></td>
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<tr>
<td>Group requirements</td>
<td>5-7</td>
<td>7-8</td>
<td>10-12</td>
</tr>
</tbody>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 310, 311—Ichthyology, Field Zoology</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 355—Entomology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group requirements</td>
<td>5-7</td>
<td>10-14</td>
<td>17-18</td>
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</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
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</thead>
<tbody>
<tr>
<td>Zoology 310, 311—Ichthyology, Field Zoology</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Zoology 340, 341—Mammalian Physiology</td>
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<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 355—Entomology</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Botany 355—Plant Ecology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group requirements</td>
<td>5-7</td>
<td>10-14</td>
<td>17-18</td>
</tr>
</tbody>
</table>

One summer at the University of Montana Biological Station (or other Biological Station) enrolled in Zoology 481, Limnology, and one of the following three courses: Zoology 493, Aquatic Insects, Zoology 495, Problems in Vertebrate Ecology, or Botany 493, Aquatic Plant Ecology. This summer could be taken either after the junior year or the senior year. Suggested electives: Any courses in Terrestrial Option not required in the Aquatic Option, any course from list of appropriate additional courses shown below:

Wildlife Science Option

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 485—Genetics</td>
<td>5</td>
<td></td>
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</tr>
<tr>
<td>English 350—Advanced Composition</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Language 101, 102, 103—French, German or Russian</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math 125, 126—Statistics, Analytical Geometry</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Advanced courses from selected list</td>
<td>4-5</td>
<td>7-8</td>
<td>7-8</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Language 211, 212—French, German or Russian</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Advanced courses from selected list</td>
<td>10-12</td>
<td>14-15</td>
<td></td>
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</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 350—Advanced Composition</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math 125, 126—Statistics, Analytical Geometry</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

An approved series of courses from either option to be worked out with adviser. Minimum courses for students interested in Aquatic Wildlife: Zoology 206, 307, 310, 413 and for the students interested in Terrestrial Wildlife: Zoology 308, 309, Forestry 470, 471, 472.

Appropriate additional courses for Wildlife students to select in any option aside from those shown above include: Chemistry 261, 262, Botany 333, 334, 353, 361, 370, 386, 400, Economics 291, 202, Forestry 311, 359, 360, 365, 480, 481, 482, Geography 370, Geology 110, 130, 200, 451, Microbiology 200, 302, Math 344, 345, Political Science 362, Speech 111, Zoology 303, 394, 404.

WILDLIFE BIOLOGY—82
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 medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: Zool 111, 112, 113, 489, and at least one course from each of the following six groups: (1) Morphology, 304, 305, 311, 404; (2) Invertebrate Zoology, 206, 321, 322, 323, 324, 364, 365, 366; (3) Vertebrate Zoology, 306, 308, 309, 310; (4) Physiology, 330, 340, 341; (5) Ecology, 290, 307, 410, 428, 461; (6) Genetics, 485.

Students may substitute Chem 261, 262 for either group 3 or 4. The following must also be completed: Botany 112, 113; Chemistry 121-122-123; Mathematics 116, 117, 118; Physics 111-112-113 or 121-122-123.

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: Zool 111, 112, 113, 404, 489; any one course from Zool 206, 308, 309, 310, 321, 364, 365, 366, 428, 461; any one course from Microbiology or from Botany or one course from Zool 304, 305, 313, 322, 323, 324, 340, 341.

Senior examinations are given only to candidates for honors.

GRADUATE WORK. See Graduate School.

SUGGESTED CURRICULUM IN ZOOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>English 156—Freshman Composition</td>
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<tr>
<td>Math 116, 117, 118—College Algebra, Trig, and Introduction to Calculus</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Zoology 111, 112, 113—Introduction to Biology</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Group requirements</td>
<td>4-5 Cr.</td>
</tr>
<tr>
<td>H&amp;APE 100—Physical Education</td>
<td>1 Cr.</td>
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<tr>
<td>Biology 112—Advanced Composition</td>
<td>3 Cr.</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>English 250—Intermediate Composition</td>
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<tr>
<td>Foreign Language 101-102-103—Elementary French, Russian, German, or</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Russian Readings</td>
<td></td>
</tr>
<tr>
<td>Physics 111-112-113 or 221-222-223—General Physics</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Zoology Advanced Courses</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Group requirements</td>
<td>5-7 Cr.</td>
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<tr>
<td>H&amp;APE 100 Physical Education</td>
<td>1 Cr.</td>
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Junior Year

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English 350—Advanced Composition</td>
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<tr>
<td>Foreign Language 211-212—French, German, or Russian Readings</td>
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</tr>
<tr>
<td>Physics 111-112-113 or 221-222-223—General Physics</td>
<td>5 Cr.</td>
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<tr>
<td>Zoology 304, 305, 309, 310</td>
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</tr>
<tr>
<td>Zoology Advanced Courses</td>
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<tr>
<td>Group requirements</td>
<td>3-5 Cr.</td>
</tr>
<tr>
<td>H&amp;APE 100 Physical Education</td>
<td>1 Cr.</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Botany 112, 113—General Botany</td>
<td>5</td>
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<tr>
<td>Zoology 304, 305, 309, 310</td>
<td>5</td>
</tr>
<tr>
<td>Zoology Advanced Courses</td>
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<tr>
<td>Electives</td>
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<tr>
<td>H&amp;APE 100 Physical Education</td>
<td>1 Cr.</td>
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<tr>
<td>Biology 112—Advanced Composition</td>
<td>3 Cr.</td>
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<tr>
<td>Zoology 304, 305, 309, 310</td>
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</tr>
<tr>
<td>Zoology Advanced Courses</td>
<td>5 Cr.</td>
</tr>
<tr>
<td>Group requirements</td>
<td>5-7 Cr.</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Course Descriptions (Index)

Courses also offered at Biological Station (*Courses only at Biological Station): 308, 309, 316, 365, 366, 431, 433, 434, 436, 461, 521, 522, 526, 591, 600, 606.

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 mechanics of evolution and adaptation. (Credit not allowed for both Bot 111 and Zool 111.)

112-113 GENERAL BIOLOGY 5 (3-4). Prereq 111 or Bot 111 or —. A comparison of structure, function, and life histories of selected invertebrates and vertebrates. (Generally taken as a sequence including 111, 112-113.)

202 HUMAN PHYSIOLOGY 5 (3-4) preq sophomore standing with at least one science course or two quarters of college zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

206 FIELD ZOOLOGY 3 (2-5) preq 113. Collection, identification and preservation of animals. Field work.

250 (350) BASIC CONCEPTS OF ECOLOGY 3 (3-0) preq 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) preq coreq 250. Population and community composition, distribution and interrelationships with environmental factors. Field work included. (Credit not allowed for this course and Bot 251.)

FOR UNDERGRADUATES AND GRADUATES

301 GENERAL COMPARATIVE EMBRYOLOGY 5 (3-4) a/y preq 311-312. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

304 COMPARATIVE VERTEBRATE ANATOMY 5 (3-4) preq 113. The comparative morphology of the vertebrates.

305 ANIMAL MICROTECHNIQUE 5 (2-6) preq 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 typing will be given at the start of the course. May be taken concurrently with 313.

306 HERPETOLOGY 3 (2-2) a/y preq 113. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 5 (3-7) preq 206 or 365 and Bot 205. The biology of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationships 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, preq 113. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

309 MAMMALLOGY 5 (3-4), Su 6 at Biological Station, preq 113. The classification, identification and life histories of mammals. Saturday field trips.
ICHTHYOLOGY 5 (3-4) prereq 113. The systematics and distribution of the fish fauna of the State and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

VERTEBRATE HISTOLOGY 5 (3-4) prereq 113. Basic and comparative anatomy, histology, and developmental anatomy of fishes and amphibians. May be taken concurrently with 305.

PROTOZOOLOGY 5 (3-4) prereq 113. Taxonomy, structure, natural history, physiology, and ecology of protozoans.

LOWER METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among sponges, coelenterates, and nematodes.

MIDDLE METAZOANS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among turbellarians, flatworms, nematodes, and other smaller invertebrates.

ARTHROPODS 5 (3-4) prereq 113. Structural, ecological and phylogenetic relationships among the arthropods exclusive of insects.

CELLULAR PHYSIOLOGY 5 (3-4) o/y prereq 2 courses in Physics, Chem 262 or 190, one course in Botany, Microbiology, or Zoology. The life processes at the cellular level emphasizing the methods of the physical sciences. Jointly listed as Botany 330.

COMPARATIVE PHYSIOLOGY 5 (3-4) prereq 230. The physiology of the major animal phyla. Special attention is paid to those functions related to the environment.

MAMMALIAN PHYSIOLOGY 5 (3-4) prereq 113 and three quarters of college zoology. Physiological properties of blood, blood, body fluids, and circulation; respiration and excretion. (361) Digestion, nutrition and intermediary metabolism; excitation, conduction, responses, sense, and endocrine and reproductive.

INVERTEBRATES OF THE INTERMOUNTAIN REGION 3 (5-12) prereq 113. The systematics, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

ENTOMOLOGY 5 (3-4) Su 6 at Biological Station, prereq 113. The structure, classification, life histories, distribution and ecology of insects.

AQUATIC INSECTS 3 (3-12) prereq 113. The insect fauna, both immature and adult, in aquatic habitats of Western Montana.

BIOLOGICAL ILLUSTRATIONS 2 (0-4) prereq 1 year of biology (genetics and vertebrate). Introduction to the basic physiological, producing illustrative materials relevant to the biological sciences. (25 special supplies fee. Credit not allowed for this course and Bot 463.)

VERTEBRATE EMBRYOLOGY 5 (3-4) prereq 304. The early stages of development of the invertebrates including organogenesis, with emphasis on birds (chick) and mammals (pig).

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.

ADVANCED ANIMAL ECOLOGY 5 (2-8) prereq Math 125 or 126. A course in zoology, including 600. The integration of physical and biotic factors on population structure, density, and productivity of plant and animal life. The effect of climate as well as practical aspects are considered. Weekend field trips.

FISHERY SCIENCE 3 (3-6) prereq 207, 310. The problems involved in investigations on fisheries biology with an analysis of, and some actual field experience in, methods employed in attacking these problems. Field trips.

INVERTEBRATE ECOLOGY 5 (2-8) o/y prereq 206, Bot 265 or =. Zool 307 or 311, 312 recommended. The relationships between invertebrates and plants with special emphasis on the invertebrates. Saturday field trips.

BILOGICAL LITERATURE 1 (2-0) prereq 20 credits in botany or zoology. Student reports of literature of the trend of investigation and experimentation in biological fields.

PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN VERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

PROBLEMS IN INVERTEBRATE PHYSIOLOGY V 1-5 prereq 25 credits in zoology including adequate background courses in the subject and c/i. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

GENERAL ECOLOGY 5 (3-4) prereq 113, 365. Interactions between animals and their environment with special emphasis on vertebrates. Introduction to population dynamics. Jointly listed as Forestry 432.

FOREST ECOLOGY 5 (2-3) prereq 442 or For 432. Factors which regulate the distribution and abundance of insect populations; the basic biological and behavioral components of insect population changes; the rational basis of insect control. Jointly listed as Forestry 453.

MARINE INVERTEBRATES 3 (1-2) prereq 463. A problem in marine biology. The systematics and ecology of marine invertebrates with particular reference to habitat niche of the animals of the Pacific Coast. (A 3-day trip to coast of Oregon or Washington required.)

LIMNOLOGY 6 (5-25) prereq 113 and Chem 123. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biological factors which influence the productivity of these bodies.

EVOLUTION. (See Botany.)

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

SENIOR WILDLIFE SEMINAR 1 prereq senior standing. Wildlife Biology. Conference and discussion by students, faculty, and guests speakers on current topics in Wildlife Biology. (Double-listed as Forestry 491-492.)

FOR GRADUATES

SEMINAR 1 prereq graduate standing in a biological science.

AREAS AND CONCEPTS OF ZOOLOGY 1 prereq graduate standing in Zoology or in Wildlife Biology. An orientation course for all new graduate students in zoology.

HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 3 (3-0) prereq 90 or one course in Botany. An introductory course in the development of biology. Emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior considered.

ACAROLOGY 5 (3-4) o/y prereq 324 or 365 or c/i. Comparative adaptive morphology, biomics and current taxonomic concepts.

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, diapause and diapause, and faunal composition. Geological and botanical evidences considered.

CONCEPTS AND PRINCIPLES OF SYSTEMATIC ZOOLOGY 3 (3-0) o/y prereq 113, 365 or 461, Bot 225 and one animal physiology course. The causation and function of normal behavior with emphasis on the experimental approach to the study of behavior. Ecological aspects of behavior considered.

ACAROLOGY 5 (3-4) o/y prereq 324 or 365 or c/i. Comparative adaptive morphology, biomics and current taxonomic concepts.

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, diapause and diapause, and faunal composition. Geological and botanical evidences considered.

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