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1961-1962 Course Catalog

University of Montana–Missoula. Office of the Registrar

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In the 68 years since its charter was signed, Montana State University has grown from a single building at the foot of Mt. Sentinel into an important center of learning. Old University Hall, its initial landmark, today serves as an administration building, houses the Memorial Carillon.
The Liberal Arts Building is being doubled in size to accommodate our growing registration.

This attractive patio is a feature of The Lodge, student activities and dining center.

Conversation corner in Craig, one of the University's residence halls.
Biggest in the state, the MSU Library houses 196,000 volumes. It is also a depository for Government documents; numbers more than 35,000 maps and an unusual group of historical documents in its collections.

The Health Center on the MSU campus. Through a cooperative arrangement the Health Center, in effect, has every member of the Western Montana Medical Society on its staff.
THE UNIVERSITY OF MONTANA
Russell Barthell, Executive Secretary

The University of Montana 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 are vested in the State Board of Education. For each of the component institutions there is a local executive board.

MONTANA STATE BOARD OF EDUCATION
Ex-officio Regents of the University of Montana
DONALD G. NUTTER, Governor
FORREST H. ANDERSON, Attorney General
HARRIET E. MILLER, Supt. of Public Instruction
EARL L. HALL, 1963
GEORGE N. LUND, 1964
MRS. F. H. PETRO, 1965
BOYTON G. PAIGE, 1966
G. D. MULLENDORE, 1968
GORDON L. DOERING, 1969

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

MONTANA STATE UNIVERSITY, MISSOULA
Established February 17, 1893, and consisting of:
The College of Arts and Sciences
The School of Law
The School of Pharmacy
The School of Forestry
The School of Journalism
The School of Business Administration
The School of Education
The School of Fine Arts
The Summer Session
The Graduate School

H. K. Newburn, President

MONTANA STATE COLLEGE, BOZEMAN
Established February 18, 1893, and consisting of:
The Division of Agriculture
The Division of Education
The Division of Engineering
The Division of Letters and Sciences
The Division of Professional Schools:
  Art
  Commerce (Dept.)
  Home Economics
  Nursing
The Agricultural Experiment Station
The Montana Grain Inspection Laboratory
The Montana Wool Laboratory
The Central Montana Branch Station (Moccasin City)

Roland R. Renn, President

MONTANA SCHOOL OF MINES, BUTTE
Established February 17, 1893, and consisting of:
The Course in Mining Engineering
The Course in Metallurgical Engineering
The Course in Mineral Dressing Engineering

E. G. Koch, President

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

James E. Short, President

EASTERN MONTANA COLLEGE OF EDUCATION, BILLINGS
Established March 12, 1925, and consisting of:
The Division of Education
  Elementary, Secondary, and Literature
  Graduates
  Humanities
  Science
  Social Science

Herbert L. Steele, President

NORTHERN MONTANA COLLEGE, HAVRE
Established March 8, 1913, and consisting of:
The Two-year Liberal Arts, Vocational, Technical, and Pre-Professional Courses
The Two-year Course in Medical Secretarship
The Four-year Course in Educational Administration

L. O. Brockmann, President

CONDENSED CALENDAR
The University of Montana
Winter Quarter, 1961 through Summer, 1963

MONTANA STATE UNIVERSITY
Missoula
Winter Quarter opens January 3, 1961
Spring Quarter opens March 27, 1961
Summer Quarter opens June 12, 1961
Autumn Quarter opens September 17, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963

MONTANA STATE COLLEGE
Bozeman
Winter Quarter opens January 3, 1961
Spring Quarter opens March 27, 1961
Summer Quarter opens June 12, 1961
Autumn Quarter opens September 17, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963

MONTANA SCHOOL OF MINES
Butte
Second Semester opens February 6, 1961
Spring Field Work opens June 12, 1961
First Semester opens September 25, 1961
Second Semester opens February 5, 1962
Summer Field Work opens June 11, 1962
First Semester opens September 24, 1962
Second Semester opens February 4, 1963
Summer Field Work opens June 10, 1963
First Semester opens September 23, 1963

WESTERN MONTANA COLLEGE OF EDUCATION
Dillon
Winter Quarter opens January 3, 1961
Spring Quarter opens March 27, 1961
Summer Quarter opens June 12, 1961
Autumn Quarter opens September 18, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963

EASTERN MONTANA COLLEGE OF EDUCATION
Billings
Winter Quarter opens January 3, 1961
Spring Quarter opens March 27, 1961
Summer Quarter opens June 12, 1961
Autumn Quarter opens September 18, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 10, 1963

NORTHERN MONTANA COLLEGE
Havre
Winter Quarter opens January 3, 1961
Spring Quarter opens March 27, 1961
Summer Quarter opens June 14, 1961
Autumn Quarter opens September 20, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 19, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 12, 1963
PURPOSE OF CATALOG

The Catalog of Montana State University is published to provide current information to be used by prospective students, their parents, their teachers, and advisers; by college students, faculty members, and administrative officers; by registrars and accrediting agencies. It also serves as an official legal document and provides a historical record.

The Catalog is planned to furnish the prospective student with information needed for selecting a school and making long-range educational plans leading to a chosen career. Students without well defined vocational objectives may attend for a year or two as “General” majors, taking courses that meet general requirements for graduation and that provide general education as a foundation for more specific work selected at least by the end of the sophomore year.

USE OF 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 the Explanation of Symbols (See Index).
3. Plan your program at least a year in advance and double-check it against the printed schedules of classes since there are often deviations from the listings in the Catalog.
4. If you have selected a major, study carefully the specific additional requirements for graduation listed under your chosen field.
5. When in doubt as to meanings or interpretation of listed information, consult your adviser or department chairman.

TABLE OF CONTENTS

The University of Montana Condensed Calendar 1
Official Directory 3
Montana State University, founding date and location 10
Accreditation 10
Support and Endowment 10
Control and Administration 10
Campus and Facilities 10
Requirements for Admission 11
Registration and General Regulations 12
Degrees and Majors 13
Grading System 13
Requirements for Graduation 13
Summer Session 15
The Graduate School 15
Financial Obligations 18
Student Services 20
Standards of Student Conduct 21
Absences from Class 22
Student Contracts and Obligations 22
Activities 22
Organizations 23
Organization of Instruction 24
Course Numbering System 24
Explanation of Symbols 24
Details of Curricula Index 80

For publications and detailed information concerning the different schools and colleges address the Registrar of the particular institution concerned. Communications intended for the Executive Office of the University of Montana should be addressed to the State Capitol, Helena, Montana.

MONTANA STATE UNIVERSITY

CALENDAR 1961 - 1962

1961

AUTUMN QUARTER

September 17-23, Sunday through Saturday Registration
September 21-22, Thursday and Friday Orientation
September 21-22, Monday Instruction begins
November 11, Saturday Veterans Day, a holiday
November 23, Thursday Thanksgiving Day, a holiday
December 11-15, Monday through Friday Autumn Quarter ends Christmas recess begins

1962

WINTER QUARTER

January 3, Tuesday Registration
January 3, Wednesday  Instruction begins
February 17, Saturday Charter day
March 12-16, Monday through Friday Winter Quarter ends
March 16, 8:00 p.m. Spring recess begins

SPRING QUARTER

March 26, Monday Registration
March 27, Tuesday Instruction begins
May 25-26, Tuesday and Saturday Intercollegiate Meet
May 30, Wednesday Memorial day, a holiday
June 4, Monday Commencement
June 4-8, Monday through Friday Examinations
June 8, 5:00 p.m. Spring Quarter ends

SUMMER SESSION

June 11, Monday (10 weeks and first term) Registration
June 12, Tuesday Instruction begins
July 4, Monday Independence Day, a holiday
July 10, Monday Second Term begins
August 17, Friday Session ends

AUTUMN QUARTER

September 23-26, Sunday through Saturday Orientation
September 21-22, Thursday and Friday Week and Registration
September 21-22, Monday Instruction begins
November 11, Tuesday Veterans Day, a holiday
November 23, Thursday Thanksgiving Day, no classes
December 17-21, Monday through Friday Examinations
December 21, 5:30 p.m. Autumn Quarter ends Christmas recess begins

LAW CALENDAR 1961 - 1962

FALL SEMESTER, 1961

September 16-20, Monday through Wednesday Registration and Orientation of New Law Students (Including Transfer Students from other schools)
September 20, Wednesday Registration of Upperclass Law Students
September 21, Thursday Classes begin at 8:00 a.m.
November 11, Saturday Veterans Day, no classes
November 23, Thursday Thanksgiving Day, no classes
December 16, Saturday Christmas vacation begins after last class
January 2, 1962, Tuesday Classes resume at 8:00 a.m.
January 10-12, Wednesday through Friday Pre-registration
January 22-27, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1962

February 1, Thursday Registration for Spring Semester Classes begin at 8:00 a.m.
March 17, Saturday Spring vacation begins after last class
March 26, Monday Classes resume at 8:00 a.m.
May 23-29, Wednesday through Tuesday Semester Examinations
June 4, Monday Commencement

FALL SEMESTER, 1962

September 24-26, Monday through Wednesday Registration and Orientation of New Law Students (Including transfer students from other schools)
September 29, Wednesday Registration of Upperclass Law Students
September 27, Thursday Classes begin at 8:30 a.m.
November 22, Thursday Thanksgiving Day, no classes
December 22, Saturday Christmas vacation begins after last class
January 7, 1963, Monday Classes resume at 8:00 a.m.
January 16-18, Wednesday through Saturday Pre-registration
January 26-Feb. 2, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1963

February 1, Thursday Registration for Spring Semester Classes begin at 8:00 a.m.
March 23, Saturday Spring vacation begins after last class
April 1, Monday Classes resume at 8:00 a.m.
May 29-June 4, Wednesday through Tuesday Semester Examinations
June 10, Monday Commencement
LOCAL EXECUTIVE BOARD

Theodore Jacobs, Missoula, President
Mmes Thomas E. Mulconey, Missoula
Alex M. Stepanoff, Missoula

ADMINISTRATIVE OFFICERS

H. K. Newburg, Ph.D., State University of Iowa, L.H.D. (hon.), Northern Michigan College, President
Frank C. Abbott, Ph.D., Harvard University, Academic Vice President (beginning February 1, 1961)
Robert T. Pantzes, LL.B., Montana State University, Financial Vice President
Troy A. Crowder, M.A., State University of Iowa, Assistant to the President
Paul R. Blochken, D.B.A., Indiana University, Dean of the School of Business Administration
Nathan B. Blumberg, Ph.D., Oxford University, Dean of the School of Journalism
Linus J. Carnston, Ed.D., University of Oregon, Dean of the School of Education
Robert W. Conkro, Ph.D., Stanford University, Dean of the College of Arts and Sciences
Luther H. Richman, Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Dean of the School of Fine Arts
Robert E. Sullivan, LL.B., University of Notre Dame, Dean of the School of Law
Robert L. Van Horne, Ph.D., State University of Iowa, Dean of the School of Pharmacy
Ellis L. Walstrom, Ph.D., University of Wisconsin, Dean of the Graduate School
Ross A. Williams, M.F., Yale University, Dean of the School of Forestry
E. Kirk Barley, B.A., Montana State University, Controller
Andrew C. Coswell, M.A., University of Minnesota, Dean of Students
Maureen Closs, Ph.D., Stanford University, Associate Dean of Students
Leo Smith, M.A., University of Washington, Registrar
E. A. Atkinson, M.A., Montana State University, Director of the Summer Session and Extension Division
Kathleen Campbell, M.S., University of Denver, Librarian

THE FACULTY

COLLEGE OF ARTS AND SCIENCES

Coonrod, Robert W., Ph.D., Stanford University, Dean

Botany

Dietzert, Rebub A., Ph.D., State University of Iowa, Professor and Chairman
Chersin, Meyers, Ph.D., University of California, Associate Professor
Guinn, Clarence C., Ph.D., Washington State University, Assistant Professor
Harbeck, James R., Ph.D., University of Wisconsin, Assistant Professor
Harvey, Leroy H., Ph.D., University of Michigan, Professor; Curator of the Herbarium; Assistant Director, Biological Station (on leave Autumn Quarter)
Howard, Harold H., M.S., Cornell University, Instructor
Krause, Joseph D., Ph.D., University of Nebraska, Professor Emeritus
Priske, Sherman J., Jr., Ph.D., Washington State University, Assistant Professor
Shively, Joseph W., Ph.D., University of Wisconsin, Professor Emeritus
Stein, Otto L., Ph.D., University of Minnesota, Assistant Professor
Bos, Louis D., Agriculturist, Agricultural University, Wageningen, The Netherlands, Research Associate (Autumn Quarter)
Agrawal, Hari Om, M.S., Aligarh-Muslim University, India, Research Associate

House, Edwin W., B.S., Western Montana College of Education, Graduate Assistant, Biological Science
Koplin, James R., B.S., Montana State University, Graduate Assistant, Biological Science
Moosling, Garble H., M.S., Michigan State University, Research Associate
Ramos, Eugene W., B.A., Montana State University, Graduate Assistant
Thullen, Robert J., B.S.F., Montana State University, Graduate Assistant

Chemistry

Stewart, John M., Ph.D., University of Illinois, Professor and Chairman
Bateman, William C., Ph.D., Yale University, Professor Emeritus
Grimes, R. Meslaw, Ph.D., Michigan State University, Assistant Professor
Howard, Joseph W., Ph.D., University of Illinois, Professor Emeritus
Judy, Richard E., Ph.D., University of Wisconsin, Professor
Lory, Earl C., Ph.D., Johns Hopkins University, Professor
Osterhied, Robert K., Ph.D., University of Illinois, Associate Professor
Thomas, Forrest D., Ph.D., Pennsylvania State University, Assistant Professor
Van Metre, Wayne P., Ph.D., University of Washington, Assistant Professor
Yates, Island M., Ph.D., Washington State University, Associate Professor (in charge of the store)
Lavy, Mathias M., M.S., Oregon State College, Graduate Assistant
Page, Donald P., B.A., University of Omaha, Graduate Research Assistant

Economics

Heiker, George B., Ph.D., University of Michigan, Associate Professor and Chairman
Leonard, James R., B.A., University of Texas, Instructor
Shannon, Richard E., Ph.D., Ohio State University, Associate Professor
Wheeler, Robert D., M.A., Northwestern University, Instructor
Cole, Donald P., B.A., Drew University, Graduate Assistant
Crawford, William M., B.S., Montana State University, Graduate Assistant
Knapp, Robert D., B.A., College of St. Thomas, Graduate Assistant
Krause, Carl G., B.A., St. Francis College, Graduate Assistant

English

Gilbert, Vesper M., Ph.D., Cornell University, Professor and Chairman
Bennett, James R., Ph.D., Stanford University, Instructor
Betsey, Seymour, Ph.D., Harvard University, Professor
Biers, Jesse, Ph.D., Princeton University, Associate Professor
Bone, Agnes V., Ph.D., University of Minnesota, Associate Professor
Brown, Walker L., Ph.D., University of California, Professor
Carpenter, Nan C., Ph.D., Yale University, Professor
Charles, Robert A., Ph.D., Pennsylvania State University, Assistant Professor
Clapp, Mary R. (Miss.), M.A., University of North Dakota, Associate Professor Emeritus
Clouse, Meriel D., Jr., Ph.D., University of Michigan, Associate Professor
Coleman, Rufus A., Ph.D., Boston University, Professor Emeritus
Feidler, Leslie A., Ph.D., University of Wisconsin, Professor
Freeman, Edmund L., M.A., Northwestern University, Professor
Harries, Phyllis L. (Mrs.), M.A., Montana State University, Instructor
King, Walter N., Ph.D., Yale University, Associate Professor
Foreign Languages

BURRESS, ROBERT M., Ph.D., University of California at Los Angeles, Professor and Chairman
BISHOFF, PAUL A., M.A., Oberlin College, Professor Emeritus
CLARK, WESLEY P., Ph.D., University of Chicago, Chairman and Professor Emeritus; Dean Emeritus of the Graduate School
EDEMANN, JAMES S., Ph.D., Columbia University, Assistant Professor
EPHISON, MANUELITA H. (MRS.), M.A., Montana State University, Assistant Professor
HOPFMANN, RUDOLF O., M.A., University of Wisconsin, Professor Emeritus
JARAK, HORST, Ph.D., University of Vienna, Assistant Professor
LACSCHEWITZ, GERHARD (MRS.), Ph.D., Goettingen University, Germany, Assistant Professor
LAPKIN, PETER P., Ph.D., University of California, Associate Professor
NONNENMACHER, PATRICIA J. (MRS.), M.A., Northwestern University, Assistant Professor
ORTEZ, DOMENICO, Ph.D., University of California, Assistant Professor
POWELL, WARDO H., Ph.D., University of Colorado, Associate Professor
SHELLEY, ANNE MARIE (MRS.), M.A., Tulane University of Louisiana, Instructor
SHEPPARD, DOUGLAS C., Ph.D., University of Wisconsin, Assistant Professor
SHOREMAKER, THEODORE H., Ph.D., University of Wisconsin, Professor
SORENSON, THORA, Ph.D., Mexico National University, Professor
STEPHAN, PHILIP, Ph.D., University of California, Assistant Professor
VERRETTE, VICTOR S., B.A., University of New Hampshire, Instructor
WESBERG, FLORA B. (MRS.), B.A., Montana State University, Assistant Professor Emeritus
MARSHALL, SUZANNE (MRS.), B.A., Montana State University, Graduate Assistant
MERCER, LILLIAN M. (MRS.), B.A., Montana State University, Graduate Assistant

Health and Physical Education

STOOLEY, AGNES L., Ed.D., Stanford University, Professor and Chairman
HAUSER, CHARLES F., M.A., Columbia University, Professor and Associate Chairman
BROWN, ELLA C., B.S., University of Missouri, Instructor
CHENNEK, EDWARD S., B.A., Montana State University, Assistant Professor
CLONINGER, E. FAY (MRS.), Instructor
CLONINGER, LEWIS A., Instructor
COATS, GEORGE W., M.S., Indiana University, Assistant Professor
LORENZ, MAVIS M., B.S., University of Washington, Assistant Professor
OSWALD, ROBERT M., M.S., University of Montana, Assistant Professor
SCHEERR, WILLIAM E., B.A., University of Wisconsin, Professor Emeritus
SELSE, KAY F., B.S., Washington State University, Instructor
SWANSON, HARLAN L., M.S., University of Oregon, Instructor
WILSON, VINCENT, M.A., New York University, Associate Professor

Intercollegiate Athletics

Dahlberg, george P., B.A., Montana State University, Professor; Director of Athletics
Adkins, HARRY F., M.S., University of Washington, Professor; Head Track Coach
COX, FORREST B., B.A., University of Kansas, Assistant Professor; Head Basketball Coach
DAVIDSON, hugo B.S., University of Colorado, Instructor; Assistant Football Coach
JENKINS, RAY, M.S., University of Colorado, Assistant Professor; Head Football Coach
RÖNNEFALD, NANCY B., Montana State University, Instructor; Trainer
Schwenk, Milton E., B.A., Washington State University, Instructor; Assistant Football Coach
Sheets, Harold E., M.Ed., Montana State University, Instructor; Freshman Football and Basketball Coach; Head Baseball Coach
Wallace, harold E., Instructor; Swimming Coach (part time)
Moore, E. CHARLES, Assistant, Football

History

WEEN, MELVIN C., Ph.D., State University of Iowa, Professor and Chairman
BENNETT, EDWARD E., Ph.D., University of Wisconsin, Professor
BORDEN, MORESTON, Ph.D., Columbia University, Associate Professor
CARTER, PAUL A., Ph.D., Columbia University, Associate Professor
COOKSON, ROBERT W., Ph.D., Stanford University, Professor; Dean, College of Arts and Sciences
Freuherberger, herman, Ph.D., Columbia University, Assistant Professor
Hammer, OSCAR J., Ph.D., University of Wisconsin, Professor
KARBIN, JULIUS A., Ph.D., University of Minnesota, Professor (also Political Science)
MILLER, J. EARLE, Ph.D., University of Illinois, Professor Emeritus
SMITH, JOHN W., Ph.D., Indiana University, Instructor
SNOW, VERNON F., Ph.D., University of Wisconsin, Assistant Professor
TURKISH, ROBERT T., Ph.D., University of California at Los Angeles, Professor; Director of Museum
BUNTINGAME, RICHARD C., B.A., Montana State University, Graduate Assistant
LEVENGOOD, JANET (M.S.), B.A., Coe College, Graduate Assistant

**Home Economics**

PLATT, ANNE C., M.S., University of Washington, Professor and Acting Chairman
BRESON, EMMA H. (M.S.), M.S., Colorado State University, Assistant Professor
CHANDLER, D. GERTHE, B.S., University of Alberta, Instructor; Director, Food Service
CHRISTOPHERSON, JOAN (M.S.), M.A., Teachers College, Columbia University, Instructor; Head Teacher, Nursery School (part time)
EMERSON, FANNIE E., M.S., Washington State University, Assistant Professor
GLEASON, HELEN, M.A., Columbia University, Professor Emeritus
LEWIS, VENITA (M.S.), M.Ed., Montana State University, Instructor
McCoy, B. LORRAINE (M.S.), M.A., Montana State University, Instructor
MALOUP, ABLINC (M.S.), B.S., University of Utah, Head Teacher of University Kindergarten of Family Life Education (half time)
BARR, DOROTHY D. (M.S.), B.A., Western Reserve University, Assistant, Nursery School
BARTELEMEUS, ZOE (M.S.), B.A., Montana State University, Assistant, Nursery School
OELICH, PATRICIA R. (M.S.), B.S., Montana State College, Graduate Assistant
YARNALL, MAUREEN F. (M.S.), B.S., Montana State University, Assistant

**Mathematics**

LIVINGSTON, ARTHUR E., Ph.D., University of Oregon, Professor and Chairman
BALLARD, WILLIAM R., Ph.D., University of Chicago, Assistant Professor
HASHISAKI, JOSEPH, Ph.D., University of Illinois, Associate Professor
MEWHILL, A. S., Ph.D., University of Chicago, Professor Emeritus; Vice President Emeritus; Dean Emeritus of the Faculty
MYERS, WILLIAM M., JR., Ph.D., Ohio State University, Associate Professor
PETTITSON, JOHN A., M.A., Montana State University, Assistant Professor
REINHARDT, HOWARD E., Ph.D., University of Michigan, Assistant Professor
RYG, PAUL T., Ph.D., Iowa State University, Assistant Professor
SWAAB, DONALD V., M.A., Montana State University, Instructor
YOUNG, FREDERICK H., Ph.D., University of Oregon, Associate Professor
BAUER, HARRY, B.A., Montana State University, Graduate Assistant
BILLINGS, MICHAEL G., B.A., Montana State University, Graduate Assistant
ENGEL, ROBERT D., B.A., Montana State University, Graduate Assistant
HOLTZ, HELDA C. (M.S.), B.A., Eastern Washington College of Education, Graduate Assistant
NANKERWIS, RICHARD S., B.A., Montana State University, Graduate Assistant

**Microbiology and Public Health**

MUNOZ, JOHN J., Ph.D., University of Wisconsin, Professor and Chairman; Director of the Stella Duncan Memorial Fund Research
EKLAND, CARL M., M.D., University of Minnesota, Lecturer in Virology (Courtesy)
FAUST, RICHARD A., Ph.D., Purdue University, Assistant Professor
HOYER, BILL H., Ph.D., University of Minnesota, Lecturer (Courtesy)
LACKEY, DAVID B., Ph.D., University of Pennsylvania, Lecturer in Immunology (Courtesy)

**Physics**

JEFFREY, C. RULON, Ph.D., University of California, Professor and Chairman
HAYDEN, RICHARD J., Ph.D., University of Chicago, Professor
JACOBSON, MARK J., Ph.D., University of California, Professor
SHALLENBERGER, G. D., Ph.D., University of Chicago, Professor Emeritus
TAYLOR, ARCHIE, B.S., Antioch College, Instructor; Director, Electronic Equipment Maintenance (part time)
KEEGER, ROLAND J., B.A., Montana State University, Graduate Assistant

**Political Science**

PAYNE, THOMAS, Ph.D., University of Chicago, Professor and Chairman
ABBOTT, FRANK C., Ph.D., Harvard University, Professor; Academic Vice President (beginning February 1, 1961)
KARLIN, JULES A., Ph.D., University of Minnesota, Professor (also History)
KARFAT, KENAL, Ph.D., New York University, Associate Professor (on leave 1960-61)
STILSON, ALBERT, B.S., Columbia University, Assistant Professor
WALDMAN, ELISS L., Ph.D., University of Wisconsin, Professor; Dean of the Graduate School; Acting Director of Bureau of Government Research
WILSON, CLIFTON E., M.A., University of Utah, Instructor
JONES, M. ROBERTA, B.A., Mount Holyoke College, Graduate Assistant
LEVENGOOD, RICHARD L., B.A., Montana State University, Graduate Assistant

**Psychology**

GRIFFITHS, WILLIAM J., JR., Ph.D., University of Cincinnati, Professor and Chairman
AMMONS, R. B., Ph.D., State University of Iowa, Professor
ATKINSON, E. A., M.A., Montana State University, Professor; Director of the Summer Session and Extension Division
BURGES, THOMAS C., Ph.D., University of Minnesota, Associate Professor
CLAY, MAURICE, Ph.D., Stanford University, Professor; Associate Dean of Students
DEMAS, FRANK M., Ph.D., University of Texas, Professor
MILLER, ARNOLD, Ph.D., Clark University, Assistant Professor
NOBLE, CLYDE E., Ph.D., State University of Iowa, Associate Professor
SAPPENFIELD, BERT R., Ph.D., New York University, Professor

**Philosophy**

BURKE, HENRY G., JR., Ph.D., University of California, Professor and Chairman
ADAMS, W. ZETHMONT, Ph.D., Harvard University, Assistant Professor
ARMOUR, LESLIE, Ph.D., University of London, Assistant Professor
MARVIN, EDWIN L., M.A., Harvard University, Professor
SCHUSTER, CYNTHIA A. (M.S.), Ph.D., University of California at Los Angeles, Associate Professor
**Reserve Officers Training Corps**

**Air Science**

- **Musgrave, Charles L.**, Colonel, USAF, B.S., Oklahoma State University, Professor and Chairman
- **Emmer, Murray W.**, Captain, USAF, B.S., Montana School of Mines, Assistant Professor
- **Fletcher, Jack W.**, Captain, USAF, B.S., Montana State College, Assistant Professor
- **Scott, Richard E. J.**, Major, USAF, B.S., University of Omaha, Assistant Professor
- **Waring, LaVere H.**, Captain, USAF, B.S., University of Utah, Assistant Professor
- **Baldwin, John (A/IC)**, Assistant
- **Leshack, Raymond (T/Sgt)**, Assistant
- **Smith, Earl F.** (T/Sgt), Assistant
- **Walden, Edward (S/Sgt)**, Assistant

**Military Science (Army)**

- **Moucha, M. F.**, Lieutenant Colonel, U.S. Army, B.S., U.S. Military Academy, Professor and Chairman
- **Fox, Donald C.**, Captain, U.S. Army, B.E., University of Omaha, Assistant Professor
- **Harris, Harold D.**, Captain, U.S. Army, B.A., University of Wyoming, Assistant Professor
- **Pedersen, Alfred L.**, Captain, U.S. Army, B.S., Wagner College, Assistant Professor
- **Skalka, George W.**, Captain, U.S. Army, B.A., The Citadel, South Carolina, Assistant Professor
- **Bishop, Milo E.** (Sgt), Assistant
- **Frederick, Leo T.** (Sgt), Assistant
- **Greenway, Jack W.** (M/Sgt), Assistant

**Sociology, Anthropology, and Social Welfare**

- **Browner, W. Gordon**, Ph.D., University of North Carolina, Professor and Chairman
- **Dwyer, Robert J.**, Ph.D., University of Missouri, Assistant Professor
- **Evans, I. Lee W.**, Ph.D., University of Texas, Assistant Professor
- **Gold, Raymon L.**, Ph.D., University of Chicago, Associate Professor
- **Giffen, Mason**, Ph.D., University of Chicago, Assistant Professor
- **Heinrich, Albert C.**, M.Ed., University of Alaska, Instructor
- **Malouf, Carl C.**, Ph.D., Columbia University, Assistant Professor
- **Tascher, Harold P.**, Ph.D., University of Illinois, Professor
- **Taylor, Der C.**, Ph.D., University of Michigan, Assistant Professor
- **Davis, Leslie B.**, B.A., Montana State University, Graduate Assistant
- **Mouzon, Stanley K.**, B.A., University of New Hampshire, Graduate Assistant
- **Smith, Grace R.** (M.S.), B.A., Montana State University, Graduate Assistant

**Speech**

- **McGinnis, Ralph Y.**, University of Denver, Professor and Chairman
- **Borhemels, Richard M.**, Ph.D., State University of Iowa, Associate Professor, Speech Pathology
- **Bristow, Forrest L.**, Ph.D., State University of Iowa, Associate Professor
- **Cocks, Evelyn H.** (M.S.), Ph.D., University of Wisconsin, Associate Professor
- **Garrett, Merrell F.**, M.A., Montana State University, Instructor
- **Hansen, Berry**, M.A., University of Washington, Professor
- **Owen, James E.**, M.A., University of Denver, Instructor (Winter and Spring Quarters)

**Zoology**

- **Wright, Philip L.**, Ph.D., University of Wisconsin, Professor and Chairman

**School of Business Administration**

- **Blomgren, Paul B.**, D.B.A., Indiana University, Dean and Professor
- **Barth, Glenn R.**, M.B.A., Harvard University, Assistant Professor
- **Busch, Edgar T.**, M.B.A., University of Denver, Instructor (resigned December 31, 1966)
- **Dobins, Jack R.**, B.A., Montana State University, C.P.A. (Mont.), Instructor (part time)
- **Emmert, Donald J.**, Ph.D., Columbia University, C.P.A. (Mont.), Professor
- **Erin, Gene L.**, Ph.D., University of Wisconsin, Associate Professor
- **Haring, Robert C.**, M.B.A., Indiana University, Assistant Professor
- **Helling, Albert T.**, Ph.D., Johns Hopkins University, Professor (on leave 1958-61)
- **Johnson, Maxine C.** (M.S.), M.A., Montana State University, Instructor; Research Associate, Bureau of Business and Economic Research
- **Keenower, Jack J.**, Ph.D., Ohio State University, C.P.A. (Mont.), Professor
- **Knowlton, Leo L.**, M.S., University of Idaho, Instructor
- **Line, Robert C.**, M.A., Harvard University, Professor Emeritus
- **McAllister, Richard C.**, M.A., University of Washington, C.P.A. (Washington), Assistant Professor
- **Martinson, Alveld, M.Ed., Montana State University, Assistant Professor
- **Panter, Robert T.**, LL.B., Montana State University, Professor; Financial Vice President
- **Rees, Willis P.**, LL.B., University of Utah, Ph.D., Ohio State University, Assistant Professor
- **Swanson, Margaret** (M.S.), M.Ed., University of Washington, Assistant Professor
- **Thompson, James W.**, B.S., Montana State University, Instructor (part time)
- **Wilson, Eber F.** (M.S.), M.A., University of Southern California, Professor
WISERMAN, DORSET E., Ph.D., University of Illinois, C.P.A. (Ill.), Associate Professor
WRIGHT, JOHN S., Ph.D., Ohio State University, Professor (on leave 1960-61)

SCHOOL OF EDUCATION
CARLETON, LEWIS J., Ed.D., University of Oregon, Dean and Professor
AMES, WALTER B., Ph.D., University of Wisconsin, Professor Emeritus
BALDWIN, HOWARD, Ed.D., University of Oregon, Associate Professor
DE LA LUZ, TEOPHILA (Mrs.), Ed.D., Indiana University, Visiting Instructor (Winter Quarter)
GEMMUT, JAMES W., Ph.D., Ohio State University, Associate Professor
GORMAN, ROBERT E., Ed.D., Indiana University, Associate Professor: Director, Placement Bureau and Counseling Center
GROOM, IRENE D., M.A., State University of Iowa: M.A. (L.S.), George Peabody College for Teachers, Assistant Professor
HARPER, AARON W., Ed.D., University of Colorado, Associate Professor
JAY, ROBERT H., M.Ed., Montana State University, Assistant Professor
LOTTER, KENNETH V., Ed.D., Harvard University, Associate Professor (on leave Winter Quarter)
MAHOD, WILLIAM E., M.A., Stanford University, Professor Emeritus
MATTHEW, CHARLES R., M.Ed., Montana State University, Assistant Professor Emeritus
MILLIS, GEORGE H., Ed.D., University of Illinois, Associate Professor
MUNRO, JAMES J. R., Ed.D., University of Washington, Assistant Professor
PEHLAND, VERA T., (Mrs.), M.A., University of Wisconsin, Assistant Professor
RIESE, HARLAN C., Ed.D., Montana State University, Assistant Professor
SLIFTER, VERNON O., Ed.D., University of Oregon, Professor; Director, Educational Research and Service
SMITH, LEO, M.A., University of Washington, Registrar; Professor
WATSON, FRANK J., M.A., Northwestern University, Associate Professor
ANDERSON, LAURIE E., M.Ed., Montana State University, Teaching Fellow
ORCH, DONALD C., M.S., University of Utah, Research Assistant
RUPP, ROBERT W., M.M.Ed., Montana State University, Graduate Assistant
SHEPHERD, LEO B.A., Montana State University, Graduate Assistant
YARNALL, JOHN L., B.S., Montana State University, Graduate Assistant (Winter and Spring Quarters)

THE SCHOOL OF FINE ARTS
RICHMAN, LUTHER A., Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Dean

Art
HOOK, WALTER M., University of New Mexico, Associate Professor and Chairman
ARNOLD, ADEN F., M.A., State University of Iowa, Professor
AUTO, A. RUDY, M.F.A., Washington State University, Assistant Professor
DEW, JAMES E., M.A., Oberlin College, Associate Professor
LENDY, JAMES A., M.S., Michigan State University, Instructor
WOLLNSCHLAGER, FREDERICK C., B.A. Montana State University, Graduate Assistant

Ballet
COOPER, MARGIE L. (Mrs.), Instructor (part time)

Drama
BROWN, FERMAN H., M.A., Montana State University, Assistant Professor and Chairman
BANSMORE, DOUGLAS H., Ph.D., University of Washington, Assistant Professor
JAMES, RICHARD H., M.A., Northwestern University, Instructor

OFFICIAL DIRECTORY—7

Music
RICHMAN, LUTHER A., Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Professor and Chairman; Dean, School of Fine Arts
ANNIE, EUGENE M., University of Washington, Professor
DOTT, GEORGE H., M.Mus., Northwestern University, Associate Professor (on leave Winter Quarter)
EVANS, JAMES A., M.Mus., College-Conservatory of Music of Cincinnati, Assistant Professor
HENDRICKSON, HENRY H., M.Mus., Eastman School of Music, Instructor (Winter and Spring Quarters)
HENDERSON, MURIEL J., M.Mus., College-Conservatory of Music of Cincinnati, Instructor
HUNGER, J. GEORGE, M.A., Columbia University, Associate Professor
JOHNSTON, DONALD O., Ph.D., Eastman School of Music, Assistant Professor (part time)
LESTER, JOHN L., B.Mus., Southwestern University, Professor
LEWIS, GEORGE D., M.Mus., Montana State University, Assistant Professor
MANNING, WILLIAM M., M.Mus., Drake University, Instructor
MURPHY, WILLIAM M., A.Mus., University of Southern California, Assistant Professor
SNEAK, FLORENCE M. (Mrs.), Professor Emeritus
STEWART, RICHARD, M.Mus., Manhattan School of Music, Instructor
WEISEL, EUGENE, B.Mus., Yale University, Professor
WENTZ, RUDOLPH, M.Mus., Eastman School of Music, Professor
GOZA, GREGORY H., B.M., Westminster Choir College, Graduate Assistant (Autumn and Spring Quarters)
JOHNSTON, CHARLES H., B.M., Montana State University, Graduate Assistant
LANNING, STEPHEN H., B.Mus., University of Illinois, Graduate Assistant
VANCE, MARIE M., B.M.E., Montana State University, Graduate Assistant

SCHOOL OF FORESTRY
WILLIAMS, ROSS A., M.F., Yale University, Dean and Professor; Director of Montana Forest and Conservation Experiment Station
BOLLE, ARNOLD W., D.F.A., Harvard University, Associate Professor
 CRACKHEAD, JOHN J., Ph.D., University of Michigan, Professor (also Zoology); Leader, Montana Cooperative Wildlife Research Unit
FAUBY, JAMES L., M.F., University of Washington, Assistant Professor
GERLACH, FREDERICK L., M.F., Montana State University, Instructor
HOST, JOHN R., M.F., University of Washington, Assistant Professor
HOWELL, O. B., M.S., Michigan State University, Assistant Professor
KERSH, JOHN P., Ph.D., Yale University, Associate Professor (on leave 1960-61)
LEWIS, GORDON D., Ph.D., Michigan State University, Instructor
MURPHY, LAWRENCE C., M.F., Oregon State College, Assistant Professor (on leave Winter Quarter)
MOORE, MILTON S., M.S., Colorado State University, Professor
NIMBUS, THOMAS J., Ph.D., University of Wisconsin, Assistant Professor
PENCE, WILLIAM R., Ph.D., University of Washington, Associate Professor
QUINN, GEORGE H., B.S., Montana State University, Instructor (Autumn Quarter)
STEEL, ROBERT W., M.F., University of Michigan, Assistant Professor
TAKE, RICHARD D., Ph.D., University of California, Associate Professor
TSOUKAS, GEORGE D.F., Yale University, Assistant Professor (Winter and Spring Quarters)
8—OFFICIAL DIRECTORY

VON DECIMANN, VOLLEAT, PH.D., Goettingen University, Assistant Professor
FUCHS, CHARLES W., B.S., Iowa State College, Graduate Teaching Assistant

SCHOOL OF JOURNALISM
BLUMBERG, NATHAN B., PH.D., Oxford University, Dean and Professor
BOM, O. J., M.S.J., Northwestern University, Professor
COGSWELL, ANDREW C., M.A., University of Minnesota, Professor; Dean of Students
DOWAN, EDWARD B., M.A., University of Missouri, Professor
JOHNSON, DOROTHY M., B.A., Montana State University, Assistant Professor (part time)
JONESSEN, ERLING S., PH.D., University of Wisconsin, Associate Professor; Director, Radio and Television Studios (on leave 1960-61)
REINEMEIER, VIG., B.A., Montana State University, Visiting Lecturer (Autumn Quarter)
SITTER, HERBIE B., M.A., Stanford University, Assistant Professor; Director, Radio-TV Studios
YU, FREDERICK THI-CHI, Ph.D., State University of Iowa, Associate Professor (on leave Autumn Quarter)
DOKKEN, NANCY N. T., B.A., Whitworth College, Graduate Assistant

SCHOOL OF LAW
SULLIVAN, ROBERT E., LL.B., University of Notre Dame, Dean and Professor
BIDDLE, EDWIN W., LL.M., Harvard University, Professor
COTTLE, JOHN F., LL.B., Catholic University of America, Visiting Professor (Spring Semester)
CROSWELL, GABRIEL, S.J.D., University of Michigan, Associate Professor
HOGGART, RODNEY M., M.A.(L.S.) University of Denver; LL.B., University of San Francisco, Assistant Professor; Law Librarian (beginning December 1, 1960)
KINZALL, EDWARD L., LL.M., University of Pennsylvania, Associate Professor
LEAPHEART, CHARLES W., S.J.D., Harvard University, Dean Emeritus; Professor Emeritus
LOE, SHERMAN V., LL.M., Harvard University, Assistant Professor (part time)
MASON, DAVID R., S.J.D., Harvard University, Dixon Professor
RUSCZYK, LEONARD R., LL.M., University of Michigan, Professor
SMITH, RUSSELL E., LL.B., Montana State University, Assistant Professor (part time) (Fall Semester)
STONE, ALBERT W., LL.B., Duke University, Associate Professor
TORLE, J. HOWARD, LL.M., Harvard University, Professor Emeritus

SCHOOL OF PHARMACY
VAN HOESE, ROBERT L., PH.D., State University of Iowa, Dean and Professor
BRYAN, GORDON H., PH.D., University of Maryland, Associate Professor
MOLKET, CHARLES E. F., M.S., University of Kansas, Professor Emeritus
PETTINATO, FRANK A., PH.D., University of Washington, Assistant Professor
ROGERS, CHARLES W., PH.D., University of Washington, Assistant Professor
SUCHY, JOHN F., PH.D., University of Colorado, Professor Emeritus
WAILES, JOHN L., Ph.D., University of Colorado, Associate Professor
GALPIN, DONALD R., B.S., Montana State University, Graduate Assistant
ROGERS, HARSHETTE, D. (MRS.), B.S., University of Washington, Assistant

AFFILIATED SCHOOL OF RELIGION
TAKUYAMA, TOSHIMI, TH.D., Boston University, Assistant Professor and Director
HABLER, C. WILLIAM, S.T.M., Temple University, Instructor

SERVICES

Library
CAMPBELL, KATHLEEN, M.S., University of Denver, Librarian (Professor)
BREWER, MABEL M. (MRS.), B.A., Montana State University, Reference Assistant (Instructor)
DELAND, MARY F. (MRS.), B.S. in L.S., University of Washington, Catalog Librarian (Assistant Professor)
MIDDLETON, ADELELYN S. (MRS.), B.A., Montana State University, Assistant Catalog Librarian (Instructor)
MILLS, DOUGLAS E., M.A., B.S.L., University of California, Acquisitions Librarian; Head, Technical Processes Department (Assistant Professor)
NELSON, BETTY (MRS.), B.A., Montana State University, Assistant Librarian (Assistant Professor) (part time)
SPEED, LOUISE E., M.A., University of Chicago, Documents Librarian (Professor)
WHITE, M. CATHERINE, M.A., Montana State University, Assistant Librarian and Reference Librarian Emeritus (Professor Emeritus)

Bureau of Business and Economic Research
JOHNSON, MAXINE C. (MRS.), M.A., Montana State University, Research Associate; Instructor, Business Administration
DURBE, ALFRED J., B.S., Montana State University, Graduate Assistant (Autumn Quarter); Assistant (Winter and Spring Quarters)
PEERSSEN, ROLAND H., B.S., Montana State University, Graduate Assistant
WATTS, DONALD A., B.S., Montana State University, Graduate Assistant

Bureau of Government Research
WALDRON, ELIS, L., PH.D., University of Wisconsin, Acting Director; Dean, Graduate School; Professor of Political Science
ANDERSON, ROBERT C., B.A., Montana State University, Research Assistant

Biological Station
CASTLE, GORDON B., PH.D., University of California, Director; Professor of Zoology
HAYES, LEON H., PH.D., University of Michigan, Assistant Director; Professor of Botany

Staff of Botany and Zoology Departments

Forest and Conservation Experiment Station
WILLIAMS, ROSS A., M.P., Yale University, Director; Dean and Professor of Forestry
COONEY, ROBERT F., B.S.F., Montana State University, Research Associate (Courtesy)
Staff of Forestry School
BARBER, RICHARD J., B.S.F., Montana State University, Graduate Assistant
CARTY, DAVID M., B.S., Montana State University, Graduate Fellow (Winter and Spring Quarters)
GRAFFIECA, DAVID, B.S.F., University of Massachusetts, Research Fellow
MURRAY, ROBERT B., B.S., Montana State University, Research Fellow
QUINN, GEORGE H., B.S., Montana State University, Research Fellow (Winter and Spring Quarters)

Wildlife Research Unit
CRAIGHEAD, JOHN J., PH.D., University of Michigan, Leader; Professor, Forestry and Zoology
COONEY, ROBERT F., B.S.F., Montana State University, Unit staff member; Research Associate, Forest and Conservation Experiment Station (Courtesy)
HOFMANN, ROBERT S., PH.D., University of California, Unit staff member; Assistant Professor, Zoology
FENGEL, W. LEGEE, PH.D., Utah State University, Head, Conservation Education Extension (Assistant Professor)
SENSLER, CLAYTON M., PH.D., Utah State University, Unit staff member; Assistant Professor, Zoology
TASH, РICHARD D., PH.D., University of California, Unit staff member; Associate Professor, Forestry
WRIGHT, PHILIP L., PH.D., University of Wisconsin, Unit staff member; Professor, Zoology
WOODCER, WESLEY R., M.S., Montana State University, Admin. Astd. Leader, Montana Cooperative Wildlife Research Unit, Montana Fish and Game Department; Research Associate, Forestry and Zoology (Courtesy)
Extension Division

Atkinson, E. A., M.A., Montana State University, Director; also Director, Summer Session

Counseling Center and Placement Bureau

Gorman, Robert E., Ed.D., Indiana University, Director; Associate Professor, Education

Lommer, Walter J., B.A., Montana State University, Psychometrist

Prestreude, Albert M., B.A., Concordia College, Psychometrist

Taylor, Sonia A., B.A., Montana State University, Psychometrist

Residence Halls

Brown, James A., M.S., Colorado State University, Director

Chamberlain, D. Gertrude, B.S., University of Alberta, Director, Food Service; Instructor, Home Economics

Miscellaneous Administration

Anderson, Homer E., M.A., Montana State University, Director of Admissions (Instructor)

Armsby, Lucille James (Mrs.), B.A., Montana State University, Secretary to the President (Assistant Professor)

Ferguson, Mary Elois (Mrs.), M.A., Columbia University, Assistant Director Emeritus, Museum and Northwest Historical Collection (Assistant Professor Emeritus)

Hansen, Robert W., M.D., University of Illinois, Director, Health Service (part time)

Kiser, Frederick W., B.S., University of Colorado, Superintendent, Buildings and Grounds

Lommarson, Emma B. (Mrs.), M.A., Montana State University, Assistant Registrar (Instructor)

Marbell, Earl W., B.A., Montana State University, Director, Student Activity Facilities; Athletic Manager (Instructor)

Swearingen, T. G., B.A., Montana State University, Director, Planning and Construction
Montana State University

In 1893 the Third Legislative Assembly of Montana chartered the University of Montana and located it at Missoula. Later legislation called it the State University of Montana. Still later statutes refer to it as Montana State University, by which name it is now generally known.

Missoula is a residential city of approximately 40,500 about 100 miles west of the continental divide on the headwaters of the Columbia river system in west central Montana. Located at an elevation of 3200 feet, it is served by two transcontinental railroads, bus lines operating on the main east-west north-south U.S. highways, and by air.

ACCREDITATION

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

SUPPORT AND ENDOWMENT

Federal land grants made available during territorial days were allocated to Montana State 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 Montana State University Endowment Foundation, among others, is a separately chartered and managed trust which receives, manages, and distributes private contributions for University purposes.

CONTROL AND ADMINISTRATION

Subject to the 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 University of Montana. 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 University of Montana." An executive office and executive secretary are located in the State Capitol at Helena, Montana, mainly for the handling of administrative routine between the institutions and the Regents and other state offices and departments.

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 as well as to impose or increase fees is similarly 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, at such times, are already enrolled in the University.

CAMPUS AND FACILITIES

The main campus spreads over 125 acres; and there are extensive adjuncts such as the Golf Course (155 acres), Biological Station (160 acres), Forest Nursery (200 acres), and the Experimental Forest (22,000 acres). The physical plant includes thirty-one brick and masonry buildings, as well as numerous other structures for storage and other purposes.

Special instructional facilities also include the Biological Station, 90 miles north of the campus on Flathead Lake with buildings for housing and research; the Forest Nursery and the Experimental Forest near the campus; and the Wildlife Research Unit. In addition to the general library there is a separate library for the law school. Special museums and collections include those relating to anthropology, biology, geology, and history.

THE LIBRARY houses approximately 330,000 volumes in the library building and all other libraries, receives over 1,780 periodical titles, and has a collection of more than 35,000 maps.

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 four islands and also has permission to carry on investigation on Wild Horse Island which has 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, as well as various maintenance buildings.

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 a great variety of opportunity for research.

For further information write to the Director, Biological Station, Montana State University.

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

Publications include the MONTANA BUSINESS REVIEW, issued monthly; THE MONTANA ALMANAC, issued periodically (in cooperation with other University departments); the MONTANA TRADE ASSOCIATION DIRECTORY, issued annually; and various monographs. Contributors include members of the Bureau staff, the faculty, and on occasion, the student body.

FOREST AND CONSERVATION EXPERIMENT STATION is staffed by: Don D. Baldwin (Nursery and Experimental Forest Superintendent), Arnold W. Bole (Forest Conservation), Robert F. Cooney (Research Associate), Thomas J. Nimlos (Forest Soils), Volfrat von Deichmann (Silviculture), Earl McConnell (Lihberecht Forest Field Assistant), Melvin S. Morris (Range Management), Gordon D. Lewis (Forest Economics), Robert W. Steele (Forest Fire Control), Richard D. Taber (Wildlife Management), Ross A. Williams, Director (Watershed Management).

The Forest and Conservation Experiment Station, School of Forestry, Montana State University, operates under Acts of Congress (Section IV, Clarke-McNary Act, June 7th, 1924 as amended, 10-U.S.C.-567), and Chapter 141, Laws of Montana of 1927. The Dean of the School of Forestry was designated as director. The Act specifies that the purpose of the Station is:

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

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

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

The station is supported by funds appropriated by the Congress and the State of Montana, income from the sale of forest products, nursery products, grazing, mining and special leases, and by private grants. Some research is concentrated on the 22,000 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 the State in printed bulletins, leaflets, and circulars.

WILDLIFE RESEARCH UNIT. The Montana Cooperative Wildlife Research Unit was established at Montana State University 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 Montana State University.

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

The Montana Unit through its graduate research fellowship program investigates wildlife problems approved by the Unit Coordinating Committee in order to make it possible for the Commission to improve management of the wildlife resources for the benefit of the citizens of Montana. At the same time this research work carried on under the supervision of the Unit Leader and University Faculty contributes to the training of graduate students in the fields of Wildlife Management and Wildlife Technology.

Graduate work in wildlife may be taken with the area of concentration either in wildlife management or in wildlife technology. It would ordinarily be necessary to have completed the Bachelor's Degree to fulfill the requirements for a degree of Master of Science in Wildlife Technology. Concentration in the area of wildlife management will ordinarily 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 Technology, or Master of Science in Forestry with the area of Concentration in wildlife management. 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, Dean of the School of Forestry, or Chairman of the Department of Zoology.

UNIVERSITY MUSEUM contains anthropological, archaeological, art, botanical, geological, historical, and zoological collections. The historical and part of the Indian collections are on display in the Fine Arts Building, while the other collections are housed with the departments most intimately concerned.

The Historical and Indian displays are open to the public from 3:00 to 5:00 o'clock on Mondays through Thursdays and on Sundays from 2:00 to 4:00 o'clock while the University is in session. The other collections may be visited by request to the department concerned.

THE TYPOGRAPHICAL LABORATORY AND UNIVERSITY PRESS serves both as a laboratory operation for instruction in the School of Journalism and to take care of the printing of educational, research, and informational materials of Montana State University.

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 JOURNALISM REVIEW and other publications of value to the press and broadcasting media.

THE EXTENSION DIVISION is the agency through which the University carries on off-campus activities and services. It serves the State through a network of Extension Classes, and the School for Administrative Leadership.

The division works directly with communities and groups in community historical pageant-dramas, community service surveys, institutes, forums, short courses, and conferences.

REQUIREMENTS FOR ADMISSION

Applications for admission should be sent to the Registrar, Montana State University, Missoula, Montana, on a form which may be obtained from any Montana State University representative or by writing to the Registrar at the University. If possible, applications for admission should be in at least a month before registration. The following credentials are required: (a) Complete high school transcript on forms provided by Montana State University. (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 completed University Health Record Form signed by a qualified physician, and mailed by him directly to the University Health Service.

Applicants other than graduate students should take the AMERICAN COLLEGE TESTING PROGRAM examination, preferably in November or February. The test is also offered in April and in selected numbers of summer test centers. After announcement of test centers, student information booklets and registration blanks are sent to all high schools. Check with your High School Counselor or Principal. If information is not available, write to the REGISTRAR, Montana State University, Missoula, Montana.

Results of these examinations are used for general advising purposes, to assist in identifying students with high college potential who may be seeking scholarships, for placement in English, and for placement in Mathematics. Students with more than 1½ high school units in mathematics take an additional placement examination on campus if planning to take college mathematics.

New students who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance will pay the $3.00 registration fee and take it on campus before they register.

GENERAL ADMISSION. 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."

Graduates of any fully accredited high school or academy, 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 regular admission. This includes four-year high school.

NON-RESIDENT ADMISSIONS. Non-residents are admitted on the basis of probability of success in their chosen field of studies.

NON-RESIDENT ADVANCE REGISTRATION FEE. The registration fee of $10.00 must accompany the non-resident application for admission. If the student registers, this fee is applied toward one-half of the University fee (see STUDENT FEES), but it is not refundable if the student fails to register the quarter indicated for entrance. The $10.00 will be returned if admission is refused.

HIGH SCHOOL PREPARATION. Although general admission to the University is granted as indicated above, 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” will be helpful, but no loss of time would be involved if the student did not take them in high school.

ADMISSION BY EXAMINATION. A person not a graduate of an accredited high school may meet regular admission requirements by passing examinations on not less than fifteen units of secondary school work. These examinations must cover the specifically required courses in English and American history and government. Credit is allowed the student for any courses taken in an accredited high school; thus the examinations need only cover those units of work lacking for general admission. Veterans and in some cases students over 21 years of age may be admitted on satisfactory scores on the High School Level General Educational Development (G.E.D.) Tests.

EARLY ADMISSION may be granted to a limited number of high school students who have completed their junior year, with specific agreement and recommendation of the high school and university unit involved.

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

ADMISSION BY TRANSFER. A transfer student must meet regular admission requirements, be eligible to return to the school from which he is transferring, and his record must be such that the student would assure his admission to, or reinstatement at, this University had he been one of its students. Credits earned at Montana State College, Montana School of Mines, Northern Montana College, Eastern Montana College of Education and Western Montana College of Education may be transferred to the University. However, a number of highly specialized curricula are offered at these units of the University of Montana; consequently a student who changes his objective either while continuing in an institution or in changing from one institution to another must expect to lose time thereby. 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 Montana State University.

ADVANCED PLACEMENT with college credit may be granted from high schools offering college level courses. (Such courses agreed upon by the high schools involved and the university units and suitable means of validation by comprehensive examinations determined by the university units.)

ADMISSION AS SPECIAL STUDENTS. Persons 21 years of age or over who are not graduates of high schools, who can make up all entrance requirements for admission, and who are not candidates for degrees may be admitted as special students upon passing general aptitude and English placement tests and the submission of satisfactory evidence that they are prepared to pursue successfully the courses they desire. Such 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 may not register for his seventh quarter of residence, including summer sessions, until all entrance units required for admission to regular standing are made up.

UNCLASSIFIED STUDENTS. Students permitted to select their subjects without reference to the requirements of any prescribed course of study may register as unclassified students.

REGISTRATION AND GENERAL REGULATIONS

Time for registration is set aside during Orientation week. One day at the beginning of other quarters is also used for this purpose. A student's registration is subject to the approval of an appointed faculty adviser until choice of major field of study has been made; after this choice, the head (or his delegate) of the department or school in which the curriculum is offered becomes the adviser.

ORIENTATION WEEK. The first week of autumn quarter is set aside for the orientation and registration of new students. The program includes: (1) Acquainting the student with the campus, the classroom buildings, and residence halls. (2) Explaining the University program in detail—the types of instruction offered and the careers for which a student may prepare at the University. (3) A physical examination. (4) Various tests to help the student determine aptitudes and interests which he or she will learn most effectively. (5) Social gatherings at which students become acquainted with fellow classmates, students of other classes, and members of the faculty. (6) Official registration in the University, with the assistance of a member of the faculty in the selection of courses.

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.

MAXIMUM CREDIT LOAD. Except for students registering in an approved curriculum, the maximum credit load per quarter is as follows: (1) For Freshmen and Sophomores, 18 credits plus physical education and ROTC as required; (2) Juniors and Seniors may register for 17 credits except that students with approximately B average may be permitted by their advisers to register for 18 credits.

In addition to those allowed numbers of credits per quarter, freshmen and sophomores may take one additional credit selected from applied or ensemble music, rehearsal and performance, and current affairs. The student must maintain a C average during the previous quarter in residence in order to be permitted to carry the added credit. Pre-college courses in English Composition or Mathematics which carry no credit, count toward the maximum load according to the number of class hours per week.

MINIMUM SCHOLASTIC REQUIREMENTS. Students whose work falls too far below the C average required for graduation are, under certain circumstances, dropped from the University.

After a student has been dropped for low grades, he is usually not readmitted until three quarters have passed. However, the Academic Standards Committee may, if convinced that the circumstances warrant, readmit upon his appeal any student at any time.

CHANGES OF ENROLLMENT. Applications for changes in enrollment must be made by the student on proper forms and filed at the Registrar's Office.

WITHDRAWAL FROM A COURSE. When a course in which a student is enrolled is dropped, and a grade of “W” is assigned for withdrawals after the fifth week. An F is assigned for withdrawals from the third week of the quarter. Withdrawals must be formal (on Drop-Add card obtained at the Registrar's Office and filed at that office after the required signatures are secured).

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. When withdrawal forms are signed by the Dean or Associate Dean of Students they are filed before the end of the final week of a nine-week course and grade of “W” are assigned. After the ninth week, the student who withdraws receives a grade, usually incomplete.

REPEITION OF A COURSE. When a course in which a student has previously received a grade is repeated, the first grade and any credit received are automatically canceled and the second grade and credit received are recorded, even if the second grade is lower. Loss of credit due to repeating a course is the responsibility of the student.

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. The student must be registered for at the beginning of a 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.
VETERAN REGISTRATION. Veterans' subsistence payments from the Veteran's 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 under the Korean G. I. Bill.

DEGREES AND MAJORS

Bachelor's, Master's, Doctor of Philosophy, and Doctor of Education degrees are offered at Montana State University. More details about degrees offered and the requirements for degrees are to be found in the section of the catalog dealing with the Graduate School and also under the various alphabetically listed curricula.

COLLEGE OF ARTS AND SCIENCES

Bachelor of Arts, with majors in:
- Anthropology
- Biological Sciences
- Botany
- Chemistry
- Economics
- Economics-Political Science
- Economics & Sociology
- English
- French
- Geography
- Geology
- German
- Health & Physical Education
- History
- History & Political Science
- Home Economics
- Latin
- Law
- Liberal Arts
- Library Service

Bachelor of Science, with majors in:
- Health & Physical Education
- Home Economics
- Military Science

Bachelor of Science in Medical Technology
Bachelor of Science in Secretarial - Home Arts
Bachelor of Science in Wildlife Technology

SCHOOL OF FINE ARTS

Bachelor of Arts, with majors in:
- Art
- Drama
- Music

Bachelor of Music, with majors in:
- Applied Music
- Music Education
- Theory or Composition

PROFESSIONAL SCHOOLS

Bachelor of Arts in Business Administration
Bachelor of Science in Business Administration
Bachelor of Arts in Education
Bachelor of Science in Forestry
Bachelor of Science in Forest Conservation
Bachelor of Arts in Journalism
Bachelor of Science in Pharmacy
Bachelor of Laws

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

A grade I—Incomplete is given if all the work in a course has not been completed and there is sufficient reason for this. An I will be changed to an F if the work is not completed during the student's next quarter of residence.

In research, thesis, and law courses the letter "I", not accompanied by a grade, is assigned at the end of each quarter to indicate that the student is entitled to continue the course; upon completing the course, a grade is given 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; 1 grade point for each credit of D. In a subject in which an "incomplete" grade has been received, grade points are counted only after this incomplete has been removed.

To compute grade point averages for graduation, the total number of grade points for courses offered for graduation will be divided by the total number of credits earned in these courses.

REQUIREMENTS FOR GRADUATION

CATALOG GOVERNING GRADUATION. Students must meet requirements of the catalog in effect when they entered the University, or they may arrange with their department chairmen to graduate under a later catalog. Students changing majors are governed by the catalog in effect at the time of such change.

CANDIDACY FOR A DEGREE. Students of the University who are admitted as candidates for a degree must have satisfied the following conditions: (a) they must have fulfilled the entrance requirements of regular students; (b) they must complete the general University requirements shown in the following paragraphs. Students who are candidates for degrees or certificates must file formal applications with the Registrar on or before the date specified in 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. The work in Montana State University is measured in terms of credit. One credit represents three hours of time per week for one quarter of twelve weeks. The time required for any credit may be distributed in any combination among preparation, recitation, lecture, or laboratory work. A total of 180 credits plus six credits in required physical education is necessary in all courses for graduation with a bachelor's degree except that more are required in Forestry, their department chairman to graduate under a later catalog. Students changing majors are governed by the catalog in effect at the time of such change.

CREDITS REQUIRED FOR A MAJOR. Students may be required to complete from 45 to 60 credits in the chosen field. For education majors, the number of credits is from 40 to 60. In curricula allowing 5 credits of a survey course to count as part of major requirements, the total maximum of 80 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, Music, or Pharmacy. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.

Not more than 65 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 90 credits of English, Drama, and Speech for a combined major and teaching minor may be counted toward graduation.

Not more than 28 credits in ROTC nor 15 credits in religion may be counted towards graduation.

Except in the School of Music, not more than 12 credits in applied music (Music 100, 101 thru 403, 151 thru 453, 114 thru 119; 125, 126, 127, 129) nor 6 credits in ensemble music (Music 105 thru 110, and 140) may be counted toward graduation.
14—ORGANIZATION

Not more than 12 credits in Ballet, including any Ballet courses taken as physical education, may be counted towards graduation.

Only students majoring in Business Administration, those taking a teaching major or minor in Business Administration or those following the curricula in Secretarial Home Arts 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.

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 lab or pre-law courses.

Each school or department shall determine for itself which, if any, courses within the department may be challenged. Approval of the dean of the school or head of the department is required before any student may challenge a course for credit.

A student must have a 3-point grade average in all courses in which he has registered and an entering freshman must have a scholastic record equivalent to a 3-point grade average in order to challenge a course.

Challenge credit will be granted only on a grade of A or B 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 $5.00 will be charged the student for each challenge examination.

GRADE POINT REQUIREMENTS. The average of the student's grade on the credits offered for graduation must equal the official University average passing grade of "C". A "C" average is required for all courses in the major field of study for which a grade is received. A transfer student must meet the grade point requirement on credits earned at Montana State University as well as on his entire record.

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.

SPECIALIZATION. A student must select a major field of study before entering the junior year at the University. Usually the selection will be made earlier.

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

1) Physical Education, 6 quarters (6 credits) required of all freshmen and sophomore students unless excused for cause. Discharged veterans and students 27 or more years of age are excused from this requirement.

2) All students except those excused for cause are required to pass the University swimming test. Customarily, students will pass this test during the 6 quarters of Physical Education. It is recommended that the test be completed by all other students by the end of the sophomore year. Arrangements to take the test must be made with the Department of Health and Physical Education.

3) ROTC, a total of 6 quarters required of all freshmen and sophomore men citizens of the United States. It is mandatory that this work be accomplished during the first six quarters and cannot be deferred except by petition of the student. For cause this requirement may be waived, entirely or in part, upon approval by the Professor of Military Science and Tactics or Professor of Air Science.

Students who complete the six weeks summer training at the end of their freshman year with the Marine Corps Platoon Leaders Class or with the Aviation Platoon Leaders Class may be exempt from the second year of basic ROTC. Students who are disenrolled from one of these programs will take the required ROTC. Recognized causes and their effects are as follows:

Physical disability as certified by the Health Director—Full Waiver

Equivalent training at another institution—On equivalent basis

Prior federal active military service on full-time basis. Proof required in form of a discharge of its equivalent.

Less than six months—None

Six months but less than 12 months—3 quarters

12 months or more—Full waiver

Two quarters of Air Science 110, Air Force Band, may be substituted for Air Science or Military Science 105 and 205.

GROUP REQUIREMENTS. All candidates for the bachelor's degree must present for graduation at least twelve credits from each of the groups I, II, and III following. Credits must be included from at least two sub-groups listed for groups I, II and III, except that General 131-132-133 INTRODUCTION TO BIOLOGICAL SCIENCES will satisfy group I.

Group I. Astronomy, Botany, Chemistry, General 131-132-133 or General 131 and 10 credits from other sub-groups, or 131-132 and 5 credits from University average sub-groups. Geology, Mathematics, Microbiology and Public Health, Physics, Zoology.

Group II. Anthropology, Economics, Geography, History, Political Science, Sociology.

Group III. Art (231-232-233 only), English (literature courses only), Foreign Languages (213-215, and other literature courses only), part or all of general 151-152-153, Music (134 only), Philosophy, Psychology, Religion.

In the School of Forestry, Group II requirement may be partially satisfied by Forestry 421, 5 cr. Five credits of Speech are accepted as part of the Group III requirement.

Elementary teachers may fulfill Group I requirements with General 126 PHYSICAL SCIENCE FOR TEACHERS, General 129 BIOLOGICAL SCIENCE FOR TEACHERS, and Mathematics 130 THEORY OF ARITHMETIC.

FOREIGN LANGUAGE REQUIREMENT. For the degree of Bachelor of Arts in the College of Arts and Sciences, Bachelor of Arts in Business Administration, and Bachelor of Arts in Journalism, a knowledge of either a modern or classical foreign language is required. This requirement may be satisfied by demonstrating a reading knowledge at the level of attainment expected of a student who has passed at least five quarters in a language, by five quarters (23 to 25 credits) in one language at the University, or by three quarters or equivalent in each of two foreign languages. A student is allowed credit toward the fulfillment of the language requirement for high school languages according to the level of attainment on a required placement examination which also indicates the level of the course in which he may continue in the University. Foreign Language placement and reading examinations are given and certified by the Department of Foreign Languages.

Arrangements for reading examinations must be made by the end of the fourth week of any quarter. Such examinations must be taken at least two weeks before final grades for the quarter are due.

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

RESIDENCE REQUIREMENTS. Students who transfer...
credits earned elsewhere and seek a degree from Montana State University, in addition to meeting other requirements of the University, earn not less than 45 credits, and devote not less than three quarters to resident study at the University; and 33 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count towards residence requirements, but correspondence credits do not.

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

SENIOR EXAMINATIONS. Some departments and schools in the University require a senior comprehensive examination as part of graduation requirements. This examination does not in any way replace the regular quarterly examinations except that departments adopting or using these senior examinations may excuse their major students during the senior year from regular quarterly examinations in major department subjects. The examination is a written examination of at least three hours length, and in addition further oral or written examinations may be given. Examinations are given the last quarter of recent residence and senior residence requirements 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 admission and graduation. For details, check under the alphabetically listed curricula in the catalog.

SENIOR EXAMINATIONS FOR HONORS. A student who wishes to be graduated with honors or high honors must meet the following requirements: (1) For honors, in the beginning of his last quarter he must have an index of at least 3.1 for all credits registered for in his entire record as well as in the major field; (2) For high honors, at the beginning of his last quarter he must have an index of at least 3.5 for all credits registered for in his entire record as well as in the major field. A student who transfers credits earned elsewhere to this university must meet the scholastic index indicated on grades earned at Montana State University as well as on his entire record; (3) The student must take an examination, oral or written or both, as determined by the major department or school; (4) He must pass the examination with a grade of "B" or better. If the student has not met the qualifications on his entire record, the candidate for honors must then receive the recommendations of his major department and of the faculty of Montana State University.

SUMMER SESSION

The Summer Session of ten weeks is divided into two five-week terms. Students may attend either five-week term or the full ten-week session. The 1962 Summer Session will open June 11 and close August 17; the first five-week term, June 11 to July 13; the second five-week term, July 18 to August 17.

Courses will be offered in all departments and schools except Law and Forestry, including graduate work as well as undergraduate work.

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.

Three regular Summer Sessions, of ten weeks each, satisfy the residence requirements for the Master's degree.

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

Students in the Summer Session who are not registered as candidates for degrees will, upon request to the Registrar, receive a certified transcript for courses completed.

Regular University students may accelerate their programs by taking Summer classes. A full quarter of regular classes is available in most departments and schools.

Full information regarding the Summer Session may be obtained from the Summer Session office.

THE GRADUATE SCHOOL

The following advanced degrees are conferred by the University:

Master of Arts—Major in Anthropology, Botany, Chemistry, Economics, English, French, Geography, Geology, German, Health & Physical Education, History, Home Economics, Latin, Mathematics, Microbiology, Philosophy, Physics, Political Science, Psychology, Sociology, Spanish, Speech and Zoology.

Master of Science—Major in Botany, Chemistry, Geology, Health & Physical Education, Home Economics, Mathematics, Microbiology, Physics and Zoology.

Master of Arts in: Art, Education, Drama, Guidance and Counseling, Journalism, Teaching (Majors in Biological Sciences and Mathematics).

Master of Science in: Business Administration, Forest Conservation, Forestry, Pharmacy, Teaching (Majors in Biological Sciences and Mathematics), Wildlife Management, Wildlife Technology.

Master of Education

Master of Forestry

Master of Music—Major in Applied Music, Composition, Music Education

Doctor of Philosophy—Chemistry, Geology, Microbiology, Zoology

Doctor of Education

GENERAL REGULATIONS

Requirements relating to graduate work and the award of graduate degrees are administered in the Graduate School. Special requirements for particular programs are listed in the curriculum statements of the schools and departments.

ADMISSION TO THE GRADUATE SCHOOL. A student who is a graduate of an accredited college or university may apply for admission to the Graduate School. The undergraduate preparation must be equivalent to the general requirements for the Bachelor's degree at Montana State University.

To apply for admission, a student must submit a properly completed application and two official transcripts of all previous college work. Two letters of recommendation from persons qualified to judge the applicant's professional potentialities must be submitted in support of applications for admission and for graduate assistantships or fellowships. Application forms may be secured from the Dean of the Graduate School.

The applicant should have completed an undergraduate major in the field selected for graduate study or in a field acceptable to the staff of the major department and the Dean of the Graduate School. For special requirements consult curricula of the departments or schools. Students who hold a Bachelor's degree and who have completed 24 credit hours in Education may be admitted to graduate study in the School of Education.

Full graduate standing will be granted to students working toward an advanced degree whose applications present clear promise of satisfactory graduate work, with particular reference to the amount and level of performance in prior academic preparation, possession of a Bachelor's degree from an accredited institution, and satisfactory recommendations.

Provisional graduate standing may be granted to a student whose application shows reasonable prospect for effective graduate work, but whose record reveals substantial deficiencies in the amount or quality of performance in prior academic work, doubtful command of language, negative recommendations, or other uncertain factors. After one quarter or more of satisfactory graduate work a student with provisional graduate status may be advanced to full
graduate standing upon recommendation of the major department or school and approval by the Dean of the Graduate School.

Students denied admission to the Graduate School may, with special permission, enroll in the University on probationary status, to demonstrate capacity for work in a graduate program, or to rectify deficiencies in prior preparation.

At the discretion of the school or department, exploratory examinations may be administered to aid in determining the applicant's preparation for graduate work.

An undergraduate of senior standing in Montana State University who needs no more than nine quarter credits to complete requirements for the Bachelor's degree may be admitted to the Graduate School.

The candidate for a Master's degree must present evidence of intensive study and investigation in his field of special interest. At least 45 credits of graduate work must be presented, and at least 30 of these credits, including credit for the thesis or professional paper, must be in the student's major department or school. With consent of the graduate adviser and of the Dean of the Graduate School, as much as 15 credits of graduate work may be offered in studies outside the major department or school. Proficient use of the English language is required of all candidates for Master's degrees.

Registration for the Graduate Record Examination is accomplished by payment of the examination fee at the Business Office. The registrant must present his receipt stub for admission to the examination. The fee receipt card retained by the Business Office must show the major field or advanced test in which the registrant is to be examined. The registrant's copy of the examination will be ordered from this Business Office record. The registrant must present his receipt stub for admission to the examination, which will be administered at an announced time and place. The examination may be repeated with approval by the Graduate Council. The examination may be expected at the end of the fifth or sixth week of the autumn and spring quarters and at the end of the fourth week of the summer session.

GRADUATE COURSES. All courses numbered over 499 carry graduate credit unless otherwise indicated. Courses in the 300 and 400 series carry graduate credit only when they have been approved for such credit by the faculty.

The following schools and departments require all entering graduate students to take the Graduate Record Examination not later than the first quarter of graduate residence: Botany, Business Administration, Economics, Education, English, Geology, Health and Physical Education, Journalism, Music, Physics, Political Science, Psychology, Sociology, Wildlife Technology and Zoology.

GRADUATE RECORD EXAMINATION. The Departments of Chemistry, Foreign Languages, Geography, History, Mathematics, Microbiology and Public Health, Philosophy, and Speech require the Graduate Record Examination to be taken by certain students as a condition of admission not later than the first quarter of graduate residence. The following schools and departments require all entering graduate students to take the Graduate Record Examination not later than the first quarter of graduate residence: Botany, Business Administration, Economics, Education, English, Geology, Health and Physical Education, Journalism, Music, Physics, Political Science, Psychology, Sociology, Wildlife Technology and Zoology.

Registration for the Graduate Record Examination is accomplished by payment of the examination fee at the Business Office on or before the second Friday of the quarter in which the examination will be taken. The fee receipt card retained by the Business Office must show the major field or advanced test in which the registrant is to be examined. The registrant's copy of the examination will be ordered from this Business Office record. The registrant must present his receipt stub for admission to the examination, which will be administered at an announced time and place. The examination may be repeated with approval by the Graduate Council.

COURSE LOAD. Fifteen credits of graduate work in a quarter constitutes the usual graduate registration. The maximum credit load, which may be oral or written, or both, covering his field of graduate study. In addition, he will be examined on his thesis by a committee designated in the manner noted below. Examinations must be completed at least one week before the Master's degree is to be granted.

THESIS OR PROFESSIONAL PAPER. The subject of the thesis or professional paper must be approved by the thesis director and by the Dean of the Graduate School.

Thesis. A maximum of 15 credits in Course 899, Thesis, may be applied toward the Master's degree unless a lesser limit is specified by the major department or school.

By the end of the fifth week of the quarter in which the Master's degree may be conferred, the candidate must submit to the Dean of the Graduate School an unbound committee draft of the thesis or professional paper as ap-
proved by the thesis director. If approved by the Dean, this committee draft will then be submitted by the candidate to the examining committee for possible revision prior to final submission and acceptance.

Final acceptance of the thesis or professional paper is subject to approval by an examining committee. This committee will include the thesis director and at least one other member of the faculty of the major department or school nominated by the head of the department or school and appointed by the Dean of the Graduate School. The Dean of the Graduate School will designate at least one faculty member from another department or school to serve as a member of the examining committee.

Three unbound copies of the approved thesis or professional paper must be submitted to the Dean of the Graduate School. The candidate will pay the costs of binding, and the thesis or professional paper will be bound by the University Library.

ABSTRACT OF THESIS. The candidate will submit two copies of an abstract of the thesis, approved by the thesis director, to the Dean of the Graduate School. The abstract is limited to 300 words. No abstract is required for professional papers.

THE MASTER OF ARTS AND
MASTER OF SCIENCE DEGREES

FOREIGN LANGUAGE REQUIREMENT. A reading knowledge of a language other than the student's native language is required of all candidates for the Master of Arts degree in the College of Arts and Sciences and for the Master of Arts in Journalism. Candidates for the Master of Science degree in those departments of the College of Arts and Sciences which require a foreign language for the Bachelor's degree must meet this requirement for the Master's degree. The language requirement may be met in any one of the ways outlined in the undergraduate Requirements for Graduation.

SPECIAL PROGRAMS

In addition to the graduate programs offered by individual departments and schools, the following interdisciplinary degree programs are available:

THE MASTER OF ARTS IN GUIDANCE AND
COUNSELING. In addition to the general requirements for admission to the Graduate School, the following special requirements must be met: Psych 230, Educ 450 and 452, or equivalents, and approval by a committee representing Psychology, Sociology and Education, since this curriculum is jointly administered by these departments. The committee must also approve the student's program.

Sixty credits are required, including the following courses if not previously taken at undergraduate level: Psych 351-352-353 and 360, or 361; Sociology 402 and 405; Educ 445, 455, 552 (4 credits), 594 (Group Guidance 2 cr.), and 597; Speech Pathology and Audiology 330. Final written and oral comprehensive examinations are required, but a thesis is not required.

This curriculum is to prepare students for counseling positions in schools, industry, or social agencies. A teaching certificate and teaching experience are usually required to qualify for a guidance or counseling position in elementary and secondary schools.

THE MASTER OF ARTS OR MASTER OF SCIENCE
IN TEACHING. The degree is designated as a Master of Arts in Teaching, or a Master of Science in Teaching, according to the teaching major. Majors are presently available in the Biological Sciences and in Mathematics.

In addition to the general requirements for admission to the Graduate School the candidate must have a teaching certificate with an undergraduate major or teaching major in the field in which the graduate degree is sought, and approval by a committee composed of two staff members from the major department or field and one from the School of Education. This committee, appointed by the Dean of the Graduate School, will also advise the student in the program of study. For the major in Biological Sciences it will comprise one member from Botany, one from Zoology and one from Education; for the major in Mathematics it will comprise two members from Mathematics and one from Education.

Specific requirements for the degree include three options:

A. Forty-five graduate credits with a maximum of 17 outside the major field, with a minimum of 10 of these 17 credits in allied fields, 6-9 credits in research and thesis, and final oral examination (written examination may be required).

B. Fifty-four graduate credits including 35 in the major field, 10 in allied fields, 9 credits electives, and final oral and written comprehensive examinations.

C. Sixty credits including 35 graduate credits in the major field, 10 graduate credits in allied fields, and final oral and written comprehensive examinations.

Candidates teaching a science in a secondary school, who lack required work in the sciences, may take 15 credits in lower division science courses to be included in the 60 credits for this option.

THE DOCTOR OF PHILOSOPHY DEGREE

RESIDENCE. At least three full academic years of acceptable graduate study are normally necessary to complete requirements for the degree of Doctor of Philosophy.

A minimum of five quarters, three of which must be consecutive and prior to admission to candidacy, must be spent in graduate residence at Montana State University. To earn a full quarter of residence, the student must complete not less than ten graduate credits in any given quarter.

With prior approval of the department and the Dean of the Graduate School, a student admitted to candidacy may register for and receive residence credit for research done in absentia for the dissertation.

TRANSFER OF CREDIT. Credit for satisfactory graduate study may be transferred from an accepted graduate institution and applied toward the fulfillment of requirements for the Doctor's degree, but credit may be devoted to work in one or more minor fields, if such work is approved by the major department.

FOREIGN LANGUAGES. A reading knowledge of at least two languages other than the student's native language is required to be established by examinations. The major department, with approval of the Dean of the Graduate School, will determine the languages that are acceptable. The Foreign Language Department will administer the examinations on materials approved by the major department. Proficient use of the English language is required of all candidates for doctoral degrees.

COMPREHENSIVE EXAMINATIONS. Prior to admission to candidacy the student must pass examinations covering the major field of study. These examinations may be oral or written, or both, at the discretion of the department. Minor area requirements, if any, and foreign language requirements must have been completed before the comprehensive examinations may be taken.

ADMISSION TO CANDIDACY. At least two weeks before the comprehensive examinations, the student must file formal application for candidacy for the Doctor's degree. Upon successful completion of the comprehensive examinations, and on recommendation of the department and approval of the Dean of the Graduate School, the student will be advanced to candidacy.

TIME LIMIT. All requirements for the degree must be completed within five years from the date of admission to candidacy.

DISSERTATION. The candidate must submit a dissertation which demonstrates competence in independent re-
The candidate will submit three copies of a committee draft of the dissertation and of a dissertation abstract to the Dean of the Graduate School at least three weeks before the date of the final oral examination. The abstract is limited to 600 words.

FINAL EXAMINATION. A final oral examination dealing primarily with the dissertation and its relationship to the candidate's fields of study will be conducted by an examining committee. This committee will be designated by the major department or school and one faculty member from another department or school recommended by the head of the major department and appointed by the Dean of the Graduate School. The Dean of the Graduate School will designate at least one other faculty member from another department or school to serve as a member of the examining committee. The examination will be given not later than three weeks before the commencement at which the degree is to be conferred. The examination will be announced by the Dean of the Graduate School one week ahead of its scheduled time and will be open to all members of the faculty.

Two copies of the approved dissertation and abstract will be submitted unbound to the Dean of the Graduate School not later than five days before the commencement at which the degree is to be conferred. The candidate will sign the necessary publication agreement; this agreement may contain stipulations regarding time and circumstances for release of the dissertation. The candidate will pay the costs of binding and of microfilm publication.

Upon the award of the doctorate the university will microfilm the dissertation and bind one copy for deposit in the university library. A positive print of the microfilmed dissertation will be sent to the Library of Congress to be entered in its catalog, and the abstract will be published in Dissertation Abstracts.

If the candidate wishes, he may apply for a copyright. Publication on microfilm does not preclude other forms of publication.

THE DEGREE OF DOCTOR OF EDUCATION

ADMISSION. The student must receive full admission to the Graduate School. In addition, he must have a Master's degree from an accredited institution and must present evidence of successful teaching or administrative experience.

RESIDENCE. A minimum of nine quarters of resident graduate work beyond the Bachelor's degree is required. Forty-five credits beyond the Master's level, exclusive of the doctoral dissertation, must be taken at Montana State University. Thirty of these forty-five credits must be taken in continuous residence and 30 of the last 45 credits must be taken in residence at Montana State University.

To earn a full quarter of residence, the student must complete not less than ten graduate credits in any given quarter.

With prior approval of the School of Education and the Dean of the Graduate School, a student admitted to candidacy may register for and receive residence credit for research done in absentia for the dissertation.

COURSE REQUIREMENTS, DISTRIBUTION, AND QUALITY OF WORK. The candidate will submit a minimum of 135 quarter credits of graduate work including 120 credits of approved course work, such work to be exclusive of the doctoral dissertation. For the Ed.D. degree a minimum of 60 credits of graduate work in Education is required. These sixty credits must include the following courses: Methods of Educational Research, Educational Statistics, Philosophy of Education and, if not taken previously, at least one course in each of the following areas: Guidance, History of Education and Educational Measurement. In addition, the student must offer 15 credits in one field and 9 in each of two other fields selected from the following: Administration and Supervision, Classroom Methods, Curriculum, Educational Psychology, Elementary Education, Guidance, Higher Education, History and Philosophy of Education and Educational Sociology, and Secondary Education.

A minimum of 40 credits of graduate work in cognate areas is required. The distribution of this work will be determined by advisement.

A grade average of "B" will be required for resident work at Montana State University.

No work of "C" grade will be accepted in transfer from other institutions and no extension credit above the Master's level will be accepted.

COMPREHENSIVE EXAMINATIONS. After 100 credits of approved graduate course work (including work on the Master's degree) have been completed, the student must pass examinations on his selected fields in Education. These examinations may be oral or written or both.

ADMISSION TO CANDIDACY. At least two weeks before the comprehensive examinations, the student must file formal application for candidacy for the Doctor's degree. Upon successful completion of the comprehensive examinations, and on recommendation of the School of Education and approval of the Dean of the Graduate School, the student will be advanced to candidacy.

TIME LIMIT. Sixty of the total graduate credits of course work (exclusive of the Doctoral dissertation) offered for the Doctorate must have been completed within eight years preceding the granting of the degree.

DISSERTATION. The candidate must submit a dissertation which shows evidence of competence in independent investigation. The dissertation may be a mature evaluation of existing knowledge or a contribution to knowledge. In either case it must show mastery of related literature and be written in creditable literary form. Fifteen to thirty credits may be allowed for the dissertation.

The candidate will submit three copies of a committee draft of the dissertation and of a dissertation abstract to the Dean of the Graduate School at least three weeks before the date of the final oral examination. The abstract is limited to 600 words.

FINAL EXAMINATION. A final oral examination dealing primarily with the dissertation and its relationship to the candidate's fields of study will be conducted by a committee recommended by the School of Education and designated by the Dean of the Graduate School. This examination will be announced by the Dean of the Graduate School one week ahead of its scheduled time and will be open to all members of the faculty.

Two copies of the approved dissertation and abstract will be submitted unbound to the Dean of the Graduate School not later than five days before the commencement at which the degree is to be conferred. The candidate will sign the necessary publication agreement; this agreement may contain stipulations regarding time and circumstances for release of the dissertation. The candidate will pay the costs of binding and of microfilm publication.

Upon the award of the Doctorate the University will microfilm the dissertation and bind one copy for deposit in the university library. A positive print of each microfilmed dissertation will be sent to the Library of Congress to be entered in its catalog, and the abstract will be published in Dissertation Abstracts.

If the candidate wishes, he may apply for a copyright. Publication on microfilm does not preclude other forms of publication.

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES for regularly enrolled students living in university facilities. Does not include fees or special purposes such as Applied Music and Forestry. Autumn quarter fees include a $10.00 deposit which is refundable, less charges.

Married students living in college operated family housing pay rental rates varying from $29.75 to $90.00 a month depending on the size and type of apartment.
NON-RESIDENT STUDENTS are those who have not resided in the State of Montana for at least 12 months immediately prior to entering Montana State University and whose parents are not residents of the state. Non-residents may not gain residence while in attendance at any institution of learning. For more information, write to the Registrar.

STUDENT FEES. The following is a detailed schedule of quarterly fees authorized for the college year 1961-62 in all schools and departments except where otherwise specified. For the Law School, which is on a semester basis, the semester fees will be 50% above the quarterly fees. Fees are subject to modification by action of the State Board of Education.

Regulation is not complete until all fee charges are paid, or arrangements made, in the Office of the Controller, for extension of the date when due.

ALL STUDENTS REGISTERED FOR SEVEN OR MORE CREDITS:

<table>
<thead>
<tr>
<th>Registration</th>
<th>$10.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental fee (for laboratory supplies in all courses, locker fees, gymnasium towel service, diploma, etc.)</td>
<td>$40.00</td>
</tr>
<tr>
<td>Building fee</td>
<td>$5.00</td>
</tr>
<tr>
<td>Student M.S.U. Building fee</td>
<td>$15.00</td>
</tr>
<tr>
<td>Student Union Building fee</td>
<td>$4.00</td>
</tr>
<tr>
<td>Student Activity fee</td>
<td>$17.00</td>
</tr>
</tbody>
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For support of activities sponsored by the Associated Students of Montana State University.

For students who have a B.A. or B.S. degree and to students registered for less than seven credits.

| Health Service | $10.00 |
| (Required of all students enrolled for class work) | $101.00 |
| General deposit (charges for loss, breakage, and fines deducted) | $10.00 |

(This deposit, less charges, is refundable after graduation or when school is discontinued. Additional amounts will be billed if the balance becomes low.)

Total, first quarter in attendance | $111.00 |

Non-resident fee is based on a charge of $20.00; General Deposit $5.00; Building Fee $15.00; Student Union Building $2.50; Health Service $10.00; Student Activity $17.00 (optional). Non-residents pay, in addition to the fees listed above, per quarter ($70.00 plus $22.50 Student M.S.U. Building fee) $92.50

(If registered for less than 7 credits, the Non-resident fee is based on a charge of $11.00 per credit, plus an $11.25 student M.S.U. Building fee.)

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

NON-RESIDENT FEES. Students who have not resided in the State of Montana for at least 12 months immediately prior to entering Montana State University and whose parents are not residents of the state are required to pay non-resident fees (autumn, winter, spring quarters). For detailed statement of student entitled to exemption from this fee write to the Registrar.

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 the services 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.

LIMITED REGISTRANTS (students registered for less than seven credits): Registration Fee $10.00; Incidental Fee $20.00; General Deposit $5.00; Building Fee $2.50; Student M.S.U. Building fee $7.50; Student Union Building $2.00; Health Service $10.00; Student Activity $17.00 (optional). Non-residents pay (in addition to other fees stated here) $11.00 per credit plus $11.25 additional M.S.U. Student Union Building fee.

Students who are enrolled as regular students, who wish to drop to limited registrants, see statement under special attendance fee.

LISTENERS (students who enroll for courses without credit) pay the same fees as students enrolled for credit.

SPECIAL ATTENDANCE FEE. Payable by adults not in regular attendance the preceding quarter, and who are not registered for credit and do not participate in class work. Each course (per quarter), $2.00. The Special Attendance privilege is not applicable to laboratory courses, such as Chemistry, Weaving, Swimming, shorthand & typing, Office Machines, etc. The regular fees are applicable if attendance is deferred in these courses.

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 $50.00 per quarter. The student activity fee is optional to students who have a B.S. or B.A. degree.

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 is also payable by students who register during the prescribed registration period except for payment of fees or securing a deferment. If a bank declines payment of a personal student check and returns it to the University, 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. ($1.00 per day to a maximum of $5.00.)

DEFERMENT. In case of an emergency, the Controller is authorized to grant a limited extension of time on payment of fees. If approved, there will be a charge of $1.00 for processing the deferment. Failure to meet payments as agreed, without an authorized extension of the deferment, will result in a penalty of $1.00 per day to a maximum of $5.00.

CHANGE OF ENROLLMENT, payable for each change of enrollment card filed after the first week of the quarter, $1.00; after the second week, $2.00.

SPECIAL EXAMINATION, for each special examination, $2.00; maximum, $5.00 for any one quarter.

REMOVAL OF INCOMPLETES (not due to illness or fault of institution) $2.00.

TRANSCRIPT OF RECORD (first transcript is free) $1.00. Transcripts ordered at one time in quantities are charged for at the rate of $1.00 for one plus 50 cents for the second and 25 cents for each additional.
STUDENT SERVICES

At Montana State University 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 Center, health service, placement service, student housing, student union, student loans, and undergraduate scholarships.

THE OFFICE OF THE DEAN OF STUDENTS has general supervision over all student welfare. Through personal counseling and group activities, the Deans assist in making opportunities available to students for personal-social success. Counseling activities are centered in the processes of democratic living. The Associate Dean has specific responsibility for all questions of social and academic welfare of women students, and the Dean similar responsibility for men.

THE COUNSELING CENTER has a general function of giving guidance and assistance to students in the following areas: 1) selection of appropriate area of major study; 2) assessment of abilities and the most efficient, effective application of those abilities to allow for maximum learning in college; 3) diagnoses of difficulties leading to less than maximum performance and recommend remedial work; 4) dealing with personality adjustment problems through self-understanding in relationship to the client’s friends, home, school, and the community as a whole, leading to more effective citizenship; 5) selection of appropriate vocational area.

The Counseling Service has a further responsibility to: 1) administer, report, and aid in the interpretation of freshman placement tests and other standardized efficiency 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; 4) assist advisers, upon request, in working with students.

THE STUDENT HEALTH SERVICE, financed in part by a health service fee paid by students each quarter, provides medical care for students. The plan was developed through a contractual arrangement between the University and the Western Montana Medical Society.

The services are comprehensive and are available at a low cost made possible by group participation and infirmary type facilities. Preventive care and early treatment of illness are stressed. The cost of an illness that might deprive a student of his education is minimized.

All new students, before enrollment, must have submitted a completed University Health Form signed by a qualified physician. During Orientation Week, patch tests will be given new students at the University Health Center.

The full-time student dispensary is staffed by physicians practicing in Missoula. Laboratory service, x-ray, and limited physical therapy are provided also. Polo and other preventive inoculations are provided at cost.

Infirmary beds are used for minor illness at no added charge. Hospitalization in Missoula hospitals is provided under the plan for major medical illness, surgical emergencies, and major trauma. The plan pays for 10-day hospitalization at $15 per day, and $100 additional cost.

Obstetrical 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. Dependents’ care is not provided, nor are medical services for illnesses arising between the Autumn, Winter, and Spring quarters. A less extensive plan is in effect during the Summer quarter.

Hospitalization but not medical services as above authorized is covered outside Missoula, in connection with University activities at any place during the school session.

A student is given free choice of local physicians participating in the plan by requesting authorization. Minor illness should be treated at the dispensary.

Particular services provided by the Health Service are as specifically mentioned in the agreement between the University and the Western Montana Medical Society.
The Health Service building also houses the Mental Hygiene Clinic and the Speech Pathology and Audiology Clinic which are operated separately.

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

THE PLACEMENT SERVICE endeavors to assist University graduates in finding positions suited to their interests and training. The services are also extended to business and other organizations in search of University-trained personnel. The Placement Service also aids University graduates in finding positions for which both a degree and experience are required. A registration fee of $5.00 is charged for placement services.

Similar services are provided for persons interested in teaching in the public schools. School authorities in need of teachers, principals, and superintendents use this facility. The Placement Service also aids teachers, principals, and superintendents in finding positions for which they have become qualified by training, ability, and experience.

STUDENT HOUSING includes six residence halls, three housing areas for married students, a women's cooperative house, nine fraternity and six sorority houses, and University-approved rooms in private homes.

Freshmen, both men and women, who do not live in their own homes while attending the University are required to live in the residence halls unless excused in special cases by the Dean or Associate Dean of Students. Upperclass women are required to live in women's residence halls or with approved student living groups unless excused as special cases by the Associate Dean of Students. Women students over 25 years of age must have the approval of the Associate Dean of Students to live in the residence halls.

RESIDENCE HALLS. Application forms and detailed information may be obtained by writing the Registrar's Office, Montana State University. A $30 prepayment on board and room, which includes a $10 deposit, must accompany each room application. If a room reservation is cancelled, notice in writing must be received by the Manager of Residence Halls on or before September 1 for fall quarter, December 5 for winter quarter, and March 6 for spring quarter, or the $10 deposit, included in the prepayment, will be forfeited. Students who live in the residence halls are required to board in the Lodge. See Residence Halls Bulletin for board and room rates.

Social life in the halls is encouraged through residence hall clubs and numerous activities. Experienced 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 in the Lodge 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 erected, 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 upon the dates similarly specified.

FAMILY HOUSING. Married students may apply to the Family Housing Office for accommodations in low-cost, temporary housing or permanent apartment-type units. One, two and three bedroom units are available.

THE WOMEN'S COOPERATIVE HOUSE provides an extra-curricular center of student life. It is the home of student organizations and their activities. Every student registered at Montana State University is a member of this organization and entitled to use the building. Here students may hold meetings, have parties, meet friends, and participate in activities. Facilities in the Lodge include a student organization center, conference rooms, social center, reading room, coffee shop, lounge, recreation room, and food service. Bowling alleys, a year-round skating rink, and a swimming pool are also maintained by the Lodge management.

FINANCIAL AIDS. National Defense loans and loans from educational fund programs are available to qualified students in need of financial aid to complete their college work. Information about these may be obtained from the Office of the Dean of Students.

Many students meet costs of attending the University by part-time work and scholarships. For freshmen to try to earn all expenses is inadvisable. Students should plan to use their available living expenses during the first year and increase their earnings as they become familiar with University life and work. Students seeking part-time work should register with the Student Placement Bureau. For unusually well qualified freshman students a Work Scholarship program is maintained. Students applying for Work Scholarships should have a high B or A average in high school. Applications should be addressed to the office of the Dean of Students.

STANDARDS OF STUDENT CONDUCT

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

This policy begins with the assumption that all students coming to the University have common sense and normal conceptions of honor, morality, integrity and respect for order and the rights of others. It also assumes that all students have a respect for the University and regard their attendance here as a privilege and not a right; that, in a sense, every 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, be guilty of improper acts toward others, be indifferent to the laws of society, 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 wherever they may be.
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.

In some areas, specific rules have been adopted as guides to student conduct, violations of which are cause for disciplinary action against individuals or groups:

I. USE OF MOTOR VEHICLES of any form on the campus or in the city or county of Missoula for the 1961-62 academic year is denied to the following classifications of undergraduates:

A. Those who have fewer than 40 quarter credits of University work or its equivalent.

B. Those who have between 40 and 90 credits of University work or its equivalent and cannot show an index of 2.0 (C average) on all credits for which they have registered.

C. Minors, who are otherwise qualified, who do not present written permission of their parents or guardians for themselves with the University’s published Motor Vehicle Regulations, violations of many of which call for cancellation of the offender’s enrollment.

II. GAMBLING. Gambling is not permitted in University buildings or in University approved housing.

III. LIQUOR. The possession or consumption of intoxicating liquor in the following circumstances or places is contrary to University standards:

A. By University students, visitors, or guests (1) when they are under 21 years of age, or (2) with or in the company of such persons under age, or (3) in a drunken or disorderly manner, or with the appearance thereof; and

B. By anyone (1) on the campus, University property, or at University-approved quarters of students, except that University family dwellings and off-campus quarters of students over 21 years of age are governed by separate rules, or (2) at University affairs, including athletic events, or (3) at organized gatherings of students.

IV. ENTERTAINMENT OF GUESTS. Entertainment of guests of the opposite sex in student living quarters is permitted only under circumstances approved by the Dean of Students office.

V. OFF-CAMPUS LIVING. Students living off-campus are expected to abide by the same standards as those living on campus or in University-supervised housing. University approval may be withheld from students for off-campus living if violations occur, or from living quarters where landlords permit conduct contrary to those standards.

VI. STUDENT MARRIAGES. Any marriage, either party of which is a student of the University, must be publicly announced. For this purpose notice of the marriage must be filed promptly with the Registrar. All students on matriculation must indicate on the entrance blank whether married or single. Falsification or willful suppression of any information called for on the form will be grounds for cancellation of registration.

VII. SOCIAL FUNCTIONS. University social functions which are commenced or continued after 8:30 p.m. are to be held only on Friday and Saturday evenings, or the evening preceding a holiday and are to close not later than midnight. Exceptions to these rules may be made by the Associate Dean of Students.

All social functions of student organizations at which women are present are to be approved by and scheduled with the Associate Dean of Students.

DISCIPLINARY ACTION. When disciplinary action against a student or a student group becomes necessary, it is the responsibility of the Dean or Associate Dean of Students. Such action can be recommended by student councils, committees or boards to which such powers of recommendation have been delegated. However, these actions cannot become final without the approval of the above mentioned Deans. Among those often so recognized are the Student Judicial Council, the Executive Board of the Associated Women Students, and the various living group councils.

ABSENCES FROM CLASS

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

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

DUE TO FIELD TRIPS. At least one week in advance of a proposed field trip the instructor in charge should send a memorandum in duplicate to the Dean of Students stating the proposed arrangements for and date of the trip as well as the list of the students who will be participating. The Dean of Students will submit the memorandum to the President’s office for final approval. When this is given the student 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 sudden emergency when it is not possible for the student to see his instructors, the student should notify 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.

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

STUDENT CONTRACTS AND OBLIGATIONS

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.”

INDIVIDUAL STUDENTS who owe bills to the University for fees, fines, board and room in the residence halls, and other charges must arrange for orderly liquidation through the Staff. No student will be 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 Montana State University, including charges for board and room in fraternity and sorority houses.

ACTIVITIES

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 extra-curricular 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 Auditorium-Field House occupies a ground area approximately the size of a standard city block. Moveable seats, stages, floors, and other equipment make it usable as an auditorium, arena, practice field, etc. There is seating for over 6,000 for basketball, 4,000 for shows or concerts. Two large lobbies serve for displays and smaller meetings. It is used for convocations, commencement exercises, alumni reunions, pageants, horse shows, military drill and formations, dances, basketball games, and indoor athletic practice or exhibitions.

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 member of the student body. Montana State University is a member of the Mountain States Athletic Conference. Facilities are provided for athletic practice or exhibitions.

ANNUAL INTERSCHOLASTIC. For more than fifty years Montana State University has held an annual high school invitational meet for track and field contests, golf and tennis tournaments, a declamatory contest, Little Theatre Festival, interscholastic debate, and meetings of the Inter-scholastic Editorial Association.

INTERCOLLEGIATE DEBATE. Montana State University engages in debate with the leading universities in the Northwest and occasionally with eastern and foreign universities. In addition to the regular debates, teams from Montana State University make a tour of the state each year. The activity of debate at the University affords opportunity for students in public address to combine academic, class, and practical experience.

PUBLICATIONS. The Associated Students of Montana State University publish a newspaper, the Montana Kaimin. The paper has become a permanent factor in campus life.

The Sentinel is a year book published by the Associated Students of the University. It contains a valuable record of the activities of each year.

Venture, a literary publication, is also sponsored by the Associated Students.

ORGANIZATIONS

The entire student body is organized into one society known as the Associated Students of Montana State University. This organization, through appropriate committees and officers, has charge of matters of general concern, such as athletics, oratory, debate, and entertainment.

The Associated Women Students is an organization made up of all women students in the University. It has responsibilities pertaining to the student life of its members.

The Student Christian Council and Campus Religious Council, and various church clubs and associations carry on work for the religious and social life of the University.

In addition to several small musical ensembles, there are the following large organizations: The University Choir, Choral Union, Choral Ensembles, Jubileers, University Symphony Orchestra, University Symphonette, the University Symphony Band and the Marching Band. These organizations provide music for university events during the year, and furnish an opportunity for all students with musical talent to cultivate it as well as to participate in the social pleasures pertaining to such organizations.

The "M" Club is an organization of all Montana State University men who have won a letter in any branch of athletics.

Penetralia Chapter of Mortar Board is a national honorary organization for senior women devoted to service and promoting the best interests of the University.

Silent Sentinel is an honorary organization for senior men chosen for their service and leadership in campus citizenship.

Bear Paw is an honorary for sophomore men who have evidenced loyalty and a desire to serve the University.

Alpha Phi Omega is a national service fraternity composed of college and university men who are or have been previously affiliated with the Boy Scouts.

Tanan-of-Spur, as a national honorary, recognizes outstanding sophomore women who have maintained high scholarship, demonstrated leadership, and character, and performed outstanding service to the University.

The Women's Athletic Association is an organization devoted to the development of interest in the various sports for women.

The "M" Club (Women) is an athletic honor society for women.

Alpha Lambda Delta is a national honorary for freshman women who have maintained high scholarship.

Phi Kappa Phi is a national scholarship honorary for women and men who evidence high scholarship and character.

The Association of United States Army Company is a national military organization for advanced Army ROTC students devoted to increasing interest in military activities, establishing standards of leadership and devotion to duty, and the development of those qualities essential to the efficient officers of the Armed Services.

Arnold Air Society is a National Honorary Society for selected Advanced AFROTC students. The society fosters interest in Air power and development of Air Force Leadership.

Pershing Rifles is a national honorary for Basic ROTC students who demonstrate a high military aptitude. Selection of members is based upon a consideration of leadership qualities, military proficiency and academic ability.

Angel Air Flight is a local women's Air Force honorary society, organized to add color to military ceremonies and be of service to the campus.

The various departments and schools in the University have professional clubs and honorary organizations for their own 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, the 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.
ORGANIZATION OF INSTRUCTION

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

COLLEGE OF ARTS AND SCIENCES

<table>
<thead>
<tr>
<th>Subject</th>
<th>Courses</th>
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<tbody>
<tr>
<td>Biological Sciences</td>
<td>Mathematics, Medical Technology, Philosopy, Physical Sciences, Physics, Political Science, Pre-Medical Sciences, Psychology, Radio and Television, Reserve Officers Training Corps, Air Science (no major), Military Science, Secretarial-Home Arts, Sociology, Anthropology, Social Welfare, Speech (Includes Speech Pathology and Audiology), Wildlife Technology, Zoology</td>
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<tr>
<td>Botany, Microbiology and Public Health</td>
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<tr>
<td>Chemistry</td>
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<td>Economics</td>
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<td>French</td>
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<tr>
<td>German</td>
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<tr>
<td>Greek (no major)</td>
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<td>Italian (no major)</td>
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<td>Latin</td>
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<td>Russian (no major)</td>
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<td>Spanish</td>
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<td>Geography</td>
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<td>Geology</td>
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<td>Health and Physical Education</td>
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<td>History</td>
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<tr>
<td>Home Economics</td>
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<td>Liberal Arts</td>
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<td>Library Service</td>
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GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

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<thead>
<tr>
<th>Subject</th>
<th>Courses</th>
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<tbody>
<tr>
<td>Accounting</td>
<td>Law-Business, Marketing, Secretarial Science</td>
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<tr>
<td>Banking and Finance</td>
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<tr>
<td>Business Teaching</td>
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<tr>
<td>General Business</td>
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<tr>
<td>Industrial Organization and Management</td>
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SCHOOL OF EDUCATION

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<th>Subject</th>
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<tr>
<td>Administration and Supervision</td>
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<tr>
<td>Elementary Education</td>
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<tr>
<td>Guidance and Counseling</td>
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<tr>
<td>Secondary Education</td>
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THE SCHOOL OF FINE ARTS

<table>
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<tr>
<th>Subject</th>
<th>Courses</th>
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<tbody>
<tr>
<td>Art</td>
<td>Music, Education, Elementary Teacher Training, Secondary Teacher Training, Applied Music, Organ, Piano, String Instruments, Voice, Wind Instruments, Theory or Composition</td>
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<tr>
<td>Drama</td>
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SCHOOL OF FORESTRY

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<th>Subject</th>
<th>Courses</th>
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<tbody>
<tr>
<td>Forestry</td>
<td>Conservation, Watershed Management, Soil and Water Conservation, Wildlife Conservation, Range Conservation, Forest Recreation</td>
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<tr>
<td>Forest Management</td>
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<td>Forest Engineering</td>
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<td>Wood Utilization</td>
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<td>Range Management</td>
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<td>Wildlife Management</td>
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SCHOOL OF JOURNALISM

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<th>Subject</th>
<th>Courses</th>
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<tbody>
<tr>
<td>Advertising</td>
<td>Magazines, News-Editorial, Radio-Television</td>
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<tr>
<td>Community Journalism</td>
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</tbody>
</table>

SCHOOL OF LAW

SCHOOL OF PHARMACY

AFFILIATED SCHOOL OF RELIGION (no major)

COURSE NUMBERING SYSTEM

Effective starting with the summer of 1957, all courses are numbered as follows:

- 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
- 500-699 Graduate courses (masters level)
- 700-799 Graduate courses (doctoral level)

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

Courses are listed under headings, FOR UNDERGRADUATES, FOR UNDERGRADUATES AND GRADUATES, or FOR GRADUATES. Courses listed under the first heading may not be taken for graduate credit even if the numbers are in the 300 or 400 series. Courses under the second heading may be taken for graduate credit if the student secures proper authorization from the Dean of 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 on the permanent record of the subject matter.

The University reserves the right to withdraw any course for which fewer than five students are enrolled before the opening of the course. Such courses may be given only in specific cases and with written approval of the President.

EXPLANATION OF SYMBOLS

In describing courses, symbols and abbreviations are used as follows:

- 106, 104-105, 101-102-103—Course numbers of one, two, and three quarter courses. Unless otherwise stated, 104 is required before 105; 101 before 102, and 102 before 103.
- 1Q, 2Q, or 3Q—Follow course title, indicate length of the course in quarters.
- A, W, S, Su—Quarters in which course given: Autumn, Winter, Spring, Summer, respectively.
- 5—Number following quarters in which course given is the number of credits per quarter.
- V or V 1-3—Variable credit course. Variation may be shown by numbers following V.
- R or R-3—Course may be taken more than once for credit; total credit allowed shown by number following the R.
- (3-4)—Hours of lecture and laboratory each week of the quarter; lecture is first figure, laboratory the second.
- (0-3/cr.)—Laboratory course in which the student does 3 hours of laboratory per week for each credit.
- a/q—Course may be offered any quarter.
- e/y—Course offered even numbered years only.
- o/y—Course offered odd numbered years only.
- =—Equal, or equivalent course.
- c/i—Consent of instructor required.
- Prereq—Prerequisite, or what must be taken before taking this course. Unless otherwise stated, numbers appearing after "Prereq" are courses within the particular school or department. Instructors must file with the Registrar a "Waiver of Prerequisite" form for any student allowed in a course without meeting the requirement as stated.
ANTHROPOLOGY is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It deals with the pre-literate or primitive societies.

Students may major in Anthropology or a combination of Sociology and Anthropology. The Master of Arts degree is also offered. (See Graduate School.) Anthropology courses stress both archaeology and ethnology and several involve laboratory and field work.

Graduates may engage in teaching, research, or government service. There are many opportunities for scholarships or fellowships in graduate work.

DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, fifty credits in departmental courses are required for the Bachelor of Arts degree with a major in Anthropology. A foreign language is required. (See foreign language requirement in the general section of the catalog.)

At least 30 of the 50 major credits must be in anthropology courses; Sociology 101, 265, and 303 and Social Welfare 181 must be completed. Remaining courses for the major may be selected from any courses in the department. Religion 260, Geography 355 and Speech 318 may be counted toward a major in Anthropology.

FOR UNDERGRADUATES

FOR GRADUATES

ART is man's visual means of expression in two and three dimensional form. Creative visual expression has existed since the beginning of man. An art student is concerned with the study of art history, the acquisition of skills to suit his personal needs for expression, and the development of judgment and taste.

A student generally places major emphasis in painting, design, ceramics, or sculpture, although he is expected to work in all areas of art. Personal experience is the basis and point of departure for effective, significant expression. A broad general educational background outside of the art field enlarges the scope of personal experience and awareness of one's environment, making possible a greater variety of art productivity.

 Those interested in study and development beyond the Bachelor of Arts degree may continue in graduate work leading to a Master of Arts degree. Graduate study requires evidence of a high level of proficiency in both studio and academic work prior to acceptance. Specific requirements may be obtained direct from the Art Department.

Graduates teach in public schools, supervise art programs, teach in colleges, engage in commercial art work or simply set out as free lance artists.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. 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 Art: 66 or more credits including Art 123, 125-126, 231-232-233, 139, 151, 260, 450. (For teaching major or minor 380 or 151, 260, 450. For teaching major or minor 307 is taken instead of 450.) The foreign language requirement listed earlier in the catalog must be satisfied.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ART. In addition to the general requirements for the Graduate School, candidates must complete 45 credits of graduate work distributed as follows: A minimum of 10 credits in art history and theory (Art 371, 372, 373, 380); a minimum of 15 credits in the area of concentration (Art 340, 341); a minimum of 15 credits in one of the following fields: 335 and 535 for ceramics majors; 335 and 336 for sculpture majors; and 325 and 540 for design majors) five to ten credits on a terminal project and/or thesis (Art 699); minimum of 10 credits in art electives outside the major area. Five credits may be taken in non-art electives. The graduate record examination Arts 686, and each candidate must present a one-man exhibition. A foreign language is required.

FOR UNDERGRADUATES

ANTHROPOLOGY, ART—25

371 CULTURE AND PERSONALITY 1Q A 3 e/y Prereq 152 or 153 or =. The role of culture in the formation of personality.

372 CULTURE AND THEORY 1Q A 3 e/y 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 1Q S 4 e/y Prereq 152 or 153 or =, and Gen. 360. The methods and results of comparative and historical linguistics, with particular attention to phonemic analysis, theory of linguistic reconstruction and dating techniques to ethnology and archaeology.

451 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq 152 or 153 or =. Modern Indian problems. (See Graduate School.)

470-471-472 SELECTED TOPICS 3Q A W S 3 Prereq 10 credits in Anthropology. Enter any quarter. Selected problems in Anthropology.

490 LINGUISTIC METHODS 1Q S 3 e/y Prereq 152 or 153 or =, and Gen. 360 or Spch 119. Phonetic transcription; phonemic, morphological and semantic analysis, using materials from informants in the field, and recordings.

FOR GRADUATES

551 RESEARCH a/q V.

699 THESIS a/q V B-15.

ART is man's visual means of expression in two and three dimensional form. Creative visual expression has existed since the beginning of man. An art student is concerned with the study of art history, the acquisition of skills to suit his personal needs for expression, and the development of judgment and taste.

A student generally places major emphasis in painting, design, ceramics, or sculpture, although he is expected to work in all areas of art. Personal experience is the basis and point of departure for effective, significant expression. A broad general educational background outside of the art field enlarges the scope of personal experience and awareness of one's environment, making possible a greater variety of art productivity.

Those interested in study and development beyond the Bachelor of Arts degree may continue in graduate work leading to a Master of Arts degree. Graduate study requires evidence of a high level of proficiency in both studio and academic work prior to acceptance. Specific requirements may be obtained direct from the Art Department.

Graduates teach in public schools, supervise art programs, teach in colleges, engage in commercial art work or simply set out as free lance artists.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. 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 Art: 55 or more credits including Art 123, 125-126, 231-232-233, 139, 151, 260. (For teaching major or minor 307 is taken instead of 450.) The foreign language requirement listed earlier in the catalog must be satisfied.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ART. In addition to the general requirements for the Graduate School, candidates must complete 45 credits of graduate work distributed as follows: A minimum of 10 credits in art history and theory (Art 371, 372, 373, 380); a minimum of 15 credits in the area of concentration (Art 340, 341); a minimum of 15 credits in one of the following fields: 335 and 535 for ceramics majors; 335 and 336 for sculpture majors; 325 and 540 for design majors) five to ten credits on a terminal project and/or thesis (Art 699); minimum of 10 credits in art electives outside the major area. Five credits may be taken in non-art electives. The graduate record examination Arts 686, and each candidate must present a one-man exhibition. A foreign language is required.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
127-128 CRAFTS 3Q A S Su 2, Enter either quarter. Projects using various materials: (127) wood, mosaic, metal, textile; (128) jewelry, enameling, plastics. Offered for one credit by extension.

129 CERAMICS 3Q W S 2 R-4. Clay projects, building, throwing, firing, and glazing. Offered for one credit by extension.

133-134 PRINTING ARTS 3Q A W 2 Prereq 8 credits of 123. Enter either quarter. Techniques of various graphic media: (133) etching, woodcut; (134) lithography, silk screen.

135 SCULPTURE 3Q W S 3 R-6 Prereq 8 credits of 122. Methods and techniques.

139 WATERCOLOR 1Q S 3, Su 2 or 4 Prereq 8 credits of 122. Offered by extension for the credit. Watercolor techniques and expressive use of subject matter.


141 LIFE DRAWING 1Q S 3 R-9 Prereq 8 credits of 123. Expressive drawing from models. Anatomical construction.

150 LETTERING 1Q A 2. Pen and brush lettering and layout.

231-232-233 HISTORY OF ART 3Q A W S 3. Enter any quarter. A comprehensive treatment of every important art movement, related to corresponding social and cultural backgrounds; aesthetic values. (233 offered Su to non-Art majors).

FOR UNDERGRADUATES AND GRADUATES


307 METHODS OF TEACHING SECONDARY ART 1Q S Su 3. Objectives, methods, materials and evaluations.

325 ADVANCED DESIGN 3Q A W S V 1-6 R-12 Prereq 125-129. Advanced problems of a specialized nature.

330 ADVANCED CERAMICS 3Q A W S V 1-6 R-12 Prereq 4 cr of 125. Advanced problems in ceramic techniques.

334 ADVANCED PRINTING ARTS 3Q A W S V 1-6 R-12 Prereq 133-134. Advanced work in printing media.

335 ADVANCED SCULPTURE 3Q A W S V 1-6 R-12 Prereq 6 cr of 135. Advanced problems in sculpture media.

340 ADVANCED PAINTING 3Q A W S V 1-6 R-12 Prereq 9 cr of 140. Advanced work in painting media.

371 HISTORY OF RENAISSANCE PAINTING 1Q A 3 Prereq c/l. History, theory, aesthetics of Western European painting during the Renaissance.

372 MODERN ART 1Q W 3 Prereq c/l. History of Modern Art from Van Gogh to present day. Includes painting, sculpture, architecture and the minor arts.

373 HISTORY OF AMERICAN PAINTING 1Q S 3 Prereq c/l. American painting and aesthetic theories from the Colonial Age to the present day.

450 SEMINAR 1Q a/q V 1-3 R-6 Prereq c/l. Theories and practices applicable to art as a profession or to the teaching of art.

FOR GRADUATES

535 SPECIAL PROBLEMS 3Q A W S V R-15 Prereq c/l. Specialized advanced work in three dimensional media.

540 SPECIAL PROBLEMS 3Q A W S V R-15 Prereq c/l. Specialized advanced work in two dimensional media.

550 SPECIAL PROBLEMS 3Q A W S V R-15 Prereq c/l. Individual research in art history or art theories.

699 THESIS AND TERMINAL PROJECT a/q V R-15.

**BIOLOGICAL SCIENCES** deal with living things. The specific sciences are Bacteriology, Botany, and Zoology. Students take courses in each field.

This program provides a basic training in the Biological Sciences. It is designed for those graduates who might have to teach science and biology in high school. Other than teaching, there are very few opportunities for graduates of this program. It is recommended that those students who might do graduate work other than in education, elect the curriculum in either Bacteriology, Botany, or Zoology.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BIOLOGICAL SCIENCES.** 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 in Biological Sciences including Botany 121-122 (General Botany), Botany 123 (Local Flora), Botany 233 (Plant Physiology), Zoology 161-163 (Elementary Zoology), Zoology 166 (Field Zoology), Zoology 261 (Comparative Vertebrate Zoology), Zoology 262 (Human Physiology), Microbiology 160 (Elementary Microbiology), General 350 (Conservation of Natural and Human Resources).

The following courses in allied sciences must be completed: Chemistry 101-102, 169 or 121-122-123 (students who plan to do advanced work should take the Chemistry 121-122-123) 8 cr. of 123.

(for 3 recommended in order to fulfill the requirements for a teaching minor in the physical sciences) of Physics 111-112-113 or 231-232-233.

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

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

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

**HIGH SCHOOL PREPARATION.** In addition to the general requirements for admission to the University, the student needs algebra and chemistry. It is also recommended that the high school preparatory course include geometry and a modern foreign language.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BOTANY.** In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Botany: 45 or more credits in Botany, including Botany 121-122 (General Botany), Botany 123 (Local Flora), Botany 233 (Plant Physiology), Zoology 161-163 (Elementary Zoology), Zoology 166 (Field Zoology), Zoology 261 (Comparative Vertebrate Zoology), Zoology 262 (Human Physiology), Microbiology 160 (Elementary Microbiology), General 350 (Conservation of Natural and Human Resources).

Also required are Zoology 104,105, Microbiology 200 and Chemistry 101-102, 169 or 121-122-123. Recommended electives: Geography 118, 128, 138, Environmental Science 115, 118 or 128, 138, 200 or 218, 220; Zoology 106. The foreign language requirement listed earlier in the catalog must be satisfied; French or German preferred.
Courses 123, 250, 341, 355, 365, 366, 370, and 375 may require field trips extending some miles from the campus. Students are required to pay their pro rata share of transportation and insurance costs for such trips.

MASTER OF ARTS OR MASTER OF SCIENCE IN TEACHING. See statement under Graduate School.

FOR UNDERGRADUATES

121-122 GENERAL BOTANY 2Q A W Su 5 (3-4), or 4(3-3)
Forestry majors only. Introduction to plant science, including anatomy, physiology, reproduction, evolution, genetics and a survey of the plant kingdom.

123 LOCAL FLORA 1Q S Su 3 (0-6) Prereq 122. The use of a manual for the identification of the flowering plants. Methods of collecting, pressing, and mounting plants. Field work.


225 PLANT PHYSIOLOGY 1Q A W Su 5 (3-4) Prereq 122 and Chemistry 101-102, 160 or 123. The various processes of plants under controlled conditions in the laboratory and greenhouse.

250 ELEMENTS OF PLANT ECOLOGY 1Q S Su 5 (3-4) Prereq 123 and 225. An introduction to ecological principles, including environmental factors, dynamics of plant communities and vegetation types.

230 PROBLEMS IN PLANT PHYSIOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 225 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant physiology not taken up in regular courses.

235 PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 335 or 337 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant anatomy and cytotogy not taken up in regular courses.

236 PROBLEMS IN MORPHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 342 or 345 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant morphology not taken up in regular courses.

239 PROBLEMS IN PLANT ECOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 300, or 355, and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant ecology not taken up in regular courses.

240 PROBLEMS IN TAXONOMY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 355 or 386, and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant taxonomy not taken up in regular courses.

243 PROBLEMS IN MYCOLOGY AND PHYTOPATHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 342 or 345 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of mycology and plant pathology not taken up in regular courses.

FOR UNDERGRADUATES AND GRADUATES

237 PLANT VIRUSES 1Q a/q V 3-3 (1-4) Prereq 122 or Microbiology 200, Chem 202, Chem 209 and Physics 223 recommended. The nature and methods of studying viruses and virus diseases of plants; origin, spread and control of viruses; relation of viruses to genetics and morphogenesis.

238 MICROSTRUCTURE 1Q S V 2-3 (0-3/cr) R-5 Prereq 15 credits in Botany. Methods of preparing microscopic slides, with emphasis on the paraffin method.

239 PLANT ANATOMY 1Q A 5 (0-10) o/y Prereq 121, 122, 123, or =. The origin of organs and tissues and the anatomy of the vascular plants.

337 CYTOLOGY 1Q W 5 (3-4) Prereq 122, and Chem 101-102, 160 or =. The finer structures of the plant cell in relation to its functions.

341 MORPHOLOGY OF THE THALLOPHYTES 1Q A e/y 5 (0-10) Prereq 121, 122, 123, or =. The morphology and life histories of the algae and fungi.

344 MORPHOLOGY OF THE BRYOPHYTES AND PTERIDOPHYTES 1Q W o/y 4 (0-6) Prereq 121, 122, 123, or =. The morphology and life histories of the Bryophytes and Pteridophytes.

345 MORPHOLOGY OF THE SPERMATOPHYTES 1Q S o/y 4 (0-6) Prereq 121, 122, 123, or =. The morphology and life histories of the gymnosperms and angiosperms.

349 PRINCIPLES OF PLANT ECOLOGY 1Q S 5 (3-4) Prereq 225, 225, or =. Plants and plant communities in relation to their physical and biological environment, succession, stratification, periodicity and energy relationships; introduction to population problems. Offered at the Biological Station.

355 PLANT PHYSIOLOGY 1Q W Su 3 (0-6) Prereq 225, 225, or =. Identification, classification, distribution, life histories and morphological relationships of the algae of the Northern Rocky Mountains.

359 BRYOPHYTES 1Q Su 3 (0-7) Given only at the Biological Station. Prereq 121, 122, 123, or =. The taxonomy, morphology, and ecology of the Bryophytes of the Northern Rocky Mountains.

360 GENERAL SYSTEMATIC BOTANY 1Q S 5 (0-8) Given in summer at Biological Station for 6 credits. Prereq 121, 122, 123, or =. The identification and classification of vascular plants; principles of nomenclature; ecological distribution; methods of collecting, pressing, and mounting plants.

367 AGROLOGY 1Q W 5 (0-6) Given in summer at Biological Station for 5 credits. Prereq 121, 122, 123, or =. 365 recommended.

368 AQUATIC FLOWERING PLANTS 1Q Su 3 (0-7) Given only at the Biological Station. Prereq 365. Identification, classification and ecological distribution of the higher aquatic plants.

370 FOREST PATHOLOGY 1Q S Su 4 (2-4) Prereq 250 or 355, and For 290-291. The agencies of disease and decay of trees and structural timbers.

375 MYCOLOGY 1Q A 5 (3-4) Prereq 123. The classification and relationships of the fungi, with training in their collection, preservation, and culture.

385 GENETICS 1Q A 5 (3-4) Prereq Zool 201 or Bot 225. The mechanics of heredity, involving consideration of mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not allowed for this course and Zool 355.

386 EVOLUTION 1Q A 5 (3-4) o/y Prereq 121-123, 123, and 238. Current typology; Zool 101 or 104-105, and 106. The theories of evolution from the historical point of view; the nature of the evolutionary processes. The evidence for evolution, and the factors of evolution. Credit not allowed for this course and Zool 355.

470 PHYTOGEOGRAPHY 1Q A 4 (4-0) Prereq 355, 366, 386, and Geol 101-102 or 110. Vegetation types of the world and their history in North America.

490 SEMINAR IN BIOLOGY 1Q Su 1 (2-4). Special problems in biology. Offered at the Biological Station.

491 SEMINAR IN BOTANY a/q 1 (2-6-3) Recent literature in plant science; field trips.

FOR GRADUATES

502 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 1Q S 5 (3-6) Prereq graduate standing in a biological science. Credit not allowed for this course and Zool 502.

521 RADIATION-BIOLOGY 1Q Su 5 (6-15) Prereq Bachelor's degree: major preparation in Physics, Chemistry, or Biology, with at least one year of college work in each of the other two fields. Introductory nuclear physics and the influence of nuclear radiation on biological systems. Offered at the Biological Station.

529 ADVANCED PHYSIOLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

539 ADVANCED ANATOMY AND CYTOLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

549 ADVANCED MORPHOLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

550 GENERAL ECOLOGY 1Q Su 5 (6-15) Prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Community concepts including succession, afflition, periodicity and energy relationships; introduction to population problems. Offered at the Biological Station.

559 ADVANCED ECOLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

569 ADVANCED TAXONOMY a/q V 2-6 (0-3/cr) Prereq c/i.

573 ADVANCED MYCOLOGY AND PATHEOLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

600 ADVANCED BOTANICAL PROBLEMS a/q V (0-3/cr) R-15. For special investigation on a research problem under the guidance of a staff member.

699 THESIS a/q V R-15

COURSES OFFERED AT THE BIOLOGICAL STATION:

123, 134, 161, 341, 355, 365, 366, 368, 369, 390, 521, 519, 551, 569, 600, 699.
BUSINESS ADMINISTRATION

The School of Business Administration of Montana State University is fully accredited by the American Association of Collegiate Schools of Business. The School of Business Administration offers programs in Business Administration on a combined program is offered in Law and Business Administration wherein a student combines his fourth year in Business Administration leads to the degree of Bachelor of Science in Business Administration. To achieve the degree of Bachelor of Science in Business Administration, the student must:

(1) The pre-business administration, and
(2) The School of Business Administration

To continue work in the School of Business Administration the student must have completed 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 101-102-103, 201-202-203; ROTC (men); English 101-102-103; requirements from Group I and II of the School of Business Administration to be found in professional, executive or managerial positions in many types of business activity. The fields of specialization indicate the many types of jobs which graduates may secure in the fields of the financial distribution of goods, the administration of the financial affairs of business activity, and the rendering of business services. For example, graduates secure positions in banks, investment companies, insurance agencies, certified public accounting firms, government, and industrial, wholesaling or retailing establishments. Training is available for those who desire to teach business subjects in schools.

Successful completion of the four-year course in Business Administration leads to the degree of Bachelor of Science in Business Administration as described below. A combined program is offered in Law and Business Administration wherein a student combines his fourth year in business administration with first year law thus acquiring a Bachelor of Science in Business Administration at the end of the four-year period and the Bachelor of Laws at the end of a six-year period. Some students may obtain the degree of Bachelor of Arts in Business Administration by following the program listed below.

At the graduate level further opportunity is offered: to broaden the knowledge of the business environment, to do further specialization in a chosen area of concentration, to learn research techniques by carrying on a research project and in getting additional education in subject fields outside of business.

PRE-BUSINESS PROGRAM

A student, upon entering the University as a freshman, 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 101-102-103, 201-202-203; ROTC (men); English 101-102-103; requirements from Group I and II including Mathematics 112; requirements from Group II including Economics 201-202-203; requirements from Group III; Speech 111; Business Administration 180 or have typing proficiency of 25 words per minute as determined by a test administered by the School of Business Administration: Business Administration 202, and 250.

ADMISSION AND GRADE POINT REQUIREMENTS. Admission to the School of Business Administration requires junior standing with a "C" average on all credits earned. To continue work in the School of Business Administration the student must maintain a "C" average and must have completed the prerequisite work in Business Administration and for course work in the area of concentration selected.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION. To achieve the degree of Bachelor of Science in Business Administration, the student must:

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

b. Complete core courses: Business Administration 330, 290, 346, 287-288, 446, and one of the following, Business Administration 333, or 335, or 466.

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

e. Offer not less than a total of 70 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credit requirement are: All courses offered by the Department of Economics; English 304; History 333, 364; courses listed in the curricula of the areas of concentration.

f. Present not less than 56 credits (including Health and Physical Education) of work taken in departments and schools other than the School of Business Administration.

g. Offer 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 FOR THE DEGREE OF BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION:

ACCOUNTING

Students majoring in accounting will elect the accounting curriculum designed for industrial and commercial accounting or the public accounting profession.

Those students desiring to enter the industrial accounting field must complete the following requirements in addition to the basic requirements of the School of Business Administration:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 306-309—Cost Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 401—Income Tax</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A minimum of 14 credits chosen:</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 409-410—Advanced Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 305—Governmental Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 406—Managerial Accounting</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Those students preparing for the public accounting profession are required to complete the following:</td>
<td></td>
</tr>
<tr>
<td>Bus. Ad. 409-410—Advanced Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 303-304—Cost Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 401—Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 403-404—Auditing</td>
<td>3</td>
</tr>
</tbody>
</table>

Students planning to prepare themselves for the uniform C.P.A. examination may find it necessary to include the following recommended courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 305—Governmental Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 402—Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 405—Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 407—C.P.A. Review</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 305—Business Law</td>
<td>3</td>
</tr>
</tbody>
</table>

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 in preparation for managerial positions in financial work in large and small scale businesses.

Requirements for a concentration in Finance are:

- Bus. Ad. 408—Administrative Accounting
- Bus. Ad. 410—Intermediate Accounting
- Bus. Ad. 321—Real Estate
- Bus. Ad. 409—Investments
- Bus. Ad. 421—Business Cycles and Business Forecasting

18

GENERAL BUSINESS

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

- Bus. Ad. 408—Administrative Accounting
- Bus. Ad. 347—Managerial Economics
- Bus. Ad. 363—Advertising Principles
- Bus. Ad. 381—Marketing Management
- Bus. Ad. 411—Business Cycles and Business Forecasting
- Bus. Ad. 441—Personnel Management
- Bus. Ad. 444—Regulation of Industry

MANAGEMENT

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

Option A. Industrial Organization and Management

- Bus. Ad. 303—Cost Accounting
- Bus. Ad. 441—Personnel Management
- Bus. Ad. 444—Regulation of Industry
- Econ. 301—302—Labor Economics

24

Option B. Personnel Management and Human Relations

- Bus. Ad. 408—Administrative Accounting
- Bus. Ad. 411—412—Personnel Management
- Bus. Ad. 444—Regulation of Industry
- Psych. 334—Industrial Psychology
- Econ. 301—302—Labor Economics

25

MARKETING

The curriculum in Marketing is designed to prepare students in retailing, wholesaling, advertising, sales and administration, and market research.

30 credit hours in the area of marketing, including the following listed courses, are required:

- Bus. Ad. 363—Advertising Principles
- Bus. Ad. 364—Marketing Management
- Bus. Ad. 361—Industrial Management
- Bus. Ad. 362—Retailing Principles
- Bus. Ad. 368—Salesmanship
- Bus. Ad. 466—Market Survey Research
- Bus. Ad. 448—Administrative Accounting and Finance
- English 304—Letter and Report Writing

30

SECRETARIAL SCIENCE

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

- Bus. Ad. 183—Advanced Typewriting
- Bus. Ad. 184—185—186—Stenography
- Bus. Ad. 197—198—Advanced Stenography
- Bus. Ad. 190—191—Advanced Shorthand Transcription
- Bus. Ad. 192—Office Machines Practice
- Bus. Ad. 193—Beginning Secretarial Practice
- Bus. Ad. 194—Records Practice
- Bus. Ad. 282—Advanced Secretarial Practice
- English 304—Letter and Report Writing

44

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

To achieve the degree of Bachelor of Arts in Business Administration, the student must complete the general university and pre-business administration core courses listed above, the business administration major courses, and sufficient electives in Business Ad. courses to offer a minimum of 75 credit hours; the university requirements for graduation.

SPECIAL REQUIREMENTS FOR THE MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

In addition to the general requirements of the Graduate School, the candidate's preparatory work must include Econ 201-202-203; Bus Ad 201-202, 250, 320, 340, and 369; or equivalent courses. Students may enter the graduate program of the School of Business Administration without these courses, but they must be offered in addition to the required forty credit hours.

A maximum of nine credits may be for the required thesis. A minimum of thirty credits including a thesis for the master's degree in Business Administration is required. In addition to the master's general requirements for the Master of Science degree, a minimum of thirty credits must be completed.

ACCOUNTING

For Undergraduates

For explanation see Index under "Symbols"

201-202 ELEMENTARY ACCOUNTING 2Q A W 8 Su 4. The basic principles underlying accounting procedures, including the techniques of recording simple business transactions, closing the books, and preparing financial statements. Application of the above principles are developed as they apply to individual proprietorships, partnerships, and corporations.

203-204 COST ACCOUNTING 2Q 303 A W 2, 204 S 3 Prereq 202. The methods of accumulating material, labor and manufacturing costs; the development of specific cost systems applicable to various types of production situations, e.g., job order, process and standard cost systems. The use of cost information in relation to manufacturing activities, which includes reports to management, budget preparation, break-even analysis, and cost-volume-profit relationship.

305 GOVERNMENTAL ACCOUNTING 1Q A 3 Prereq 202. Accounting principles and problems applied to state and local governments, and other public institutions.

306-307 INTERMEDIATE ACCOUNTING 2Q 306 A S 4, 307 A W 4 Prereq 202. The fundamental accounting principles of valuation as applied to the determination of the income and the balance sheet and operating accounts; preparation of audit working papers, reports, and submission of the auditor's opinion.

405 ACCOUNTING SYSTEMS 1Q W 4 Prereq 307. The principles underlying the design and installation of accounting systems.

406 MANAGERIAL ACCOUNTING 1Q S 4 Prereq 304, 307. For accounting majors who expect to prepare and interpret accounting reports specifically designed to aid management. The controller's function in modern management; preparation and use of business budgets; importance of valid and reliable financial and cost data; other accounting control devices.

407 C.P.A. REVIEW 1Q S 5 Prereq 304, 406, 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.

408 ADMINISTRATIVE ACCOUNTING 1Q A W S 4 Prereq 202. Open only to non-accounting majors. To give students majoring in finance, marketing, management, or general business an understanding of the significance of accounting data without involvement
MARKETING
FOR UNDERGRADUATES
368 SALESMANSHIP IQ A W S Su 2. The fundamentals and techniques of the selling process, including the pre-contact, approach, demonstration, handling of objections, and the close.

FOR UNDERGRADUATES AND GRADUATES
369 MARKETING PRINCIPLES IQ A W S Su 4 Prereq Econ 201. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation.

361 INDUSTRIAL MARKETING IQ W 4 Prereq 369. Economic factors affecting marketing policy are analyzed. Deals with buying practices, channels, sales organization, industrial distributors, price, markets, and research policies.

362 RETAILING PRINCIPLES IQ A W 5 Prereq 369. Types of retail stores, location, buying, pricing, display, store selling, advertising, and cost control.

363 ADVERTISING PRINCIPLES IQ A S 4, Su 3 Prereq 369. The principles and techniques of advertising examined from the viewpoint of the businessman.

364 MARKETING MANAGEMENT IQ W 4 Prereq 369 and 369. Management of the sales force; planning, coordination, and control of the marketing program.

365 FOREIGN TRADE IQ W S 4 Prereq 369 (Prereq waived for seniors majoring in Political Science.) Theories, principles and methods of international trade.

461 MARKETING PROBLEMS IQ A Preq 369 and 6 other credits in marketing courses. Case studies of problems facing the marketing executive.

464 ADVANCED RETAILING IQ S 4 Prereq 366. Management problems of large and small retailers. Emphasis on individual student projects and research.

369 CREDIT AND CREDIT ADMINISTRATION IQ W 3 Preq 360 or Econ 301. The general nature and functions of credit, credit instruments, the credit executive, operation of the credit department, sources of credit information, acceptance of credit risk, establishment of credit limits and collections.

366 MARKET SURVEY RESEARCH IQ A S 3 Preq 250, 360. The design and conduct of sample surveys of consumer behavior. Intentions, habits, attitudes, and motivation.

368 MARKET ANALYSIS AND PLANNING IQ W 3 Preq 250, 360. Utilization of statistical and accounting techniques in analyzing past and planning future marketing performance.

479 MARKETING SEMINAR IQ a/q 2 R-6 Preq 15 credits in marketing and c/i.

FOR GRADUATES
590 MARKETING THEORY IQ A A critical analysis and synthesis of the marketing literature and marketing from the viewpoint of other disciplines.

561 CURRENT MARKETING PROBLEMS IQ a/q 2 R-6. Investigation of areas of current interest in marketing. Reports and discussions designed to develop an analytical attitude toward market problems.

599 RESEARCH IQ a/q V R-6. Special research problems.

699 THESIS IQ a/q V R-9.

SECRETARIAL AND BUSINESS EDUCATION

SECRETARY AND BUSINESS ADMINISTRATION
Not more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189, and 190-191 may be applied toward graduation by students not majoring in Business Administration, Secretarial-Home Arts, or earning a teaching major or minor in Business Administration.

FOR UNDERGRADUATES
190-191-192 ELEMENTARY TYPEWRITING IQ A W S 2 Prereq 181-182. Development of basic skills. With 1 H.S. entrance unit, no credit in 180; 2 units, no credit 180-181.

183 ADVANCED TYPEWRITING IQ A W S 2 Preq 192 or placement. Application of basic skills to production jobs.

184-185-186 STENOGRAPHY 3Q A W S 5. Theory, dictation, transcription. With 1 H.S. entrance unit, no credit in 184-185, 2 units, no credit 184, 185.


190-191 ADVANCED SHORTHAND TRANSCRIPTION 2Q W S 1 Preq 186 or placement. Concurrent enrollment in 187-188 required.

192 OFFICE MACHINES PRACTICE IQ A W S 2. Calculators and Adding.

193 BEGINNING SECRETARIAL PRACTICE IQ A W S 2 Preq 162. Duplicating, dictating, and transcribing machines.

194 RECORDS MANAGEMENT IQ A S 2. Prereq 182 and c/i. Alphabetic, Numeric, Automatic, Geographic, Subject, Decimal, and Soundex filing.

FOR UNDERGRADUATES AND GRADUATES
380 METHODS OF TEACHING SHORTHAND, TYPEWRITING, AND TRANSCRIPTION IQ A W 2. Prereq 185, 189 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

381 METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS IQ W 2. Prereq 201 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

382 ADVANCED SECRETARIAL PRACTICE IQ S. Alternate years. Prereq 183, 187, 190, 192, 193, 194, Eng. 304, and c/i. Practi cal application to typical secretarial activities. Required for secretarial majors.


384 GREGG SHORTHAND THEORY FOR TEACHERS IQ W Su 3 Preq 186 or teaching experience and c/i. Required of teaching majors and minors in Bus. Ad.

FOR GRADUATES
590 IMPROVEMENT OF INSTRUCTION IN OFFICE MACHINES PRACTICE IQ S 3. Prereq 183 or business teaching experience, and c/i. Lecture, methods, and rotation-plan techniques in teaching newest office machines.

551 IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE IQ S 3. Prereq 183 or business teaching experience, and c/i. Lecture, methods, and rotation-plan techniques in teaching secretarial machines. Duplication processes in producing the high school newspaper.

583 PROBLEMS IN TEACHING BOOKKEEPING IQ Su 3 Prereq 201 or bookkeeping teaching experience and c/i. Developing a course of study using the latest methods and materials.

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

585 UNIT COURSES IN BUSINESS EDUCATION IQ Su V R-10. Prereq major or minor in Bus. Ad. or business teaching experience and c/i. Several units may be taken in one or more semesters. Each unit will carry a specific designation of topic covered.

599 RESEARCH IQ a/q V R-6. Special research problems.

699 THESIS IQ a/q V R-9.

STATISTICS
FOR UNDERGRADUATES
250 INTRODUCTORY BUSINESS STATISTICS IQ A W S 4 Prereq 112. Methods of collection, analysis, and presentation of economic, social, and business data. Ratios, frequency distributions, averages, variability, sampling error, and measures of association.

FOR UNDERGRADUATES AND GRADUATES
353 SAMPLING AND STATISTICAL CONTROL IQ W 3. Prereq 250 or Math 125. The construction and historical analysis of economic time series including index number theory, techniques of the National Bureau of Economic Research, and regression studies.

459 BUSINESS STATISTICS SEMINAR IQ a/q V R-6. Prereq 6 credits of statistics in 300 courses and c/i. Projects or topics selected in consultation with instructor.
CHEMISTRY

is the science which seeks to determine the composition of substances, how their properties are related to their composition and when and how one substance reacts with another. A study of chemistry also includes the energy changes accompanying chemical reactions. The chemist is concerned with transforming raw materials and waste products into useful products; in making new products with new uses, such as plastics, alloys, medicinals, etc. A knowledge of chemistry is essential in many other professions. Biologists and physicians, for example, must understand the chemical nature of the materials of which living things are composed, the numerous chemical processes necessary to life, as well as ways of altering these materials or processes.

Opportunities for employment for graduates with a Bachelor's degree in chemistry are many and varied. In addition to positions in laboratories connected directly with chemical industries, with petroleum companies, etc., there are many jobs for chemists in laboratories connected with state and national government agencies, with hospitals, and with testing agencies. Good students are encouraged to continue their studies toward the M.S. or Ph.D. degrees in chemistry and are aided in obtaining graduate teaching assistantships or fellowships to help them finance these goals.

The normal four-year course leads to the degree of Bachelor of Arts. Most courses in chemistry involve considerable laboratory work. The M.S. and Ph.D. degrees are also offered. (See Graduate School).

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 and geometry. It is also recommended that the high school preparation include advanced Algebra, Chemistry and 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 Arts degree with a major in Chemistry: Chemistry 121-122-123, 345, 201, 202-203, 344, 352, 371, 372-373, 375, 376-377, 411, 412-413, and 8 credits selected from Chemistry 345, 346, 347, 348, 353, 355, 366, 463, 464, 474, 475, 476, 481, 482, 490. Eight credits in upper division courses in allied fields may be substituted for the optional credits with the approval of the department. At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or French or five quarters of German. Credit for Chemistry through 252 is required. Every student is required to pass a senior comprehensive examination.

CHEMISTRY CURRICULUM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
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</thead>
<tbody>
<tr>
<td>Chem. 121-122-123</td>
<td>5</td>
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</tr>
<tr>
<td>Math 116-117-118</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Eng. 101-102-103</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mill. Science or Air Science 101-102-103</td>
<td>2-0</td>
<td>2-0</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>2-3</td>
<td>2-3</td>
</tr>
<tr>
<td>(Optional Elective-Group II or III)</td>
<td>1-4</td>
<td>2-5</td>
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<tr>
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<td>14-19</td>
<td>14-17</td>
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Sophomore Year

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<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Chem. 261-262-263</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Math. 251-252</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German 101-102-103</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 264</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mill. Science or Air Science 201-202-203</td>
<td>2</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
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</tr>
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Junior Year

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<tr>
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</thead>
<tbody>
<tr>
<td>Physics 221-222-223</td>
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<td>5</td>
</tr>
<tr>
<td>German 213 &amp; 215</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 332</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 344</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td>14-17</td>
<td>14-17</td>
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</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
<th>Cr.</th>
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</thead>
<tbody>
<tr>
<td>Chem. 371-372-373</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 375-376-377</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective or Chem. 481-482</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 421-422-423</td>
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<tr>
<td>Electives</td>
<td>5-8</td>
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<tr>
<td>Adv. Chem. courses</td>
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<td>3-6</td>
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<th>Course</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>14-17</td>
<td>15-18</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102 GENERAL CHEMISTRY 2Q A W 4 (5-3). The basic laws, properties and reactions of elements and compounds. For students desiring a one year general course only.

103 SURVEY OF ORGANIC CHEMISTRY 1Q S Su 5 (5-4). Normally to follow Chemistry 101-102 as the 3rd quarter of chemistry for students in non-science majors desiring a one year general course. It is also open for credit to students who have completed Chemistry 122 or 123 or an equivalent two quarters of a full one year course in general or college chemistry.

121-122-123 COLLEGE CHEMISTRY 3Q A W Su 5 (5-4). Prereq. Placement above 001 in Mathematics entrance test or completion of Math 001. For science majors and those students wishing more than one year of chemistry. The principles and theories of chemical properties and reactions with emphasis on organic compounds, including qualitative analysis. Students who have completed Chemistry 121-122 may not receive credit for 121-122 but are eligible for credit in 123.

245 QUANTITATIVE ANALYSIS 1Q W Su 4 (3-6) Prereq 123. Gravimetric, volumetric and colorimetric methods of analysis.

291-292-293 ORGANIC CHEMISTRY 3Q A W 4 (4-4) Prereq 102 or 122.

FOR UNDERGRADUATES AND GRADUATES

344 ADVANCED QUANTITATIVE ANALYSIS 1Q A 3 (2-5) Prereq 245. The methods of quantitative analysis of mixtures and complex materials.

346 TECHNICAL ANALYSIS 1Q A 2 (0-6) Prereq 245. Quantitative analysis of materials of commercial importance.

349 INSTRUMENTAL ANALYSIS 1Q W Su V 2-5 (1 or 2—4 or 10) Prereq 245. Modern instrumental methods of analysis.

347 MICROCHEMICAL ANALYSIS 1Q W 3 (0-6) Prereq 245. The use of microchemical techniques in chemical analysis.

348 ADVANCED QUALITATIVE ANALYSIS 1Q A 3 (2-4) Prereq 123. The use of modern techniques and methods of qualitative analysis.

352 INORGANIC CHEMISTRY 1Q W 3 (3-0) Prereq 123 and 253. The principles of systematic inorganic chemistry.

355 INORGANIC CHEMISTRY LABORATORY 1Q W 2 (0-6) Prereq 123, 253, and c/l. The techniques in preparation of inorganic compounds.

356 ORGANIC QUALITATIVE ANALYSIS 1Q S Su V 2-5 (1 or 2—4 or 10) Prereq 263. Systematic methods of identification of pure organic compounds and mixtures; general class reactions of organic chemistry.

370 SURVEY OF PHYSICAL CHEMISTRY 1Q S 5 (5-4) Prereq 123 or 122 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 3Q A W S 3 (3-0) Prereq Math 252. The most important methods, results and problems of theoretical chemistry.

375-376-377 PHYSICAL CHEMISTRY LABORATORY 3Q A W S 1 (0-4) Prereq 254, and 371-372-373 or concurrent enrollment.

394 PHYSIOLOGICAL CHEMISTRY 1Q S 3 (3-0) or 5 (3-6) Prereq 260 or 263. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

431-432-433 CHEMICAL LITERATURE 3Q A W Su 1 (0-2) R-4 since Chem 423 R-2. Prereq 260 or 263, and a reading knowledge of German. Presentation and discussion of current literature of chemistry. Use of the library.

465-466 THEORETICAL ORGANIC CHEMISTRY 2Q a/q 3 (4-0) Prereq 253.

468 ADVANCED ORGANIC LABORATORY TECHNIQUES 1Q a/q 2 (0-6) Prereq 263 and c/l.

469 INSTRUMENTAL TECHNIQUES OF ORGANIC CHEMISTRY 1Q a/q 2 (1-4 or 6) Prereq as the modern instrumentation applied to organic problems.

474 CHEMICAL THERMODYNAMICS 1Q S 3 (3-0) Prereq 373. The principles of thermodynamics and their application to chemical systems.

475 ELECTROCHEMISTRY 1Q A 3 (2-4) Prereq 373. The principles and applications of electricity to chemical reactions.

476 RADIOCHEMISTRY 1Q S 3 (3-4) Prereq 102 or 122. The principles of nuclear reactions and application of radiochemistry.

481-482 ELEMENTARY BIOCHEMISTRY 2Q A W 4 (3-4) Prereq 262. Primarily for science majors.

490 PROBLEMS AND RESEARCH a/q V R-10 Prereq c/l. Independent library and laboratory work under the guidance of a staff member. An introduction to research methods.
### DRAMA

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

The Montana State University Drama Department offers work leading to the Bachelor of Arts in Drama and the Master of Arts degree in Drama.

**FOR UNDERGRADUATES**

- **321 THEATER PRODUCTION IN THE HIGH SCHOOL IQ S Su** 3. Problems of high school theater including playing selection, staging, acting, promotion, organization.

- **324 ADVANCED STAGECRAFT IQ S Prereq 131. Principles and practice in scene painting, properties, sound and music, and elements of lighting and costume. Students will work on major productions.**

- **324 STAGE COSTUMING IQ S 2 Prereq 112. History of costumes of various periods. Principles of adapting the period style to the period play. Students will work on costumes for major productions.**

- **324 ACTING FOR TELEVISION IQ W 3 Prereq 121. Theory and practice of acting before the television camera.**

- **324 STAGE LIGHTING IQ A 3 Prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment and in-theater practice in the construction, rigging, and handling of stage scenery. Students will work on production crews of major productions.**

- **324 STAGE MAKEUP IQ A W 2 (2-2) Prereq 373. Students will work on makeup for major productions.**

- **326-201-202 READINGS IN DRAMATIC LITERATURE 3Q A W S.**

- **112 INTRODUCTION TO THE THEATER 1Q A 2. A survey of the elements which make up the art of play production. The principles underlying all the arts.**

- **121 ELEMENTARY ACTING 1Q W S 3 (3-2).**

- **121 INTRODUCTION TO THE THEATER 1Q A 2. A survey of the elements which make up the art of play production. The principles underlying all the arts.**

- **131 ELEMENTARY STAGECRAFT 1Q A W 3 (3-4). Principles and practice of the construction and handling of stage scenery. Students will work on construction crews of major productions.**

- **233 ELEMENTARY DIRECTION 1Q W 3 (3-3) Prereq 121. Principles and practice of the directing of one-act and full-length plays. The production of the one-act play form will be considered and used in this course.**

- **234 ADVANCED DIRECTION 1Q A W 3 Prereq 121. Principles and practice of directing major productions.**

- **236-201-202 READINGS IN DRAMATIC LITERATURE 3Q A W S.**

- **301-302-303 HISTORY OF THE THEATER. 3Q A W S 3 e/y.**

- **FOR GRADUATES**

- **630 SEMINAR a/q 1.**

- **651-652-653 ADVANCED INORGANIC CHEMISTRY 3Q A W S 3 (3-0). Prereq 352 and 373. Special topics in advanced inorganic chemistry.**

- **654 CHEMISTRY OF THE TRANSITION ELEMENTS 1Q a/q 3 (3-0) Prereq 352.**

- **664 PHYSICAL ORGANIC CHEMISTRY 1Q a/q 3 (4-4) Prereq 373 and 464. Kinetics of organic reactions.**

- **671-672-673 ADVANCED PHYSICAL CHEMISTRY 3Q A W S 3 (3-0) Prereq 373.**

- **675 CHEMICAL BONDING 1Q W 3 (3-0) Prereq 373.**

- **677 PHYSICAL CHEMISTRY SEMINAR 1Q a/q 2 (2-0) R-6 Prereq 373.**

- **690 RESEARCH a/q V.**

- **699 THESIS a/q V R-15.**
441 ADVANCED MAKEUP 1Q S 2 Prereq 251 or experience and c/i. Principles and techniques of creating makeup for characters from dramatic literature. Students will work on makeup for major productions.

FOR GRADUATES

311-512-513 SEMINAR 3Q a/q V 2-4 Prereq 10 credits in drama courses or in Eng 301-302-303, 341-342-343, and c/i. Student may study the plays of a dramatist, inform himself about actors or playwrights, or consider drama in society and in the theatre. (1) to one student, special division courses.

521 THEATER ADMINISTRATION 1Q A 3 Prereq c/i. Administrative and organizational techniques in the operation of theater producing organizations.

531 SEMINAR IN HIGH SCHOOL THEATER PRODUCTION 1Q W Su 3 Prereq 251. Intensive study of play production in the secondary schools with particular emphasis upon direction and training of high school students.

541 ADVANCED PLAYWRITING 1Q A W S V 2-4 R-6 Prereq 306. Creative work of the student's own choosing, study of the structure, characterization and dialogue as used in the play form.

699 THESIS a/q V 2-5 R-15.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 CULTURAL ECONOMICS 1Q W 5. Institutional development of economics, nature, origins and problems of modern capitalism.

201-202-203 PRINCIPLES OF ECONOMICS 2Q a/q S 2. (201) Nature of American economy, capitalistic production, money and its role, economic instability; (202) Markets, value and price; (203) Functional distribution of income; selected economic topics.

111-112-113 ECONOMIC GEOGRAPHY (See Geography.)

FOR UNDERGRADUATES AND GRADUATES

301 MONEY AND BANKING 1Q A S 4 Prereq 203. Role of money; banks as suppliers of money; Federal Reserve System as regulator of money; monetary theories, history and policy.

302 SOCIAL SCIENCE METHODS (See Sociology.)

304 PUBLIC FINANCE 1Q W 4, Su 3, Prereq 203. Principles and problems of Federal financing.

305 STATE AND LOCAL TAXATION 1Q S 4 Prereq 203. Revenues and expenditures on state and local levels.

311-312 INTERMEDIATE ECONOMIC ANALYSIS 1Q A, W 3, 311 Su 4 Prereq 203. Theory of the firm; (311) Input analysis and welfare conditions.

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

321-322 LABOR ECONOMICS 2Q A W S 3 Prereq 203. (321) Institutional and legal background of labor problems; (322) Economics of labor markets.

324 INDUSTRIAL RELATIONS 1Q S 3 Prereq 203. Problems and public policy in labor-management relations.

325 SOCIAL SECURITY 1Q S 3 Prereq 203. Theoretical analysis and problems of public policy.

331-332 INTRODUCTION TO INTERNATIONAL ECONOMICS 2Q A, W, 3, 331 Su 3 Prereq 203. (331) Theoretical analysis; (332) Problems of policy-making.


345 ECONOMIC DEVELOPMENT 1Q W Su 3 Prereq 203. Theoretical determinants of economic growth in poor and rich countries.

355 PUBLIC UTILITY ECONOMICS 1Q A 3 Prereq 203. Analysis of costs and pricing policies; economic aspects of regulation.

356-570 ECONOMICS OF TRANSPORTATION 2Q W 3 Prereq 203. Economic significance, systems, freight rates and their relations to location of industries and market centers, regulation; (356) Waterways, highways, pipelines, and airways.

374 COMPARATIVE ECONOMIC SYSTEMS 1Q S alternate years. 4 Prereq 203. Capitalism, fascism, socialism, communism; evaluation.

375 THE RUSSIAN ECONOMY 1Q S 4, Su 3 Prereq 203.

376 MONOPOLY AND COMPETITION 1Q W 3 Prereq 203. Theories of imperfect markets and workable competition as applied to public policy.

378 ECONOMICS OF MONTANA 1Q W Su 3 Prereq 203. Factors and forces determining the economic well-being of the people of Montana.

390 AGRICULTURE ECONOMICS 1Q A 4 Prereq 203. Agricultural industry, supply of and demand for farm products, farm finance, taxation, agricultural policies.

392 CONTEMPORARY ECONOMIC PROBLEMS 1Q S 3 Prereq 203.

406 MONETARY THEORY 1Q W 4 Prereq 301.

410 ADVANCED ECONOMIC ANALYSIS 1Q S 4 Prereq 25 credits in economics including 311.

411 MATHEMATICAL ECONOMICS 1Q S 4 Prereq 312 and Math. 123.

419 ADVANCED ECONOMIC ANALYSIS 1Q S 4 Prereq 25 credits in economics including 311.

450 SEMINAR IN ECONOMICS a/q V 1-2 R-6 Prereq 12 credits in economics and c/i.

499 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq 12 credits in economics and c/i.

FOR GRADUATES

Students desiring to take graduate work in economics must be admitted to the Graduate School. To be admitted a student must earn credits in each of the following: Economics 406, 410, and 540. It is recommended that the student take Graduate Research in Economics (499) for 2 credits for each term.
EDUCATION  
The introduction of youth into America's complex culture has become a major task of the schools and a challenge to all teachers. The problem is intensified by the steadily increasing numbers of children who must be educated. This creates a growing need for teachers at all levels—elementary, secondary, and college—and requires that over half of the college graduates each year train for the profession of teaching.

Developing teaching competence involves securing a liberal education with special study in the fields in which the student is to teach, and study and practice in the area of teaching. In addition, the teacher must develop appreciation of people as individuals and as members of society because systematic application of teaching knowledge involves human relations in their most varied and vital aspects.

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

Many University graduates will wish to remain in Montana but teaching is a stimulating career which knows no geographical boundaries and Montana State University graduates go on to teach throughout the United States and its possessions. In increasing numbers, American teachers find teaching assignments available to them in foreign lands.

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, and research director; or it may be used to build up their backgrounds in the field or fields which they teach. Montana State University offers graduate work leading to the master's and doctor's degrees.

A six year program in school administration (two years of graduate work beyond the bachelor's degree) is also offered. This program is for practicing 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. Additional information may be secured from the Dean of the School of Education.

Other departments and schools which offer courses acceptable for Education credit include Art, Business Administration, English, Foreign Languages, Health and Physical Education, Home Economics, Journalism, Mathematics, Music, and Religion.

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

It prepares students for teaching, supervising, or administering in the public schools; for school library services; or for carrying on educational research.

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 Library Service for library work major in Education or in Library Service; those preparing for counseling, supervising, administering, or research work usually major in Education.

Students taking Education courses for purposes of meeting certification requirements will be given a series of tests for the purpose of obtaining additional information as to the student's ability and potential.

To enroll in courses in Education, a student must have at least a C average in all course work for which credit has been received. To continue work in Education, at least a C average must be maintained in all course work.

In order to register for student teaching, a student must have at least a C average in his teaching major, in his teaching minor and in all courses in Education, 30 credits in the teaching major and 20 credits in the teaching minor.

REQUIREMENTS FOR ADMISSION. Pre-education students preparing for secondary teaching should consult with their advisors as to courses to be taken in their freshman and sophomore years in preparation to Psychology, while it does not count toward the Education major, is prerequisite to all courses in Education and should be taken in the freshman or sophomore year. Those students preparing to teach in the elementary grades should take Introduction to Psychology during the freshman year.

All students who transfer to the School of Education must have at least a C average for all credits earned.

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 40 credits in Education, 35 credits: Education 200, 202, 301, 302, 303, 318, 340, 404, 407, 409, 490 and 492 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 45 or more credits in a teaching major. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in secondary education:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 101-102-103—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Genl. 111-112-113—Intro to the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Genl. 151-152-153—Intro to the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>History, Political Science, Sociology or Economics (to fulfill Group II Requirements)</td>
<td>4</td>
</tr>
<tr>
<td>Psychological Testing</td>
<td>1</td>
</tr>
<tr>
<td>Teaching Major Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
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Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 205—Educational Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Educ 305—Secondary School Teaching Procedures</td>
<td>4</td>
</tr>
<tr>
<td>Educ 312—The School Library in Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Educ Methods Course (in one or both teaching majors)</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Major Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 405—Student Teaching; Secondary</td>
<td>10</td>
</tr>
<tr>
<td>or 2 quarters, 5 credits each, may be arranged with director</td>
<td></td>
</tr>
<tr>
<td>Educ. 407—Curriculum Foundation</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 450—Guidance in the Elem and Sec School</td>
<td>4</td>
</tr>
<tr>
<td>Educ. 452—Educational Measurement</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Major or Minor Sequence, or Electives</td>
<td>4-12</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>

PREPARATION FOR TEACHING IN THE ELEMENTARY GRADES. Candidates must earn a minimum of 40 credits in Education, including the following minimum credits: Elementary Education 200, 202, 301, 302, 303, 318, 340, 404, 407, and elective courses totaling 5 or more credits selected from other courses in Education.

In addition, the student will complete work in the following areas: English, 23 credits; History and Political Science, 23 credits; Geography, 8 credits; Science, 13 credits; Mathematics, 5 credits; Health and Physical Education, 9 credits; Psychology, 10 credits; Art, 4 credits; and Music, 6 credits.

For elementary teachers, Group I requirements may be satisfied by General 125, 129, and Mathematics 129.

It is recommended that elementary teachers take the following Health and Physical Education courses as part of their required work in Physical Education during the freshman and sophomore years: men, 115, 116, 118; women, 116, 117, 118, 120.
Suggested curriculum in elementary education:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101-102—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Genl 125—Physical Science for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>Genl 126—Biological Science for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>Hist 101-102—The Development of Western Civilization</td>
<td>5</td>
</tr>
<tr>
<td>Math 103—Theory of Arithmetic</td>
<td>5</td>
</tr>
<tr>
<td>Psy1 110—Introduction to Psychology</td>
<td>2</td>
</tr>
<tr>
<td>RotC 101-102-103—Military or Air Science</td>
<td>10</td>
</tr>
<tr>
<td>or</td>
<td></td>
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</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 200—Orientation to Education</td>
<td>2</td>
</tr>
<tr>
<td>Educ 202—The Elementary School Child</td>
<td>3</td>
</tr>
<tr>
<td>Eng 231-232—Intro to Major American Writers</td>
<td>3</td>
</tr>
<tr>
<td>Geog 101—Elements of Geography</td>
<td>3</td>
</tr>
<tr>
<td>Music 122—Music Educ. in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>Speech 101-102—Principals of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Psy2 101—Child and Adolescent Psychology</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 199—First Aid</td>
<td>1</td>
</tr>
<tr>
<td>RotC 201-202-203—Military or Air Science</td>
<td>9</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
</tr>
<tr>
<td>or</td>
<td></td>
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</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 303-304—Elementary School Art</td>
<td>3</td>
</tr>
<tr>
<td>Educ 301-302-303—The Child and the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>Educ 314—Supervision and Teaching of Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>Genl 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Educ 346—Children's Literature</td>
<td>3</td>
</tr>
<tr>
<td>Hist 101-102-103—United States History</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 323—Teaching Phys Educ in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>P.Sci. 101—Intro to Govt. or P.Sci. 202—Am. Govt.</td>
<td>4</td>
</tr>
<tr>
<td>Elective course in Education</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
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</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 404—Student Teaching: Elementary (a/q)</td>
<td>10</td>
</tr>
<tr>
<td>Educ 407—Curriculum, minimum of 15 credits (see Course Requirements in Teaching Major and Minor Fields below)</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 273—School Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>16</td>
</tr>
</tbody>
</table>

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

Academic and professional requirements for University recommendation for certification in the elementary schools of Montana are as follows:

1. A Bachelor's degree from Montana State University or other approved institution of higher education.
2. Twenty-four or more quarter credits in Education designated by the Dean of the School of Education (see Preparation for Secondary Teaching below).
3. A teaching major (45 or more credits) and a teaching minor (30 or more credits) in fields commonly taught in high schools (see Course Requirements in Teaching Major and Minor Fields below).

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

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

Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarters preceding the quarter in which they desire to teach a statement of their intended teaching fields. Those students who expect to be certified to teach in the elementary grades will similarly submit a statement setting forth their proposed programs. Each candidate for certification who has not already received credit in Student Teaching (Educ 404 or 408) will be assigned definite quarters in which he must register for that course.

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

Freshman or Sophomore year: Psy1 110 (not counted among the 24 credits required for secondary certification)

Sophomore or Junior year: Educ 200, 2 credits: Educ 205, 4 credits: Junior year: Educ 305, 5 credits.

Senior year: Educ 401, a minimum of 10 credits, Educ 407, 3 credits.

SEQUENCE OF CERTIFICATION COURSES IN ELEMENTARY EDUCATION. Since certification for teaching at the elementary level is based on the Bachelor's degree in Elementary Education, see the preceding section on preparation for teaching in the elementary grades for requirements.

Montana State University does not offer a two-year diploma program leading to provisional elementary certification.

Variations from these patterns of required courses for elementary and secondary teaching certification is permissible only with the approval of the Dean of the School of Education.

PREPARATION FOR SCHOOL LIBRARIANS. The library service is designed to serve school and teacher-librarians to meet the requirements of the Northwest Association of Secondary Schools, and of the State of Montana. Minimum certification for schools of under 100 enrollment includes Education 343, 344, and 345. The student planning a more extended program should consult the library service instructor for advice on additional courses.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN EDUCATION. In addition to the general requirements of the Graduate School (except for the foreign language requirement), candidates must include a minimum of 10 credits of cognate work based upon a minimum of 30 credits of graduate work. Such cognate work may not include courses that carry a dual listing shared by Education and any other school of the University, and may not include any course that is primarily concerned with techniques or training in specific skills. The candidate will present a thesis for which 5 to 10 credits may be allowed.

SPECIAL REQUIREMENTS FOR THE MASTER OF EDUCATION DEGREE. Candidates must have completed two years of satisfactory teaching experience before the degree is conferred. At least 15 credits of graduate work must have been completed following the two years' teaching experience. All candidates for the Master of Education degree must be considered with a minimum of 15 graduate credits to meet the academic requirements of the University.

Two programs leading to the Master of Education degree are available:

A. Master of Education With Professional Paper. Candidates for this degree must complete 45 credits of graduate work, including a minimum of 15 credits in Methods of Educational Research (Educational Research or equivalent) and a professional paper (3 to 6 credits of the latter). Such cognate work may not include courses that carry a dual listing shared by Education and any other school of the University, and may not include any course that is primarily concerned with techniques or training in specific skills. The candidate will present a thesis for which 5 to 10 credits may be allowed.

B. Master of Education Without Professional Paper. Candidates who choose not to do the professional paper will be required to take a minimum of 54 credits of graduate study (in either Educational Research, Educational Administration, or equivalent) and a minimum of 10 credits of cognate work based upon a minimum of 30 credits of graduate work. They will take examinations covering the field of education—such examination to be arranged by the Dean of the School of Education.

MASTER OF ARTS IN GUIDANCE AND COUNSELING, and MASTER OF ARTS IN SCIENCE IN TEACHING. See statement under Graduate School.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
305 SECONDARY SCHOOL TEACHING PROCEDURES 1Q A W S Su 3 Prereq 209 and 205. Methods of planning, presentation, evaluation, and discipline. The materials of classroom teaching, demonstration, observation, and related activity involving student participation.

341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 1Q A 4 Prereq c/l. Objectives of library service, library routines, and library features and configurations. The library's place in governmental organization, library extension work.

400 STUDENT TEACHING: ELEMENTARY 1Q A W S Su V R-16 Prereq 301-302-303, 318 and consent of Director of Student Teaching. Students will do supervised teaching in cooperating schools in the library's place in governmental organization, library extension work.

405 STUDENT TEACHING: SECONDARY 1Q A W S Su V R-15 Prereq 305 or =, and consent of Director of Student Teaching. Observation and supervised teaching in Montana public schools under the supervision of co-operating teachers and staff members of the School of Education.

407 CURRICULUM FOUNDATIONS 1 Q A W S Su 3 Prereq 401 or 405 or concurrent registration. Implications of basic social, philosophical, and psychological factors in curriculum planning and organization in the secondary and elementary school; historical background of curriculum planning.

445 LIBRARY PRACTICE 1Q A W S Su 3 Prereq 20 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under the supervision of a professional librarian. Weekly meeting with Director of Library Service.

FOR UNDERGRADUATES AND GRADUATES

311 SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 1Q W Su 3 Prereq teaching experience and c/l. Analysis of current methods in the teaching of language arts in the elementary school as a unified program.

312 SUPERVISION AND TEACHING OF READING 1Q W Su 3 Prereq teaching experience and c/l. Characteristics of good reading programs and their development in accordance with present-day understandings of child development.

314 SUPERVISION AND TEACHING OF SOCIAL STUDIES IN THE ELEMENTARY SCHOOL 1Q Su 3 Prereq teaching experience. Curriculum trends, instructional practices, teacher-pupil relationship, and unit evaluation, integration with other areas, and use of community resources.

315 SUPERVISION AND TEACHING OF ARITHMETIC 1Q Su 3 Prereq teaching experience or c/l. Curriculum trends, instructional materials, research, and supervisory techniques relevant to a modern elementary school arithmetic program.

318 SUPERVISION AND TEACHING OF SCIENCE IN THE ELEMENTARY SCHOOL 1Q S Su 3 Prereq Gen 123, 126 and Educ 205. Curriculum planning, development, and use of instructional materials, teaching procedures.

326 TEACHING OF CONSERVATION 1Q S Su 3 Prereq Gen 300 and 12 credits in Educ and c/l. Current conservation programs and materials. Integral part of summer Conservation Education Workshop.

327 PROBLEMS IN CONSERVATION EDUCATION 1Q Su 3 Prereq 326 or 341 or 343 and 12 credits in Educ and c/l. Current conservation programs and materials. Integral part of summer Conservation Education Workshop.

330 CHILDREN'S LITERATURE 1Q W or S 4, Su 3. Survey of children's literature. The elementary school library.

335 THE SCHOOL LIBRARY IN TEACHING 1Q A W S Su 3. The use of books and libraries. The use of library materials in school enrichment and guidance. May not be counted in Library Service major or minor.

338 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 1Q A 4, Su 3. Objectives of school library service, library routines, and library features and configurations. The library's place in governmental organization, library extension work.

345 BIBLIOGRAPHY AND BOOK SELECTION 1Q W 4, Su 3 Prereq 341 or 343. Book selection and order work for the small library. Book lists and bibliographies.

346 LIBRARY REFERENCE MATERIALS 1Q S 4, Su 3 Prereq 341 or 343. Basic reference books and bibliographies.
c/l. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

FOR GRADUATES

531 ELEMENTARY CURRICULUM 1Q S 4, Su 3. Major trends in course content, grade placement, organization of materials, and evaluation of outcomes.


535 CURRICULUM WORKSHOP 1Q Su V R-10 Prereq teaching experience and c/l.

590 ADVANCED EDUCATIONAL PSYCHOLOGY 1Q W Su 3. General concepts and learning; motivation, interference reduction, reinforcement, teaching for permanence and transfer. Current research in field.

595 PRACTICE IN GUIDANCE 1Q S V 2-4 Prereq 456 or = and c/l. Practicum and counseling observation in neighboring schools. Seminar discussions weekly.

598 GUIDANCE INSTITUTE 1Q Su V 8-12 Prereq basic course in guidance and measurement and c/l. Guidance practices and techniques for teachers charged with guidance responsibilities.

591 COMPARATIVE EDUCATION 1Q S Su 3. A comparison of the education systems of United Kingdom, France, Germany, Italy, the Soviet Union, Japan and the United States.

594 PHILOSOPHY OF EDUCATION 1Q A Su 3 Leading philosophical points of view in Education; concepts of the individual, society, the educative process, and the role of education.

596 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W Su 3 Prereq 390 or 364 or = and c/l. The background of education in its broadest sense as found in the religious, the economic system, the family, the estate, and other social institutions.

570 EDUCATIONAL ADMINISTRATION 1Q A Su 4 Prereq teaching experience. Administrative relationships at federal, state, and local levels; responsibilities of county and district school superintendents.

572 ELEMENTARY SCHOOL ADMINISTRATION 1Q W Su 3 Prereq teaching experience. Problems in administering the elementary school. Role and relationship of the elementary principal.

573 SECONDARY SCHOOL ADMINISTRATION 1Q W Su 3 Prereq teaching experience. Administration of secondary education. Role of the principal and areas of competency.

575 SCHOOL SUPERVISION 1Q S 4, Su 3 Prereq teaching experience. Sources of school revenue; related costs, inequalities, legal limitations, and proper expenditures; relationship of foundation programs and district reorganization.

577 PLANNING THE SCHOOL BUILDING PROGRAM 1Q Su V 2-3 Prereq 570 or = and c/l. Procedures in determining building needs, site selection, planning the building, financing, and supervision of construction.

579 PERSONNEL ADMINISTRATION 1Q Su 3 Prereq 570 and c/l. Problems of public instruction which arise in determining personnel for a school district; selection, in-service training, assignment, supervision, and welfare.

581 COLLEGE TEACHING 1Q Su 3 Prereq 30 credits of graduate work. The type of teaching applicable to the college level.

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

596 SEMINAR a/q V R-10 Prereq c/l. Group analysis of problems in specific areas of education.

595 METHODS OF RESEARCH IN EDUCATION 1Q A Su 4. Research problems: their statement, organization, techniques, tabulation of materials, statistical concepts necessary for interpretation of research results.

597 EDUCATIONAL STATISTICS 1Q A Su 4 Prereq Math 125, Educ 452 and 593 or concurrent registration therein and c/l.

599 RESEARCH a/q V R-15 Prereq c/l.

699 THESIS OR PROFESSIONAL WRITING a/q V R-9.

600 DISSERTATION a/q V R-30.

EDUCATION COURSES TAUGHT BY OTHER SCHOOLS AND DEPARTMENTS

The following courses offered in other Schools and Departments of Montana State University may be presented for credit in the School of Education. Descriptions of these courses may be found under the Department or School which teaches the course.

Art 307 Methods of Teaching Secondary Art.

B Ad 200 Methods of Teaching Shorthand, Typewriting, and Transcription.

B Ad 381 Methods of teaching Bookkeeping and Basic Business.

B Ad 384 Gregg Shorthand Theory for Teachers.

B Ad 582 Problems in Teaching Bookkeeping.

B Ad 583 Problems in Teaching Gregg Shorthand.

B Ad 584 Problems in Teaching Typewriting.

B Ad 585 Unit Courses in Business Education.

Engl 461 Methods of Teaching English.

For L 301 Methods of Teaching Foreign Languages.

For L 401 Foreign Language Workshop.

H&PE 335 Methods of Teaching Physical Education.

H&PE 737 School Health Problems.

H Ec 321 Methods of Teaching Home Economics.

H Ec 421 Advanced Problems in Teaching Home Economics.

Math 300 Algebra for Teachers.

Math 304 Geometry for Teachers.

Mus 323-324-325 School Music.

Rel 380 Principles of Religious Education (for Education majors only).

COURSE REQUIREMENT

IN TEACHING MAJOR AND MINOR FIELDS

Students who wish to qualify for the 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. The type of teaching major 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 could in mind that a course may not be counted in more than one teaching major or minor.

ART

Teaching Major

Teaching Minor

(45 credits) (30 credits)

38 credits as follows:

Required Courses:

Art 129—Drawing 6

Art 129-129—Color and Design 6

Art 129-129—Crafts 6

Art 135—Sculpture 3

Art 140—Painting 3

Art 151—Life Drawing 3

Art 231-232-233—History or Art 9

Art 307—Methods of Teaching Secondary Art 3

7 credits from the following:

Electives:

Art 129-129—Crafts 2

Art 129—129—Fine Art 2

Art 139—Watercolor 3

Art 151—Life Drawing 1-2

BUSINESS ADMINISTRATION

Teaching Major

Teaching Minor

(45 credits) (30 credits)

38 credits as follows:

Required Courses:

B Ad 180—Advanced Typewriting 2

B Ad 192—Office Machines Practice 2

B Ad 193—Beg. Secretarial Pract. 2

B Ad 194—Records Management 2

B Ad 201-202—Elementary Accounting 4

B Ad 301—Methods of Teaching Shorthand 2

B Ad 381—Methods of Teaching Bookkeeping and Basic Business 2

B Ad 384—Gregg Shorthand Theory for Teachers 3

7 credits from the following:

Electives:

B A 320—Financial Institutions 4

B Ad 330—Principles of Insurance 3

B Ad 397-398-399—Business Law 6

B Ad 396—Marketing Principles 3

B Ad 393—Office Management 3

Econ 201-202-203—Principles of Economics 9
DRAMA (Minor Only)  

| Drama 121—Elementary Acting | Teaching Minor (31 credits) 2 |
| Drama 131—Elementary Stagecraft | 3 |
| Drama 225—Elementary Direction | 2 |
| Drama 425—Stage Lighting | 2 |
| Elective Drama | 3-5 |

Soc 111—Principles of Speech | 3-5 |
Soc 118—Voice and Diction | 3 |
Soc 261—Beginning Oral Interpretation | 2-4 |
Elective in Speech | 2-4 |

ECONOMICS AND SOCIOLOGY (Minor Only)  

| Anth 153—Social Anthropology | (31-33 credits) 5 |
| Econ 201-202-203—Principles of Economics | 9 |
| Econ 431—Money and Banking, or Econ 432—Intermediate Econ Analysis | 4 |
| Soc 101—Introductory Sociology | 5 |
| Soc 102—Social Problems | 5 |
| Electives: Soc 302, 304 or 402 | 3-5 |

ENGLISH  

| Teaching Major (90 credits) | Teaching Minor (30 credits) |
| Teaching Major (21 credits) | Teaching Minor (9 credits) |

Required Courses:  
- Eng 201—Advanced Composition 3  
- Eng 211—Intro to Major British Writers 6  
- Eng 220—Intro to Major American Writers 6  
- Soc 111—Principles of Oral Interpretation 3-5  
- Eng 312 or 342—Shakespeare and Contemporaries 3  
- Eng 371—The English Language 3  
- Eng 381—Literature for the High School Teacher 3  
- Eng 401—Methods of Teaching English 4  

Electives:  

The majors must elect at least 10 credits in the related fields below. Other electives may be chosen from courses in the Department of English. Students should elect one course in American literature, one in British literature, and one in creative writing. RELATED FIELDS: Drama 321 (strongly recommended), 101, 121, 241, 251, Journalism 101, 102, 103, Speech 101-102-103, 118, 214, 261 and 321. Three credits of Humanities will be allowed.

FOREIGN LANGUAGES  

Language taken in high school will be recognized by the University in fulfilling the equivalent for a teaching major or minor in a language. High school work will be evaluated on the basis of a placement examination certified by the Department of Foreign Languages.

Modern Languages (French, German or Spanish)  

| Teaching Major (42 credits or equivalent) | Teaching Minor (30 credits or equivalent) |
| Teaching Major (3 credits) | Teaching Minor (2 credits) |

Required Courses:  
- F. L. 101-102-103—Elementary 15  
- F. L. 213—Intermediate 4  
- F. L. 215—Advanced 4  
- F. L. 217—Review of Grammar and Composition 3  
- F. L. 301—302—303—Survey of Literature 6  

Electives:  
Any course numbered 200 or above  

Russian (Minor Only)  

| Teaching Major (30 credits) |
| Teaching Minor (24 credits or equivalent) |

Required Courses:  
- F. L. 101-102-103—Elementary 15  
- F. L. 213—Intermediate 4  
- F. L. 215—Advanced 4  
- F. L. 217—Review of Grammar and Composition 3  
- F. L. 301—302—303—Survey of Literature 6  

Electives:  

Classical Languages (Latin)  

| Teaching Major (45 credits or equivalent) | Teaching Minor (30 credits or equivalent) |
| Teaching Major (5 credits) | Teaching Minor (2 credits) |

Required Courses:  
- F. L. 101-102-103—Elementary 15  
- F. L. 213—Intermediate 4  
- F. L. 215—Advanced 4  
- F. L. 217—Latin Readings 5  

Electives:  
- F. L. 491—Seminar 17  

HEALTH AND PHYSICAL EDUCATION FOR MEN  

| Teaching Major (48 credits) | Teaching Minor (33 credits) |

Required Courses:  
- H&PE 100—Intro. to Physical Education 3  
- H&PE 109—First Aid 3  
- H&PE 210—Coaching—Football, Basketball, Track 6  
- H&PE 211—Coaching—Football, Basketball 4  
- H&PE 240—Art of Physical Education 2  
- H&PE 250—Dance Methods & Materials 2  
- H&PE 290—Methods of Teaching Phys. Ed. 3  
- H&PE 357—Elementary School Phys. Ed. 1  
- H&PE 358—Organization and Administration 3  

Electives: Other courses in the department 3

Notes: 1. Majors and Minors substitute courses 115-116-117, 118-119-120 for courses 101-102-103, 201-202-203 required of other lower division students.

2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.

HEALTH AND PHYSICAL EDUCATION FOR WOMEN  

| Teaching Major (48 credits) | Teaching Minor (33 credits) |

Required Courses:  
- H&PE 100—Intro. to Physical Education 3  
- H&PE 109—First Aid 2  
- H&PE 210—Coaching—Volleyball, Basketball 4  
- H&PE 290—Teaching Team Sports for Women; Teaching of Individual Sports for Women 4  
- H&PE 324—Dance Methods and Materials 4  
- H&PE 334—Methods of Teaching Phys. Ed. 3  
- H&PE 337—Elementary School Phys. Ed.Prog. 3  
- H&PE 365—Organization and Administration 4  
- H&PE 373—School Health Problems 4  
- H&PE 375—Personal Health Problems (Women) 3  
- H&PE 491—Seminar 1  
- H&PE 495—Testing in Phys. Ed. 3  
- H&PE 499—Teaching of College Physical Education Activities 2  

Electives: Other courses in the department 2  

Notes: 1. Majors and minors substitute courses H&PE 115-116-117, 118-119-120 for courses 101-102-103, 201-202-203 required of other lower division students.

2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.

HISTORY AND POLITICAL SCIENCE  

| Teaching Major (48 credits) | Teaching Minor (33 credits) |

Required Courses:  
- Hist. 101-102-103—Dev. of West. Civ. 15  
- Hist. 251-252—U. S. History 12  
- Hist. 257-258—American Government 1  

Electives: Must include 9 credits of upper division courses.

HOME ECONOMICS  

| Teaching Major (31-55 credits) | Teaching Minor (32-56 credits) |

Required Courses:  
- H Ec 102—Personal Management 5  
- H Ec 141—Introduction to Foods 5  
- H Ec 157—Clothing Construction 3  
- H Ec 161—Household Economics 3  
- H Ec 242—Meal Management 3  
- H Ec 254—Nutrition 3  
- H Ec 266—Clothing for the Family 3  
- H Ec 302—Home Planning 2  
- H Ec 303—Household Finishing 3  
- H Ec 308—Problems of the Consumer 3  
- H Ec 310—Home Living Center 4  
- H Ec 311—Home Management 2  
- H Ec 321—Methods of Teaching Home Ec. 4  
- H Ec 344—Food Conservation 2  
- H Ec 359—Applied Clothing Design 3  
- H Ec 365—Human Development 3  

Notes: 1. Majors and minors substitute courses H Ec 115-116-117, 118-119-120 for courses 101-102-103, 201-202-203 required of other lower division students.

2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.
JOURNALISM (Minor Only)  

**Teaching Minor (31 credits)**

**Required Courses:**
- Journ. 106—Introduction to Journalism 3
- Journ. 117—Elementary Photography 3
- Journ. 140—Introduction to Radio and Television 3
- Journ. 196—Current Affairs 1
- Journ. 270—Reporting 3
- Journ. 290—History and Principles of Journalism 3
- Journ. 316—School Publications 2
- Journ. 390—Principles of Advertising 3
- Journ. 383—Advertising Layout and Copy 3
- Journ. 455—Editorial Writing 3

**LIBRARY SERVICE (Minor Only)**

**Required Courses:**
- Edu 243—Org. & Adm. of the School Library 3-4
- Edu 344—Cataloging and Classification 3-4
- Edu 346—Bibliography and Book Selection 3-4
- Edu 346—Library Reference Materials 3-4

**Electives:**
- 14-18 credits from the following:
  - Edu 247—Audio-Visual Aids 3
  - Edu 342—Children’s Literature 4
  - Edu 441—Evaluation of School Library Service & Materials 2
  - Edu 442—Library Work with Children 2
  - Edu 444—Library Seminar 1-10
  - Edu 445—Library Practice 5
- Engl 381—Literature for the High School Teacher 3

**MATHMATICS**

**Teaching Major Teaching Minor**  

**Required Courses:**
- Math 116—College Algebra 5 5
- Math 117—Modern Trigonometry 5 5
- Math 118—Introduction to Analytic Geometry and Calculus 5 5
- Math 251—Sophomore Math I 5 5
- Math 252—Sophomore Math II 5 5
- Math 253—Sophomore Math III 5 5
- Math 300—Algebra for Teachers 5 5
- Math 301—Geometry for Teachers 5 5
- Math 302—History and Development of Mathematics 5 5
- Math 303—Calculus 1-10

**Other Electives:** Additional courses in mathematics may be selected to complete the 45 credits for the teaching major and the 30 credits for the teaching minor.

**SOCIAL SCIENCES (Major Only)**

**Required Courses:**
- Pol. S. 201—American Government 5
- Hist. 101-102—History of Western Civilization 15
- Hist. 111-112—U. S. History 15
- Pol. S. 202—American Government 5
- Hist. 251-252—History of Western Civilization 15
- Hist. 253—U. S. History 15
- Hist. 301—Introductory Sociology 5

**Electives:** Limited to upper division courses approved by the advisor; must include one upper division course in Sociology 16

**ENGLISH courses** prepare the student in the fields of literature, creative writing, composition, and teaching. Through separate schedules, he is allowed to emphasize that part of English which he feels to be most important to his future career.

A student planning to qualify for a secondary certificate based on either a teaching major or minor in science must, before the completion of his sophomore year, secure approval of his course offerings in science by the science-education advisor in the School of Education.

**SCIENCE**

A student planning to qualify for a secondary certificate based on either a teaching major or minor in science must, before the completion of his sophomore year, secure approval of his course offerings in science by the science-education advisor in the School of Education.

Science minors may be taken only by students with a teaching major in another science.

**LIBRARY SERVICE (Minor Only)**

**Required Courses:**
- Edu 243—Org. & Adm. of the School Library 3-4
- Edu 344—Cataloging and Classification 3-4
- Edu 346—Bibliography and Book Selection 3-4
- Edu 346—Library Reference Materials 3-4

**Electives:**
- 14-18 credits from the following:
  - Edu 247—Audio-Visual Aids 3
  - Edu 342—Children’s Literature 4
  - Edu 441—Evaluation of School Library Service & Materials 2
  - Edu 442—Library Work with Children 2
  - Edu 444—Library Seminar 1-10
  - Edu 445—Library Practice 5
- Engl 381—Literature for the High School Teacher 3

**MATHMATICS**

**Teaching Major Teaching Minor**  

**Required Courses:**
- Math 116—College Algebra 5 5
- Math 117—Modern Trigonometry 5 5
- Math 118—Introduction to Analytic Geometry and Calculus 5 5
- Math 251—Sophomore Math I 5 5
- Math 252—Sophomore Math II 5 5
- Math 253—Sophomore Math III 5 5
- Math 300—Algebra for Teachers 5 5
- Math 301—Geometry for Teachers 5 5
- Math 302—History and Development of Mathematics 5 5
- Math 303—Calculus 1-10

**Other Electives:** Additional courses in mathematics may be selected to complete the 45 credits for the teaching major and the 30 credits for the teaching minor.

**SOCIAL SCIENCES (Major Only)**

**Required Courses:**
- Pol. S. 201—American Government 5
- Hist. 101-102—History of Western Civilization 15
- Hist. 111-112—U. S. History 15
- Pol. S. 202—American Government 5
- Hist. 251-252—History of Western Civilization 15
- Hist. 253—U. S. History 15
- Hist. 301—Introductory Sociology 5

**Electives:** Limited to upper division courses approved by the advisor; must include one upper division course in Sociology 16

**ENGLISH courses** prepare the student in the fields of literature, creative writing, composition, and teaching. Through separate schedules, he is allowed to emphasize that part of English which he feels to be most important to his future career.

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Science minors may be taken only by students with a teaching major in another science.

**LIBRARY SERVICE (Minor Only)**

**Required Courses:**
- Edu 243—Org. & Adm. of the School Library 3-4
- Edu 344—Cataloging and Classification 3-4
- Edu 346—Bibliography and Book Selection 3-4
- Edu 346—Library Reference Materials 3-4

**Electives:**
- 14-18 credits from the following:
  - Edu 247—Audio-Visual Aids 3
  - Edu 342—Children’s Literature 4
  - Edu 441—Evaluation of School Library Service & Materials 2
  - Edu 442—Library Work with Children 2
  - Edu 444—Library Seminar 1-10
  - Edu 445—Library Practice 5
- Engl 381—Literature for the High School Teacher 3

**MATHMATICS**

**Teaching Major Teaching Minor**  

**Required Courses:**
- Math 116—College Algebra 5 5
- Math 117—Modern Trigonometry 5 5
- Math 118—Introduction to Analytic Geometry and Calculus 5 5
- Math 251—Sophomore Math I 5 5
- Math 252—Sophomore Math II 5 5
- Math 253—Sophomore Math III 5 5
- Math 300—Algebra for Teachers 5 5
- Math 301—Geometry for Teachers 5 5
- Math 302—History and Development of Mathematics 5 5
- Math 303—Calculus 1-10

**Other Electives:** Additional courses in mathematics may be selected to complete the 45 credits for the teaching major and the 30 credits for the teaching minor.

**SOCIAL SCIENCES (Major Only)**

**Required Courses:**
- Pol. S. 201—American Government 5
- Hist. 101-102—History of Western Civilization 15
- Hist. 111-112—U. S. History 15
- Pol. S. 202—American Government 5
- Hist. 251-252—History of Western Civilization 15
- Hist. 253—U. S. History 15
- Hist. 301—Introductory Sociology 5

**Electives:** Limited to upper division courses approved by the advisor; must include one upper division course in Sociology 16

**ENGLISH courses** prepare the student in the fields of literature, creative writing, composition, and teaching. Through separate schedules, he is allowed to emphasize that part of English which he feels to be most important to his future career.

A student planning to qualify for a secondary certificate based on either a teaching major or minor in science must, before the completion of his sophomore year, secure approval of his course offerings in science by the science-education advisor in the School of Education.

Science minors may be taken only by students with a teaching major in another science.
literature that they will find most rewarding in the training of high school students.

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 but not more than 60 credits in the department. The following courses in English are listed in the three schedules given below, one for students primarily interested in preparing for advanced work in literature, one for students seeking experience and guidance in writing, and one for students planning to teach in the secondary schools. By the beginning of his junior year the student should have decided definitely which of the schedules he is to follow.

Seniors in Schedules A and C should present for graduation a paper, critical or scholarly, prepared in English 498-499. Students in Schedule B may substitute for this a body of creative writing.

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

I. All prospective English majors are expected to take, in their freshman year, the Introduction to Humanities (General 121-122-123), 6 credits of which will be counted toward the English major. (General 350 may be counted as English credit toward the major)

II. All students are expected to take, in addition, English 201; English 342 or 343 and two quarters in one sequence and one in the other from English 211-212-213, and 231-232-233.

III. Students who are hoping to go on to do graduate study in English should supplement the above courses with the following required minimum.

SCHEDULE A: LITERATURE

English 385 (Chaucer): 3 credits from 491-492-493; 490-499. The remaining credits required for the completion of the 50 credits may be selected from courses in English, American, or General Literature numbered above 200. The maximum of courses up to 60 credits may include 305 and 401-402-403.

SCHEDULE B: CREATIVE WRITING

Students whose major interest is in 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. In addition to the basic departmental requirements:

SOPHOMORE YEAR

English 211-212-213 and 231-232-233; 3 credits may be taken from one sequence and 3 from the other; 202-203.

JUNIOR AND SENIOR YEARS

English 301-302-303, 305; 3 credits from 310-311-312, 341-342-343, 491-492-493; 401-402-403; 406. The 5 credits allowed beyond the 15 credits above may be taken from the courses in English Literature numbered above 300.

SCHEDULE C: TEACHING

Students planning to teach English in high school should supplement the core courses with the following required minimum:

English 211-213, 223-225, Speech 111 or 261. English 342 or 343, 371, 381, 431, 490-499.

Electives: 10 credits in the related fields below. Other electives may be chosen from courses in the Department of English, from courses in General Literature numbered above 200, and from the Related Field. Electives numbered 300-399 may be one course in American Literature and one British Literature.


IV. The foreign language requirement listed earlier in the catalog must be satisfied. Art 211-213-220; Music 135-136-137; Psychology 240; Philosophy 201-202, 100 and 340, plus at least two quarters of study in sociology and history (especially 241-242-243) are strongly recommended.

HONORS: Special comprehensive examinations must be taken and a paper submitted by students working for honors in English. An incoming senior, by the beginning of his last quarter, must have an index of 3.1 or better in credit courses numbered above 200. In this entire record as well as in his major field to become a candidate for honors.

SPECIAL REQUIREMENTS FOR THE MAJOR OF ARTS IN ENGLISH. In addition to the general requirements of the Graduate School, candidates are required to take nine credits of 200-300-500 and two credits of 600, unless they offer 498 or . The candidate will present a thesis for which 6 to 9 credits may be allowed.

COMPOSITION, LANGUAGE AND LITERATURE FOR UNDERGRADUATES

For explanation see Index under "Symbols".

001 PREPARATORY COMPOSITION 1Q A W 0. For freshmen who fail to establish an acceptable college performance in the placement examination.

101-102-103 FRESHMAN COMPOSITION 3Q A W S Su 3. Students who receive a grade of "A" in 102 may substitute 201 for 103. Genealogy and an organization of the elements of thought, structure, form, and variations of the sentence and paragraph.

NOTE: A special section will be reserved for foreign students. Prereq c/l.

106 CREATIVE COMPOSITION 1Q W S 3. Prereq 102 and c/l. The study and writing of verse and short fiction. (Credit in this course is sufficient for 103, but also permits, with c/l, sophomore entrance into 201.)

201-202-203 ADVANCED COMPOSITION AND CREATIVE WRITING 3Q A W S Su 3. Enter any quarter. Prereq 101-102-103; (301) Expository writing; (206) Short Fiction; (205) Techniques of poetry.

211-212-213 INTRODUCTION TO MAJOR BRITISH WRITERS 3Q S Su 3. Enter any quarter. A student with 6 credits of British Literature excluding Humanities cannot take this course. (211) Shakespeare through Milton; (212) Dryden through Blake; (213) Wordsworth through Yeats.

231-232-233 INTRODUCTION TO AMERICAN WRITERS 3Q A W S Su 3. Enter any quarter. A student with 6 credits of American Literature cannot take this course. (231) Franklin through Thomas Jefferson; (232) Hawthorne through Dickinson; (233) Twain through Hemingway.

301-302-303 CREATIVE WRITING 3Q A W S 2. Enter any quarter. Prereq 202 or 106. Fiction, with emphasis on the short story. Longer fiction requires a working plan, sample chapters, and c/l.

304 LETTER AND REPORT WRITING 1Q A W S 3. Common types of professional letters are written and analyzed, with emphasis upon tone, content, and form; organizing and writing factual reports.

306 THE WRITING OF DRAMA (See Drama)

381 LITERATURE FOR THE HIGH SCHOOL TEACHER 1Q A W S 3. The literature usually taught in grades 7 through 12 with intensive study of a few selections.

FOR UNDERGRADUATES AND GRADUATES

305 TECHNIQUES OF THE MODERN NOVEL 1Q A 3. The intentions and methods of such innovators as Conrad and Faulkner. Author content variable. Primarily for advanced students in the creative writing program, but also to aid the reading awareness of advanced students in the literary and teaching schedules.


341-342-343 SHAKESPEARE AND CONTEMPORARIES 3Q A W S Su 3. Enter any quarter. Prereq 9 credits of literature. (341) Tudor Drama; early liturgical drama, medieval mystery and morality plays, Elizabethan and Jacobean plays with emphasis upon historical development and stylistic characteristics. (342) Intensive study of three of Shakespeare's plays, reading of Shakespeare's plays with attention to dramatic conventions, Renaissance ideology, and Shakespeare's artistic development.

344-345 THEORIES OF DRAMA 2Q 2Q S 2 e/y. Enter either quarter of the fall and the spring. Prereq 1 quarter of 301-302. The critical literature from Aristotle to contemporary critics and the reading of representative plays from Aeschylus to the modern dramatists. (344) Tragedy; (345) Comedy.

360 INTRODUCTION TO LINGUISTICS (See General Courses).


FOREIGN LANGUAGES provide instruction and practice in speaking, reading, and writing the tongues of other peoples for commercial, political, and cultural purposes. Intercommunication among the nations of the world is particularly necessary as the increasing interdependence of the world's peoples makes it important to be able to communicate in the languages of other nations. Knowledge of a foreign language is also recognized as contributing greatly to the student's ability to use his own tongue. Such is particularly true of the classical languages, Latin and Greek, which are useful for studies of the literature and thought of ancient times. These classical languages, as well as modern French, German, Italian, Russian, and Spanish, are offered at the University.

Students of the modern languages are given an opportunity to supplement their classroom instruction with practice in a modern language laboratory.

The time needed to meet requirements for a major in one of the languages depends on language study prior to college entry, and concentration of studies in college. The department offers a Master of Arts degree as well as an undergraduate major in all the above listed languages except Greek, Italian and Russian.

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

HIGH SCHOOL PREPARATION. Language taken in high school may be recognized by the University both in meeting foreign language requirements and in fulfilling the requirements for a major in languages. Placement examinations are required of all entering students who continue languages in which high school entrance credit is presented. Students with one high school unit in a modern language will normally enter course 106; those with two units, course 215; those with three units, courses numbered 300 or over.

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 for a major in a foreign language varies with the student's high school preparation. Specific requirements are set forth below in connection with each language.

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 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.
4. Two quarters in history of Europe, chosen from the following: History 207, 208, 210, 215, 216, 311, 319, 315, 322.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 ELEMENTARY FRENCH 1Q A W Su 5.
102 ELEMENTARY FRENCH 1Q W S 5 Prereq 101 or =.
103 ELEMENTARY FRENCH 1Q A S Su 5 Prereq 102 or =.
111 FRENCH FOR ELEMENTARY TEACHERS 1Q a/q Prereq c/i. Grammar, conversation, and methods of teaching French in the elementary school.
213 INTERMEDIATE FRENCH 1Q A W S Su 4 Prereq 103 or =.
215 ADVANCED FRENCH 1Q W S 4 Prereq 213 or =.
217 FRENCH GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 FRENCH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF FRENCH LITERATURE 3Q A W S 2 Prereq 217.
305 ADVANCED FRENCH PHONETICS 1Q S 2 Prereq 217 or =.
311 MEDIEVAL FRENCH LITERATURE 1Q A 3 o/y Prereq 217.
321 FRENCH RENAISSANCE 1Q W 3 c/e Prereq 217.
321 17th CENTURY FRENCH LITERATURE 1Q S 3 c/e Prereq 217.
341 18th CENTURY FRENCH LITERATURE 1Q A 3 c/e Prereq 217.
351 19th CENTURY FRENCH LITERATURE 1Q W 3 c/e Prereq 217.
401 SEMINAR 1Q a/q V 2-3 R-15 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

GENERAL LITERATURE

181 CLASSICAL MYTHOLOGY 1Q a/q 2. Deities and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.
221 FOREIGN LITERATURES IN TRANSLATION 1Q A W S 2 R-4. Works of foreign authors in English translation. Periods and literatures vary each quarter to quarter. No knowledge of foreign languages necessary.
440 STUDIES IN COMPARATIVE LITERATURE 1Q a/q 3. The origin and dissemination of important literary ideas, trends, and movements.

GERMAN

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in German must meet the following

308-309-310 GERMAN LITERATURE TO 1870 3Q A W S Su 3. Enter any quarter. Prereq 12 cr of literature.

NOTE: 3 courses from the above Foreign Language sequence will be offered each year.

401-402-403 ADVANCED CREATIVE WRITING 3Q A W S 2. Su 1. Enter any quarter. Prereq 301-302-303. Fiction, with emphasis on the novel, although work in the short story may be continued in addition to the general requirements for graduation listed earlier in the catalog.
401-402-403 ADVANCED CREATIVE WRITING 3Q A W S 2. Enter anyquarter. Prereq 12 credits in literature. One major writer, American or British, will be given special attention each quarter; this writer will be given one quarter c/i. (Graduate students may substitute 1 q of Drama 541.)
411 MAJOR WRITERS 1Q A W S Su 3 Prereq 12 credits in literature. One major writer, American or British, will be given special attention each quarter; this writer will be given one quarter c/i.
423-424-425 POETRY 3Q A W S Su 3. Offered 2Q each year. Prereq 9 cr of literature. A chronological survey, with emphasis on close reading of representative works by major British and American Authors.

481 METHODS OF TEACHING ENGLISH 1Q S 4, Su 3. Objectives, materials and organization of the curriculum from grades 9 through 12; observation and practice in teaching and correcting student themes. Does not count in curricula A and B. Credit not allowed for this course and the identical course Educ 461.
485 INDEPENDENT STUDIES 3Q A W S 2-4, Su 2-4 R-4. Work in several fields of literature. For English seniors and graduate students, particularly seniors who are seeking honors.
479 SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 1Q S Su 3 Prereq Gen 360 or English 371. Subjects vary: linguistic problems in teaching reading and writing, in teaching English as a foreign language, and in phonemics, morphemics, and stylistics.
486-489 SEMINAR 3Q A W S 2-4. First instruction and practice in research, with creative project permitted, with consent of advisor, for students in schedule B.

FOR GRADUATES

500-501-502 SEMINAR: PROBLEMS IN LITERATURE. Enter any quarter. Prereq R-15. Studies in British and American literature offered from various points of view. (500) a period; (501) a person; (502) a genre.
506 WORKSHOP 1Q Su only V R-10 Prereq teaching experience and c/i.
699 SEMINAR: PROBLEMS IN RESEARCH a/q V R-6. Guidance in graduate subject and research.
699 THESIS a/q V R-6 to 9.
requirements in addition to the general requirements for graduation listed earlier in the catalog.

1. German 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent of another language.
4. Two quarters in history of Europe, chosen from the following: History 207, 208, 210, 215, 216, 211, 214, 215, 222.

FOR UNDERGRADUATES

101 ELEMENTARY GERMAN 1Q A W Su 5.
102 ELEMENTARY GERMAN 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY GERMAN 1Q A Su 5 Prereq 102 or =.
111 GERMAN FOR ELEMENTARY TEACHERS 1Q a/q 2 Prereq c/i. Grammar, conversation, and methods of teaching German in the elementary school.
200 ELEMENTARY GERMAN CONVERSATION 1Q a/q 1 R-2 Prereq 103 or =. Primarily for majors and minors.
213 INTERMEDIATE GERMAN 1Q A W Su 4 Prereq 103 or =.
215 ADVANCED GERMAN 1Q W S Su 4 Prereq 213 or =.
217 GERMAN GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215 or =.

FOR GRADUATES

699 THESIS a/q V R-15.

GERMAN

No major is given in German.

101 ELEMENTARY GERMAN 1Q A W Su 5.
102 ELEMENTARY GERMAN 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY GERMAN 1Q A Su 5 Prereq 102 or =.

FOR UNDERGRADUATES AND GRADUATES

300 GERMAN CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF GERMAN LITERATURE 3Q A W S 2 Prereq 217.
341 16th CENTURY GERMAN LITERATURE 1Q A 3 o/y Prereq 217.
351 19th CENTURY GERMAN LITERATURE 1Q A 3 o/y Prereq 217.
491 SEMINAR 1Q a/q V 2-3 R-25 Prereq 217. Works of outstanding writers.

ITALIAN

No major is given in Italian.

101 ELEMENTARY ITALIAN 1Q A 5.
102 ELEMENTARY ITALIAN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY ITALIAN 1Q S 5 Prereq 102.
213 INTERMEDIATE ITALIAN 1Q A S 3 Prereq 103.
215 ADVANCED ITALIAN 1Q W 4 Prereq 213.
217 ITALIAN GRAMMAR REVIEW AND COMPOSITION 1Q S 3 Prereq 215 or =.

LATIN

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

1. Latin 101 to 217 inclusive, or equivalent.
2. At least 18 credits selected from Latin Seminar (Latin 491). The development of the Romance languages from Latin to their present-day forms.
3. The Ancient World, History 203-204.
4. Greek 101-102 may be substituted for a Latin course above 217.

FOR UNDERGRADUATES

101 ELEMENTARY LATIN 1Q A Su 5.
102 ELEMENTARY LATIN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY LATIN 1Q S 5 Prereq 102.
213 INTERMEDIATE LATIN 1Q A Su 4 Prereq 103.
215 ADVANCED LATIN 1Q W 4 Prereq 213 or =.
217 LATIN READINGS 1Q S 3 Prereq 215 or =. Works of outstanding Latin writers.

FOR GRADUATES AND GRADUATES

491 SEMINAR 1Q a/q V 2-3 R-30 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

ROMANCE PHILOLOGY

575 INTRODUCTION TO ROMANCE PHILOLOGY 1Q S 3 o/y Prereq Foreign Language 217. The development of the Romance languages from Latin to their present-day forms.

RUSSIAN

No major is given in Russian.

101 ELEMENTARY RUSSIAN 1Q A 5.
102 ELEMENTARY RUSSIAN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY RUSSIAN 1Q S 5 Prereq 102.
213 INTERMEDIATE RUSSIAN 1Q A 4 Prereq 103.
215 ADVANCED RUSSIAN 1Q W 4 Prereq 213.
217 RUSSIAN REVIEW GRAMMAR AND COMPOSITION 1Q S 3 Prereq 215 or =.
301-302-303 SURVEY OF RUSSIAN LITERATURE 3Q A W S 2 Prereq 217.

SPANISH

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

1. Spanish 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.
4. Two quarters in history of Europe or Spanish America, chosen from the following: History 210, 215, 216, 285, 286, 287, 323.

FOR UNDERGRADUATES

101 ELEMENTARY SPANISH 1Q A W Su 5.
102 ELEMENTARY SPANISH 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY SPANISH 1Q A S Su 5 Prereq 102.
111 SPANISH FOR ELEMENTARY TEACHERS 1Q a/q Prereq c/i. Grammar, conversation, and methods of teaching Spanish in the elementary school.
213 INTERMEDIATE SPANISH 1Q A W Su 4 Prereq 103.
215 ADVANCED SPANISH 1Q W S Su 4 Prereq 213.
217 SPANISH GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215.

FOR UNDERGRADUATES AND GRADUATES

300 SPANISH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF SPANISH LITERATURE 3Q A W S 2 Prereq 217.

217 or =.
307 ADVANCED SPANISH COMPOSITION 1Q S 3 o/y Prereq 217.
331 CERVANTES 1Q A 3 o/y Prereq 217.
333 SPANISH DRAMA OF THE GOLDEN AGE 1Q W 3 o/y Prereq 217.
333 PICARESQUE NOVEL 1Q S 3 o/y Prereq 217.
353 19TH CENTURY SPANISH NOVEL 1Q A 3 o/y Prereq 217.
353 19TH CENTURY SPANISH DRAMA 1Q W 3 o/y Prereq 217.
361 CONTEMPORARY SPANISH DRAMA 1Q A 3 o/y Prereq 217.

FOR GRADUATES

699 THESIS a/q V R-15.

THE TEACHING OF FOREIGN LANGUAGES

591 METHODS OF TEACHING FOREIGN LANGUAGES 1Q S 3 Prereq 217 or = or concurrent registration. Fundamental principles, concepts, objectives, and methods involved in the teaching of a foreign language. Required of teaching majors and minors.
401 FOREIGN LANGUAGE WORKSHOP 1Q S Su 3 Prereq c/i. New methods and techniques in foreign language instruction. May be taken for education credit.

FOR GRADUATES

591 SEMINAR ON LANGUAGE TEACHING 1Q Su 12 Prereq 2 yrs of college language instruction or =. For language teachers. (NDEA participants only) (Credits may be applied toward a graduate degree in either languages or Education.)
FORESTRY is the scientific management of timber resources for continuous production, including the processing of wood products, and embraces as well the related fields of range, wildlife, watershed, and soil management.

The four-year and five-year curricula lead to the degree of Bachelor of Science in Forestry. The degrees of Master of Science in Forestry, Master of Science in Forest Conservation, Master of Forestry, and Master of Science in Wildlife Management are also offered (see Graduate School). Within the general forestry curriculum the student may specialize at the undergraduate level in Forest, Range or Wildlife Management, or in Wood Utilization. A five-year curriculum is offered in Forest Engineering. Laboratory and field work are distinguishing characteristics of forestry training, affording opportunities for putting into practice the theoretical knowledge emphasized in the classroom. A summer camp is not required. In lieu of this, however, all students who select Forest Management, Forest Engineering, Forest Recreation, Range Management, Wildlife Management or Watershed Management as their field of specialization will spend their sophomore spring quarter in camp on the Lubrecht Forest. Those selecting Forest Management or Forest Engineering will also be expected to spend their senior spring quarter on a field trip in the western states and in camp near Thompson Lakes. Those selecting Range Management or Forest Conservation will spend their senior spring quarter on extended field trips through the western states.

Graduates find positions in state and federal government service for work in public forests or in conservation or wildlife organizations. Others are employed by private logging, lumber, and forest products industries. Those who pursue graduate studies in forestry may secure positions in research as teachers in universities and colleges, or as consultants in special phases of forestry.

The School of Forestry is accredited by the Society of American Foresters. The courses and curriculum described below prepare the student for United States Civil Service positions and professional positions with individual states, some of which offer civil service examinations.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY. A minimum of 182 credits of work, not including credits obtained by required work in Military Science and Physical Education.

To continue as majors in the School of Forestry during the second, third and fourth years, students must have and maintain a grade point average of 2.0 on all credits for which registered and for which a final grade is received.

Each student is required to spend not less than two summers of three months each, in successful employment, gaining field experience through some type of approved work pertinent to his curriculum.

MASTER OF FORESTRY. Candidates must offer 45 credits in graduate courses including a professional paper.

A minimum of 25 graduate credits in Forestry is required. The remainder of the work may be in other acceptable areas of study, approved by the Dean of the School of Forestry and to the Dean of the Graduate School.

A professional paper must be prepared under the direction of the major professor. The subject matter of the paper must be approved by the Dean of the School of Forestry and be the Dean of the Graduate School.

Two copies of the professional paper must be submitted to the Dean of the Graduate School.

Examinations must be taken during the final month of the quarter in which the degree is offered.

A senior student in the School of Forestry who has earned a total of at least 122 undergraduate credits, but still lacks as many as 18 in his major field may be allowed to begin graduate work. All requirements for such enrollment must be submitted in writing to and be approved by the major adviser and the Dean of the Graduate School prior to registration for such work.

FIELD COURSE EXPENSE DEPOSITS. All students enrolled in Forestry courses will be charged a laboratory fee of $15.00 per quarter.

All seniors and sophomores must be prepared to spend all or part of the spring quarter off campus and should be prepared to make additional deposits to meet actual field expense.

CURRICULA LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN FORESTRY

FOREST MANAGEMENT

(All group requirements are not included)

With few exceptions, the first year and the autumn quarter of the second year are the same for all students enrolled for this degree. Students are expected to select a specific course of study before they begin the winter quarter of their second year.

First Year

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For 190-1-2—Survey of Forestry
Bot 111-112—Forest Botany
Bot 123—Local Flora
Chem 101-2—General Chemistry
Chem 160—Survey of Organic Chemistry
Eng 101-2—Fundamentals of Language
Math 113—Trigonometry
Speech 101—Principles of Speech
H&PE 101-2—Physical Education
ROTC 101-2-3—Military or Air Science

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Second Year

Autumn: For 210, 252, 290; Winter: For 300, 310, 360; Winter: For 401, 420, 451, 452; Spring: For 311, 312; Bot 370; Electives. H&PE 203; Speech 111; Econ 201.

Third Year

Fourth Year

Students who are interested in specific areas of forest management may, with the adviser's consent, substitute from the following list, courses pertaining to these areas: Silviculture: For 411, 412, 494; Fire Control: For 391, 400; Forest Recreation: For 245, 246, 247, 248; Conservation: For 360, 460, 471, 472; Watershed Management: For 390, 484; Policy and Administration: 422 and 423.

FOREST ENGINEERING

First Year

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Autumn: For 190; Chem 101; Eng 101; Math 113; H&PE 101; ROTC 101. Winter: For 192; Bot 111; Chem 102; Math 116; H&PE 105; ROTC 102. Spring: For 193; Bot 105; Chem 202; H&PE 103; ROTC 103.

Second Year

Autumn: For 210, 252, 290; Winter: For 300, 310, 360; Winter: For 401, 420, 451, 452; Spring: For 311, 300-1; Psych 343; Bot 370.

Third Year

Fourth Year

Students find positions in state and federal government service for work in public forests or in conservation or wildlife organizations. Others are employed by private logging, lumber, and forest products industries. Those who pursue graduate studies in forestry may secure positions in research, as teachers in universities and colleges, or as consultants in special phases of forestry.

The School of Forestry is accredited by the Society of American Foresters. The courses and curriculum described below prepare the student for United States Civil Service positions and professional positions with individual states, some of which offer civil service examinations.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY. A minimum of 182 credits of work, not including credits obtained by required work in Military Science and Physical Education.

To continue as majors in the School of Forestry during the second, third and fourth years, students must have and maintain a grade point average of 2.0 on all credits for which registered and for which a final grade is received.

Each student is required to spend not less than two summers of three months each, in successful employment, gaining field experience through some type of approved work pertinent to his curriculum.

MASTER OF FORESTRY. Candidates must offer 45 credits in graduate courses including a professional paper.

A minimum of 25 graduate credits in Forestry is required. The remainder of the work may be in other acceptable areas of study, approved by the Dean of the School of Forestry and to the Dean of the Graduate School.

A professional paper must be prepared under the direction of the major professor. The subject matter of the paper must be approved by the Dean of the School of Forestry and be the Dean of the Graduate School.

Two copies of the professional paper must be submitted to the Dean of the Graduate School.

Examinations must be taken during the final month of the quarter in which the degree is offered.

A senior student in the School of Forestry who has earned a total of at least 122 undergraduate credits, but still lacks as many as 18 in his major field may be allowed to begin graduate work. All requirements for such enrollment must be submitted in writing to and be approved by the major adviser and the Dean of the Graduate School prior to registration for such work.

FIELD COURSE EXPENSE DEPOSITS. All students enrolled in Forestry courses will be charged a laboratory fee of $15.00 per quarter.

All seniors and sophomores must be prepared to spend all or part of the spring quarter off campus and should be prepared to make additional deposits to meet actual field expense.
WILDLIFE MANAGEMENT

Second Year
Autumn: For 210, 252, 290; Physics 111; H&EPE 201; ROTC 201.

Third Year
Autumn: For 200, 310, 360; Zool 101; H&EPE 203. Winter: For 330, 382, 370; Bot 366. Spring: For 311, 499; Jour 334; Zool 201; Bot 370.

Fourth Year

CURRICULA LEADING INTO THE DEGREE OF BACHELOR OF SCIENCE IN FOREST CONSERVATION

FOREST CONSERVATION

(All group requirements are not included)

CONSERVATION is the scientific management of natural resources. The term management as used here pertains more specifically to the "wise use" of our renewable natural resources and involves in many instances the multiple and coordinated use of several resources existing on the same, adjacent or associated areas. Forests and forestry play an important part in the solution of many conservation problems, however, the foresters' training is from necessity specialized to meet the demands of the profession and the accreditation of most conservation problems demand a broader training than that called for in the professional fields of Forestry, Agriculture, Geology, Ecology, Hydrology and others. On the other hand, it is generally conceded that there is a limited field of employment for the Conservation Generalist.

For these reasons, it is desirable for the student to specialize in one of the several fields that play an important part in Conservation, but to have a broad background of basic courses. The four year curriculum leads to the degree of Bachelor of Science in Forest Conservation. The Master of Science in Forest Conservation is also offered.

This training prepares the graduate for employment with Federal and State Conservation agencies that usually require the applicant to qualify under a civil service examination. Some positions are available with private companies.

High School preparation and special requirements for the degree in Forest Conservation are the same as for Forestry.

With few exceptions the first year is the same for all students enrolled for this degree. With the assistance of their advisors, students are expected to select a specific course of study before they begin the autumn quarter of their second year.

First Year

Bot 111-112—Forest Botany A W S Cr 4 4 3
Bot 123—Local Flora Cr
Chem 101-2—General Chemistry 4 4 5
Chem 180—Survey of Organic Chemistry 4 4 5
Eng 101-2—Freshman Composition 3 3 3
For 191-2—Survey of Forestry 1
Math 113—Trigonometry 3 3 3
Speech 101—Principles of Speech 3 3 3
H&EPE 101-2—Physical Education 1 1 1
ROT C 101-2-3—Military of Air Science or
16-18 16 20

FOREST RECREATION

Second Year
Autumn: For 210, 252, 290; Zool 101; H&EPE 201; ROTC 201.

Third Year
Autumn: For 200, 360, 380; Geol 101; Electives. Winter: For 250, 285, 291; Geol 102; Electives. Spring: For 385; Jour 334; Zool 201; ROTC 203.

Fourth Year
Autumn: Anthrop 361; For 422, 432; Zool 309. Winter: For 370, 421, 494; Pol Sci 362; Electives. Spring: For 312, 361, 423, 460; Zool 368; Electives.

RANGE CONSERVATION

Second Year
Autumn: Econ 201; For 210, 252; Phys 111; H&EPE 201; ROTC 201. Winter: Bot 225; Econ 203; For 250; Psych 110; H&EPE 202; ROTC 202. Spring: Bot 255, 285; For 252; H&EPE 203; ROTC 203.

Third Year
Autumn: For 300, 462; Geol 101; Jour 334. Winter: Bot 366; For 352, 370; Electives. Spring: For 309, 361, 411; Electives.

Fourth Year

SOIL AND WATER CONSERVATION

Second Year
Autumn: Econ 201; For 210, 252; Phys 111; H&EPE 201; ROTC 201.

Winter: Bot 225; Econ 203; For 250, 285; Psych 110; H&EPE 202; ROTC 203.
Spring: Bot 255, 285; For 252; H&EPE 203; ROTC 203.

Third Year
Autumn: For 310, 360, 390; Geol 110; Electives. Winter: Bot 366; Econ 360; For 352, 370; Electives. Spring: For 355; For 361, 411; Jour 394; Electives.

WATERSHED MANAGEMENT

Second Year
Autumn: For 210, 252, 290; Physics 111; H&EPE 201; ROTC 201. Winter: Bot 225; For 255, 291; Zool 105; H&EPE 202; ROTC 202. Spring: Bot 255; Econ 201; For 250, 285, 293; H&EPE 203; ROTC 203.

Third Year
Autumn: For 300, 310, 360; Geol 110. Winter: For 301, 352, 450, 490; Phys 112. Spring: For 311, 464; Phys 113; Electives.

Fourth Year
Autumn: For 460; Econ 201; Electives. Winter: For 470, 472, 490; Electives. Spring: For 471, 481, 490; Econ 202; Electives.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

50 SLIDE RULE 1Q a c 0 (3-0) Prereq Math 100 and 113 or concurrent registration. Choice of prerequisite to be based on the solution of mathematics problems commonly encountered in the field of forestry.

190-191-192 SURVEY OF FORESTRY 3Q A W S 1 (1-0). Enter any quarter. General survey of the field and subject matter of forestry and introduction to the profession; functions and characteristics of forests, their benefits, use, distribution, importance, and conservation.

200 ELEMENTARY FOREST MENSURATION 1Q S 4 (2-0) Prereq sophomore standing in the School of Forestry. The fundamentals and field problems in tree and timber stand measurements, including site determination, tree form, volume tables, timber cruising, log scaling, forest mapping and growth determination.

210 SOILS 1Q A W 4 (3-4) Prereq Chem 101-102 or Geol 104; soils of forest and range land, morphological, physical, and chemical properties; soil erosion control.

230 ELEMENTS OF FOREST PROTECTION 1Q S 3 (3-0) Prereq sophomore standing, Bot 111 and For 290-291. Protection of the forest against enemies other than fire and disease; insects, wildlife, man, grazing, and climatic factors.


251 PLANE TABLE SURVEYING 1Q S 5 (2-4) Prereq Math 113 or 151. Care and use of plane table telescope alidade and rod. Introduction to differential leveling, stadia surveying, plane table survey methods. Adjustment of horizontal and vertical controls. Topographic map construction. Primarily for anthropology and geology majors, not for forestry and wildlife majors.

252-253 SURVEYING 2Q A 4 (5-0), S 5 (2-8) Prereq Math 113 or 151 with a grade of C or better and For 50 prior to or concurrent registration. Care and use of tape, staff and compass. Abney level, Engineer's level, transit, plane table, and telescopic alidade. Introduction to differential leveling transit, stadia, and plane table survey, public land survey methods; (253) Instrument adjustment. Establishment of a triangulation, horizontal and vertical control by transit and plane table. Topographic surveys and maps obtained by various combinations of instruments. Solar observations. Introduction to earthworks.

259 FOREST AESTHETICS 1Q W 4 (3-3) Prereq sophomore standing in the School of Forestry and c/l. Historical development and problems in recreational use of forests and wild lands. Appreciation of natural landscapes. Values. State, national, and wilderness areas and introduction to planning. Field trip.

259-291 DENDROLOGY 2Q A W 3 (2-3) Prereq sophomore standing in the School of Forestry and c/l. The taxonomic relations and distribution of the principal forest and ornamental trees of the United States and Canada. Identification, uses, range, and silvicultural characteristics.

FOR UNDERGRADUATES AND GRADUATES

300-301 FOREST MENSURATION 2Q A W 4 (3-3) Prereq 200.
(300) The application of statistical methods to forest mensuration; introduction to the principles of forest management, silviculture and soils to small woodland holdings.

309 FARM FORESTRY 1Q S 3 (2-4) Prereq junior standing in the School of Forestry. The application of the principles of forest mensuration, management, silviculture and soils to small woodland holdings.

310 SILVICULTURAL METHODS 1Q A 4 (4-0) Prereq Bot 250 and 255. The foundations of silviculture on an ecological basis. The effects of climatic, edaphic, and biotic factors on the growth and development of trees and stands: the information that is fundamental to understanding the regeneration, care, and protection of forest stands.

311 SILVICULTURAL METHODS 1Q A 5 (4-4) Prereq 310. The production of forest crops; reproduction methods, intermediate cuttings, and cultural operations. Field trips.

312 SEEDING AND PLANTING 1Q S 3 (2-4) Prereq 311. Artificial propagation of the forest; care of seed and seedlings; planting and testing of forest tree seed; direct seeding; nursery practice; forest planting. Field trips.


321 FOREST FIRE PLANS 1Q W 3 (3-0) Prereq junior standing in the School of Forestry and 300. Area pre-suppression fire plans, smoke management, small-scale project fires, fuel type mapping, and fire prevention techniques.


322 WOOD GLUING AND PHYSICAL PROPERTIES 1Q S 3 (3-0) Prereq 340 and junior standing in the School of Forestry. Theory and practice of wood gluing. Familiarization with glues, and Gluing equipment and methods of use in the United States. Principles of wood construction. Bent wood, painting and finishing wood. Laboratory and field. Credit not allowed for this course and For 452. A survey of logging industries on location.

323 ADVANCED SURVEYING 2Q W 2 (6-0) Prereq 250, 252-255, and c/i. (300) Simple curve definitions, their theory and use; (351) selected topics of surveying not covered in For 253-255.

322 AERIAL PHOTOGRAMMETRY 1Q W 3 (1-4) Prereq 253 or 255. The elements of photogrammetry and their applications with emphasis on aerial photograph analysis and mapping. Application of photogrammetric methods to planimetric and topographic mapping. Field trips.

323 TIMBER MECHANICS 1Q W 3 (0-0) Prereq Physics 111. Graphical and analytic statics applied to simple structures; simple beam and truss design: use of timber connectors.

324 APPLIED AERIAL PHOTO INTERPRETATION 1Q S 3 (0-6) Prereq For 252 and course work between laboratory and field. Map compilation, cover and type mapping, mensurational techniques, and topics of individual interest.


361 RANGE FORAGE PLANTS 1Q S 4 (0-8) Prereq 360, Bot 306 and c/i. Economic range forage plants; forage value to different kinds of range animals; management problems in their use.

370 GENERAL WILDLIFE MANAGEMENT 1Q W 4 (4-0) Prereq c/i. The management of wildlife as a land resource.

380 THE RENEWABLE RESOURCES AND THEIR CONSERVATION 1Q A W 3 (3-0) Prereq 210 and Bot 255. The interrelationships of resource conservation problems and programs. The need for conservation, the role of our renewable resources and how to manage their development and use to meet the needs of our expanding economy. The relationship of utilization facilities and the agencies involved in their application, not open for doctoral credit.

385 FOREST RECREATION 1Q S 4 (2-4) Prereq 243. Physical development of objectives and planning in the recreational use of forests and other wild lands. Class and field.

390 RECREATIONAL UTILITIES 1Q W 3 (1-4) Prereq c/i. Theory and design of service and sanitary utilities for recreational areas. Laboratory and field.

388 RECREATIONAL STRUCTURES 1Q W 2 (1-3) Prereq c/i. Elements of planning, design, and construction of recreational structures, including ski runs, tobogan slides, fishing, boating, hunting, swimming, camping sites, and other recreational features. Field trips.

400-401 FOREST MANAGEMENT SQ W 5 (5-5) S 5 Prereq 300-301, 311 and 420 (420 may be taken concurrently) (400) Organization and management of forest properties; determination of allowable cut and regulation of the growing stock. (401) Emphasis on field work necessary in applying forest management, timber harvesting, determination of growth, and timber marking.

410 REGIONAL SILVICULTURE 1Q S 2 (5-Field) Prereq 310 and 311. Application of the principles of silviculture to commercial forest species, types, and regions of the United States.

411 FOREST SOIL CLASSIFICATION AND MAPPING 1Q S 4 (3-4) Prereq 210 and Geol 101. Classification of forest soils as natural bodies. Mapping of forest soils, land use classes, and forest site classes.

412 ADVANCED FOREST SOILS 1Q S 3 (2-4) Prereq 210 and 310, Bot 223 and 250. Relationship of the chemical, physical and biological properties of soils to forest soil development. Major groups of soil in the United States. Policy objectives, programs, and groups.

420 VALUATION 1Q A 4 (4-0) Prereq 310 and 311. Theory and process of estimating value of forest properties and enterprise.

421 FOREST ECONOMICS 1Q W 5 (3-0) Prereq Econ 201 and For 240. Economic problems and principles involved in the use of the forest resources and in the distribution of forest products.

422 LAND USE POLICY 1Q A 4 (4-0) Prereq c/i. The development of ranges, recreational areas, and wilderness areas in the United States. Policy objectives, programs, and groups.

423 FOREST ADMINISTRATION 1Q S 2 (2-0). Principles and problems of organizing and dealing with personnel in executing private and public forest policies.

440 MECHANICALLY DERIVED WOOD PRODUCTS 1Q A 3 (3-0) Prereq junior standing in the School of Forestry. History, status, developments in residue utilization. Relationships between present day trends and problems. Brief survey of drying operations.


442 SEASONING AND PRESERVATION 1Q W 3 (3-0) Prereq junior standing in the School of Forestry. Principles involved in the drying and preservation of wood. Related wood anatomy. Application to present commercial practices.

450 HYDRAULICS 1Q W 2 (2-0) Prereq c/i. Elementary study of the physical properties of water.

451 MECHANICAL PROPERTIES OF WOOD 1Q A 3 (2-2) Prereq 340. Mechanical factors related to strength of wood; elementary graphic statics; elementary stress analysis.

452 LOGGING 1Q A 3 (2-4) Prereq 351. Equipment and methods of logging in the United States; calculation of logging costs; the effect of logging on other forest values; fundamentals of a logging plan. Field trips.


454-455-456 FOREST ENGINEERING 3Q A W 4 (4-4-4) S 6 Prereq 252-253, 330-351, 454 and 455 are for engineering majors only. (454) Selection of forest sites for a given area. Location of main and spur roads (Field work). (455) Earthwork calculations, mass and earth movements. Principles of civil engineering necessary to complete the logging plan. (456) Prereq For 453 or 455. Application of forest engineering, methods and techniques, time and cost studies. (Field work.)

457 TIMBER DESIGN 1Q W 4 (2-4) Prereq 353 and mathematics 353. Forces in three dimensions; combined stresses; columns; design of simple beams for deflection; joint analysis using timber connectors; post and beam construction; and laminated wooden arches.

460 RANGE TECHNIQUES 1Q A 4 (2-3) Prereq 360 and c/i. Range surveys, conditions and trend analysis, utilization analysis, dam and appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 1Q W 5 (3-4) Prereq 360 and c/i. The elements of animal nutrition. The nutritional characteristics of livestock and big game animals.

462 RANGE LIVESTOCK PRODUCTION 1Q S 2 (2-0) Prereq 360 and c/i. Selection, production, and management of range livestock.

463 RANGE ECONOMICS 1Q S 3 (3-0) Prereq 360, Econ 201 and c/i. Range economics and economic analysis of range value and income, tenure, taxation, fees and leases, economic utilization of forage, economics of range improvements, ranch organization and appraisal.

464 RANGE ADMINISTRATION 1Q S 2 (2-0) Prereq 360 and c/i. Legislation and policies developed in the acquisition of federal, state and private range lands. The organization and methods for regulation of grazing on public lands.

465 REGIONAL RANGE MANAGEMENT 1Q S 6 Prereq 460, 481, 482 and c/i. Regional range management problems and situations. Work done on senior spring trip.

470 ADVANCED WILDLIFE MANAGEMENT 1Q W 5 (4-2) Prereq Zool 303, 309 or 360; Bot 250 or 355 and c/i. The application of...
### General Courses

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 a particular field is required for a degree is strictly limited (see Graduation Requirements). But it has been found advisable to provide certain degree-curricula which overlap two or more fields; these are described below.

### Undergraduate and Graduate Courses

University students are compelled to choose a major in which a degree is offered. The curricula in Biological Sciences, Liberal Arts, Physical Sciences, and Business (except for Technical and Professional Sciences), are examples. It has also been found desirable to provide particular courses which overlap two or more fields; these are described below.

### Services

For a degree in a particular field, the student is required to meet the conditions producing, popular and inferior forms of literature. The curricula in Biological Sciences, Liberal Arts, Physical Sciences, and Business are examples. It has also been found desirable to provide particular courses which overlap two or more fields; these are described below.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tr>
<td>101-102-203</td>
<td>Introduction to the Reading of Literature</td>
<td>3</td>
<td>Any quarter. Training in the skills of reading literature, including the reading of, and the conditions producing, popular and inferior forms of literature.</td>
</tr>
<tr>
<td>128</td>
<td>Physical Science for Teachers</td>
<td>4</td>
<td>Open only to majors in Elementary Education. A survey of the physical aspects of the universe.</td>
</tr>
<tr>
<td>131-132-133</td>
<td>Introduction to Biological Science</td>
<td>3</td>
<td>Open only to majors in Elementary Education. A survey of the physical aspects of the universe.</td>
</tr>
<tr>
<td>351</td>
<td>Studies in Humanities</td>
<td>3</td>
<td>Enter any quarter. Those who have completed 8 or more college credits in literature may not receive credit in this course. A general survey of the field of Humanities. Acquaintance with literature through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation. Given by the departments of Botany, Microbiology and Public Health and Zoology.</td>
</tr>
<tr>
<td>416-162-163</td>
<td>Introduction to the Humanities</td>
<td>3</td>
<td>Enter any quarter. Those who have completed 8 or more college credits in literature may not receive credit in this course. A survey of the field of Humanities. Acquaintance with literature through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation. Given by the departments of Botany, Microbiology and Public Health and Zoology.</td>
</tr>
<tr>
<td>425-426-427</td>
<td>Conservation of Natural and Human Resources</td>
<td>4</td>
<td>Open only to majors in Elementary Education. A survey of the physical aspects of the universe.</td>
</tr>
<tr>
<td>435</td>
<td>Introduction to Linguistics</td>
<td>3</td>
<td>A survey of linguistic science. The nature of language and the techniques of research in linguistics.</td>
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<td>450</td>
<td>Wildlife Seminar</td>
<td>1</td>
<td>Prereq senior standing in Wildlife Technology or Forestry. Legal problems, policy and administrative problems.</td>
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<tr>
<td>500</td>
<td>General Literature</td>
<td></td>
<td>These courses may be applied toward a major in the Department of English, except for 161. Courses numbered 307, 308, 440 and 491-492 may be applied toward a major in foreign languages.</td>
</tr>
<tr>
<td>511-512</td>
<td>Research Methods</td>
<td>3</td>
<td>Enter any quarter. Those who have completed 8 or more college credits in literature may not receive credit in this course. A general survey of the field of Humanities. Acquaintance with literature through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation. Given by the departments of Botany, Microbiology and Public Health and Zoology.</td>
</tr>
<tr>
<td>525</td>
<td>Conservation of Natural and Human Resources</td>
<td>4</td>
<td>Open only to majors in Elementary Education. A survey of the physical aspects of the universe.</td>
</tr>
<tr>
<td>535</td>
<td>Introduction to Linguistics</td>
<td>3</td>
<td>A survey of linguistic science. The nature of language and the techniques of research in linguistics.</td>
</tr>
<tr>
<td>540</td>
<td>Wildlife Seminar</td>
<td>1</td>
<td>Prereq senior standing in Wildlife Technology or Forestry. Legal problems, policy and administrative problems.</td>
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<tr>
<td>565</td>
<td>Conservation of Natural and Human Resources</td>
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<td>Open only to majors in Elementary Education. A survey of the physical aspects of the universe.</td>
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<tr>
<td>580</td>
<td>Seminar</td>
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<td>Prereq senior standing in Wildlife Technology or Forestry. Legal problems, policy and administrative problems.</td>
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</table>
GEOGRAPHY is concerned with the description and analysis of the earth’s surface. Geographers 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 50 credits in Geography including Geography 101, 201, 111-112-113, 300, 360, 369, 370, 371; Economics 201-202-203; Geology 110-111-112; History 251-252-253 or Political Science 202-203; and Sociology 101 or Anthropology 122.

The following courses with the consent of the adviser may be counted toward a major in Geography: Botany 250 or 355, Business Administration 344, Economics 201, 230, 310, Mathematics 111, Sociology 304, and Forestry 280.

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.

SUGGESTED CURRICULUM IN GEOGRAPHY

<table>
<thead>
<tr>
<th>Junior Year</th>
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<tr>
<td>Geog 300—Geography of North America</td>
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<td>Geog 305—Geography of Europe</td>
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<td>Geog 360—Climatology</td>
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<td>Geog 380—Cartography</td>
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<td>Hist 351-352-353—United States History</td>
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<td>Pol S 202-203—American Political Institutions</td>
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FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 ELEMENTS OF GEOGRAPHY 1Q A W S Su 5. Field, content and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, landforms and population distribution.

111-112-113 ECONOMIC GEOGRAPHY 2Q A W S 2. Enter any quarter. (111) The industries producing food and raw materials; (112) the significance, structure, and distribution of manufacturing industries; (113) service industries with an emphasis on trade and transportation. A review of economic regions.

301 MAP INTERPRETATION 1Q A 3. Map and chart evaluation. The analysis of human and physical features on maps; progress, coverage, and quality of world mapping.

303 CARTOGRAPHY 1Q A 3. The interpretation, construction, and uses of important map projections. Cartographic techniques utilized in the presentation of data.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 1Q W Su 3. Prereq 101 or =. Natural and cultural regions of the continent, with emphasis on economic developments.

301 PHYSIOGRAPHY OF NORTH AMERICA 1Q A 3 Prereq 101, Geology 110, or =. The geomorphic regions of the continent, their topography, climate, soils, and vegetation.

303 GENERAL GEOGRAPHY 1Q Su 3. Description and analysis of basic relationships between physical and human elements in geography. Not for geography majors.

305 GEOGRAPHY OF EUROPE 1Q A Su 3 Prereq 101 or =. The distribution and analysis of geographic features. Contemporary problems and developments.

310 GEOGRAPHY OF LATIN AMERICA 1Q A 3 Prereq 101 or =. The physical environment and economic developments.

312 GEOGRAPHY OF AFRICA 1Q A 3 Prereq 101 or =. Regional differentiation and political and economic development of the whole continent.

315 GEOGRAPHY OF THE FAR EAST 1Q S 3 Prereq 101 or =. The lands and peoples of monsoon Asia interpreted as the basis of economic and political activities with special reference to population problems.

318 GEOGRAPHY OF THE U.S.S.R. 1Q S 3 Prereq 101 or =. The geographical regions which are the basis for Soviet agriculture and industry.

320 GEOGRAPHY OF THE PACIFIC NORTHWEST 1Q S 3 Prereq 101 or =. The relation of the physical environment to changing human adjustments in the Pacific Northwest.


333 HUMAN GEOGRAPHY 1Q A 3. Human societies in their environmental setting. A comparative approach to men, space and resources.

345 URBAN GEOGRAPHY 1Q W 3 Prereq 101 or =. The growth, morphology and functions of towns and cities. Examination of the contemporary urban scene.

350 CLIMATOLOGY 1Q W 5 Prereq 101 or =. Elements and controls of weather and climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 1Q S 3 Prereq 101 or =. Topographic elements of the earth’s surface with emphasis on processes of morphologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 1Q W 3 Prereq 101, Geology 110, or =. Landform development in the desert environment.

405 THE HISTORY OF GEOGRAPHY 1Q W 3 Prereq 12 credits in Geography or =. Geography from early Greek and Roman times to the close of the nineteenth century.

410 PROBLEMS IN GEOGRAPHY 1Q a/q V 1-2 R-6 Prereq 12 credits in Geography.

450 SEMINAR IN GEOGRAPHY 1Q a/q V R-6 Prereq 16 credits in Geography including 101, or =.

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 1Q S 3. The analysis of geographical concepts, approaches, and techniques developed in the twentieth century.

530 RESEARCH METHODS AND MATERIALS 1Q A 3. Collection and preparation of materials in geographic research, including field techniques, interviewing, library sources, and the cartographic presentation of data.

699 THESIS a/q V R-15.
GEOLGY 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 materials, 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, geologic and topographic maps, aerial photographs, optical and chemical methods, X-ray methods and many others. Nearly all courses include laboratory work and the student is prepared for 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 GEOLGY. 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, 211-212, 220, 230, 3 cr of 225, 230-231, 341. Also required are Mathematics 116, 117, 118; Chemistry 111-112-113 or 221-222-223; Physics 114-115; and English 344. Two of these courses may be substituted with their lower number, 2 credits each 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 will be devised for those students after consultation with their advisers. This will, for example, allow special curricula planned for special areas of interest as geochemistry 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.

COMBINATION GEOLOGY AND LAW PROGRAM. Students in this program complete all of the above requirements except Mathematics 251-252. 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 will be devised for those students after consultation with their advisers. This will, for example, allow special curricula planned for special areas of interest as geochemistry 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.

FIELD TRIP EXPENSES. Students enrolled in courses which include field trips share equally the cost of transportation and insurance. Students should consult the University Business Office for a statement of expenses connected with Geology 230 Field Geology.

CUMRICLUM IN GEOLGY

<table>
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Analysis of Requirements

1. University requirements. (Eng 9 cr; Group II 12 cr; Group III 12 cr. ForL 23 cr, 8 of which can be applied toward Group III)
2. Geology course requirements
3. Requirements for the master's degree (Math 15-25 cr, Chem 15 cr, Physics 15 cr, Zool 6-10 cr, Eng 3 cr.)
4. Military Science 6-0
5. Health and Physical Education 6
6. Electives 5-2

Total 166

305 MONTANA MINERAL RESOURCES 1Q Su only 3 (2-3) Prereq 110, Zool 101 or concurrent registration. Fossil remains of invertebrate animals; emphasis on morphology of skeletal parts and classification.

320 OPTICAL MINERALOGY 1Q A 4 (2-4) Prereq 220, Physics 113 or Math 118. Use of polarizing microscope; optical and accessory properties of minerals; theory of optical phenomena observed with microscope; identification of mineral fragments and minerals in thin section.

423-425 PEROGRAPHY 2Q W S 4 (2-4) Prereq 200, 240, 242.) Optical microscopy and identification in thin section of igneous and metamorphic rocks; related aspects of dispersal, lithification, diagenesis, and provenance.

435 PETROLEUM GEOLOGY 1Q S S 3 (3-3) Prereq 331. Theories of origin, of stratigraphic and structural controls of occurrence; some of the problems associated with development.

440 INTRODUCTION TO GEOPHYSICS 1Q S S 3 (3-3) Prereq Physics 111 or 223, Math 118 or concurrent registration, Geol 331. Theory of geophysical methods, as well as geophysical and geologic maps; field work.

451 GROUND WATER GEOLOGY 1Q S 4 (3-3) Prereq 200, 220, Physics 113. Geologic and hydrologic conditions controlling occurrence and movement of ground water; emphasis on conditions in Montana and vicinity.

555 MARINE GEOLOGY 1Q W 4 (2-4) Prereq 110, Zool 105. Physical, chemical, biological and geological aspects of the ocean and its floor.

660 HISTORY OF GEOLOGY 1Q W W 3 (2-3) Prereq 30 credits in Geology. Analysis of the development of some of the fundamental concepts in geology. History of major branches of geology.

694-696 VERTEBRATE PALEONTOLOGY 1Q W S 4 (2-4) Prereq Zoology 200 or Geol 305 or 315. The theory of evolution; systematics, paleontology, geologic history of fishes, amphibians and reptiles o/y. (695) Taxonomy, paleontology, and geologic history of birds; emphasis on Rocky Mountain Cenozoic stratigraphy. o/y.

FOR GRADUATES

500 ADVANCED SEDIMENTATION 1Q W 4 (3-3) Prereq 335, 420. Formation of sedimentary rocks including origin of sediments, structure, mass movement, deformation, compaction and lithification; concepts of size, shape, and roundness.

501 CLAY MINERALOGY 1Q S S 3 (3-3) Prereq Chem 123, Geol 220, with 465 recommended. Crystal structure and composition of clay minerals; reaction of clay minerals with water, heat, and organic matter; chemistry of formation of clay minerals.

505 ADVANCED GEOCHEMISTRY 1Q S 3 o/y (3-0) Prereq Chem 123, Physics 113 or 223, Geol 420, 427-428. Application of physical chemistry in study of origin, internal structure and chemical composition of earth.

510 GEOTECHNICS 1Q S 3 o/y (3-0) Prereq 331. Analysis, synthesis of regional structural features including geosequences, island arcs, compressional mountain systems, structure of plateaus, and bathed tectons. Conditions within earth; possible causes of deformation.

515 STRUCTURE OF MINERAL DEPOSITS 1Q S S 3 o/y (3-0) Prereq 331, 460. Classification of mineral deposits according to structural controls and chemical features; special reference to origin as related to tectonic control.

520-521 PEROGENESIS 2Q W S 3 o/y (3-0) Prereq 426 and 428. Advanced discussion of modern theories of origin of igneous and metamorphic rocks.

525 MICROSCOPIC DETERMINATION OF OPAQUE MINERALS 1Q S S 3 (3-0) Prereq 401, 420. Identification of minerals in polished sections by physical and microchemical tests. Theoretical and practical aspects of microscope, interpretation of thin sections.

530 X-RAY CRYSTALLOGRAPHY 1Q W S 3 (3-2) Prereq 445. X-ray crystallography and structural determination of single crystals by Weissenberg and other methods.

540 ADVANCED PROBLEMS a/q V. Investigations of geologic problems or a Bachelor of Science degree with a major in this field. The Master of Arts and the Master of Science degrees are also offered. Theory courses include structure and function of the human body, basic principles and teaching procedures, history and philosophy, and planning and administration of programs. Professional activity courses include training in teaching, health promotion, physical therapy and orthopedic rehabilitation. Many fulfill courses for American Red Cross certification in physical therapy. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation for leadership. 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 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 play and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION. Two degrees are offered in this Department: Bachelor of Arts, which requires that the student complete the catalog in the college at the point of entry to the college, and Bachelor of Science, which requires no courses in foreign language. Students electing the Bachelor of Science degree will offer the following courses: Home Economics 248, Psychology 320, Speech 101 or 111, and 8-10 credits from Sociology 101, 105, 264, 368, 369, and 410. Requirements for both degrees are identical in all other aspects.
A student may not repeat a class in beginning skills of any sport in which he has received a grade. 3 credits in these courses may be applied to meet the graduation requirement, and only 1 credit per quarter may be used to meet this requirement. Enter any quarter.

115-116-117

PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS


150

HISTORY OF PHYSICAL EDUCATION

IQ W 2. Basic survey of history from primitive cultures through the modern era.

159

INTRODUCTION TO PHYSICAL EDUCATION

IQ W 3, Su only. Prereq major or minor in Physical Education and a history and principles of Physical Education, professional opportunities, relationship with other fields and with education in general. Orientation for prospective majors and minors.

199

FIRST AID

IQ A W S 2, Su o/y. Recognition and treatment of common injuries. Red Cross certification may be secured upon completion of the course.

236

ADVANCED COACHING TECHNIQUES

IQ Su only 1 week. Lectures or special techniques of coaching football and basketball and in athletic training. (Special coaching school.)

210

COACHING OF FOOTBALL

IQ W 3.

211

THEORY OF OFFICIATING FOOTBALL

IQ W 1. Principles, rules and techniques.

212

FOOTBALL OFFICIATING FIELD WORK

IQ A 1. Prereq 211. Practical experience.

220

COACHING OF BASEBALL

IQ W 3.

221

THEORY OF OFFICIATING SOFTBALL AND BASEBALL

IQ W 1. Principles, rules and techniques.

222

SOFTBALL AND BASEBALL OFFICIATING FIELD WORK

IQ W 1. Prereq 221. Practical experience.

231

OFFICIATING VOLLEYBALL

IQ A W S 3. Theory, principles, rules and techniques. Practical experience in officiating intramurals. Ratings given by Women's National Officials Rating Committee upon successful completion of requirements.

232

OFFICIATING BASKETBALL

IQ W 2. Theory, principles, rules and techniques. Practical experience in officiating intramurals. Ratings given by Women's National Officials Rating Committee upon successful completion of requirements.

238

TECHNIQUES OF TEACHING SWIMMING

IQ S 2. Prereq completion of University swimming test. Methods of teaching swimming, and use of tests for classifying students.

238

WATER SAFETY AND LIFE SAVING

IQ W 2, Su o/y. Prereq Red Cross Senior Life Saving Certificate. Theory and practice in teaching life saving and water safety. Red Cross Instructor's Certificate awarded upon successful completion of requirements, providing student has reached his 19th birthday.

240

CARE AND PREVENTION OF ATHLETIC INJURIES

IQ W 2, Su o/y. Treatment of athletic injuries, their causes, prevention and care. Practical work in bandaging and wrapping.

250

HUMAN ANATOMY

IQ A 5, Su o/y. The systems of the body and the structure of organs composing these systems.

301

TEACHING OF TEAM SPORTS FOR WOMEN


302

TEACHING OF INDIVIDUAL-DUAL SPORTS FOR WOMEN

IQ S 2. Prereq 335. Methods and materials.

310

COACHING OF BASKETBALL

IQ A 3, Su 3. Theory and practice in handling work in basketball.

311

THEORY OF OFFICIATING BASKETBALL


312

BASKETBALL OFFICIATING FIELD WORK

IQ W 1. Prereq 311 or 313. Practical experience.

321

COACHING OF TRACK

IQ W 2, Su 3. Theory.

322

COACHING OF TRACK

IQ S 2. Practice.

324

METHODS AND MATERIALS IN SOCIAL DANCING AND TAP DANCING

IQ A 2.

325

METHODS AND MATERIALS IN MODERN DANCE

IQ W 2.

326

METHODS AND MATERIALS IN FOLK DANCING

IQ W 2.

333

METHODS OF TEACHING PHYSICAL EDUCATION

A 3, Su e/y Prereq 115 through 120. Required of all teaching majors and minors in HPE. Materials for junior and senior high school programs. Demonstration and practice in teaching techniques. Lesson planning.

362 RECREATION LEADERSHIP (SOCIAL RECREATION) 1Q W 3 Prereq Sociology 101. Principles and practice in group leadership. Planning, organizing, and conducting of social and recreational programs such as the handiesplug. Credit not allowed for this and Social Welfare 362.

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1Q S 3 Prereq Sociology 101. Principles and practice in leadership in the pursuit of organizing and administration of high school physical education departments. Management of the physical plant.

FOR UNDERGRADUATES AND GRADUATES

332 INSTRUCTOR’S FIRST AID 1Q S 2, Su 3 Prereq Advanced Red Cross Certificate in First Aid. Techniques and practice in teaching first aid. Red Cross Instructor’s Certificate awarded upon successful completion of requirements, providing a student has reached the 20th birthday.

327 THE ELEMENTARY SCHOOL PHYSICAL EDUCATION PROGRAM 1Q S 3 115 and 335. Theory and practice in selecting and presenting activities for different age levels; characteristics of human growth and development related to course content. Credit not allowed for this and 339.

339 TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOLS 1Q A S 3 Prereq major in elementary education and completion of 115 or teaching experience. Principles and techniques of elementary school physical education; theory and practice in selecting and teaching activities and management of classroom and playground, with special attention given to problems of the grade school teacher. Credit not allowed for this and 357.

350 PLAYGROUNDS 1Q A 4 Prereq 357. Theory of play. Classification, construction, equipment, minimum program, conditions of conducting, and practical working supervision of playgrounds.

355 THE HIGH SCHOOL INTRAMURAL PROGRAM 1Q Su 3. Problems of organizing and administering the intramural sports in the high school.

361 INTRODUCTION TO RECREATION LEADERSHIP 1Q A 3 Prereq Sociology 101. Sociology of play, recreation and leisure time; community approach to recreation; recreation for industrial workers, hospital patients, senior citizens, playgrounds; facilities and resources. Credit not allowed for this and Social Welfare 361.

366 CURRICULUM CONSTRUCTION 1Q W 4 Prereq 357. Classification and analysis of physical education activities; criteria for selecting activities; construction of programs for specific situations.

367 PROBLEMS IN PHYSICAL EDUCATION 1Q on demand Prereq 115-116-117, 118-119-120, 335. Credit not allowable for this and 357.

369 SURVEY OF PROFESSIONAL LITERATURE 1Q Su 2 Prereq = of teaching minor in physical education. Recent publications in physical education and related fields; survey and evaluation.

375 SCHOOL HEALTH PROBLEMS 1Q W S 4 Prereq 118-119-120 and of all students seeking elementary teaching certification. School health problems in the areas of health services, healthful school environment, and health education.

376 PERSONAL HEALTH PROBLEMS (WOMEN) 1Q W S 3 Prereq 118-119-120. Fundamentals of healthful living; health counseling problems frequently encountered by physical educators.

377 PHYSIOLOGY OF EXERCISE 1Q W 2, Su e/y. The physiological effects of the different types of exercise on the functions of the human body.

380 APPLIED ANATOMY 1Q W 5, Su e/y. The bones, muscles and joints of the body. Bodily movements, joint mechanics, and the action of muscles in relation to physical education and activities of daily life.

385 KINESIOLOGY 1Q W 5, Su e/y Prereq 380. Advanced study of muscle action and joint mechanics of the body.

386 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 1Q S W 5, Su e/y Prereq 380. Prevention and detection of common physical defects in children and adults, program for a physical educator; follow-up programs possible under medical supervision.

388 INTRODUCTION TO PHYSICAL THERAPY 1Q S 4 Prereq 386 or concurrent registration. Theory and practice of massage. The treatment of defects which come within the field of physical education.

390 CLINICAL TRAINING IN PHYSICAL THERAPY 1Q 4 Prereq 386 and c/l. Practical experience in local physical therapy centers.

469 SEMINAR 1Q A W S 1-3 R-3. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

485 TESTING IN PHYSICAL EDUCATION 1Q A 3, Su e/y. Orientation to statistical techniques; interpretative use of tests, elementary statistical techniques and procedures.

486 SUPERVISION IN PHYSICAL EDUCATION 1Q Su Prereq 385 or =. Roles and responsibilities of supervisors in effecting effective leadership.

490 TEACHING OF COLLEGE PHYSICAL EDUCATION ACTIVITIES 1Q S 2-4 Prereq 115-116-117, 118-119-120, 335, and c/l. Assigned teaching projects in college classes, under supervision.

FOR GRADUATES

501 RESEARCH a/q 2 R-4. Scientific methods in Health, Physical Education and Recreation. Practice in employing research techniques in planning and executing individual projects.

502 ADVANCED TESTS AND MEASUREMENTS 1Q W 4, Su e/y. Prereq 466 or =. Specific tests for evaluation of organic, neuromuscular, psychological and social outcomes. Practice in construction and application of tests, and interpretation of results.

506 THESIS a/q V R-15.

HISTORY

as taught at Montana State University is a study of man's past activities with the hope that lessons may be learned which will be applicable in solving problems of the present era. For the student who is in search of a broad basis of education rather than training for specific occupation, this department offers a program of instruction calculated to provide knowledge and understanding of the backgrounds and the possibilities of preparation for national and world situations.

Courses are offered in European, American, Far Eastern, Canadian, and Latin-American History. Many students combine the fields of History and Political Science.

The department offers the Master of Arts degree in History involving the completion of an acceptable thesis based on original research. Admission to graduate work requires an acceptable academic record as well as the equivalent of an undergraduate major in history.

Occupationally this department helps to prepare men and women 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 the skills and understandings essential to organized occupations, but also furnishes knowledge and perspective for intelligent leadership in community activity.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation, liberal arts college students must complete the following special requirements for the Bachelor of Arts degree with a major in History. A minimum of 45 credits must be earned in History with 20 credits from courses numbered over 300 and including History 391 or 392. Only 2 credits in 401 or 402 will count in fulfilling the History major requirement. Credit earned in History majors must also count for the B.A. in History. Only one of History 491 or 492 will count in fulfilling the History major requirement. After the 15 credits in American History and 20 credits in Political Science. A minimum of 20 credits from courses numbered over 300 and including History 491 or 492. Only 4 credits in 401 or 402 will count in fulfilling the History major requirement. Credit earned in History majors must also count for the B.A. in History. A student may offer a combined major in History and Political Science with 60 credits, of which at least 20 credits must be in History and 20 credits in Political Science. A minimum of 20 credits must be earned in Political Science, at least 30 credits including either History 491 or 492 or Political Science 491. Only one course History 491 or 492, or Political Science 491 will count in fulfilling the History major requirement, but 60 credits in History and Political Science for the B.A. degree is required.

Either the completion of five quarters of a foreign language or the demonstration of a satisfactory reading knowledge of historical, legal or political science materials in such a language is required. With the consent of the Chairman of the Department the student may fulfill the Language requirement by completing three quarters each in two languages.

In the final year in the Department, each major must pass a Senior Comprehensive examination.

With permission of the Chairman of the Department, majors may offer credit earned in Economics 365, 364-365, 331, 312 and in Journalism 350 in partial fulfillment of the major requirements for a degree.

To earn a Bachelor of Arts degree with a major in History and Political Science with a Bachelor’s Law degree in six academic years the student must fulfill all the customary University and departmental requirements, in addition to those recommended in fulfilling the foreign language requirement. Because of the time involved and the field to be covered, the Department and the School of Law jointly propose a more rigid program than is ordinarily required from Departmental majors. The student must satisfy as many positive requirements for graduation as is possible during his freshman year. As a sophomore, he will be expected to register...
202, 203 leaving free approximately seven hours per quarter for History 241, 242 and 243, 251, 252 and 253, and Political Science.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102-103 THE DEVELOPMENT OF WESTERN CONFLICTION 3Q A W S 5. Enter any quarter. (101) Ancient world through the Medieval period. Greek and Roman civilization, barbarian invasions; Medieval society to 1200. Age of Absolutism; Period of Enlightenment; French Revolution and Napoleon; Industrial Revolution; American Civil War; and World War I. (102) 1870 to 1914; Political, economic, and social development of Europe from 1870 until 1914. (103) 1914 to 1945; Political, economic, and social development of Europe from 1914 until 1945.

207-208 MEDIEVAL EUROPE 3Q A W 3. Enter either quarter. (207) The political, economic, social and religious development of Europe from the third century to the eleventh century. (208) A continuation of 207 to the fourteenth century. Some attention will be paid to cultural and intellectual developments.

101-102-103 THE DEVELOPMENT OF WESTERN CONFLICTION 3Q A W S 5. Enter any quarter. (101) Ancient world through the Medieval period. Greek and Roman civilization, barbarian invasions; Medieval society to 1200. Age of Absolutism; Period of Enlightenment; French Revolution and Napoleon; Industrial Revolution; American Civil War; and World War I. (102) 1870 to 1914; Political, economic, and social development of Europe from 1870 until 1914. (103) 1914 to 1945; Political, economic, and social development of Europe from 1914 until 1945.

207-208 MEDIEVAL EUROPE 3Q A W 3. Enter either quarter. (207) The political, economic, social and religious development of Europe from the third century to the eleventh century. (208) A continuation of 207 to the fourteenth century. Some attention will be paid to cultural and intellectual developments.

101-102-103 THE DEVELOPMENT OF WESTERN CONFLICTION 3Q A W S 5. Enter any quarter. (101) Ancient world through the Medieval period. Greek and Roman civilization, barbarian invasions; Medieval society to 1200. Age of Absolutism; Period of Enlightenment; French Revolution and Napoleon; Industrial Revolution; American Civil War; and World War I. (102) 1870 to 1914; Political, economic, and social development of Europe from 1870 until 1914. (103) 1914 to 1945; Political, economic, and social development of Europe from 1914 until 1945.

207-208 MEDIEVAL EUROPE 3Q A W 3. Enter either quarter. (207) The political, economic, social and religious development of Europe from the third century to the eleventh century. (208) A continuation of 207 to the fourteenth century. Some attention will be paid to cultural and intellectual developments.

101-102-103 THE DEVELOPMENT OF WESTERN CONFLICTION 3Q A W S 5. Enter any quarter. (101) Ancient world through the Medieval period. Greek and Roman civilization, barbarian invasions; Medieval society to 1200. Age of Absolutism; Period of Enlightenment; French Revolution and Napoleon; Industrial Revolution; American Civil War; and World War I. (102) 1870 to 1914; Political, economic, and social development of Europe from 1870 until 1914. (103) 1914 to 1945; Political, economic, and social development of Europe from 1914 until 1945.

207-208 MEDIEVAL EUROPE 3Q A W 3. Enter either quarter. (207) The political, economic, social and religious development of Europe from the third century to the eleventh century. (208) A continuation of 207 to the fourteenth century. Some attention will be paid to cultural and intellectual developments.
HOME ECONOMICS curricula are designed to provide opportunities for broad individual growth, social and cultural competence and professional occupation. Depending on the particular interests of the student, selection may be made from ten fields of concentration as is indicated in the copy following.

For admission to graduate study in Home Economics a student should have a Bachelor's degree in Home Economics or in a related field and should present evidence of proficiency in academic work.

Both a Master of Science and a Master of Arts are offered, depending largely upon the undergraduate preparation and the field of specialization in Home Economics.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 30 credits in Home Economics selected as follows:

Required for all women: Home Economics 102, 141, 155, 157, 210, 242, 346, 352, 363, and 366.

Required for all men: Home Economics 141, 155, 210, 242, 346, and 302; Econ 201-202-203.

The following courses are required according to the area of interest selected by the student.

1. GENERAL: Home Economics 235 or 335, 236, 310, 311, and 317.

2. TEACHING: Home Economics 235 or 236, 304, 306, 310, 311, 321, 334, 366 or 380; a teaching minor acceptable to the School of Education: twenty-four hours in Education including Education 200, 205, 305, 405, and 407; Art 125; Sociology 204 or 402. These courses plus certain electives prepare teachers for vocational Home Economics in reimbursed schools.


4. CLOTHING AND TEXTILES: Home Economics 235 or 335, 336, 337, 338, 339, 340, and 341; a teaching minor acceptable to the School of Education: twenty-four hours in Education including Education 200, 205, 305, 405, and 407; Art 125; Sociology 204 or 402. These courses plus certain electives prepare teachers for vocational Home Economics in reimbursed schools.

5. NEWS OR MAGAZINE WRITING: English 106 and 201-202-203; Home Economics 234; Journalism 332, 333, 335.

6. RADIO AND TELEVISION: Home Economics 342; Journalism 140, 335, 345, 441-442-443; Speech 241.

7. CONSUMER EDUCATION, PROMOTION, RETAILING: Economics 201-202-203; Business Administration 340, and 360; Journalism 335, 352, and 363; Psychology 241.

JOURNALISM is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media; methods by which events and ideas are transmitted, and their effects on readers and listeners. It includes instruction in the techniques 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, community newspapers, advertising, or magazines. They receive training in reporting, copy editing, advertising, and the history and law of journalism. Depending on their future specialty, they may also take courses in photography, typology, radio-television, magazine and feature writing and editing, public relations, editorial writing, and the international press. Instruction in many courses stresses ethics, legal and social responsibilities, and the opportunities for commercial success and public service.

Graduates obtain positions on newspapers in Montana and in other states, including many metropolitan centers. Some are foreign correspondents and others are employed in advertising agencies, public relations firms, 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 39 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 100, 200, 300, 311, 370, 371, 380, 381, 390, 391, 392, 393, 491, 492, 493, 699, and 900, with technical magazines, in public relations firms or advertising agencies, and government agencies. Some are distinguished scholars, authors and teachers.
58—JOURNALISM

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 327, 390, 476, 471, 455.

ADVERTISING SEQUENCE: Additional 9 hours required to be chosen from Journalism 346, 352, 363, 364.

MAGAZINE SEQUENCE: Additional 9 hours required to be chosen from Journalism 327, 333, 333, 334.

RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Journalism 342, 345, 346, 348.

COMMUNITY JOURNALISM SEQUENCE: An additional 9 hours required to be chosen from Journalism 390, 391, 392, 394, 495.

Note: Students wishing to major primarily in radio or television journalism should take the radio-televison sequence in Journalism. The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree with a major in Radio-Television (See Radio-Television).

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

100 INTRODUCTION TO JOURNALISM 1Q A W S Su 3. Open to non-majors. History, organisation, techniques and responsibilities of the media of mass communication, with emphasis on the newspapers.

128 TYPOGRAPHY IQ A W S Su 2 Prereq c/i. Problems of typographical design and application. Elementary work in printing and in the handling of type.

140 INTRODUCTION TO RADIO AND TELEVISION 1Q W S 3. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electrical theory of radio and television as media of mass communication.


227 ELEMENTARY PHOTOGRAPHY IQ A W S Su 3 Prereq c/i. Open to non-majors. Photographic equipment, materials, and facilities with practice in taking of pictures under varied conditions and processing of film and prints.

240 STUDIO OPERATIONS IQ A 1 (1-2) Open to non-majors. Operation of broadcasting and recording equipment. Production of programs.

242 RADIO-TELEVISION CONTINUITY 1Q S 3 Prereq 149 and Eng 201. The techniques of writing for radio and television. Writing programs for broadcasting.

270-271 REPORTING 2Q A W S 3 Prereq 100. Open to non-majors. Groundwork in gathering, writing and evaluating news.

299 HISTORY AND PRINCIPLES OF JOURNALISM 1Q S 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 1Q S 3 Prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

333 MAGAZINE MAKEUP AND EDITING 1Q A 3 Prereq c/i. Open to non-majors. Theory and practice of editing magazines. Practices includes the use of type and illustrations, and adapting format to content.

333 MAGAZINE ARTICLE WRITING 1Q W Su 3 Prereq c/i. Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.

334 TRADE AND TECHNICAL JOURNALISM 1Q A 3 Prereq c/i. Open to non-majors. The writing and editing of trade and business journals, technical and specialized publications.

335 PROMOTION AND PUBLIC RELATIONS 1Q A W S Su 3 Prereq c/i. Open to non-majors. The techniques and theories of promotion and public relations.

345 NEWSCASTING 1Q A 3 Prereq 140, 270. Radio and television as news media. Preparation and delivery of radio and television news broadcasts.

346 RADIO-TELEVISION PUBLIC AFFAIRS 1Q W 3 Prereq 345. Radio and television special events and information programs, commentaries, spots, and interviews and interpretation. Practice in newscasting.

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 1Q W S 3 Prereq 140. Planning and broadcasting of advertising campaigns. Station management and sales principles.

350 COMMUNITY JOURNALISM 1Q W S 2 Prereq 270. News, editorial, circulation, and advertising problems of weekly and small daily newspapers.

352 NEWSPAPER MANAGEMENT 1Q A W S 3 Prereq 360. Problems of operation of daily and weekly newspapers.

360 PRINCIPLES OF ADVERTISING 1Q A 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 1Q A W S 2 Prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 1Q W 3 Prereq c/i. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.

363 ADVERTISING LAYOUT AND COPY 1Q S 3 Prereq 390. Open to non-majors. Application of typographical and advertising principles to preparation of layouts and copy.

364 RETAIL STORE ADVERTISING 1Q S 3 Prereq 366. Open to non-majors. Integration of retail store merchandising among advertising media. Technical aspects of advertising schedules for retail stores.

371 ADVANCED REPORTING 1Q A W S 2 Prereq 270. News coverage, reporting and publishing problems.

370 NEWS EDITING 1Q A W S 2 Prereq 270. Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing.

381 ADVANCED NEWS EDITING 1Q A W S 2 Prereq 360. Editing and makeup problems.

FOR UNDERGRADUATES AND GRADUATES

315 SCHOOL PUBLICATIONS 1Q S c/i. Prereq 3 W 2. Open to non-majors. For students who plan to teach journalism courses in high schools or seek as advisers to school publications.

317 SCHOOL PUBLIC RELATIONS 1Q Su Su 3 Prereq only 3 Prereq B.A. degree or teaching experience. The principles of developing better understanding among the school, the press, and the community. For school administrators and teachers.

390 PUBLIC OPINION 1Q A W S 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and methods used in its measurement.

391 LAW OF JOURNALISM 1Q S 3. Legal guarantees and limitations of the right to gather and publish news and to comment on it.

399 ADVANCED JOURNALISM PROBLEMS 1-3Q A W S Su V Prereq consent of the dean. Training and research in advanced journalism problems.

440 CINEMATOGRAPHY 1Q S 3 Prereq 129 or 129, and 12 hours in radio-television courses. Motion picture news photography. Film for television.

441-443 RADIO-TELEVISION PRODUCTION AND DIRECTION 3Q A W S 3 Prereq 12 hours in radio-television courses. Advanced course in producing and directing radio and television programs. (441) emphasizes radio, (442) and (443) emphasize television.

470 REPORTING PUBLIC AFFAIRS 1Q W 3. Laboratory work in coverage of political and governmental news at the city, county, state, and federal levels.

471 SPECIALIZED REPORTING 1Q S 3 Prereq 371. A tutorial course for students wishing to specialize in a field of reporting such as politics, labor, finance, and science.

480-483 SENIOR SEMINAR 3Q A W S 2 Prereq senior standing in journalism. Investigative methods of editing, study of several aspects of American society which constitute the background for many news stories, and practice in research methods.

494 RADIO-TELEVISION SEMINAR 1Q S 3. Prereq or prerequisite 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.

495 EDITORIAL WRITING 1Q S 3. The editorial pages of leading newspapers; practice in research and the writing of editorials.

496 MASS MEDIA IN MODERN SOCIETY 1Q W 3 Prereq c/i. Inter-relationships between media of mass communication and diverse facets of modern society.

497 INTERNATIONAL COMMUNICATIONS 1Q S 3 Prereq c/i. Media of communication in other countries, with emphasis on newspapers.

FOR GRADUATES

599 METHODS OF JOURNALISM RESEARCH 1Q A W S 3 Prereq consent of the dean. Problems and techniques in study and analysis of communications.

601 RESEARCH IN JOURNALISM 1-3Q A W S Su V Prereq consent of the dean.

609 THESIS a/q V R-15.
LAW is the study of the official rules and regulations under which people live in organized American society; of the methods by which such rules are devised and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions selected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and legal materials. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana.

The Supreme Court of Montana admits graduates to practice without examination. Most graduates become practicing attorneys. Others enter government service, business, or finance with or without additional studies in the law. 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 1961

September 24-29, Monday through Wednesday - Registration and Orientation of New Law Students (Including Transfer Students from other schools)
September 25, Monday - Laboratory classes begin at 8:00 a.m.
September 29, Friday - Orientation of New Law Students (Including Transfers and Special Students)

FALL SEMESTER 1962

September 24-29, Monday through Wednesday - Registration and Orientation of New Law Students (Including transfer students from other schools)
September 28, Tuesday - Laboratory classes begin at 8:00 a.m.

SPRING SEMESTER 1963

January 19, Monday - Labor Day
January 20-25, Monday through Saturday - Pre-registration examinations

SPRING SEMESTER 1964

February 6, Wednesday - Registration for Spring Quarter
February 7, Thursday - Classes begin at 8:00 a.m.
February 13, Wednesday - Spring vacation begins at 5:00 p.m.
March 4, Monday - Classes resume at 8:00 a.m.

GENERAL STATEMENT: The Law School is accredited by the American Bar Association and the Association of American Law Schools. Organization of instruction conforms with the guidelines of the two associations. Cancellations of administrative regulations the applicant should consult the Law School Bulletin.

REQUIREMENTS FOR ADMISSION: The Law faculty passes on all applications for admission to the Law School. Students who are admitted to the Law School must (1) have a degree from an accredited college or university; (2) have satisfactorily completed three years of an approved combination program with a minimum index of 2.0 in all work for which he has registered and received a grade; (3) have completed nine years of high school study with an index of 2.0 in all work for which he has registered and received a grade; (4) have completed at least two semesters of a college or university, three fourths of the work required for an undergraduate degree with a grade index of 2.0 in all work for which he has registered and received a grade, equivalent of that required for graduation from the institution attended, on condition, nonetheless, that he qualify for such degree prior to receiving a Law degree. Non-theory courses are not acceptable under the provisions of subdivisions (2) and (3) with the exception that required courses in military drill and physical education are acceptable to the extent of ten per cent of the total credit offered for admission. In addition to the foregoing requirements, no applicant will be admitted who has not demonstrated moral character and capacity for law school work as evidenced, for example, by failing to achieve at least average grades (C) in English composition. In addition, the faculty reserves the right to determine the qualifications of those Law School students who are admitted to practice law in Montana without taking a bar examination, an applicant from a school other than Montana State University who has failed a course in which he is not likely to be admitted unless he has a very high scholastic average and is exceptionally qualified to pursue the study of law.

A number of combination programs have been formulated by the Law School in cooperation with various departments of the University to provide a curriculum in Antiquarian and Art History, Business Administration and Law, Economics and Law, Geology and Law, History and Political Science and Law, and Philosophy and Law. Combination programs in other departments, if approved by the faculty, may be formulated.

The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the year preceding the year for which the applicant applies. The examination fee, which is to be paid by the applicant, will be charged to him by the University. The scores will be sent to the Law School, which reserves the right to accept or reject an applicant from the Law School basis of his examination score, and may be considered in the final decision concerning the applicant for admission. The scores will be sent to the Law School, which reserves the right to accept or reject an applicant from the Law School basis of his examination score, and may be considered in the final decision concerning the applicant for admission.

All applications for admission to the Law School must be submitted at least three weeks prior to the commencement of the first term of the semester in which enrollment is desired. Each applicant will be automatically dropped from the law school program if he fails to meet the minimum requirements for graduation from the institution attended, on condition, nonetheless, that he qualify for such degree prior to receiving a Law degree. Non-theory courses are not acceptable under the provisions of subdivisions (2) and (3) with the exception that required courses in military drill and physical education are acceptable to the extent of ten per cent of the total credit offered for admission. In addition to the foregoing requirements, no applicant will be admitted who has not demonstrated moral character and capacity for law school work as evidenced, for example, by failing to achieve at least average grades (C) in English composition. In addition, the faculty reserves the right to determine the qualifications of those Law School students who are admitted to practice law in Montana without taking a bar examination, an applicant from a school other than Montana State University who has failed a course in which he is not likely to be admitted unless he has a very high scholastic average and is exceptionally qualified to pursue the study of Law.

A candidate for the degree of Bachelor of Laws who has fulfilled the requirements for graduation will not be recommended for the degree if, in the opinion of the faculty, he is unqualified in accordance with generally accepted standards for admission to the bar.
A student may not register nor receive credit for more than 16 hours of law in a semester.

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Second Year</th>
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<tbody>
<tr>
<td><strong>Sem. Hr.</strong></td>
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<tr>
<td>Civil Procedure I, II</td>
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<td>Contracts I, II</td>
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<tr>
<td>Criminal Law</td>
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<tr>
<td>Equity</td>
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<td>Intro to Law I, II</td>
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<td>Property I, II</td>
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<tr>
<td>Torts I, II</td>
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<td><strong>SECOND YEAR</strong></td>
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<td>Administrative Law</td>
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<tr>
<td>Agency and Business Organizations I, II</td>
<td>3</td>
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<tr>
<td>Civil Procedure III</td>
<td>3</td>
</tr>
<tr>
<td>Commercial Transactions I, II</td>
<td>3</td>
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<tr>
<td>Constitutional Law</td>
<td>4</td>
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<tr>
<td>Evidence</td>
<td>4</td>
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<tr>
<td>Law Review I</td>
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<tr>
<td>Legal Writing I, II</td>
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<tr>
<td>Trusts and Future Interests</td>
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<tr>
<td>Wills</td>
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<td><strong>THIRD YEAR</strong></td>
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<tr>
<td>Conflicts</td>
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<tr>
<td>Court Room and Office Practice I, II</td>
<td>1</td>
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<tr>
<td>Creditors' Rights</td>
<td>4</td>
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<td>Criminal Procedure</td>
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<td>Federal Taxation I, II</td>
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<td>Labor Law</td>
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<tr>
<td>Law Review II</td>
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<td>Legal Ethics</td>
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<tr>
<td>Legal Writing III</td>
<td>1</td>
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<tr>
<td>Oil and Gas</td>
<td>1</td>
</tr>
<tr>
<td>Restitution</td>
<td>2</td>
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<td>Secured Transactions</td>
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</tr>
<tr>
<td>Trade Regulations</td>
<td>2</td>
</tr>
<tr>
<td>Water Law</td>
<td>2</td>
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**COURSES**


**EVIDENCE** 1 Sem A 4. McCormick's Cases on Evidence.


**INTRODUCTION TO LAW I & II** 2 Sem A S 1. Continuous. Casebook to be announced.


**LAW REVIEW I & II** 2 Sem S 1, Second year. A 1, Third year.

**LEGAL ETHICS** 1 Sem S 1. Griswold, Cases and Materials on Legal Ethics.

**LEGAL WRITING I, II & III** 3 Sem A S 1 Second Year. S 1 Third year. No text.

**OIL AND GAS** 1 Sem A 4. Sullivan, Handbook of Oil and Gas Law; Cases and Materials on Oil and Gas (Multithreaded).


**RESTITUTION** 1 Sem A 2. Durfee and Dawson, Cases and Remedies, Volume II.

**SECURED TRANSACTIONS** 1 Sem A 3. Hanna, Cases and Materials on Secured Transactions.


**TRADE REGULATIONS** 1 Sem S 2. Handler, Cases on Trade and Regulation.


**WATER LAW** 1 Sem S 2. Mimographed materials of instructor.

**WILLS** 1 Sem A 2. Turrentine, Cases and Text on Wills and Administration.

**LIBERAL ARTS**

Include Literature, Philosophy, Art, Foreign Languages, and the Social Sciences. The latter include Anthropology, Economics, History, Political Science and Sociology.

Four years are required for the degree of Bachelor of Arts. This program permits the student to work in these 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 broad liberal education with a minor in a specialized professional work. It also provides a broad educational 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 as well as in their chosen field.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

- University Requirements
  - English Composition 101-102-103
  - Group I (lab. sciences and mathematics recommended)
  - Foreign Language (5 quarters)
  - Physical Education
  - Military Science (men)
  - 6-9

- Major Requirements (Courses under 300)
  - 1. Art 211-212-213
  - 2. Economics, Psychology, Sociology, Anthropology
  - 3. History and Political Science
  - 4. Humanities
  - 5. Literature (English 211-212-213 and 231-232-233 recommended)
  - 6. Philosophy
  - 15

- Major Requirements (Courses 300 and above)
  - 7. Economics, Psychology, Sociology, Anthropology
  - 8. History and Political Science
  - 12
  - 9. Literature or Philosophy
  - 12
  - 24

- Free Electives
  - 10-7

- 186

**LIBRARY SERVICE**

Courses are designed to prepare students for professional work in small and medium sized public and college libraries. Students preparing for school library work should work toward a major in the School of Education with a minor in library service. Students preparing for public or college library work should register for the four-year program leading to the degree of Bachelor of Arts with a major in library service.

This program is so planned that the student is given basic preparation for admission to a graduate library school if he wishes to prepare for work in larger libraries. The course outlined here is primarily designed to meet the needs of Montana for trained librarians, but will also prepare the student for library work in similar libraries in the Northwest and other areas.
MATHEMATICS—59

The College of Arts and Sciences and the School of Education offer the curriculum in Library Service.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LIBRARY SERVICE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts with a major in Library Service:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Eng 101-102-103—Freshman Composition</td>
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</tr>
<tr>
<td>History 101-102-103—Development of Western Civilization</td>
<td>15</td>
</tr>
<tr>
<td>French or German 101, 102, 103—Elementary French or German</td>
<td>15</td>
</tr>
<tr>
<td>Psych 110—Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>Health &amp; PE 101, 102, 103</td>
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<td>Total</td>
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Sophomore Year

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<tr>
<td>Music 134—Introduction to Concert Music</td>
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<tr>
<td>French or German 213, 215—Intermediate and Advanced</td>
</tr>
<tr>
<td>History 322—A World of Ideas</td>
</tr>
<tr>
<td>Eng 211, 213, 213—Intro to Major British Writers</td>
</tr>
<tr>
<td>Econ 201-202-203—Principles of Economics</td>
</tr>
<tr>
<td>Educ 347—Audio-Visual Aids</td>
</tr>
<tr>
<td>Educ 340—Children’s Literature</td>
</tr>
<tr>
<td>Educ 345—Family Life and Children</td>
</tr>
<tr>
<td>Educ 444—Library Seminar</td>
</tr>
<tr>
<td>Educ 445—Library Practice</td>
</tr>
<tr>
<td>Educ 498—Seminar (bibliography)</td>
</tr>
<tr>
<td>Journalism 335—Promotion and Public Relations</td>
</tr>
<tr>
<td>History 491—Methods and Materials</td>
</tr>
<tr>
<td>Group I Requirements</td>
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<tr>
<td>Electives (selected from upper division courses)</td>
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<td>Total</td>
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Junior Year

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<tbody>
<tr>
<td>Eng 222, 223—Intro to Major American Writers</td>
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<tr>
<td>Political Science 101—Intro to Government</td>
</tr>
<tr>
<td>Sociology 303—Social Science Methods</td>
</tr>
<tr>
<td>Educ 341—Public Library Administration</td>
</tr>
<tr>
<td>Educ 344—Cataloging and Classification</td>
</tr>
<tr>
<td>Educ 345—Bibliography and Book Selection</td>
</tr>
<tr>
<td>Educ 346—Reference Materials</td>
</tr>
<tr>
<td>Educ 347—Audio-Visual Aids</td>
</tr>
<tr>
<td>Art 251, 253, 253—History of Art</td>
</tr>
<tr>
<td>Group I Requirements</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
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<td>Total</td>
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</table>

Senior Year

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>Educ 346—Children’s Literature</td>
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<tr>
<td>Educ 448—Library Work with Children</td>
</tr>
<tr>
<td>Educ 444—Library Seminar</td>
</tr>
<tr>
<td>Educ 445—Library Practice</td>
</tr>
<tr>
<td>Educ 498—Seminar (bibliography)</td>
</tr>
<tr>
<td>Journalism 335—Promotion and Public Relations</td>
</tr>
<tr>
<td>History 491—Methods and Materials</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
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<tr>
<td>Total</td>
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</tbody>
</table>

MATHEMATICS

is concerned not only with formulas and processes which give “answers” to problems but with the fundamental ideas which are the basis for modern developments in modern other sciences. It is a science in its own right and is still growing rapidly.

Graduates find a growing range of occupations open to them—in engineering, the sciences, economics, or business. They may teach in high schools or with further training, in colleges and universities. Industry and government make increasing use of skilled mathematicians. Such positions may involve work ranging from elementary computation to highly complicated statistical procedures and research.

Modern high speed computing devices, instead of replacing mathematicians, have increased their usefulness. A high degree of mathematical skill is required to put a problem into a form in which the machine can handle it.

The Bachelor of Arts, Master of Arts and Master of Science degrees are offered (see Graduate School).

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 all of the mathematics possible.

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 116, 117, 118, 251, 252. A foreign language; French or German preferred.

1. For those planning to go into graduate work or industry: a total of 50 credits in mathematics courses approved by the department, including at least 20 credits in courses numbered above 300; at least 15 credits in advanced mathematics or 15 credits in physics; at least 6 credits from mathematics 309, 310, 311, 312.

2. For those planning to go into teaching: a total of 45 credits in mathematics courses approved by the department including math 300 or 304; at least 15 of these credits must be in courses numbered over 300, and completion of requirements for certification as a high school teacher.

MASTER OF ARTS OR MASTER OF SCIENCE IN TEACHING. See statement under Graduate School.

FOR UNDERGRADUATES

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>1. For explanation see Index under “Symbols”</td>
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</table>

001 PRE-FRESHMAN ALGEBRA 1Q A 0. For students who do not qualify for Mathematics 100.

100 INTERMEDIATE ALGEBRA 1Q A W S 2 Prereq satisfactory performance in an examination in elementary algebra.

112 MATHEMATICS FOR BUSINESS STUDENTS 1Q A W S 5 Prereq 100 or satisfactory performance in an examination in intermediate algebra. Annuities, topics in algebra.

113 TRIGONOMETRY 1Q A W S 5 Prereq 100 or satisfactory performance in an examination in intermediate algebra. Trigonometry for students not intending to take more Mathematics. Credit not allowed for both 112 and 113.

116 COLLEGE ALGEBRA 1Q A W 5 Prereq 100 or satisfactory performance in an examination in intermediate algebra. College algebra presented in such books as Allendoerfer and Oakley: “Fundamentals.” Credit not allowed for both 116 and 152.

117 MODERN TRIGONOMETRY 1Q A W S 5 Prereq 116. Trigonometry as treated in such books as Allendoerfer and Oakley: “Fundamentals.” Credit not allowed for both 117 and 153.

118 INTRODUCTION TO ANALYTIC GEOMETRY AND CALCULUS 1Q A W S 5 Prereq 117 or 151 and 116 or 152. Credit not allowed for both 118 and 154.

125 STATISTICS 1Q A W S 5 Prereq 100 or satisfactory performance in an examination in intermediate algebra.

126 THEORY OF ARITHMETIC 1Q A S 5 Prereq satisfactory performance in a placement examination in elementary algebra. The mathematical meaning and background of arithmetic.

251 CALCULUS I 1Q A W S 5 Prereq 112 or 154. Applications of the derivative; transcendental functions and their derivatives; integration.

252 CALCULUS II 1Q A W S 5 Prereq 251. Integration techniques; further applications of the derivative and the integral; mathematical induction.

253 CALCULUS III 1Q A W S 5 Prereq 252. Solid analytic geometry; partial derivatives; multiple integrals; infinite series.

FOR UNDERGRADUATES AND GRADUATES

300 ALGEBRA FOR TEACHERS 1Q W S 5 Prereq 222 or 251 or concurrent registration. The processes of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra.

302-303 STATISTICAL METHODS 2Q A W S 3 0/y Prereq 116, 123, or 152, and c/i. Primarily intended for those who find need for statistical techniques in fields of application: (302) Descriptive statistics, principles of estimation, confidence intervals, tests of significance; (303) analysis of variance, regression, correlation, design of experiments, simplified statistics.

304 GEOMETRY FOR TEACHERS 1Q W S 5 Prereq 252. Credit not allowed for both 304 and 305.

305 TOPICS IN MATHEMATICS Su V Prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to help high school teachers improve their own background in mathematics. Content varied to meet the needs of the student. Not allowed to count as a major in Mathematics.

306 HISTORY OF MATHEMATICS 1Q S 4 Prereq 15 credits in Mathematics and c/i.

306-310 ADVANCED CALCULUS 2Q A W 3 0/y Prereq 224 or 253. (306) Sequences of real numbers; continuous functions; partial derivatives, (310) Riemann Integrals; series of functions; power series; line Integrals.

311-312 INTRODUCTION TO ABSTRACT MATHEMATICS 2Q A W S 3 Prereq 222 or 251. (311) An introduction to modern ideas of mathematics. Group, rings, fields, vector spaces. (312) Vector spaces and matrix theory.

313 ORDINARY DIFFERENTIAL EQUATIONS 1Q S 5 Prereq 223 or 252 (Math 300-310 recommended). Elementary solutions of differential equations series solutions; Bernoulli’s equation; Legendre equations; introductions to Sturm-Liouville systems; Picard’s Method.

314 LINEAR GROUPS 1Q S 1 Prereq 312.

315 MODERN ALGEBRA 1Q S 5 Prereq 15 credits of mathematics and c/i. (Intended primarily for those enrolled in NSF
MEDICAL TECHNOLOGY is a combined study of chemistry, physics, physiology, and microbiology. A medical technologist is one who, by education and training, is capable of performing, under the supervision of a pathologist or other qualified physician, the various chemical, microscopic, bacteriologic and other medical laboratory procedures used in the diagnosis, study and treatment of disease. Four years are required to earn the degree of Bachelor of Science in Medical Technology. The first two years are devoted to the development of a sound foundation in physical chemistry and biology and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this Certification is desirable, persons 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 and Public Health. 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 required 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. This option has the advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 305, 309, 310; Physics 111, 112, 113; Zoology 194, 195, 201, 202; Chemistry 151, 152, 153, 245, 261, 262; Math 116. A minimum total of 45 credits from Microbiology courses listed above and from the following courses is required: Microbiology 305, 309, 310, 331, 401, 402, 403, 404, 405, 410, 420, 425; Zoology 303, 305, 340, 341, 345; Chemistry 340, 349, 370, 384, 461, 481; or other courses approved by the adviser and Department Chairman.

BASIC MEDICAL TECHNOLOGY CURRICULUM

OPTIONS

<table>
<thead>
<tr>
<th>Freshman Year</th>
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<tbody>
<tr>
<td>OPTION I</td>
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<td>Chem 121-122-123—College Chemistry</td>
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<tr>
<td>211-212—Physical Chemistry</td>
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<tr>
<td>215-216—Elementary Zoology</td>
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<tr>
<td>Math 116—College Algebra</td>
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<td>Eng 101-102—English</td>
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<td>Freshman Composition</td>
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<td>Electives</td>
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<td>H&amp;PE 101-102-P—Freshman Phys Ed</td>
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<tr>
<td>ROTC 101-102-103—Military or Air Science (Men)</td>
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<td>16-18</td>
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</table>
**For Undergraduates**

For explanation see Index under "Symbols".

100 ELEMENTARY MICROBIOLOGY 1Q S Su 3 (3-0). Morphology, physiology, classification of bacteria, rickettsia and viruses; importance of microorganisms in food and fermentation industries, agriculture and public health. (Not allowed towards a major in microbiology.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 1Q Su 2 (0-4). General principles of immunity and extensive laboratory work in microbiological examination of foods, water, soil, and air and experiments with microorganisms of medical importance. (Not allowed towards a major in microbiology.)

105 GENERAL HYGIENE 1Q S 3 (3-0). Personal hygiene and its effects on the individual and the community. Nutrition, sanitation and prevention of diseases.

110 PUBLIC HEALTH 1Q W 2 (2-0). Sanitation problems as they involve health and disease.

200 GENERAL MICROBIOLOGY 1Q A 5 (3-4). Bacterial taxonomy, classification, morphology, physiology; effect of environmental factors on bacterial microbiology of soil, water, milk and foods; industrial microbiology.

FOR UNDERGRADUATES AND GRADUATES

202 MEDICAL MICROBIOLOGY 1Q A 5 (3-4) Prereq 200. Pathogenic microorganisms including bacteria, fungi, viruses, and rickettsia.

203-304 PHARMACEUTICAL MICROBIOLOGY 2Q A W 5 (3-4) Prereq 203, Phys 113 or 223. (303) Principles and techniques of basic bacteriology; (304) Pathogenic bacteriology, immunology and chemotherapy as they apply to the field of Pharmacy.

305 MEDIA PREPARATION 1Q a/q 2 (1-3) Prereq 200. Preparation, sterilization and storage of culture media; differential media, function of ingredients, and general nutritional requirements of bacteria.

310 IMMUNOLOGY AND SEROLOGY 1Q W 5 (3-4) Prereq 200. Basic principles of immunity and extensive laboratory work in serology, animal experimentation, and clinical diagnosis.

320 MICROBIOLOGY OF WATER AND SEWAGE 1Q W On demand 5 (3-4) e/y Prereq 200. Microorganisms found in water and sewage; sewage treatment and disposal, and water purification.

330 FOOD MICROBIOLOGY 1Q W 3 (3-0) e/y. Microbiology of foods with emphasis on preparation, preservation and spoilage of foods.

331 FOOD MICROBIOLOGY LABORATORY 1Q W 2 (6-4) e/y Prereq 330. Techniques for the investigation of microorganisms in foods.

340 MICROBIOLOGY FOR TEACHERS 1Q Su 5 (3-4). Introduction of Microbiology to high school science teachers. Not open to Microbiology majors.

401 ADVANCED IMMUNOLOGY 1Q On demand 3 (3-0) Prereq 310. Advanced theories of immunity and recent immunological techniques.

402 HEMATOLOGY 1Q A 4 (3-4) e/y. Blood elements and blood chemistry in health and disease as applied to hospital laboratories.
The School of Music 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 courses 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 School of Music is a member of the National Association of Schools of Music.

The following degrees in music are offered by the School of Music:

Bachelor of Music
- with a major in Music Education
- with a major in Applied Music
- with a major in Theory or Composition

Bachelor of Arts
- with a major in Music

Master of Music
- with a major in Music Education
- with a major in Applied Music
- with a major in Composition

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the School of Music is by certificate from the high school from which the student graduates. The faculty of the School of Music is more concerned with evidence of talent, conspicuous achievement in music, promise of development, and in scholarship in general, than it is in the precise content of the program which the prospective music student has followed prior to admission to college. The School of Music 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. All candidates for the Bachelor of Music degree must select academic electives so as to complete a minimum of 44 credits not including required freshmen and sophomore physical education and military science, courses in music, and courses in education offered for state certification.

2. For the Bachelor of Music with a major in Music Education, the course requirements in Curriculum A must be completed.

3. 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.

4. For the Bachelor of Arts degree with music as a major, the course requirements in Curriculum C must be completed.

5. All students majoring in music are required to attend a minimum of eight recitals per quarter as prescribed by the faculty.

6. All music majors seeking a B.M. degree are required to participate in Band, Orchestra, or a Choral Group each quarter of residence within the regular schedule of rehearsals. Students who are wind instrument majors in their applied field must register for band (or orchestra) during every quarter; string majors must register for choir every quarter. Piano and organ majors must fulfill this requirement by attending at least 30% of the time. Exceptions to this requirement may be made only by action of the music faculty.

7. All candidates for the Bachelor of Music degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217.

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 lessons per week $20.00

Rentals, Per Quarter

Practice room without piano, one hour daily $2.00
Additional hour daily 1.00
Piano and practice room, one hour daily 3.00
Additional hour daily 2.00
Organ and practice room, one hour daily 6.00
Additional hour daily 5.00
Wind and string instruments 3.00
Rentals must be paid for entire quarter. No refunds of rentals will be made.

(The above fees are subject to modification by action of the State Board of Education.)

A. CURRICULUM FOR BACHELOR OF MUSIC DEGREE WITH A MAJOR IN MUSIC EDUCATION:

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, Montana State University offers three major courses, each leading to the degree of Bachelor of Music with a major in Music Education.

Students desirous of teaching and directing both vocal and instrumental music may enroll for the General Course. Separate courses for vocal and instrumental majors are available. All courses of study meet the state requirements for certification for public school teaching (see Education).
VOCAL MAJORS

Vocal majors in Music Education follow curriculum A with the following exceptions: Three credits only in Music 125, 126, 127 and 129. Music 225, 226, 227 and 231 are not required, but Vocal majors must substitute 6 additional credits in upper division music electives. An academic teaching minor is recommended.

INSTRUMENTAL MAJOR

Instrumental majors in Music Education follow Curriculum A with the following exceptions: Music 117, 118, 119, 232 and 324 are not required. Music or academic elective may be substituted.

B. CURRICULA FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION.

The serious instrumentalist or vocalist whose talent and ability are unquestionable superior may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music. Enrollment may not be completed until the student has received the recommendation of a major professor or a committee of the music faculty, before which the student has appeared in an audition at the time of enrollment.

Completion of the entire Curriculum qualifies the student to receive the Secondary Staff Certification in Applied Music by recommendation from the State Department of Public Instruction. Students who intend to request a certificate in applied music by endorsement must include 4 credits in Educational Psychology or Philosophy of Education as an elective.

MAJOR IN PIANO OR ORGAN

FRESHMAN YEAR: Credits per Quarter

| Music 151-152-153 (Applied) | 4.4.4 |
| Music 100-101-102 (Instrumental) | 1.1.1 |
| Music 101, 102-103 (理论 I) | 2.2.2 |
| Music 121, 122, 123 (理论 II, 理论 III) | 1.1.1 |
| Music 102, 103-104 (Theory) | 3.3.3 |
| Music 203-204-205 (Applied) | 4.4.4 |
| Music 201, 202-203 (Applied) | 1.1.1 |
| Music 104-105-106 (Applied) | 2.2.2 |
| Music 206-207-208 (Applied) | 0.0,2 |
| Music 209-210-211 (Applied) | 2.0,2 |

Sophomore Year:

| Music 202-203-204 (Applied) | 4.4.4 |
| Music 204-205-206 (Applied) | 1.1.1 |
| Music 206-207-208 (Applied) | 2.2.2 |
| Music 209-210-211 (Applied) | 0.0,2 |

Junior Year:

| Music 310-311-312 (Applied) | 4.4.4 |
| Music 313, 314, 315 (Theory I) | 1.1.1 |
| Music 316-317-318 (Orchestrating) | 3.3.3 |
| Music 319-320-321 (Applied) | 4.4.4 |
| Music 319-320-321 (Theory II) | 7.7.7 |

Major in Voice:

FRESHMAN YEAR: Credits per Quarter

| Music 151, 152, 153 (Applied) | 3.3.3 |
| Music 100-101-102 (Instrumental) | 1.1.1 |
| Music 102, 103-104 (Theory I) | 2.2.2 |
| Music 111-112-113 (Theory II) | 3.3.3 |
| Music 111-112-113 (Theory III) | 4.4.4 |
| Music 201-202-203 (Applied) | 1.1.1 |
| Music 204-205-206 (Applied) | 2.2.2 |
| Music 207-208-209 (Sight Singing, Conducting) | 3.3.3 |
| Music 209-210-211 (Applied) | 4.4.4 |
| Music 212-213-214 (Sight Singing, Conducting) | 5.5.5 |
| Music 215, 216, 217 (Theory II) | 6.6.6 |

Major in Organ:

FRESHMAN YEAR: Credits per Quarter

| Music 151, 152, 153 (Applied) | 4.4.4 |
| Music 100-101-102 (Instrumental) | 1.1.1 |
| Music 101, 102-103 (理论 I) | 2.2.2 |
| Music 121, 122, 123 (理论 II, 理论 III) | 1.1.1 |
| Music 102, 103-104 (Theory) | 3.3.3 |
| Music 203-204-205 (Applied) | 4.4.4 |
| Music 201, 202-203 (Applied) | 1.1.1 |
| Music 104-105-106 (Applied) | 2.2.2 |
| Music 206-207-208 (Applied) | 0.0,2 |
| Music 209-210-211 (Applied) | 2.0,2 |

Sophomore Year:

| Music 202-203-204 (Applied) | 4.4.4 |
| Music 204-205-206 (Applied) | 1.1.1 |
| Music 206-207-208 (Applied) | 2.2.2 |
| Music 209-210-211 (Applied) | 0.0,2 |

Junior Year:

| Music 310-311-312 (Applied) | 4.4.4 |
| Music 313, 314, 315 (Theory I) | 1.1.1 |
| Music 316-317-318 (Orchestrating) | 3.3.3 |
| Music 319-320-321 (Applied) | 4.4.4 |
| Music 319-320-321 (Theory II) | 5.5.5 |
| Music 322-323-324 (Sight Singing, Conducting) | 6.6.6 |
| Music 325-326-327 (Applied) | 7.7.7 |

Additional Requirements: Students taking voice or instrumental in the Music 101-403 Series, must take Music 100—Piano until a jury examination has been passed.

Theory Majors are required to complete Music 109, 109, 161 and Music 206, 206, 261.
C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, to gain scholarly insight into the art of music, and to develop understanding of the world around them. This degree does not qualify a student for public school teaching in Montana but does provide a background for further pursuit of musical performance and scholarship, and the possibility of teaching careers in colleges or in private institutions.

Minimum credit requirements for this degree are: Music - 97 cr., Arts and Sciences - 44 credits other than music and Physical Education - 120 cr., Groups I, II, and III - 36 credits. Maximum credits applicable toward this degree: Applied Music - 12 cr., Ensemble Music - 6 cr.

FRESHMAN YEAR:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits Per Quarter</th>
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</thead>
<tbody>
<tr>
<td>Music 101, 102, 103 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 108-110 (Organization)</td>
<td></td>
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<tr>
<td>Music 311, 112, 113 (Theory I)</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation)</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 138, 139, 177 (Intro to Music Literature)</td>
<td>4.4.</td>
</tr>
<tr>
<td>Eng 101-102-103 (Freshman Composition)</td>
<td>3.3.3.</td>
</tr>
<tr>
<td>General 151-152-153 (Humanities)</td>
<td>3.3.3.</td>
</tr>
<tr>
<td>Health &amp; Physical Educ. for R.O.T.C. 101-102-103 (Men)</td>
<td>2.0.2.</td>
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<td>or 2.0.2.</td>
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SOPHOMORE YEAR:

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<th>Course</th>
<th>Credits Per Quarter</th>
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<tbody>
<tr>
<td>Music 201, 202, 203 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 108-110</td>
<td></td>
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<tr>
<td>Music 221, 222 (Sight Singing, Keyboard, and Dictation)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 241, 242, 243 (Theory II)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>3.3.</td>
</tr>
<tr>
<td>General 151-152-153 (Biol Sci)</td>
<td>3.3.3.</td>
</tr>
<tr>
<td>Health &amp; Physical Educ. for R.O.T.C. 201-202-203 (Men)</td>
<td>2.1.4.</td>
</tr>
<tr>
<td>or 2.1.4.</td>
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JUNIOR YEAR:

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<th>Course</th>
<th>Credits Per Quarter</th>
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<tbody>
<tr>
<td>Music 301, 302, 303 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 108-110</td>
<td></td>
</tr>
<tr>
<td>Music electives (choice of Orchestration or Composition)</td>
<td>3.3.3.</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>3.3.</td>
</tr>
<tr>
<td>Electives from Group II</td>
<td>4.4.4.</td>
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<tr>
<td>Electives (non-music)</td>
<td>3.3.3.</td>
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</table>

SENIOR YEAR:

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<thead>
<tr>
<th>Course</th>
<th>Credits Per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 401, 402, 403 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 108-110</td>
<td></td>
</tr>
<tr>
<td>Music electives (choice of History &amp; Literature or Counterpoint)</td>
<td>2.2.3, 2.2.2.</td>
</tr>
<tr>
<td>Electives (non-music)</td>
<td>3.7.7.</td>
</tr>
<tr>
<td>Electives from Group I, II, III</td>
<td>3.3.3.</td>
</tr>
</tbody>
</table>

SPECIAL REQUIREMENTS FOR THE MASTER OF MUSIC DEGREE. Three programs are available which lead to this degree:

A. Major in Applied Music. In addition to the general requirements for admission under the Graduate School, the candidate must meet the following special requirements: A written placement test, a bachelor's degree in one field of applied music or the demonstrated equivalent of an applied major, and an audition or a tape recording will be required of students with a B.S.E. from other institutions.

General requirements: 45 quarter credits of graduate work, a minimum of 12 credits in applied music, a full solo recital, three copies of a professional paper (performance practices or literature or both), an oral examination covering the field of study, and at least 3 credits selected from Band, Orchestra, Chorus, or (140 summer only).

Required music courses: 12 credits of 501-502-503, 4-6 credits of 699, 8-12 credits from 392-330-331, 359-360, 379, 380, 381; 9 credits from 421, 422, 423, 424, or 425 or 3 credits selected from 311-312-313, 370, 379-390-391, 440, 450-460-461, 556, 555, 562.

A total of 4 credits - non-music electives (graduate credit) may be offered toward the degree.

B. Major in Composition. In addition to the general requirements for admission under the Graduate School, the candidate must meet the following special requirements: A bachelor's degree with a major composition or the demonstrated equivalent of such a degree, faculty approval of original scores submitted, and faculty approval of pianistic ability through audition.

General requirements: 45 quarter credits of graduate work, minimum of 12 credits in composition and 6 credits in applied music, a 50 minute performance, and an oral examination covering the field of study; 3 credits selected from Band, Orchestra, Chorus, or (140 summer only); and three copies of a professional paper consisting of a musical work of major proportions, submitted under assignment. A performance of the work shall be supervised by the candidate.

Required music courses: 6 credits of 501-502-503, 0 credits of 699, 12 credits of 699, 6-9 credits of 421, 422, 423, 424; and a minimum of 5-11 credits selected from 311-312-313, 370, 379-380-391, 440, 555, 556, 562.

A total of 7 graduate credits in non-music electives may be offered toward the degree.

C. Major in Music Education. In addition to the general requirements for admission under the Graduate School, the candidate must meet the following special requirements: at least one year of teaching experience, a theory placement test, an audition in the student's performance area for the purpose of applied music placement.

General requirements: 45 quarter credits of graduate work, a minimum of three credits in applied music, three copies of a professional paper (performance practices or literature or both), 3 credits in courses in the 500 series or above, pass an oral examination covering the field of study; and at least 3 credits selected from Band, Orchestra, Chorus, or (140 summer only).

Required courses (music unless otherwise indicated): 6 credits of 471, 472, 473, 379-380-381, 359-360-361, 311-312-313, 6 credits of 421, 422, 423, 424, or 425 or 3 credits of 501-502-503, 6-10 credits of 699; Educ 452 or a 3 or 4 credit grade level Educ. course; a minimum of 5 elective credits from 306, 384, 363, 370, 440, 441, 442; and 6 credits of non-music electives may be offered toward the degree.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 100—Secondary Applied Minor a/q 1-2 Prereq c/l.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Various curricula provide for secondary study in applied music. Secondary study is designed to give the beginning student certain proficiencies in order that he may use this as an application in a major as a performance. A total of 12 credits is allowed in any one applied area.

Music 101, 102, 103 (First year)—201, 202, 203 (Second year)—301, 302, 303 (Third year)—401, 402, 403 (Fourth year) or 404

Secondary Applied Major a/q V 1-2 Prereq audition and c/l.

Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum A must have an applied major field which is secondary to their primary major, i.e., Music Education. A student entering in Music 101 should show evidence of the equivalence of two years prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For explanation see Index under "Symbols".

105 SUMMER SESSION CHORUS 1Q Su V 1-2.

106 UNIVERSITY CHOIR

107 CHORAL UNION

110 ORCHESTRA

110 UNIVERSITY BAND

Courses 106 thru 110 are major musical organizations. 3Q A W S Su 1 Prereq c/l. Music majors take a minimum of 12 credits; non-music majors may take 6 credits.

111-112-113 THEORY I 3Q A W S 2 Prereq pass music placement test. Basic structure and function (emphasis on 18th century style) including study of scales, keys, intervals, chords, cadences, melodic writing, modulation, and rhythm.

114-115-116 PIANO IN CLASS 3Q A W S 1. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Harmonization of simple tunes with IV V7 chord. Materials such as Oxford and Burrows Adult Beginners books. Transposition, memorization, and sight-reading.


123 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS 3Q W S Su 4 Prereq registration, (123) A philosophy of teaching music in the elementary schools. The emphasis placed on learning by doing. Singing, listening, rhythm, instrumental, creative and integration; two- and three-part songs memorized; use of the pitch pipe, autoharp and chording on piano; classroom teaching of basic rudiments of music and keyboard fundamentals. (123) Continuation of 122, dealing more specifically with topics presented during the first quarter. Other topics included; beginning part singing; dramatizations; integrated units with social studies, art, and literature; listening and use of phonograph records; classroom music centers; additional work in music reading; music books for the elementary school library. Not open to music majors.

125-126 STRING INSTRUMENTS IN CLASS 3Q A W S Su 1-6. Instruction on violin, viola, cello, and bass, with emphasis on teaching procedures.

129 WIND AND PERCUSSION INSTRUMENTS IN CLASS 3Q A W S Su 1 R-6. Enter any quarter. To enable music education majors to gain a practical knowledge of the instruments of the band.

ENSEMBLE GROUPS 1 A W S 1. Any small group of two or more players may form and register a group (max. 12). A continuation of composition with writing in the larger forms.

Advanced conducting 1 A W S 3 Prereq 233 (Choral majors), 233 (others), and c/i. A continuation of conducting. Prerequisite: 233 (instrumental conducting). Practical conducting experience is provided through individual conducting projects, the class being used as a clinic chorus and band.


PIANO FOR THE CLASSROOM TEACHER 1 S 1. Provided as an introduction to the teaching of music in various instruments and techniques for use in grade and high school music classes.

Audio-visual aids in music education 1 Q A W S 3 Prereq 131. Special course for educators desiring further study of minor applied fields. Students desiring further study of minor applied fields may elect 1-2 credits.

Music education in America 1 Q W S 3. The history and philosophy of music education in America and their relation to general educational thought.

School music administration 1 Q A Su 3. School systems, plans for organizing and administering the music program in the elementary, junior and senior high school. For students whose primary purpose in advanced study is preparation for administrative or supervisory work in music education.

Baroque chamber music 1 Q W 2. The style and performance practices of the late 17th and early 18th centuries. Private and ensemble instruction available on harpsichord, clavecind and viola d'amore.

Pedagogy of theory 1 Q W Su 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of standard harmonic texts. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

Seminar 1 q V 1-5 R-15. Investigation of research in fields of individual interest.

Composition a/q V R-12.

Applied techniques a/q V 1-4. Individual instruction in voice, piano, organ, string or wind instruments. Students desiring further study of minor applied fields may elect 1-2 credits.

Thesis a/q V R-15.
PHARMACY is the science which treats of medicinal substances. It embraces a knowledge of medicines and the art of compounding and dispensing them and of their identification, selection, combination, analysis, standardization, and mode of action.

Five years are required for the degree of Bachelor of Science in Pharmacy. A program of study leading to the Master of Science degree in Pharmacy is also offered. Since pharmacists are licensed by the states, the undergraduate curriculum is geared to such requirements. During the first two years at the University students study physical and biological sciences and take courses in the social sciences and English. Pharmacy proper involves studies of the various types of pharmaceutical products and dosage forms—their preparation, compounding, and dispensing—physicians' prescriptions. Pharmaceutical chemistry is the application of the principles of chemistry to substances used in pharmacy and medicine with emphasis on preparation, identification, purification, and analysis. Pharmacognosy is the study of drugs obtained from plant, animal, and microbiological sources. Pharmacology treats of the effects and mode of action of drugs on living organisms. Pharmaceutical administration is concerned with personnel, facilities, business phases of retail pharmacy such as management and marketing.

Most graduates enter retail pharmacy in rural, neighborhood, or "downtown" stores. Others conduct hospital pharmacies, a particularly attractive field for women. 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 pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. 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 State 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 3-year professional program based on two years of general college work and leading to a B.S. degree in Pharmacy is offered. The first two years are devoted to the prescribed pre-professional subjects listed below and may be taken in residence at Montana State College or transferred from accredited colleges. In addition to these requirements, the student needs to select a major field of study chosen by the student, and must be approved by the faculty of the School of Pharmacy.

The School of Pharmacy was established in 1907 at Montana State College and was transferred to the State University campus in 1913.

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On demand 2 (0–6) Prereq 325.

For explanation see Index under "Symbols"

**SURVEY OF PHARMACOLOGY** 1Q A 3 (3–0) Career opportunities, literature, history and terminology, library orientation. Fundamental processes and equipment of pharmacy.

**PHARMACEUTICAL CALCULATIONS** 1Q W 3 (3–0), 2.00

**PHARMACOGNOSY** 2Q W 4 (3–2), S 4 (3–2) Prereq Zool 101, 220, and 220 or Elective 325.

**DRUG ANALYSIS** IQ A 4 (2-6) Prereq Chem 245. Special instrumental methods used in the analysis of pharmaceutical preparations.

**OPERATIVE PHARMACY** 2Q W 5 (3–4) Prereq 220 and 220. Fundamental techniques and the various classes of pharmaceutical preparations.

**MEDICINAL PLANTS** 1Q On demand 2 (0–6) Prereq 225.

**IDENTIFICATION OF MEDICINAL PLANTS** 1Q a/g On demand 3 (0–6) Prereq 466. The herbarium study of medicinal plants.

**DRUG MICROSCOPY** 1Q On demand 2 (0–4) Prereq 220 and 220. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

**BIOLOGICAL MEDICINAL PRODUCTS** 2Q W 3 (3–0) Prereq 325. Biological, antibiotics, vitamins, hormones, and other medicinal products of microbial origin.

**DISPENSING** 2Q A W 4 (2–6) Prereq 463. The fundamental principles of pharmaceutical preparation and compounding by means of a detailed study of the common dosage forms and special forms of medication.

Each applicant for admission to the professional curriculum must have an adequate grade point index of 2.00 on all college work taken and completed for credit at the time he makes application for admission to the first professional year.

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 may not have a grade point deficiency of 2.00 or greater. If such deficiency is 2.00 or greater, he will not be granted senior standing but will be required to retake such courses as necessary to reduce the deficiency to 1.00 or less. Such courses must be taken in residence at Montana State University, although students transferring from other accredited schools of pharmacy may be admitted to an advanced standing determined on the basis of grades presented.

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 pre-professional preparation and a minimum of three years of professional instruction.
3. Complete not less than 255 credits of course work, plus six credits in required Health and Physical Education.

**REQUIREMENTS FOR LICENSURE IN MONTANA.** An applicant for licensure as a Registered Pharmacist in Montana must pass the 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 Intern year, following graduation, in an approved pharmacy in the state of Montana.

**GRADUATE STUDY.** Candidates for the degree of Master of Science in Pharmacy must comply with the regulations governing graduate study and must complete a program satisfactory to the faculty of the School of Pharmacy.

**PHARMACY CURRICULUM**

First year: Microbiology 303–304; Business Administration 201; Chemistry 245; Pharmacy 206 or Elective, 220 or Elective, 324–325, Zoology 246–248; electives 201–203.

Second year: Business Administration 360; Chemistry 384; Pharmacy 414–415, 416, 441, 451, 461, 462, 463; and electives.

Third year: Pharmacy 500, 504, 505–508, 516, 517–518, 519, 540–541, 542, 550, 577; Microbiology 411; and electives.

**FOR UNDERGRADUATES**

**SURVEY OF PHARMACOLOGY** 1Q A 3 (3–0) Career opportunities, literature, history and terminology, library orientation. Fundamental processes and equipment of pharmacy.

**PHARMACEUTICAL CALCULATIONS** 1Q W 3 (3–0), 2.00

**PHARMACOGNOSY** 2Q W 4 (3–2), S 4 (3–2) Prereq Bot 101 and Chem 220 or Elective.

**DRUG ANALYSIS** IQ A 4 (2-6) Prereq Chem 245. Special instrumental methods used in the analysis of pharmaceutical preparations.

**OPERATIVE PHARMACY** 2Q W 5 (3–4) Prereq 220 and 220. Fundamental techniques and the various classes of pharmaceutical preparations.

**MEDICINAL PLANTS** 1Q On demand 2 (0–6) Prereq 225. The collection, identification, drying, garbling, milling of crude drugs.

**IDENTIFICATION OF MEDICINAL PLANTS** 1Q a/g On demand 3 (0–6) Prereq 466. The herbarium study of medicinal plants.

**DRUG MICROSCOPY** 1Q On demand 2 (0–4) Prereq 220 and 220. Microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

**BIOLOGICAL MEDICINAL PRODUCTS** 2Q W 3 (3–0) Prereq 325. Biological, antibiotics, vitamins, hormones, and other medicinal products of microbial origin.

**DISPENSING** 2Q A W 4 (2–6) Prereq 463. The fundamental principles of pharmaceutical preparation and compounding by means of a detailed study of the common dosage forms and special forms of medication.
PHILOSOPHY

PHILOSOPHY—67

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, 201, 202, 203, and three or more credits in courses numbered 400 and above. Normally students are expected to complete Philosophy 110, 201, 202 and 203 by the end of their sophomore year. The foreign language requirement listed earlier in the catalog must be satisfied.

PHILOSOPHY-LAW COMBINATION PROGRAM. In addition to the general requirements for graduation listed earlier in the catalog, the minimum of 50 credits in Philosophy must be earned in three years. The first year of law will complete requirements for the degree of Bachelor of Arts with a major in Philosophy. Students must take Philosophy 110, 201, 202, 203, 322, and either 320 or 321, and should take as many as possible of the following courses: Philosophy 299, 350, 354, 360, 369 and 422.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

190 INTRODUCTION TO PHILOSOPHY 1Q A W S Su 5. The main problems of metaphysics, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

191-192-193 INTRODUCTION TO PHILOSOPHY 3Q A W S 2 (191) Theory of Knowledge. (192) Metaphysics. (193) Moral Philosophy. Credit not allowed for both this course and 100.

110 LOGIC 1Q A 5. The valid forms of reasoning, the methods of science, and the detection of fallacies.

120 ETHICS 1Q A 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.

121-122 ETHICS 2Q A W 3. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations. Credit not allowed for this course and 120.

150 FUNDAMENTALS OF METAPHYSICS AND THEORY OF KNOWLEDGE 1Q A 5. The study of the various philosophical problems involved in theories of being and the possibilities of knowing reality.

201 HISTORY OF ANCIENT PHILOSOPHY 1Q A 5.

202 HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 1Q W 5 Prereq 201.

203 HISTORY OF MODERN PHILOSOPHY 1Q S 5 Prereq 202.

210 SYMBOLIC LOGIC 1Q W 5. Theory and practice in the kind of logic also known as formal or mathematical logic. Applications to the foundations of mathematics and in theory of scientific investigation.

FOR UNDERGRADUATES AND GRADUATES

301-302-303 GREAT PHILOSOPHERS 3Q A W S 1. (Given in the summer for 3 cr as 204). Enter any quarter. (301) Greek, Roman, and early Christian thinkers. (302) late medieval, Renaissance, and modern European thinkers. (303) Recent and contemporary thinkers.

310 MODERN ETHICS 1Q W 5 Prereq 210. Recent theories on the nature of moral concepts; these will include naturalism, intuitionism, emotionism, and ethical behaviorism.

321 SOCIAL ETHICS 1Q S Su 3 o/y Prereq 210. Implications of different social systems with respect to rights and responsibilities.

322 PHILOSOPHY OF LAW 1Q A 3 Prereq 5 credits in Philosophy. Various concepts of law in their relation to individual freedom and social order; philosophical justification of different forms of authority.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 1Q A 5 Prereq 15 credits in Philosophy preferably 201-202-203.

340 AESTHETICS 1Q S 3. The nature of aesthetic experience, 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 1Q A W S 3 Prereq 10 credits in literature or in literature and philosophy. Philosophical evaluation of leading ideas in selected masterpieces of literature both classical and modern.

350 THEORY OF KNOWLEDGE 1Q S 5 Prereq 150 or 10 credits in Philosophy. Foundations of belief and reliable knowledge; the claims of rationalism, empiricism, pragmatism, mysticism, authoritarianism, and scepticism.

351 METAPHYSICS 1Q W 5 Prereq 150 or 10 credits in Philosophy. Theories of reality including study of such major concepts as being, form, substance, causation, universal, particular, and process.

353 PHILOSOPHY OF LANGUAGE 1Q S 5 Prereq 5 credits in Philosophy. Theories of reference and meaning, the structure of ordinary and ideal languages as systems of signs and resulting conclusions for Philosophy.

354 CONTEMPORARY PHILOSOPHIES OF SCIENCE 1Q A 3 e/y Prereq 110 or S. History and critical study of some contemporary theories concerning the nature and limits of science, including logical empiricism and operationism.
PHYSICAL SCIENCES are those sciences which concern themselves primarily with the inanimate aspects of man's environment—the fields of Astronomy, Chemistry, Geology, Mathematics, and Physics.

Four years are required for the degree of Bachelor of Arts. During the first two years the student has the opportunity to study in all five fields. In the junior and senior years the student takes advanced work in the area of his choice. Since more advanced mathematics is necessary for adequate understanding of modern physics, students who choose that field must complete calculus.

This program enables the student to gain broad insight into these related areas of the physical sciences as well as to do some intensive work in one or more of them.

Students completing this program are prepared for beginning positions in industry or for work toward more advanced degrees. Those electing to teach may qualify to do so by taking the required courses in education and completing courses to meet requirements in a field taught in high schools in addition to the area chosen for intensive work.

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 a foreign language.

Following are the requirements leading to the Bachelor of Arts degree with a major in physical sciences:

**University Requirements**

<table>
<thead>
<tr>
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<td>Physical Education</td>
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<td>Military Science (men)</td>
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<td>Military Science (women)</td>
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**Group Requirements**

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<td>II</td>
<td>12</td>
</tr>
<tr>
<td>III</td>
<td>24</td>
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</table>

**Requirements outside Major**

- Biological Science 131-132-133 or 15 credits in Biological Science selected from Zoology 101, 202; Botany 111 or 121. At least 5 credits must be selected from each of the two fields Botany and Zoology unless Biological Science 131-132-133 is taken.
- Foreign Language (23-25 credits or a reading proficiency) 0-25

**Major Requirements**

- Mathematics through Analytical Geometry or Math 118 15-17
- Chemistry 191-192-193 15
- Physics 111-112-113 or 221-222-223 15
- Geology 110, 120, 130 12
- Astronomy 5

Fifteen credits from one of the following sequences:

<table>
<thead>
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<tbody>
<tr>
<td>Philosophy</td>
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<tr>
<td>Physical Education</td>
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</table>

**HIGH SCHOOL PREPARATION**

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

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS.** In addition to the general requirements for graduation listed earlier in the catalog, fifty-five credits in physics must be earned for the Bachelor of Arts degree with a major in physics. In preparation for these courses, a student should take Physics 221-222-223 in the sophomore year. Required courses offered in other departments: Mathematics 116, 113 or 117, 118, 251, 252, 255; Philosophy 353, (requires Math 252) 25

**FOR UNDERGRADUATES**

- Chemistry 160, 245, or 201-202-203, 270 15-17
- Geology 201-202-203 or 211, 212, 220, 310 15

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 developments of physics.

The Bachelor of Arts and Master of Arts degrees are offered.
POLITICAL SCIENCE

221-222-223 GENERAL PHYSICS 3Q A W S 5 (6-4) Prereq for 221: Math 118. 221 is prereq for 222 and 223, but 222 is not prereq to 223. This course satisfies medical and technical school requirements in general physics. 221 (Mechanics and wave motion; 222) heat, electricity, and magnetism. (223) Sound, light and atomic physics.

231 WEATHER 1Q W 2 Prereq 221-222-223. Elements of meteorological phenomena including observational quantities, air mass relations and application to air transportation.

251-252-253 LABORATORY ARTS 3Q A W S 1 (3-0). Open to upper division science majors who have completed 223. Enter any quarter.

311-315-316 ELECTRICITY 3Q A W 3 (3-0), S 4 (3-3) Prereq 271.

322-323-324 LIGHT 3Q A W S 2, A W (2-0) S (1-3). Prereq 223 and Math 252.


352-353 ATOMIC PHYSICS 2Q A W 3 (3-0) Prereq 223 and Math 252.

354 NUCLEAR PHYSICS 1Q S 3 (3-0) Prereq 353.

431 SELECTED TOPICS a/q V 1-5 R-10 Prereq e/i and 15 credits in Physics.

471-472 MECHANICS 2Q A W 3 (3-0) Prereq 271 and Math 253.

473 QUANTUM MECHANICS 1Q S 3 (3-0) Prereq 472.

490 PHYSICS SEMINAR 1Q S 1 (1-0). A library and discussion course required of Physics majors.

FOR GRADUATES

501 RESEARCH Given subject to demand. V 2-10 R-15 Prereq c/l.

519-513-514 ADVANCED EXPERIMENTAL PHYSICS 3Q A W S 2 (6-0). Given subject to demand.

552 RADIATION AND ATOMIC STRUCTURE 1Q S 5 (5-0) Prereq 353. Given subject to demand.

554-555 QUANTUM MECHANICS 2Q W S 5 (5-0) Prereq 353 and 473.

690 THESIS a/q 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, 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 both for 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 or other professional schools.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for the Bachelor of Arts degree, a major in Political Science is required, with 20 credits from courses numbered over 300 and including Political Science 491.

A student may earn a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines, at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be earned from courses numbered over 300 including either Political Science 491 or History 570. Only three of the latter three could be counted in fulfilling the minimum of 20 upper division credits.

All students majoring in Political Science will complete the integrated introductory sequence 101, 202-203 before taking other courses in Political Science 491.

Upper division work in Political Science is offered in American Political Institutions, Comparative Government, International Affairs, Public Administration, Public Law, and Political Theory. Each major in Political Science must present credits in at least four of these fields.

A student may earn a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines, at least 20 credits must be in Political Science and 20 credits in Economics. A minimum of 12 additional credits will be chosen from upper division Economics courses and 15 additional credits from Political Science. Twelve hours of the Political Science must be in upper division courses and the student must satisfy all the customary University general education requirements for graduation. As is possible, all upper division courses will be in Political Science.

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines, at least 20 credits must be in Political Science and 20 credits in Economics. A minimum of 12 additional credits will be chosen from upper division Economics courses and 15 additional credits from Political Science. Twelve hours of the Political Science must be in upper division courses and the student must satisfy all the customary University general education requirements for graduation. As is possible, all upper division courses will be in Political Science.

Either the completion of five quarters of a foreign language or the demonstration of a satisfactory reading knowledge of historical, legal, or political science materials in each language is required. With the consent of the Chairman of the Department the student may fulfill the language requirement by completing the courses in each of two languages.

In the final year in the Department, each major must pass a senior comprehensive examination.

With permission of the Chairman of the Department, majors may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines, at least 20 credits must be in Political Science and 20 credits in Economics. A minimum of 12 additional credits will be chosen from upper division Economics courses and 15 additional credits from Political Science. Twelve hours of the Political Science must be in upper division courses and the student must satisfy all the customary University general education requirements for graduation. As is possible, all upper division courses will be in Political Science.

FOR GRADUATES

491-492-493-494-495 AMERICAN GOVERNMENT I 4Q A W 4 (4-0) Prereq 302. The functions of the national government, including finance, business, labor, agriculture, conservation, energy, national defense, and foreign policy. Selected problems of national government will also receive emphasis.

321 INTERNATIONAL RELATIONS 1Q S 4, Su 3. A general introduction to the nation-state system: factors of national power and policy, forces inducing tension, legal and institutional devices for the adjustment of conflict, and the machinery of international cooperation with particular reference to the United Nations.

FOR UNDERGRADUATES

101 INTRODUCTION TO GOVERNMENT 1Q S Su 4. Comparative study of fundamental political institutions of modern governments, including constitutions, political parties, legislatures, executives, and courts.

202-203 AMERICAN GOVERNMENT 2Q A W Su 4. (203) The underlying constitutional principles of the nation. The democratic political processes, including public opinion, interest groups, political parties, and elections. The structure of the national government, congress, the presidency, and the courts; (203) The development of the nation-state system, including superpolitics, business, labor, agriculture, conservation, energy, national defense, and foreign policy. Selected problems of national government will also receive emphasis.

231-232-233-234-235 PUBLIC ADMINISTRATION 1Q S Su 3. An introduction to public administration: the history, philosophy, and development of public administration; the structures of public administration; the role of the public administrator; the nature of public administration practice; public administration and public policy. Students majoring in public administration may apply This course toward the 40 credit minimum for the Master's degree. Students majoring in political science may apply This course toward the 20 credit major requirement. A student may offer a combination major in Political Science and Public Administration with a minimum of 60 credits selected from the two disciplines, at least 20 credits must be in Political Science and 20 credits in Public Administration. A minimum of 12 additional credits will be chosen from upper division Political Science courses and 15 additional credits from Public Administration. Twelve hours of the Political Science must be in upper division courses and the student must satisfy all the customary University general education requirements for graduation. As is possible, all upper division courses will be in Political Science.

241 POLITICAL PARTIES AND ELECTIONS 1Q W Su 3 Prereq 202-203. The organization and work of American political parties; the conduct and control of nominations and elections; parties and political democracy.

FOR UNDERGRADUATES AND GRADUATES


321-322-323 INTERNATIONAL ORGANIZATIONS 1Q A Su 3 Prereq 231. The machinery of international cooperation with particular reference to the United Nations.
332-333 INTERNATIONAL PUBLIC LAW 2Q A W 3 Prereq 8 cr in the Department. The law of nations in relation to peace, war and collective security.

341 PRESSURE GROUP POLITICS 1Q S 3 Prereq 241. The role of interest groups in a democracy; their interaction of interests with public opinion, political parties, legislatures, executives, administrations, and the courts.

251-382 THE DEVELOPMENT OF POLITICAL THOUGHT 2Q A W 4 Prereq 101 or 205. (351) Western Political thought from ancient origins to the early modern period. (352) Western political thought from its early modern roots to the twentieth century.

353 AMERICAN POLITICAL THOUGHT 1Q S 4 Prereq 101 or 203. American political thought, both systematic and popular from colonial origins to the present.

361-362 PUBLIC ADMINISTRATION 2Q A W 4, Su 3 Prereq 101 or 203. (361) Legislative, executive, and judicial aspects of American administration. The processes of public management, including the administration of public finance and personnel. (362) Problems and techniques of public administration illustrated through the study of case materials.

363 PUBLIC PERSONNEL ADMINISTRATION 1Q S 3 Prereq 361. The recruitment, selection, promotion, training, classification, and rating of public employees; organization for personnel management in government.

365 GOVERNMENT REGULATION OF BUSINESS 1Q S 3 Prereq 203. The theories of government regulation; regulation in practice by legislation, by commission, and by judicial decision; the government in business.

371-372 THE AMERICAN CONSTITUTIONAL SYSTEM 2Q W S 3 Prereq 203. The constitution of the United States in the jurisprudence of the Supreme Court.

375 PRINCIPLES OF ADMINISTRATIVE LAW 1Q W 3 Prereq 371 or 361. Administrative law in the United States with reference to other countries. Administrative authorities, the scope and limitations of their powers, remedies, judicial control of administrative action.

381 STATE GOVERNMENT 1Q A 3 Prereq 203. Structure, functions, and operations of state governments; relation of states to other units of local government; administrative organization and reorganization including constitutional reforms. Special attention to Montana.

383 MUNICIPAL GOVERNMENT 1Q S 3 Prereq 203. Legal bases for city government, the city government, municipal reform, municipal laws, and a city government plan. Municipal services; problems of modern cities and metropolitan areas.

387-389 PROBLEMS OF MONTANA GOVERNMENT 3Q A W S 3 Prereq 381 and History 299. Prerequisites recommended, and c/l. Any entry. Enter any quarter. (387) Problems in state administration, other than legislative. (388) Problems in state administration, legislative. (389) Problems in local government. Research and field study, visits to governmental agencies, discussion with public officials.

391 PROBLEMS IN POLITICAL SCIENCE 3Q A W S Su V R-4 Prereq 203 or 361. In the Department. Research in fields selected according to the needs and objectives of the individual student. Total credits allowed in Political Science 361 and History 301-9.

395 SPECIAL STUDIES IN POLITICAL SCIENCE 3Q A W S Su V 1-2 R-4 Prereq 203 or 101 and 231, and c/l. Selected aspects of politics, government, or international affairs. Offered by different instructors under various titles.

396 AMERICAN POLITICAL PROBLEMS 1Q A 4, Su 3 Prereq 203 or History 291-292. Present day problems such as governmental reorganization, taxation, and budget, states rights, and powers of Congress and the Chief Executive.

397 PRESENT WORLD PROBLEMS 1Q S 3 Prereq 12 cr in the Department. Selected problems in recent and contemporary international affairs.

401 METHODS AND MATERIALS 1Q S Su 3. Open to departmental majors only. Methods of investigation, evaluation and synthesis in Political Science with a survey of the technical literature on the subject.

FOR GRADUATES

593 SEMINAR IN POLITICAL SCIENCE 1Q A W S Su V R-10 Prereq 361 or 491 and History 491. Special problems in political science.

669 THESIS a/q V R-15.

PRE-MEDICAL SCIENCES are designed for students who wish to prepare for entry into medical, dental, or nursing schools. Medical schools require the five years of such training and in most cases prefer four. For the latter the University offers the degree of Bachelor of Arts with a major in pre-medical sciences, the curriculum for which is described below. However, pre-medical students may take their degrees in any of the related sciences so long as they are careful to include the required courses. The prerequisites have been standardized by the medical profession and its governing or licensing boards and representatives. They require primarily basic sciences (Chemistry, Mathematics, Physics, and Zoology) as well as a modern Foreign Language, Literature, Psychology, and Social Studies. An equally important prerequisite is superior scholastic standing since medical and dental schools have more applicants for admission than they can accept, for which reason, as well as the exacting nature of those professions, high scholarship is a prime qualification.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs at least three years of high school mathematics. It is also recommended that the high school graduation year of the applicant be spent in laboratory science, two years of French or German and considerable background in literature and social studies.

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, demonstrates a high level of competency, and has a relatively well-balanced personality. Since not all applicants for entrance to medical schools are accepted, the pre-medical student is urged to plan his own University career with that idea in mind.

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 in the pre-medical sciences, (2) the requirements listed below, and (3) the major requirements in his selected field. The student should consult with both the pre-medical sciences adviser during the freshman year and with both the pre-medical sciences adviser and the adviser in the selected major beginning not later than the sophomore year in residence.

MINSIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT. English, Phy. Ed., Mil. Sci., Group and other University requirements listed earlier in the catalog; Chemistry through Organic Chemistry and Quantitative Analysis; one year of college mathematics; one year of college physics; Zoology through comparative anatomy and embryology; (Genetics is recommended); A reading knowledge or 23 credits in French, German or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS Degree in the Pre-Medical Sciences. A reading knowledge of one modern Foreign Language, a year of laboratory science, two years of French or German and considerable background in literature and social studies.

In addition to the minimum course requirements listed immediately above the student must take Psychology 6-10 credits; 15 credits of Mathematics or Physics; and additional electives selected from the non-sciences to complete University credit requirements for graduation.

Students who complete 135 credits of pre-medical work (plus six credits in English) at Montana State University, complete all requirements for the B.A. degree with a major in the pre-medical sciences and present evidence of satisfactory completion of the first year of medical school may be granted a B.A. degree in the Pre-Medical Sciences.

It is possible for the Pre-medical Sciences student who has satisfied the above requirements to earn a Bachelor's degree in some other field than the Pre-medical Sciences. A degree in a related field such as Microbiology, Chemistry, Mathematics, Zoology may be earned by completing minimal course work in the area selected as approved by the Chairman of the major department concerned.

PRE-MEDICAL SCIENCES CURRICULUM

(Medicine, Dentistry, Veterinary Medicine)

Freshman Year

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<th>Preceptor</th>
<th>A</th>
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<td>Mathematics 116, 117, 118</td>
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<td>Chemistry 121-122-123</td>
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<td>Physics 113-114</td>
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Sophomore Year

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<td>English 261-262</td>
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<td>Social Science 101</td>
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<td>H&amp;P and ROTC (see below)</td>
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</table>
**PSYCHOLOGY** is the science concerned with principles of human behavior. It deals with processes of motivation, emotion, perception, learning, thinking, imagination and intelligence.

The Bachelor of Arts and Master of Arts degrees are offered.

Minimum preparation for professional work in psychology requires an A.A. degree, and full professional competence requires the Ph.D. degree. The fully trained student may select from a variety of positions in 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 persons 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: at least 45 credits in psychology, including Psychology 110, 210, 211, 212, 220, and 411, with at least 25 credits in psychology courses numbered above 290; Mathematics 125; and a reading knowledge or five quarters (23 to 25 credits) in one modern language. Other courses recommended for psychology majors include Philosophy 210 and 333; Psychology 101 or 201, 202, 203, 210, 211, 212, 220, and 411, with at least 25 credits in psychology courses, numbered above 290.

**RECOMMENDED COURSE SEQUENCE**

**Freshman Year**

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<tr>
<td>Chemistry 370</td>
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<td>Physics 121-122-232</td>
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<tr>
<td>For. Language 101-102-103</td>
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<td>Social Science</td>
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<td>Zoology 202</td>
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**Sophomore Year**

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<td>Mathematics 100—Intermediate Algebra</td>
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<td>Mathematics 125—Statistics</td>
<td>5</td>
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<tr>
<td>Modern Language: 101-102-103</td>
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<td>English 201-202-203</td>
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<tr>
<td>Psychology 200—Psychological Statistics</td>
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<td>Electives</td>
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<tr>
<td>PE 101-102-103—Physical Education</td>
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<td>ROTC 101-102-103—Military or Air Science (Men)</td>
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<td>or ROTC 101-102-103—Military or Air Science (Women)</td>
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**Junior Year**

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<td>Philosophy 210 or Elective</td>
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<tr>
<td>Zoology 202—Human Physiology</td>
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<td>Electives</td>
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**Senior Year**

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<td>Choice of 400-level Psychology courses</td>
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<tr>
<td>Electives</td>
<td>1-6</td>
</tr>
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**SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN PSYCHOLOGY.** In addition to the general requirements of the Graduate School, the following special requirements must be completed for the Master of Arts degree in psychology: at least 45 credits in courses numbered above 290, which may include no more than 15 credits in Psychology 699, and which must include Psychology 505-506-507, 511, and 521. Upon completion of two quarters in residence or completion of 30 graduate credits, the student is required to pass a comprehensive written examination in selected areas of psychology.

**MASTER OF ARTS IN GUIDANCE AND COUNSELING.** See statement under Graduate School.

**FOR UNDERGRADUATES**

110 INTRODUCTION TO PSYCHOLOGY 1Q A W S Su 5 (5-4)  
Psychological methods and principles, and their application to problems of human adjustment.

190 PSYCHOLOGICAL INVESTIGATION A W S V 1-3 R-S  
Prereq 110 and c/i. Supervised investigation of psychological problems.

210-211-212 GENERAL PSYCHOLOGY 3Q A W S S 5 (3-4)  

220 PSYCHOLOGICAL STATISTICS 1Q S S (4-2)  
Prereq 110 and Math 100. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 1Q W S (5-4)  
Prereq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 1Q A S (5-4)  
Prereq 110. Effects of social environment upon human behavior.

241 PSYCHOLOGY OF BUSINESS 1Q A W S (5-4)  
Prereq 110.

344 PSYCHOLOGY OF LEADERSHIP 1Q A S (3-0)  
Prereq 110. The leadership role examined in terms of behavioral principles.

**FOR UNDERGRADUATES AND GRADUATES**

220 CORRELATIONAL ANALYSIS 1Q W S (3-4)  
Prereq 220. Psychological applications of correlational methods.

342 PERSONNEL PSYCHOLOGY 1Q W S (3-4)  
Prereq 110. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 1Q S S (3-0)  
Prereq 110. Applications of psychology in industry.

350 PSYCHOMETRICS 1Q S S (3-0)  
Prereq 220. Psychological and physiological scaling.

351-352-353 PSYCHOLOGICAL TESTING 3Q A W S 4 (3-2)  
Prereq 230; 352 is not a prereq for 353. (351) Test construction techniques; (352) Intelligence, aptitude, and ability tests; (353) Objective tests of personality, interests, attitudes, and values.

360 PERSONALITY DYNAMICS 1Q A S S (5-4)  

361 ABNORMAL PSYCHOLOGY 1Q A W S 5 (5-0)  
Prereq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

400 SCIENTIFIC METHOD IN PSYCHOLOGY 1Q W S 5 (5-0)  
Prereq 110. A survey of the social and experimental evidence, the nature of law, theory, induction, deduction, and verification in psychology.

410 HISTORY OF PSYCHOLOGY 1Q W S 5 (3-0)  
Prereq 210-211-212. The historical development of concepts, methods, and theories in psychology.

411 SYSTEMATIC PSYCHOLOGY 1Q S S (3-6)  
Prereq 210-211-212. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis, etc.

412 PHYSIOLOGICAL PSYCHOLOGY 1Q A S (3-0)  
Prereq 210-211-212. Prereq 220. The physiological and neurological correlates of behavior. Survey of the experimental approaches of physiology.

413 COMPARATIVE PSYCHOLOGY 1Q S S (3-2)  
Prereq 210-211-212. A comparative study of human and animal behavior, and a survey of the phyetic scale.

414 THOUGHT PROCESSES 1Q S S (3-0)  
Prereq 10 credits from 210-211-212; 220. Theoretical and experimental analysis of thought processes, their development, and their influence on human behavior. (211) Attention and concentration; (212) Memory and amnesia; (213) Learning and intelligence; (214) Language; (215) Motor behavior; (216) Perception; (217) Animal instincts and behavior; (218) Theories of intelligence; (219) Mental imagery; (220) Thought and perception; (221) Theory and methods of research on thought processes.

440 SURVEY RESEARCH 1Q S S (3-4)  
Prereq 220 or =. 240. Theory and methods of survey research, with review of areas of application.

441 GROUP DYNAMICS 1Q A S (3-4)  
Prereq 444. Social processes within small and large groups.

444 THEORY AND METHODS IN SOCIAL PSYCHOLOGY 1Q W S S 5 (5-0)  

451 INDIVIDUAL DIFFERENCES 1Q A S S (3-0)  
Prereq 110. Nature and extent of individual and group differences.
RADIO AND TELEVISION courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in other fields, or for greater appreciation of the media as audience members. Graduates in radio-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers and executives of radio and television stations, or as radio-television specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree with a major 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. In addition to required courses in radio and television, special requirements must be met in curricula of related fields. Most of the radio-television courses are offered by the School of Journalism, but some departments in the College of Arts and Sciences also have offerings in the program. Production of programs for broadcast from the University’s studios is included in the course of study. Modern equipment of professional quality in new studios and an adherence to high standards of performance prepare students to make significant contributions and successful careers in the broadcasting profession.

Note: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree with a major in Radio-Television.

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 the courses listed below may be counted for graduation in other curricula where the professional requirements leave room for such electives. The instruction includes the use of religious literature, including the scriptures, along with church and religious history and contemporary thought and scholarship. No attempt is made to indoctrinate the student in beliefs or creeds.

The Montana School of Religion was organized in 1924 by a committee representing the University and several religious denominations for the purpose of making courses in religion available to students. The School is affiliated with the University, under a director who is responsible to a Board of Trustees representing the cooperating denominations and the University.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

118 INTRODUCTORY STUDY OF RELIGION 1Q A W S 2. Some major religions of the world, and some basic religious problems a student must face. Open only to Freshmen and Sophomores.

123 LIFE AND TEACHINGS OF JESUS 1Q W S 3. The origins, backgrounds, problems, occasions, motifs and messages of the four gospels with an attempt to relate the teaching for today.

142 RELIGION IN AMERICA 1Q A W 3. The beliefs and practices of Judaism, Protestantism, Roman Catholicism, and representative sects.


224 LIFE AND TEACHINGS OF PAUL 1Q W 3. The origins, backgrounds, problems, occasions, motifs and messages of ten epistles of Paul the apostle and their implications and applications for today.

241 CHRISTIANITY TO 1700 1Q W 3. The background and trends of the Christian Church, its spread through the Roman Empire and its growth in Europe.

250 BASIC CHRISTIAN CONVictions 1Q W S 2. The realities of God, man, sin, Jesus Christ, and redemption interpreted in meaningful terms for our day.
RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both Departments offer 6 quarterly periods of ROTC training to satisfy University requirements. All undergraduate male students other than veterans are required to take two years of Air Science or the equivalent of Air Science during their freshman and sophomore years. Students interested in careers in the Air Force or Army should consult the Professor of Air Science or the Professor of Military Science.

AIR SCIENCE

BASIC COURSE: AIR AGE CITIZENSHIP EDUCATION

The academic requirements of the basic courses autumn and winter quarters of the freshman year and spring quarter of the sophomore year will be met through enrollment in any group requirement with the exception of Art, Drama, or Music courses.

101-102-103 FOUNDATIONS OF AIR POWER-1 3Q A W 0, S 2, (101-102) Basic Military Training, including exercises in drill ceremonies, and customs, with emphasis on proficiency and teamwork (concurrent enrollment in a minimum of 2 credit course selected from appropriate Group Requirements). (103) Professional opportunities in the U.S. Army and Air Force, the significance and potential of aerospace power, and air vehicle industries.

201-202-203 FOUNDATIONS OF AIR POWER-2 3Q A W S 0 Prereq 101-102-103, (201) Development of aerial warfare with emphasis on principles of warfare, employment of forces, changing weapons system, and weapons. (202) Aerial targets, aircraft, missiles, bases and facilities, and aerial operations. (203) Basic military training, with emphasis on leadership and teamwork. Continuation of leadership, drill and command of cadet non-commissioned officers. (Concurrent enrollment required in a minimum of 2 credits in a course selected from appropriate Group Requirements.)

110 AIR FORCE BAND 1Q S 1 R-2 Taught by the School of Music, which must approve all admissions. May be substituted for Air Science 102 and 202, except for those sophomores who have been selected for the Advanced Course. Band formations and marching, military ceremonies.

ADVANCED COURSE: AIR FORCE OFFICER DEVELOPMENT

Admission to the Advanced Course is on application of the student and selection by the Department of Air Science and the President of the University. Once begun, successful completion of the six quarters and the Summer Training Unit is a requirement for a bachelor's degree in military science.

201-202-203 AIR FORCE OFFICER DEVELOPMENT 3Q A 1, W 4, S 3 (concurrent enrollment in Psy 344 required.) (201) Principles and practices of leadership. Includes basic psychology of leadership, stress management, and military procedures. (202) Principles of problem solving in Air Force application. Analysis of rules and cliches. Translation of knowledge into speaking, writing, and listening skills. Creative thinking and practical logic. Military correspondence and reports. (203) Leadership, drill and command with emphasis on duties and responsibilities of the Junior leaders. Leadership, drill and command with emphasis on duties and responsibilities of the Junior leaders. Leadership, drill and command with emphasis on duties and responsibilities of the Junior leaders.

304 SUMMER TRAINING UNIT No credit. Four weeks at an Air Force Base after completion of Air Science 301-302-303. Organization and functions of an Air Force Base, of crew and aircraft indoctrination, officer orientation, military fundamentals, physical training and individual weapons.

401-402-403 GLOBAL RELATIONS 3Q A 1, W 1, S 1 (Concurrent enrollment in Geog 331-332 and Pol Sci 201 required.) (401) Physical and cultural features of a state in relation to problems of unity and diversity. Introduction presenting the navigational aspects of airpower, emphasizing terrain appreciation and navigation, globes and maps in the air age world. Introduction to weather such as temperature, pressure and air masses. (402) Nature of weather such as temperature, pressure and air masses. (403) Nature of weather such as temperature, pressure and air masses.

RESERVE OFFICERS TRAINING CORPS—73
recommended by both the President of the University and the Professor of Military Science. Upon enrollment, the student is required to enter into a contract with the Government stipulating that he will pursue the course to its completion, unless sooner relieved by competent authority, and further that he will accept a commission if tendered. Advanced corps cadets are paid a subsistence allowance of $60 per day through the year except while at summer camp in which case he receives the pay of a Private E-1. If commissioned, the length of service is as required by Federal Reserve Forces Act of 1955, with Amendments.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 301 A W S 3 Enter any quarter. (301) Leadership and inspirational principles, including character, leadership, qualities, requirements, problem solving and theoretical and practical exercises in giving military instruction; organizational structure and functions of the branches of the Army. Leadership, Drill and Command—to include practical work in instructing and directing military drill of individuals and small units. (302) Small unit tactics, including the principles and techniques of leading small units from the squad to the company in offensive and defensive operations. Continuation of Leadership, Drill and Command. (303) Continuation of small unit tactics and instruction to Army Communication Systems. Orientation of Summer Camp Activities. Continuation of Leadership, Drill and Command.

313 SUMMER CAMP. No credit. Six weeks at an Army training center taken after completion of 303 from middle of June through first of August. Practical military training and tactical exercises with emphasis on the development of discipline and qualities of leadership.

491-492-493 MILITARY MANAGEMENT 301 A W S 3 Prereq 301-302-303 Enter any quarter. (491) Operations to include staff organizations and procedure at Division level, coordination of the Army's services, functions and techniques, requirements, management and procedures, troop movements by foot and motor, motor pool management; military justice and constitutional procedure with practical work in moot court. Continuation of Leadership, Drill and Command. (492) Continuation of Military Administration, orientation on life in active military service. Continuation of Leadership, Drill and Command.

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. Bread 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 such positions as care workers, supervisors and administrators in public and private social agencies, courts, hospitals, mental-health clinics and youth serving organizations.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. 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 with a major in Social Welfare: 50 credits in departmental courses including at least 39 credits in Social Welfare. A foreign language is required as listed earlier in the catalog.

During the first two years, the following courses should be taken to provide a broad foundation: Anthropology 102 or 125; Economics 301-302-303; History 102-103 or 252-253; Political Science 202-203; Psychology 110; Sociology 101 (Social Welfare 101).

During the second two years, one course numbered 200 or above must be taken in each of the following fields: Anthropology, Economics, History, Political Science, Psychology, and Sociology. Work in the Community Services Laboratory during the senior year is required up to a maximum of 12 credit hours.

GENERAL INFORMATION: 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.

The undergraduate program features the interdisciplinary approach—courses selected from the several social sciences to serve as a foundation for the limited number of courses which present Social Welfare content and method. Group methods are freely used.

For explanation see Index under "Symbols"

181 THE FIELD OF SOCIAL WELFARE 1 q a/q 5. Social welfare functions. Development of modern social welfare and the distinctive features of the profession.

361 INTRODUCTION TO RECREATION LEADERSHIP 1 q A 3 Prereq Sociology 101. Sociology of play, recreation and leisure time community approach to recreation; recreation for industrial workers, hospital patients, senior citizens, playgrounds; facilities and resources. Credit not allowed for this and H&PfE 361.

362 RECREATION LEADERSHIP (SOCIAL RECREATION) 1 q W Prereq Sociology 101. Organization 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 H&PfE 362.

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1 q S 3 Prereq Sociology 101. Principles and practice in group leadership of outdoor activities; skills and understandings essential to organized camping. Credit not allowed for this and H&PfE 363.
Teaching of content and skill subjects and the principles recognized as basic in their use.  

FOR UNDERGRADUATES AND GRADUATES  

SOCIOLOGY is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It is concerned with contemporary civilization. The Bachelor of Arts degree, may be earned either in Sociology or in combination of Sociology and Anthropology. The Master of Arts degree is also offered (see Graduate School). Graduates may engage in teaching, research, or government service. There are many opportunities for scholarships or fellowships in graduate work. Sociology is also a preparatory background for those who, after other studies, plan to engage in many of the familiar professions.  

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in departmental courses are required for the Bachelor of Arts degree with a major in Sociology. A foreign language is required as listed earlier in the catalog. At least 25 of the 50 major credits must be in sociology courses, including Sociology 101, 205, 305, and 410. Anthropology 102 or 153 and Social Welfare 111 may be taken. Remaining credits for the major may be selected from any courses in the department. Credit may be allowed for Psychology 240 and Psychology 449.  

For those who plan to go into work that requires a background in both sociology and the area of interhuman relations in general, it will be necessary to take in addition to general departmental requirements should be completed: Sociology 304, and at least 12 additional credits of upper division sociology; Economics 201-202-205, 311 and at least 12 additional upper division credits of economics.  

MASTER OF ARTS IN GUIDANCE AND COUNSELING. See statement under Graduate School.  

FOR UNDERGRADUATES  

401 INTRODUCTORY SOCIOLOGY 1q A W S Su 5. A general study of the sociological method.  

402 THE FAMILY 1q W 5 Prereq 101. Comparative, historical and statistical study of family life in its social and cultural background.  

403 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq c/l.  


411 ADVANCED GENERAL SOCIOLOGY 1q S 4 Prereq 401, 10 upper division credits in sociology. Review and analysis of major sociological theory and laboratory method.  

459 ADVANCED METHODS 1q A 5 Prereq 303 or c. Required of all graduate students in sociology.  

FOR GRADUATES  

501 GRADUATE RESEARCH a/q V 5 R-10.  

SPEECH includes courses in the field of General Speech, and according to the interest of the student, emphasis in one or more areas of concentration: Public Address and Forensics, Speech Pathology and Audiology, Speech Education, Oral Interpretation, Radio and Television, Historical Pageant-Drama and Sociodrama, and Communications Research and Theory. Speech Graduates teach Speech (including the coaching of forensics teams) in high school or college, enter employment in radio-television, public relations, and speech and hearing therapy, or do professional speaking. Also, as a result of their training, graduates in Speech can compete successfully in various other fields.  

The curriculum in Speech is designed to provide cultural background and technical training in oral communication which will prepare the student for competence in...
social situations, for leadership in a chosen profession, and for proficiency in professional speech work.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. 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 Speech: (a) a minimum of 45 credits in Speech, including Speech 111, 112, 113, 214, 261, 353, and either 344 or 345; Speech Pathology 231, 300, and 317. The speech competence of the student must be satisfied. A special comprehensive examination is required of all candidates for honors in Speech.

GRADUATE STUDY. In addition to meeting the requirements above, a student should take Speech 318, Philosophy 210 or 216 and Mathematics 125.

NOTE: Either Speech 101-102 (6 credits) or 111 (5 credits) will satisfy school or departmental requirements for the beginning course in Speech.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102 PRINCIPLES OF SPEECH IQ A W S Su 3. See note above. Group discussion, oral reading, public speaking, to develop constructive attitudes, organized thinking, and discriminative listening as these contribute to effective communication and human relations.

111 PRINCIPLES OF SPEECH IQ A W S 5. See note above. This course aims, through various experiences in group discussion, oral reading, and public speaking, to develop constructive attitudes, organized thinking, and discriminative listening as these contribute to effective communication and human relations.

112 ARGUMENTATION IQ A W S 5. The principles by which belief and conduct are influenced through appeals to logical reasoning, organization, and communication. Study and practice of effective logical reasoning and communication.

113 PARLIAMENTARY PROCEDURE IQ A W S 2. The principles and practices of parliamentary procedures used in the conduct of fraternal, professional and community meetings.

118 VOICE AND DICTION IQ A W S 3. Application of principles to the improvement of voice and diction.

119 PHONETICS IQ A S. The speech mechanism in relation to the production of auditory symbols. Introduction to the use of phonetic symbols.

123 PUBLIC SPEAKING IQ A W S Su 3. Prereq 101-102 or 111. A beginning course in written and oral presentation. Development of responsiveness to the meaning of literature, oral interpretation of major pieces of literature, and of the ability to read orally so as to communicate this appreciation to others.

210 INTERMEDIATE ORAL INTERPRETATION IQ A 3 Prereq 262 or =. Preparing programs for various occasions. The oral interpretation of literature and art.

214 DISCUSSION TECHNIQUES IQ A 3. Study and practice in the techniques in making inquiries into and solving problems by the means of group thinking.

241 RADIO-TELEVISION SPEECH IQ W S 3 Pre 262-266 or =. Principles and practices of speaking and writing; rehearsal, rebuttal, and their application to current economic, social and political problems.

251 BEGINNING ORAL INTERPRETATION IQ A 3 Prereq 116. Development of competence in the meaning of literature, the production of auditory symbols.
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN SPEECH for students emphasizing Speech Pathology and Audiology: In addition to the general requirements listed earlier in the catalog, the following special requirements must be satisfied: at least 29 hours in speech pathology and audiology including 231, 330, 331, 335-336, 340, 342, and 6 hours of 333; Psychology 110, 230, 360; Speech 101 and 102; and one or 111, 118; and Zoology 260. The better positions go to those who have received the master's degree in Wildlife Management, the relationship of wildlife to problems of land management.

Graduates find employment with state fish and game or conservation departments or federal agencies such as the Fish and Wildlife Service, the National Park Service, the Soil Conservation Service, the Food and Drug Administration, etc. Some become managers of wildlife on private estates. The better positions go to those who have received the master's degree in Wildlife Management or Wildlife Technology. The field is becoming more specialized and certain institutions give graduate work leading to the doctor's degree. Graduates with advanced degrees may enter college or university teaching.

WILDLIFE TECHNOLOGY—77

WILDLIFE TECHNOLOGY is the study of basic science with particular emphasis upon the biological sciences, together with the development of special skills and techniques as a preparation for professional work in fish and wildlife conservation and management. Wildlife Technology stresses biological concepts; Wildlife Management the relationship of wildlife to problems of land management.

Curricula in Wildlife Technology

Freshman Year

Zool 104-105, 201—Elem. Zoology, Comparative Vertebrate Anatomy .............................. 5

Botany 111, 112, or 123—General Botany .................. 3

Chemistry 101, 102, 160—General, Survey Organic .... 4

English 101, 102, 165—Freshman Composition ......... 3

Mathematics 110—Intermediate Algebra ................. 3

Group Requirements .............................. 3

Health & Physical Education 101, 102, 103 .......... 1

ROTC 101, 102, 103—Military or Air Science ..... 2

17-18

Sophomore Year

Zool 104-105, 201—Elem. Zoology, Comparative Vertebrate Anatomy .............................. 5

Phys 112, 113—General Physics ........................ 5

Group Requirements (5 or 10 credits winter or spring depending on physics 112 or 113) .... 5

HPE 201-202-203—Physical Education .................. 1

ROTC 201-202-203—Military or Air Science ......... 2

19-17-18

FOR UNDERGRADUATES

231 VOICE SCIENCE 1Q W Su 3 Prereq Speech 119. Basic scientific concepts and principles fundamental to the understanding of voice and speech phenomena.


333 SPEECH CLINIC PRACTICUM 2Q A W S Su 2 R-6 Prereq or Corequisite 331. Sixty clock hours per quarter of supervised clinical practice in the Speech and Hearing Clinic.


340 INTRODUCTION TO AUDIOLGY 1Q S Su 4 Prereq 330. The basic psychophysical dimensions of the auditory mechanism and a survey of the fundamentals and principles related to the measurement of hearing loss.


343 ADVANCED CLINICAL PRACTICUM 1Q A W S V 1-3 R-6 Prereq 6 hours of 333. Supervised clinical practice beyond that provided in the preclinical clinic. Field.

345 METHODS IN PUBLIC SCHOOL SPEECH AND HEARING THERAPY 1Q A Su 2 Prereq 333, 335, 336, 342. Methods in speech and hearing therapy used in public school programs with emphasis on the elementary level.

346 PRACTICUM IN PUBLIC SCHOOL SPEECH AND HEARING THERAPY 1Q A W S V 2-4 Prereq Educ 301, Corequisite 435. Establishing, integrating, and conducting a speech and hearing program under supervision in a cooperating public school. Thirty clock hours of clinical practice for each credit.

400 PROBLEMS a/q V R-6 Prereq c/l.

FOR GRADUATES

531 STUTTERING 1Q S Su 3 Prereq 330 or =. Lectures, readings, demonstrations and observations covering the research, theory, and therapeutic principles of stuttering.

532-533 ORGANIC DISORDERS OF SPEECH 2Q W S Su 3 Prereq 336 or (532) Theory and research pertaining to the various organic pathologies of speech with specific emphasis on cleft palate, laryngectomy and miscellaneous organic pathologies of voice. (533) Theories, research and remedial techniques in the areas of cerebral palsy and aphasia.

540 MEASUREMENT OF HEARING LOSS 1Q A Su 3 Prereq 340 or =. The techniques employed in evaluation of hearing loss. Tuner-ear type hearing losses and their differential responses to audiological examination.

542 CLINICAL AUDIOLGY: REHABILITATION 1Q W Su 3 Prereq 342 or =. Theory and research pertaining to the various methods of speech and language rehabilitation of hard of hearing adults and children.

590 ADVANCED PROBLEMS a/q V R-9 Prereq c/l.

598 RESEARCH METHODS 1Q A Su 2 Prereq 18 credits in Speech Pathology and Audiology.

599 SEMINAR 1Q W Su V 1-2 Prereq 18 credits in Speech Pathology and Audiology.

600 RESEARCH a/q V R-10 Prereq 18 credits in Speech Pathology and Audiology.

609 THESIS a/q V R-15.
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.

The Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are also 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, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, etc. Many, with further training, enter medicine or related fields.
306 HERPETOLOGY IQ W 3 (2-3) o/y Prereq 201. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY IQ S 5 (3-7, 10) Prereq 106 and Bot 123. The biology of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY IQ S 5 (3-6), Su 3 at Biological Station, Prereq 201. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

310 MAMMALOGY 1Q A 5 (3-4), Su 6 at Biological Station, Prereq 201. The classification, identification and life histories of mammals. Saturday field trips.

311-312 INVERTEBRATE ZOOLOGY 2Q A W 5 (3-4) e/y Prereq 104-105 and one additional Zoology course. The anatomy, embryology, and physiology of the invertebrate animals.

321 PROTOZOOLOGY 1Q A 5 o/y Prereq 104-105. Taxonomy, structure, natural history, physiology, and ecology of non-parasitic protozoans.

323 VERTEBRATE ENDOCRINOLOGY 1Q S 3 (2-4) Prereq 201, 302. The microscopic anatomy and the normal physiology of the major glands of internal secretion of vertebrates. Correlative problems employing surgical and experimental techniques may be undertaken.

330-341 VERTEBRATE PHYSIOLOGY 2Q A W 5 (3-4) Prereq 201 or =, three quarters of college chemistry. (140) General physiological properties of protoplasm: blood, body fluids, and circulation; respiration and excretion; (341) digestion, nutrition and inter- mediate metabolism; excitation, conduction, responses, senses; endocri nes and reproduction.

350 ECOLOGY OF WILDLIFE POPULATIONS 1Q W 3 (3-0) Prereq 201. The population dynamics of wildlife species, with emphasis on recent literature. Productivity, turnover, carrying capacity, predation, methods of census and harvest.

364 INVERTEBRATES OF THE INTERMOUNTAIN REGION 1Q Su 3 (3-12) Prereq 103. The ecology, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

365 ENTOLOGY 1Q S 5 (3-4) o/y Su 6 at Biological Station. Prereq 101 or 104-105. The structure, classification, life histories, distribution and ecology of insects.

366 AQUATIC INSECTS 1Q Su 3 (3-12) Prereq 104-105 or 101 and one additional Zoology course. The insect fauna, both immature and adult, aquatic habitats of Western Montana.

385 GENETICS 1Q A 5 (3-4) Prereq 201 or Bot 225. The mechanism of heredity, involving consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not allowed for this course and Botany 225.

386 EVOLUTION 1Q A 3 (3-0) o/y Prereq 106 and Bot 121, 122, 123, 225 or concurrent registration. The theories of evolution from the historical point of view; the nature of evolutionary processes, the evidence for evolution, and the factors of evolution. Credit not allowed for this course and Botany 225.

401 CELLULAR PHYSIOLOGY 1Q W 5 (3-4) o/y Prereq Physics 113 or 223, Chem 261, and two courses in Botany, Microbiology, or Zoology. The life processes at the cellular level emphasizing the methods of physical science.

402 COMPARATIVE PHYSIOLOGY 1Q W 5 (3-4) e/y Prereq Physics 113 or 223, Chem 261, and two courses in Botany, Microbiology, or Zoology. A survey of the diverse ways in which different kinds of animals meet their functional requirements.

413 FISHERY SCIENCE 1Q W 3 (3-6) e/y 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.

420 BIOLOGICAL LITERATURE 2Q A W 1 (2-0) Prereq 29 credits in Biol or Zoology. Student reports of literature of the trend of investigation and experimentation in biological fields.

431 PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Primarily a problems type course involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

432 PROBLEMS IN VERTEBRATE PHYSIOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

433 PROBLEMS IN VERTEBRATE ECOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Primarily a problems type course involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

434 PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

435 PROBLEMS IN INVERTEBRATE PHYSIOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

436 PROBLEMS IN INVERTEBRATE ECOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

437 PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.

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ZOOLOGY—79