1-1-1961

1961-1962 Course Catalog

University of Montana–Missoula. Office of the Registrar

Let us know how access to this document benefits you.
Follow this and additional works at: https://scholarworks.umt.edu/coursecatalogs_asc

Recommended Citation
https://scholarworks.umt.edu/coursecatalogs_asc/109

This Book is brought to you for free and open access by the Archives and Special Collections at ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana Course Catalogs, 1895-2017 by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
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.
(Left) — The Liberal Arts Building is being doubled in size to accommodate our growing registration.

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

(Below) — 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 It is also a depository for Government documents; numbers more than 35,000 maps and an unusual group of historical documents in its collections.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

EMMET J. RILEY, 1962
GEORGE N. LUND, 1964
MRS. F. H. PETRO, 1965
MRS. HARRY BYRNE, 1967
MRS. HARRY BYRNE, 1967

EARL L. HALL, 1963
BOYNTON G. PAIGE, 1966
GORDON L. DOERING, 1969
HARRIET E. MILLER, Supt. of Public Instruction

Butte
Great Falls
Helena
Helena

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 16, 1893, and consisting of
The Division of Agriculture
The Division of Education
The Division of Engineering
The Division of Letters and Science
The Division of Professional Schools:
School of Agriculture
School of Architecture
School of Commerce
School of Home Economics
School of Nursing
The Agricultural Experiment Station
The Montana Grain Inspection Laboratory
The Montana Wool Laboratory
The Central Montana Branch Station (Moccasin)

Roland R. Renne, 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 Teacher Service Division
The Graduate Division

James E. Short, President

EASTERN MONTANA COLLEGE OF EDUCATION, BILLINGS
Established March 12, 1893, and consisting of
The Division of Education
The Division of Humanities

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 Secretariats

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 23, 1962
Winter Quarter opens January 7, 1963
Summer 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 25, 1961
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 12, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 6, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 18, 1963

MONTANA SCHOOL OF MINES
Butte
Second Semester opens February 6, 1961
First Semester opens September 25, 1961
Second Semester opens February 5, 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 19, 1961
Winter Quarter opens January 3, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 13, 1962
Autumn Quarter opens September 19, 1962
Winter Quarter opens January 3, 1963
Spring Quarter opens March 25, 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 12, 1962
Autumn Quarter opens September 19, 1962
Winter Quarter opens January 3, 1963
Spring Quarter opens March 25, 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 departmental chairperson.

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 ............................................ 25
Index ................................................................ 80

MONTANA STATE UNIVERSITY
CALENDAR 1961 - 1962

1961

AUTUMN QUARTER
September 17-23, Sunday through Saturday  Orientation
September 21-22, Thursday and Friday  Week and Registration
September 22-23, 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
December 18, 5:20 p.m.  Christmas recess begins

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, 5:20 p.m.  Spring recess begins

SPRING QUARTER
March 26, Monday  Registration
March 27, Tuesday  Instruction begins
May 25-26, Friday and Saturday  Intercollegiate Meet
May 30, Wednesday  Memorial Day, a holiday
June 4, Monday  Commencement
June 4-8, Monday through Friday  Examinations
June 8, 5:20 p.m.  Spring Quarter ends

SUMMER SESSION
June 11, Monday (10 weeks and first term)  Registration
June 12, Tuesday  Instruction begins
July 4, Wednesday  Independence Day, a holiday
July 16, 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 22-23, Monday  Instruction begins
November 11, Saturday  Veterans Day, a holiday
November 23, Thursday  Thanksgiving Day, no classes
December 17-21, Monday through Friday  Examinations
December 21, 5:20 p.m.  Autumn Quarter ends
December 21-22, Thursday and Friday  Autumn Quarter ends
December 27, Saturday  Christmas recess begins

1962

FALL SEMESTER, 1961
September 18-20, 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  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
January 31, Wednesday  Registration for Spring Semester
February 1, Thursday  Classes begin at 8:00 a.m.
March 17, Saturday  Spring vacation begins after last class
March 20, 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 25, Wednesday  Registration of Upperclass Law Students
September 27, Thursday  Classes begin at 8:00 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 20-Feb. 2, Monday through Saturday  Semester Examinations

SPRING SEMESTER, 1963
Feb 6, Wednesday  Registration for Spring Semester
February 7, Thursday  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

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.
LOCAL EXECUTIVE BOARD

Theodore Jacobs, Missoula
Mrs. Thomas E. Mulloy, Missoula
Alex M. Stepanoff, Missoula

ADMINISTRATIVE OFFICERS

H. K. Newburn, 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. Panites, LL.B., Montana State University, Financial Vice
President

Troy F. Crowder, M.A., State University of Iowa, Assistant to the
President

Paul E. Blomgren, 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. Carson, Ed.D., University of Oregon, Dean of the School
of Education

Robert W. Coonrod, Ph.D., Stanford University, Dean of the College
of Arts and Sciences

Luther A. 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. Walborn, 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 Barclay, B.A., Montana State University, Controller

Andrew C. Cogswell, M.A., University of Minnesota, Dean of Students

Marine Clow, 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

Dietz, Ruth B., Ph.D., State University of Iowa, Professor and
Chairman

Cheswin, Meyer, Ph.D., University of California, Associate Professor

Gordon, Clarence C., Ph.D., Washington State University, Assistant
Professor

Hasegawa, 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

Kraemer, Joseph D., Ph.D., University of Nebraska, Professor Emeritus

Pitney, Shermas J., Jr., Ph.D., Washington State University, Assistant
Professor

Kasai, Joseph W., Ph.D., University of Wisconsin, Professor Emeritus

Skeen, Otto L., Ph.D., University of Minnesota, Assistant Professor

Bos, Lutte, D.Agr., Agricultural University, Wageningen, The Nether-
lands, Research Associate (Autumn Quarter)

Agarwal, Hari Om, M.S., Aligarh-Muslim University, India, Re-
search Associate

Hous, 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

Moshling, Gabrielle N., M.S., Michigan State University, Research Associate

Ramakrishna, Eugene W., B.A., Montana State University, Graduate Assistant

Thielken, Robert J., B.S., Montana State University, Graduate Assistant

Chemistry

Stewart, John M., Ph.D., University of Illinois, Professor and Chair
man

Bate, William C., Ph.D., Yale University, Professor Emeritus

Greene, R. Messing, Ph.D., Michigan State University, Assistant Pro
fessor

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

Osterholt, Robert K., Ph.D., University of Illinois, Associate Profes
sor

Thomas, Forrest D., Ph.D., Pennsylvania State University, Assistant Professor

Van Meter, Wayn P., Ph.D., University of Washington, Assistant Professor

Yates, Isean M., Ph.D., Washington State University, Associate Professor (in charge of the storeroom)

Lamb, Mathias M., M.S., Oregon State College, Graduate Assistant

Page, Donald P., B.A., University of Omaha, Graduate Research Assistant

Economics

Heller, George B., Ph.D., University of Michigan, Associate Profes
sor and Chairman

Leonard, James L., B.A., University of Texas, Instructor

Shannon, Richard E., Ph.D., Ohio State University, Associate Profes
sor

Wheeler, Robert D., M.A., Northwestern University, Instructor

Coles, 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

Kraus, Carl G., B.A., St. Francis College, Graduate Assistant

English

Gilbert, Vesper M., Ph.D., Cornell University, Professor and Chair
man

Bennett, James R., Ph.D., Stanford University, Instructor

Betsky, Seygour, Ph.D., Harvard University, Professor

Biers, Jesse, Ph.D., Princeton University, Associate Professor

Bone, Albert E., V.D., University of Minnesota, Associate Professor

Brown, Walter 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

Cline, Albert L., M.A., University of North Dakota, Associate Professor Emeritus

Cloud, Merriel D., Jr., Ph.D., University of Michigan, Associate Professor

Coleman, Rufus A., Ph.D., Boston University, Professor Emeritus

Fidler, Leslie A., Ph.D., University of Wisconsin, Professor

Freeman, Edmund L., M.A., Northwestern University, Professor

Harris, Phyllis L., M.A., Montana State University, Instructor

King, Walter N., Ph.D., Yale University, Associate Professor
Larsen, Henning, Ph.D., Princeton University, Litt.D., (hon.), Luther College, Visiting Professor (Autumn Quarter)
McLaro, Donald B., B.A., Whitman College, Instructor
Mensh, Harold G., Ph.D., Columbia University, Professor Emeritus
Moody, Jacqueline (Mrs.), B.A., Mills College, Instructor (part-time) (Autumn Quarter)
Moor, John E., M.A., University of Michigan, Professor
Schafer, Robert L., M.A., Montana State University, Instructor
Schwarz, John M., M.A., Montana State University, Instructor
Sharma, Ved P., M.A., Punjab University, India, Instructor
Tiel, Ruth R. (Mrs.), M.A., Montana State University, Instructor
Vinocur, Jacob, Ph.D., University of Wisconsin, Assistant Professor
Allen, Friscilla D., B.A., University of California, Santa Barbara, Graduate Assistant
Cosselwell, William B., B.A., Montana State University, Graduate Assistant
Corey, James R., B.S., Montana State College, Graduate Assistant (Autumn Quarter)
Swanson, Bernice T. (Mrs.), B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)

Foreign Languages
Burress, Robert M., Ph.D., University of California at Los Angeles, Professor and Chairman
Bischoff, 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
Emmons, James S., Ph.D., Columbia University, Assistant Professor
Epstein, Manuveret H. (Mrs.), M.A., Montana State University, Associate Professor
Hoffman, Rudolph O., M.A., University of Wisconsin, Professor Emeritus
Janka, Horst, Ph.D., University of Vienna, Assistant Professor
Lachschwitz, Gerhard (Mrs.), Ph.D., Goettingen University, Germany, Assistant Professor
Lapham, Peter P., Ph.D., University of California, Associate Professor
Noltenmacker, Patricia J. (Mrs.), M.A., Northwestern University, Instructor
Ortelli, Domenico, Ph.D., University of California, Assistant Professor
Powell, Ward H., Ph.D., University of Colorado, Associate Professor
Shelley, Anne Marie (Mrs.), M.A., Tulane University of Louisiana, Instructor
Shipman, Douglas C., Ph.D., University of Wisconsin, Assistant Professor
Shormaker, 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
Vezette, Victor S., B.A., University of New Hampshire, Instructor
Weissberg, Flora B. (Mrs.), B.A., Montana State University, Assistant Professor Emeritus
Marshall, Suzanne (Mrs.), B.A., Montana State University, Graduate Assistant
Mercer, Lilian M. (Mrs.), B.A., Montana State University, Graduate Assistant

Geography
Shaver, Vincent K., Ph.D., Ohio State University, Assistant Professor and Chairman
Beaty, Chester B., Ph.D., University of California, Assistant Professor
Hansen, Axel E., M.S., University of Wisconsin, Instructor

Geology
Horn, Fred S., Ph.D., University of Michigan, Professor and Chairman
Brodersen, Ray A., B.A., Fresno State College, Instructor
Fields, Robert W., Ph.D., University of California, Associate Professor
Morisawa, Marie, M.A., University of Wyoming, Assistant Professor
Silverman, Arnold J., M.A., Columbia University, Assistant Professor
Weihenmeyer, John P., Ph.D., University of Illinois, Associate Professor
Weidman, Robert M., Ph.D., University of California, Assistant Professor
Yalovsky, Ralph P., Ph.D., University of Chicago, Assistant Professor
Bonsheim, Torrey E., B.A., National University of Cordoba, Argentina, Graduate Assistant
Kuenzi, Wilbur D., B.S., Washington State University, Graduate Assistant
Menghanti, Murli H., M.S., Indian School of Mines and Geology, Dhanbad, India, Graduate Assistant
Tinku, Paul T., B.A., Washington University, St. Louis, Graduate Assistant
Zuber, Ashok K., M.S., Aligarh Muslim University, India, Graduate Assistant

Health and Physical Education
Stoodeley, Agnes L., Ed.D., Stanford University, Professor and Chairman
Heiser, Charles F., M.A., Columbia University, Professor and Associate Chairman
Brown, Ella C., B.S., University of Missouri, Instructor
Cedrnik, Edward S., B.A., Montana State University, Assistant Professor
Clokey, E. Fay (Mrs.), Instructor
Cloninger, Lewis A., Instructor
Cross, George W., M.S., Indiana University, Assistant Professor
Lorenz, Mavis M., M.S., University of Washington, Assistant Professor
Oswood, Robert M., M.S., University of Minnesota, Assistant Professor
Schaffer, William E., B.A., University of Wisconsin, Professor Emeritus
Selby, 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
Dashberg, George F., B.A., Montana State University, Professor; Director of Athletics
Adams, Harry F., M.S., University of Washington, Professor; Head Track Coach
Cox, Forrest B., B.A., University of Kansas, Assistant Professor; Head Basketball Coach
Davison, Hugh B., S., University of Colorado, Instructor; Assistant Football Coach
Jenkins, Ray M., S., University of Colorado, Assistant Professor; Head Football Coach
Riehnhart, Naseby, B.A., Montana State University, Instructor; Trainer
Schwenn, Milton E., B.A., Washington State University, Instructor; Assistant Football Coach
Shepherd, 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
Wein, Melvin C., Ph.D., State University of Iowa, Professor and Chairman
Bennett, Edward E., Ph.D., University of Wisconsin, Professor
Borden, Morton, Ph.D., Columbia University, Associate Professor
Carter, Paul A., Ph.D., Columbia University, Associate Professor
Coombs, Robert W., Ph.D., Stanford University, Professor; Dean, College of Arts and Sciences
Freukenburger, Herman, Ph.D., Columbia University, Assistant Professor
Hammer, Oscar J., Ph.D., University of Wisconsin, Professor
Kablin, Julius A., Ph.D., University of Minnesota, Professor (also Political Science)
Home Economies

Platt, Anne C., M.S., University of Washington, Professor and Acting Chairman

Briscoe, Emma H. (M.S.), M.S., Colorado State University, Assistant Professor

Chamberlain, D. Gertrude, 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)

Emeridge, Fannie E., M.S., Washington State University, Assistant Professor

Gleason, Helen, M.A., Columbia University, Professor Emeritus

Lewis, Vaneita (M.S.), M.Ed., Montana State University, Instructor

McCoy, B. Lorenae (M.S.), M.A., Montana State University, Instructor

Maloup, Aline (M.S.), B.S., University of Utah, Head Teacher of University Kindergarten of Family Life Education (half time)

Barb, Dorothy D. (M.S.), B.A., Western Reserve University, Assistant, Nursery School

Barthelmes, 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

Meekill, 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

Peterson, John A., M.A., Montana State University, Assistant Professor

Rosen, Howard E., Ph.D., University of Michigan, Assistant Professor

Rys, Paul T., Ph.D., Iowa State University, Assistant Professor

Swaed, 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

Holz, Hilda C. (M.S.), B.A., Eastern Washington College of Education, Graduate Assistant

Nancy, 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 Stelle Duncan Memorial Fund Research

Eklund, Carl M., M.D., University of Minnesota, Lecturer in Virology (Courtesy)

Fauset, Richard A., Ph.D., Purdue University, Assistant Professor

Hoyt, Illa B., Ph.D., University of Minnesota, Lecturer (Courtesy)

Lackman, David B., Ph.D., University of Pennsylvania, Lecturer in Immunology (Courtesy)

OFFICIAL DIRECTORY—5

Larsson, Carl L., M.D., University of Minnesota, Sc.D. (hon.), Montana State University, Lecturer (Courtesy)

Nakamura, Minsao J., Ph.D., Boston University, Associate Professor

Oreskovic, Richard A., Ph.D., Brown University, Lecturer in Biochemistry (Courtesy)

Salvin, Samuel B., Ph.D., Harvard University, Lecturer (Courtesy)

Taylor, John J., Ph.D., Ohio State University, Assistant Professor

Anshani, Khurshed A., B.S., B.S., King George Medical College, Lucknow, India, Research Fellow (Autumn Quarter)

Claude, Carla, B.A., Montana State University, Graduate Assistant

Craig, Mary Ann, B.A., St. Joseph’s College for Women, Research Corporation Fellow

North, James L., B.S., Brigham Young University, Graduate Assistant (Autumn Quarter)

Philosophy

Buehler, Henry G., Jr., Ph.D., University of California, Professor and Chairman

Andreasen, Zygmunt, 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

Physics

Jefferson, C. Rulon, Ph.D., University of California, Professor and Chairman

Hayden, Richard J., Ph.D., University of Chicago, Professor

Jadak, Mark J., Ph.D., University of California, Professor

Shallenberger, G. D., Ph.D., University of Chicago, Professor Emeritus

Taylor, Archer, B.S., Antioch College, Instructor; Director, Electronic Equipment Maintenance (part time)

Keefe, Roland J., B.A., Montana State University, Graduate Assistant

Political Science

Payne, Thomas, Ph.D., University of Chicago, Professor and Chairman

Abott, 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)

Karpat, Kemal, Ph.D., New York University, Associate Professor (on leave 1960-61)

Stillson, Albert C., Ph.D., Columbia University, Assistant Professor

Waldron, Ellis 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

Burgess, Thomas C., Ph.D., University of Minnesota, Associate Professor

Crow, Maunier, 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

Saffensfield, Bert R., Ph.D., New York University, Professor
6—OFFICIAL DIRECTORY

HERGENHAHN, BALDWIN R., B.A., Western Washington College of Education, Graduate Assistant (Winter and Spring Quarters)

NIelsen, Dale F., B.A., Pacific Lutheran College, Graduate Assistant

Showell, Florence (Mrs.), B.A., University of Minnesota, Graduate Assistant (Autumn Quarter)

Smith, Richard K., Graduate Assistant

Reserve Officers Training Corps

Air Science

Musgrave, Charles L., Colonel, USAF, B.S., Oklahoma State University, Professor and Chairman

Emmerg, Milton W., Captain, USAF, B.S., Montana School of Mines, Assistant Professor

Flanner, 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, LaVerne H., Captain, USAF, B.S., University of Utah, Assistant Professor

Baldwin, John (A/1C), Assistant

Leschke, Raymond (7/Sgt.), Assistant

Smith, Earl F. (7/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.G.E., University of Omaha, Assistant Professor

Harrs, 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

Scully, 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

Brower, W. Gordon, Ph.D., University of North Carolina, Professor and Chairman

Dwyer, Robert J., Ph.D., University of Missouri, Assistant Professor

Evans, Ideis W., Ph.D., University of Texas, Assistant Professor

Gold, Raymond L., Ph.D., University of Chicago, Associate Professor

Griff, Mason, Ph.D., University of Chicago, Assistant Professor

Henrich, Albert C., M.Ed., University of Alaska, Instructor

Malouf, Carl C., Ph.D., Columbia University, Associate Professor

Tashier, Harold D., Ph.D., University of Illinois, Professor

Taylar, Der C., Ph.D., University of Michigan, Assistant Professor

Davis, Leslie B., B.A., Montana State University, Graduate Assistant

Moogler, Stanley K., B.A., University of New Hampshire, Graduate Assistant

Smee, Grace R. (Mrs.), B.A., Montana State University, Graduate Assistant

Speech

McGinnis, Ralph Y., Ph.D., University of Denver, Professor and Chairman

Borehaug, Richard M., Ph.D., State University of Iowa, Associate Professor, Speech Pathology

Briskey, Forrest L., Ph.D., State University of Iowa, Associate Professor

Coope, Evelyn H. (Mrs.), Ph.D., University of Wisconsin, Associate Professor

Garrett, Merrill F., M.A., Montana State University, Instructor

Hansen, Erle, M.A., University of Washington, Professor

Owen, James, M.A., University of Denver, Instructor (Winter and Spring Quarters)

Parker, Charles D., Ph.D., State University of Iowa, Associate Professor, Speech Pathology; Director, Speech and Hearing Clinic

Paris, Jeanne (Mrs.), B.A., Eureka College, Assistant (Autumn Quarter)

Doherty, Mary M., B.A., Holy Names College, Graduate Assistant, Speech Pathology and Audiology

Maier, James E., B.A., Montana State University, Therapist, Speech and Hearing Clinic

Voss, John, B.A., Montana State University, Graduate Assistant

Watkins, John M., B.A., Montana State University, Graduate Assistant

Zoology

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

Bartelse, George W., Ph.D., University of Chicago, Guest Investigator (Courtesy)

Browne, Louis C., Ph.D., University of Chicago, Professor

Bunston, Royal B., Ph.D., University of Michigan, Professor (on leave Autumn and Winter quarters)

Castle, Gordon B., Ph.D., University of California, Professor; Director, Biological Station

Chapman, John J., Ph.D., University of Michigan, Professor (also Forestry); Leader, Montana Cooperative Wildlife Research Unit

Graves, Lynn B., The Ohio State University, Assistant Professor

Hoffman, Robert S., Ph.D., University of California, Assistant Professor

Petersen, E. W., Ph.D., University of California, Assistant Professor

Senger, Clyde E., Ph.D., Utah State University, Assistant Professor

Weibel, George E., Ph.D., University of California at Los Angeles, Professor

Crease, Thomas S., B.S., Colorado State University, Graduate Assistant

Forrester, Donald J., M.S., Montana State University, Graduate Assistant

Roney, Ernest E., B.A., Bowdoin College, Graduate Assistant

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)

Dohms, Jack R. B.A., Montana State University, C.P.A. (Mont.), Instructor (part time)

Emslie, Donald J., Ph.D., Columbia University, C.P.A. (Mont.), Professor

Erion, Gene L., Ph.D., University of Wisconsin, Associate Professor

Haring, Robert C., M.B.A., Indiana University, Assistant Professor

Haskell, Albert T., Ph.D., Johns Hopkins University, Professor (on leave 1960-61)

Johnson, Maxine C. (Mrs.), M.A., Montana State University, Instructor; Research Associate, Bureau of Business and Economic Research

Kedower, 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. (Wash.), Assistant Professor

Martin, Alvin E., M.Ed., Montana State University, Assistant Professor

Pantzer, Robert T., LL.B., Montana State University, Professor; Financial Vice President

Rees, Wilbur P., LL.B., University of Utah, Ph.D., Ohio State University, Assistant Professor

Swanson, Margaret (Mrs.), M.Ed., University of Washington, Assistant Professor

Thompson, James W., B.S., Montana State University, Instructor (part time)

Wilson, Eranda F. (Mrs.), M.A., University of Southern California, Professor
SCHOOL OF EDUCATION

CARLEYON, LENIS J., Ed.D., University of Oregon, Dean and Professor
AMES, WALTER R., Ph.D., University of Wisconsin, Professor Emeritus
BALDWIN, HOWARD, Ed.D., University of Oregon, Associate Professor
DE LA LUZ, TROPEL (Mrs.), Ed.D., Indiana University, Visiting Instructor (Winter Quarter)
GERHARD, 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, IRWIN 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
LOTTEK, KENNETH V., Ed.D., Harvard University, Associate Professor (on leave Winter Quarter)
MAISOCK, WILLIAM E., M.A., Stanford University, Professor Emeritus
MATTILI, CHARLES R., M.Ed., Montana State University, Assistant Professor Emeritus
MILLIS, GEORGE E., Ed.D., University of Illinois, Associate Professor
MUNRO, JAMES J., Ed.D., University of Washington, Assistant Professor
PEHLAND, GENEVA T., (Mrs.), M.A., University of Wisconsin, Assistant Professor
RIESE, HARLAN C., Ed.D., Montana State University, Assistant Professor
SLEETEN, 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, LAURENCE E., M.Ed., Montana State University, Teaching Fellow
ORCH, DONALD C., M.S., University of Utah, Research Assistant
RUPPEL, ROBERT W., M.M.Ed., Montana State University, Graduate Assistant
SHEPHERD, LEO R., 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.A., 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
LEYD, JAMES A., M.S., Michigan State University, Instructor
WOLFFSCHLAGER, FREDERICK C., B.A. Montana State University, Graduate Assistant

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

Drama
BROWN, FERMAN H., M.A., Montana State University, Assistant Professor and Chairman
BANDSON, 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

ANN, EUGENE M., University of Washington, Professor
DOTY, GERALD H., M.Mus., Northwestern University, Associate Professor (on leave Winter Quarter)
EVANS, JAMES A., M.Mus., College-Conservatory of Music of Cincinnati, Assistant Professor
HERBER, HAROLD H., M.Mus., Eastman School of Music, Instructor (Winter and Spring Quarters)
HETTEN, MURIEL J., M.Mus., College-Conservatory of Music of Cincinnati, Instructor
HUMMEL, J. GEORGE, M.A., Columbia University, Associate Professor
JOHNSON, 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
MUSSELMAN, JOSEPH A., M.Mus., Northwestern University, Assistant Professor

SCHOOL OF FORESTRY

WILLIAMS, ROSS A., M.F., Yale University, Dean and Professor; Director of Montana Forest and Conservation Experiment Station
BOLTE, 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
FAUBUS, 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
KIES, JOHN P., Ph.D., Yale University, Associate Professor (on leave 1960-61)
LEWIS, GORDON D., Ph.D., Michigan State University, Instructor
MUSSELMAN, LAWRENCE C., M.F., Oregon State College, Assistant Professor (on leave Winter Quarter)
MORGAN, MELVIN S., M.S., Colorado State University, Professor
NIMLOS, THOMAS J., Ph.D., University of Washington, Assistant Professor

PIERCE, WILLIAM R., Ph.D., University of Washington, Associate Professor
QUINCE, GEORGE H., B.S., Montana State University, Instructor (Autumn Quarter)
STEWART, RICHARD W., M.F., University of Michigan, Assistant Professor
TADEO, RICHARD D., Ph.D., University of California, Associate Professor
TSOUKAS, GEORGE D.F., Yale University, Assistant Professor (Winter and Spring Quarters)
SCHOOL OF JOURNALISM

BLOMBERG, NATHAN B., Ph.D., Oxford University, Dean and Professor
BREZ, O. J., M.S.J., Northwestern University, Professor
COSGOWELL, ANDREW C., M.A., University of Minnesota, Professor; Dean of Students
DUGAN, EDWARD B., M.A., University of Missouri, Professor
JOHNSON, DOROTHY M., B.A., Montana State University, Assistant Professor (part time)
JONGENEN, ERLING S., Ph.D., University of Wisconsin, Associate Professor; Director, Radio and Television Studios (on leave 1960-61)
REINEMEER, VICT., B.A., Montana State University, Visiting Lecturer (Autumn Quarter)
SIEFFER, HERBERT D., M.A., Stanford University, Assistant Professor; Director, Radio-TV Studios
YU, FREEDICK TIN-CHI, Ph.D., State University of Iowa, Associate Professor (on leave Autumn Quarter)
DONNER, NANCY N. T., B.A., Whitworth College, Graduate Assistant

SCHOOL OF LAW

SULLIVAN, ROBERT E., LL.B., University of Notre Dame, Dean and Professor
BUND, EDWIN W., LL.M., Harvard University, Professor
COTTER, JOHN F., LL.B., Catholic University of America, Visiting Professor (Spring Semester)
CROMWELL, GABREYES, S.J.D., University of Michigan, Associate Professor
HOUGHTON, RODNEY M., M.A.(L.S.) University of Denver; LL.B., University of San Francisco, Assistant Professor; Law Librarian (beginning December 1, 1960)
KIMBALL, EDWARD L., LL.M., University of Pennsylvania, Associate Professor
LEPHART, CHARLES W., S.J.D., Harvard University, Dean Emeritus; Professor Emeritus
LOIN, SIEFMAN V., LL.M., Harvard University, Assistant Professor (part time)
MASON, DAVID R., S.J.D., Harvard University, Dixon Professor
RUSOFF, LEEF, LL.R., 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
TOLLE, J. HOWARD, LL.M., Harvard University, Professor Emeritus

SCHOOL OF PHARMACY

VAN HOESEN, ROBERT L., Ph.D., State University of Iowa, Dean and Professor
BRYAN, GORDON H., Ph.D., University of Maryland, Associate Professor
MOLLEY, CHARLES E. F., M.S., University of Kansas, Professor Emeritus
PETTINATO, FRANK A., Ph.D., University of Washington, Assistant Professor
RUSCH, CHARLES W., Ph.D., University of Washington, Assistant Professor
SUGUY, JOHN F., Ph.D., University of Colorado, Professor Emeritus
WAIKES, JOHN L., Ph.D., University of Colorado, Associate Professor
GALPIN, DONALD R., B.S., Montana State University, Graduate Assistant
ROSCOE, GARRETT D. (Mrs.), B.S., University of Washington, Assistant Professor

AFFILIATED SCHOOL OF RELIGION

TATSUYAMA, TOSHIHI, Th.D., Boston University, Assistant Professor and Director
HASSLER, C. WILLIAM, S.T.M., Temple University, Instructor

Services

Library

CAMPELL, KATHLEEN, M.S., University of Denver, Librarian (Professor)
BREZER, 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)
MIDGRT, ARLENE S. (Mrs.), B.A., Montana State University, Assistant Catalog Librarian (Instructor)
MILLS, DOUGLAS F., M.A., B.S.L., University of California, Acquisitions Librarian; Head, Technical Processes Department (Assistant Professor)
NIELSON, RITA (Mrs.), B.A., Montana State University, Assistant Acquisitions Librarian (Assistant Professor) (part time)
SPEER, LOUISE E., M.A., University of Chicago, Documents Librarian (Assistant Professor)
WHITE, M. CATHRINE, 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
DUBER, ALFRED J., B.S., Montana State University, Graduate Assistant (Autumn Quarter); Assistant (Winter and Spring Quarters)
PEERS, 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 I., Ph.D., University of Wisconsin, Acting Director; Dean, Graduate School; Professor of Political Science
ANDERSON, ROBERT G., B.A., Montana State University, Research Assistant

Biological Station

CASTLE, GORDON B., Ph.D., University of California, Director; Professor of Zoology
HARVEY, LEWY H., Ph.D., University of Michigan, Assistant Director; Professor of Botany

Staff of Botany and Zoology Departments

Forest and Conservation Experiment Station

WILLIAMS, BOB A., M.F., Yale University, Director; Dean and Professor of Forestry
CODER, ROBERT F., B.S.F., Montana State University, Research Associate (Courtesy)

Staff of Forestry School

BARST, RICHARD J., B.S.F., Montana State University, Graduate Assistant
CARTY, DAVID M., B.S., Montana State University, Graduate Fellow (Winter and Spring Quarters)
GUERRINEL, 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

CRAIG, JOHN J., Ph.D., University of Michigan, Leader; Professor, Forestry and Zoology
CODER, ROBERT F., B.S.F., Montana State University, Unit staff member; Research Associate, Forest and Conservation Experiment Station (Courtesy)
HOPFMAH, ROBERT S., Ph.D., University of California, Unit Staff member; Assistant Professor, Zoology
PENGELLY, W. LESLIE, Ph.D., Utah State University, Head, Conservation Education Extension (Assistant Professor)
TAHN, RICHARD 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
WOOD, WESLEY L., M.S., Montana State University, Admin. Asst. 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
GOERMER, ROBERT E., Ed.D., Indiana University, Director; Associate Professor, Education
LONNER, WALTER J., B.A., Montana State University, Psychometrist
PRSTRUD, ALBERT M., B.A., Concordia College, Psychometrist
TELYK, SONDRA 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)
ARMBY, LUCILLE JAMES (Mrs.), B.A., Montana State University, Secretary to the President (Assistant Professor)
FERGASON, MARY ELROD (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)
KEESER, FREDERICK W., B.S., University of Colorado, Superintendent, Buildings and Grounds
LOMMASON, EMMA B. (Mrs.), M.A., Montana State University, Assistant Registrar (Instructor)
MARTELL, EARL W., B.A., Montana State University, Director, Student Activity Facilities; Athletic Manager (Instructor)
SWAISON, T. G., B.A., Montana State University, Director, Planning and Construction

Official Directory—9
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.

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), the 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 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 co-operation 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. Bolle (Forest Conservation), Robert F. Cooney (Research Associate), Thomas J. Nimlos (Forest Soils), Vollrat von Deichmann (Silviculture), Earl McConnell (Lubrecht 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 pasturage 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 windbreaks on the farms of the State . . . To study logging, lumbering and milling operations and other operations dealing with the products of forest soils with special reference to their improvement . . ."

"To cooperate with the other departments of the 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 1948. 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 require two years work beyond 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 to six 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, archeological, 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 Individual 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 is the responsibility 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 the Office of the Registrar or by writing to the Registrar at the University. If possible, applications for admission should be sent in at least a month before registration. The following credentials are required: (a) Completion of 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 a limited number of summer test centers. After the 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 foreign students.

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's application for admission. If the student registers, the fee is non-refundable (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" were 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 course 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 senior 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 general admission requirements, be eligible to return to the school from which he is transferring, and his record must be such that he 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 meet all of the requirements for admission, and who are not candidates for degrees, may be considered 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 the 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 the appointed faculty adviser until choice of major field of study has been made; after this choice, 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 any special difficulties 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, 16 credits plus physical education and ROTC as required; (2) Juniors and Seniors may register for 17 credits except that students with appropriately B high school averages 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 additional credits. 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 has previously received a grade is repeated, the first grade and any credit received are automatically canceled and the second grade and any 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. Students may 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.
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; P—pass without defining grade. The 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 "n", not accompanied by a grade, is assigned at the end of each quarter to indicate that the student is entitled to continue the course; 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 chairman 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 the date specified on Official University Notices. Applications must be filed at least one quarter preceding the quarter in which requirements are to be completed.

CREDITS REQUIRED FOR A DEGREE. The work in Montana State University is measured in terms of credit. One credit represents three hours of time per week for one quarter year of twelve weeks. The time required for each 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 chairmen to graduate under a later catalog. 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.

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 60 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. Exception to these regulations may be made on the basis of entrance credits in the Department 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 towards 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 towards graduation.
Net 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 law 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.

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

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 grades 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 203.

(4) Freshman Composition English 101-102-103, 3 quarters (9 credits). All students registering for the first time take a placement examination; those who fail to demonstrate an acceptable college standard must take English 001 in order credit before enrolling in English 101. Students who receive "A" in English 102 may substitute English 201 for 103.

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 for each group.

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 other 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 includes reading a 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 must, 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 35 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count towards residence requirements, but correspondence credits do not.

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

SENIOR EXAMINATIONS. Some departments and schools in the University require a senior comprehensive examination as part of graduation requirements. This examination does not in any way replace the regular quarterly examinations except that departments adopting or using these senior examinations may excuse their major students during the senior year from regular quarterly examinations in major department subjects. The examination is a written examination of at least three hours length, and in addition further oral or written examinations may be given. Examinations are given the last quarter of senior residence and are arranged in each department or school at the convenience of the persons concerned. If the student fails to pass this special examination, he shall be given another opportunity within the next six months without the necessity of taking additional courses. In case of a second failure, further opportunity will be granted at the discretion of the department or school concerned and the committee on 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, in 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 higher to be qualified. If all qualifications have been met, 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 16 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 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
16—ORGANIZATION

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.

Members of the faculty of Montana State University above the rank of instructor may not become candidates for degrees from this University. This stipulation does not apply to staff of the Reserve Officers Training Corps who are on courtesy appointment to the faculty; nor does it prevent members of the faculty from taking advanced courses for credit to be transferred to another institution.

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 at any 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.

GRADES. An average of B must be maintained in all courses taken for graduate credit. Courses in which grades below C have been received are not accepted for degree requirements but grades in all courses taken for graduate credit will be included in grade-point computations. A maximum of eight credits of work with grades less than B 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 work, in a five-week summer term is nine credits and in the full summer session the maximum is 16 credits.

Graduate assistants carry a reduced credit load of not more than 12 hours in a quarter. With approval by the school dean or department chair, the Dean of the Graduate School and the President, regular full-time employees of the University register for programs of not more than five credits in a quarter.

REGISTRATION. At the time of registration for each quarter the student's program must be submitted to the Dean of the Graduate School for approval of courses to be taken for graduate credit.

EXTENSION AND CORRESPONDENCE COURSES. A maximum of 15 credits earned in extension courses taught by members of the faculty of Montana State University may be accepted toward a graduate degree. Such courses must have been approved for graduate credit by the Graduate Council. One-third of the residence requirements for the Master's degree may be met by satisfactory completion of fifteen credits in approved extension courses.

Correspondence courses will not be accepted for graduate credit.

THE MASTER'S DEGREES

The following requirements pertain to all Master's degrees unless specific exceptions or additional requirements are indicated in the curriculum statements of particular schools or departments.

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. Proficiency in the English language is required of all candidates for Master's degrees.

RESIDENCE. The minimum residence requirement for the Master's degree is enrollment for 30 weeks, including at least one full 10-week quarter.

To earn a full quarter of residence for the Master's degree the student must complete not less than five graduate credits of work in any given quarter. Students transferring from Montana State College who have completed one quarter of graduate study in residence at that institution will be required to fulfill only two-thirds of the minimum residence requirement, including one full 10-week quarter.

TIME LIMIT. All requirements for the Master's degree must be completed within a period of eight years, except that a maximum of 10 quarter-credits of graduate work is not more than three courses taken prior to the eight-year period may be validated by departmental examination. These credits must have been earned at Montana State University or at another institution of accepted standing. All such validations must be reported to the Dean of the Graduate School before the student is admitted to candidacy.

TRANSFER OF CREDIT. A student may transfer up to 12 graduate course credits toward fulfillment of requirements for the Master's degree. Residence requirements may not be transferred for the Master's degree except by students from Montana State College who have completed one quarter of residence. A student may transfer a maximum of 15 course credits and 10 weeks of residence if such transfer is approved by the adviser and by the Dean of the Graduate School.

ADMISSION TO CANDIDACY. A student whose record during the first two quarters of graduate residence is satisfactory, including a B average in courses taken for graduate credit, will be admitted to candidacy for the Master's degree. Not later than the second week of the quarter in which the student expects to complete work for the Master's degree, the student must file with the Dean of the Graduate School three copies of an application for admission to candidacy.

EXAMINATIONS. Each candidate for a Master's degree must pass examinations 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 Art and 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 454, 455, 552 (4 cr.), 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 field and one faculty member 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 only 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 comprehensive 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-
search. The dissertation must be an original contribution to knowledge; it must be presented in acceptable literary form and of a quality to warrant eventual publication. Individual departments may, at their discretion, require publication.

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 consist of the dissertation director, at least one other member of the faculty of 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 each microfilm 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 receive for research credit work 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.
Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

<table>
<thead>
<tr>
<th></th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students not residents of Montana</td>
<td>92.50</td>
<td>92.50</td>
<td>92.50</td>
<td>277.50</td>
</tr>
<tr>
<td>Tot. for Non-res.</td>
<td>$485.50</td>
<td>$424.50</td>
<td>$426.50</td>
<td>$1,336.50</td>
</tr>
</tbody>
</table>

**NON-RESIDENT STUDENTS** are those who have not resided in 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 plan, the semester fees will be 50% above the quarterly fees. Fees are subject to modification by action of the State Board of Education.

Registration 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.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td></td>
<td></td>
<td></td>
<td>$10.00</td>
</tr>
<tr>
<td>(Many Honor Scholarships entitle the holder to a waiver of the Registration and Incidental fees)</td>
<td>$10.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidental fee</td>
<td></td>
<td></td>
<td></td>
<td>$40.00</td>
</tr>
<tr>
<td>(for laboratory supplies in all courses, locker fees, gymnasion towel service, diploma, etc.)</td>
<td>$40.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building</td>
<td></td>
<td></td>
<td></td>
<td>$5.00</td>
</tr>
<tr>
<td>Student M.S.U. Building</td>
<td>$15.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Union Building</td>
<td>$4.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Activity</td>
<td>$17.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For support of activities sponsored by the Associated Students of Montana State University. (Optional to students who have a B.A. or B.S. degree and to students registered for less than seven credits.)</td>
<td>$17.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Service</td>
<td></td>
<td></td>
<td></td>
<td>$10.00</td>
</tr>
<tr>
<td>(Required of all students enrolled for class work.)</td>
<td>$10.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General deposit (charges for loss, breakage, and fines deducted)</td>
<td></td>
<td></td>
<td></td>
<td>$10.00</td>
</tr>
<tr>
<td>(This deposit, less charges, is refundable after graduation or when schooling is discontinued. Additional amounts will be billed if the balance becomes low)</td>
<td>$10.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total, first quarter in attendance</td>
<td></td>
<td></td>
<td></td>
<td>$111.00</td>
</tr>
<tr>
<td>Non-residents (out-of-state) pay, in addition to the fees listed above, per quarter ($70.00 plus $22.50 student M.S.U. Building fee)</td>
<td></td>
<td></td>
<td></td>
<td>$92.50</td>
</tr>
<tr>
<td>(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.)</td>
<td></td>
<td></td>
<td></td>
<td>$92.50</td>
</tr>
</tbody>
</table>

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 its branches 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 activity fee. Students who are enrolled as regular students, who wish to drop to limited registrants, see statement under regular refund schedule.

**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 available to laboratory courses, such as Chemistry, Weaving, Swimming, shorthand & typing, Office Machine, etc. The regular fees are applicable if attendance is delayed 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. If approved, there will be a charge of $1.00 for processing the deferral. Failure to meet payments as agreed, without an authorized extension of the deferral, will result in a penalty of $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 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 each additional.
FIELD TRIPS. Certain departments require field trips, the cost of which is a personal expense prorated among the students in the course. Check the department involved for such costs.

CORRESPONDENCE AND SUMMER STUDY. Fees are listed in the Correspondence Study Catalog, the Summer Session Bulletin and the Biological Station Bulletin, respectively.

REFUNDS. All fees, except the $10.00 Registration fee, are refunded to students who withdraw before the beginning of classes. No fee refunds are made after the fourth week of instruction (except Music). Students who withdraw after the beginning of classes but before the end of the fourth week will be refunded according to the refund schedule published below.

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

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

REGULAR STUDENTS—WEEK OF INSTRUCTION—First Second Third Fourth
Registration None None None None
Incidental 75% 50% 50% None
Building 100% 50% 50% None
Student M.S.U. Building 100% 50% 50% None
Student Union Bldg. None None None None
Student Activity 100% 50% 50% None
Health Service 100% 50% 50% None
(No refund if medical service furnished or physical examination taken.)
Non-Resident Tuition ($65.00) 80% 60% 40% 20%

REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS
Registration None None None None
Incidental 40% 20% 20% None
Building 50% 25% 25% None
Student M.S.U. Building 50% 25% 25% None
Student Union Bldg. None None None None
Student Activity 100% 50% 50% None
Health Service None None None None
Non-Resident Tuition Varies with number of credits.

Students who owe bills to the University for fees, fines, board and room in residence halls, and other charges are not permitted to register for the following semester until transcript or record, or obtain diplomas until the obligation is paid or satisfactorily adjusted. Similar action is taken where students owe bills to student organizations whose books are kept in the business offices of Montana State University, including charges for board and room in fraternity and sorority houses.

PAYMENT OF FEES by check in exact amount of bill is preferable. The University does not accept non-bankable paper in payment of bills. Personal checks are not cashed except in payment of University bills.

RAILWAY FARE REFUND. In accordance with the provisions of Chapter 41 of the Session Laws of 1925, enacted by the Nineteenth Legislative Assembly, and under regulations established by the State Board of Education, railroad fare in excess of fifteen dollars actually paid by any student for a round trip by the most direct route available between his Montana home and Montana State University once each year, will be refunded. The amount of the refund will be based upon the railroad or bus fare over the shortest route and at the lowest rate. Students must present receipts for the fare thus paid.

In order to be entitled to the refund students must carry satisfactorily a normal amount of work and remain in attendance either throughout the college year or through the summer quarter.

Claims for refunds must be presented within thirty days after the close of the term in which the student was last in attendance.

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 plans, 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. Students are encouraged to participate 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) diagnosis of difficulties leading to less than maximum performance, and response to the use of remedial procedure where indicated; 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 testing programs; 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) act as a consultant, 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, punch cards 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. Polio 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 care and non-emergency surgery are not covered. Accidents and illnesses arising from activities contrary to University regulations or due to use of alcohol are not covered. Adults' care is not provided, nor are 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 students in the years respecting opportunities for which both a degree and training are indicated. 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 rooms, 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 $90 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 living in the halls to develop 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 built, and maintenance and operation are financed out of payments for such housing or meals. When costs go up, charges for these services must go up unless the services themselves are to be allowed to suffer unduly in quality or quantity. New or additional services, when demanded, also require additional charges. Such charges are fixed from time to time, effective 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 opportunity for women to gain experience in group living while reducing living expenses by sharing in the work of the house. This residence is under supervision of an approved housemother. Information may be obtained by writing to the President, Synadelphic House, 601 Daly Avenue, Missoula, Montana.

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 and earn all expenses is inadvisable. Students should plan to use the maximum 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.

SCHOLARSHIPS AND PRIZES. The University offers many rewards for outstanding academic achievement. Many are available through the generosity of friends and alumni of the University. Graduate scholarships are administered by the Graduate Dean and undergraduate scholarships by the Dean of Students. Prize awards related to specific departments are awarded by the department concerned. A list of scholarships and prizes may be secured by writing to the Dean of Students or to the Registrar.

STANDARDS OF STUDENT CONDUCT

Personal honor and self-discipline play a large part in one's success in the University. A record, built during undergraduate years, for 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 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 or indecency, 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. Use of any form of motor vehicle 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, or of the age of majority, for those living with their parents and commuting to the campus, handicapped students, and those who can qualify as exceptional cases, may petition the Dean of Students for a waiver of A and B above. All students are required to familiarize 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 will be held to this principle.
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.

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 present 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 staff member in charge will receive from the Dean of Students office leave of absence cards which will be distributed to the affected students. Each student is responsible for having his cards signed by his various instructors and returned to the Dean of Students office for filing.

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

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 that are not permitted to register for the succeeding quarter, secure transcript of record, or obtain diplomas, until the obligation is paid or satisfactorily adjusted. Similar action is taken when students owe bills to student organizations whose books are kept in the business office of 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. The Conference makes it possible for students in public address to combine academic, class, and practical experience.

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 Theater Festival, interscholastic debate, and meetings of the Inter­scholastic 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 who have 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.

Tannan-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 qualifications, 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

| Biological Sciences      | Mathematics              |
| Botany, Microbiology and Public Health | Medical Technology       |
| Chemistry                | Philosophy               |
| Economics                | Physical Sciences        |
| English                  | Physics                  |
| Foreign Languages        | Political Science        |
| French                   | Pre-Medical Sciences     |
| German                   | Psychology               |
| Greek (no major)         | Radio and Television     |
| Italian (no major)       | Reserve Officers Training Corps |
| Latin                    | Air Science (no major)   |
| Russian (no major)       | Military Science         |
| Spanish                  | Secretarial-Home Arts    |
| Geography                | Sociology, Anthropology, |
| Geology                  | Social Welfare           |
| Health and Physical Education | Speech (Includes Speech  |
| History                  | Pathology and Audiology) |
| Home Economics           | Wildlife Technology      |
| Liberal Arts             | Zoology                  |
| Library Service          |                         |

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

Accounting       Law-Business
Banking and Finance Marketing
Business Teaching Secretarial Science
General Business
Industrial Organization and Management

SCHOOL OF EDUCATION

Administration and Supervision
Elementary Education
Guidance and Counseling
Secondary Education

THE SCHOOL OF FINE ARTS

Art
Drama
Music
Musical Education
Elementary Teacher Training
Secondary Teacher Training
Applied Music
Organ
Piano
String Instruments
Voice
Wind Instruments
Theory or Composition

SCHOOL OF FORESTRY

Forestry
Forest Management
Forest Engineering
Wood Utilization
Range Management
Wildlife Management

Conservation
Watershed Management
Soil and Water Conservation
Wildlife Conservation
Range Conservation
Forest Recreation

SCHOOL OF JOURNALISM

Advertising
Magazines
Community Journalism
News-Editorial
Radio-Television

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-8—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.

c/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.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE 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, 205, and Social Welfare 181 must be completed. Remaining courses for the major may be selected from any courses in the department. Religion 204, Geography 355 and Speech 318 may be counted toward a major in Anthropology.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"


153 SOCIAL ANTHROPOLOGY 1Q A W S Su 3. Institutions as exemplified in primitive religion, economics, political structures, art and music.

154 RACE AND MINORITIES 1Q W 3. Problems of assimilation of racial and cultural minorities.

155 SOCIAL ORGANIZATION OF PRIMITIVE PEOPLES 1Q S 3. Prereq 152 or 153. The social structure of non-literate peoples: family, kinship structures, kin and local groups and associations, social classes, and political aggregates.

FOR UNDERGRADUATES AND GRADUATES

301 PREHISTORIC CULTURES 1Q W 3 e/y Prereq 192 or 153 or =. Prehistoric man and his cultures, up to the Neolithic, in Europe and the Near East.

322 ARCHAEOLOGY OF MONTANA 1Q S 3 e/y Prereq 152 or 153 or =, and c/l. The origins and distribution of aboriginal cultures in Montana and surrounding area. Credit is required to attend a minimum of three field trips in which actual archaeological sites will be excavated, and techniques demonstrated.

323 ARCHAEOLOGICAL SURVEY Any quarter in which field parties are organized V 3-4 R-15 Prereq 152 or 153 or =. A field course in Montana Archaeology.

335 ARCHEOLOGY OF NORTH AMERICA 1Q W 4 o/y Prereq 152 or 153 or =. The origins, backgrounds and development of pre-Columbian North American peoples and cultures.

352 PHYSICAL ANTHROPOLOGY 1Q W 4 e/y Prereq 152 or =. The history, evolution, and present nature of man's bodily structure. Identification and determination of age and sex, of human osteological materials.

353 INDIANS OF THE SOUTHWESTERN UNITED STATES 1Q S 3 o/y Prereq 152 or =. The history, present social organization and daily life of Indian cultures in the southwestern United States from the most ancient evidences of man to the present.

361 INDIANS OF NORTH AMERICA 1Q A 4 Su 3 Prereq 152 or 153 or =. The native cultures of North America, north of the Rio Grande.

362 INDIANS OF SOUTH AMERICA 1Q W 4 e/y Prereq 152 or 153 or =. The cultures of the Indians of South America.

363 PEOPLES OF AFRICA 1Q S 4 o/y, Su 3 Prereq 152 or 153 or =. The cultures of the African continent.

364 PEOPLES OF ASIA 1Q S 4 o/y Prereq 152 or 153 or =. The peoples and cultures of India, China, Japan, Siberia, and the Near East.

365 INDIANS OF MONTANA 1Q W Su 3 Prereq 153 or 158 or 16 cr in Sociology, economics, and c/l. The history and culture of the Indian tribes of Montana.

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

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 the application 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 =, and c/l.

452 MODERN INDIAN PROBLEMS 1Q A 3 Prereq 152 or 153 or =. Social and health problems, legislation, education, and economic conditions of Indians of the United States.

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 o/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 enriches 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, 135, 139, 140 (9 cr), 151, 307, 450. (For teaching major or minor 307 is taken instead of 450.) The foreign language requirement listed earlier in the catalog must be satisfied, and a candidate must present a one-man exhibition. A foreign language is required.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ART. In addition to the general requirements for graduation listed earlier in the catalog, 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, 350 for painting and drawing; 335 and 336 for ceramics majors; 355 and 356 for sculpture majors; 325 and 540 for design majors); five to 15 credits on a terminal project and/or thesis (Art 695); a minimum of 10 credits in art electives outside the major area. Five credits may be taken in non-art electives. The graduate record examination is waived, and each candidate must present a one-man exhibition. A foreign language is required.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

123 DRAWING 3Q A W S, Su 2 or 4, R-12. V when taught by extension. Objective and expressive drawing, using varied methods and subject matter.

125-126 COLOR AND DESIGN 2Q A W 3, Su 3 or 4. Creative design and use of color, theories, methods and problems.
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.

For undergraduates and graduates

321-322-323 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

303-304 ELEMENTARY SCHOOL ART 2Q A W Su 3 V when taught by extension. (303) Art education at elementary school level; philosophy, history, theories and practice in media. (304) Continued practice in media and materials used in public schools.

307 METHODS OF TEACHING SECONDARY ART 1Q Su S 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 129. 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 130. 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 related 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.

400 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.

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, Forestry 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 preparation 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 125 (Local Flora), Botany 223 (Plant Physiology), Zoology 161-163 (Elementary Zoology), Zoology 166 (Field Zoology), Zoology 201 (Comparative Vertebrate Zoology), Zoology 302 (Human Physiology), Microbiology 100 (Elementary Microbiology), General 500 (Conservation of Natural and Human Resources).

The following courses in allied sciences must be completed: Chemistry 101-102, 160 or 121-122-123 (students who plan to do advanced work should take the Chemistry 121-122-123) 24 credits of 123. Su prereq c/i. Techniques of various graphic media: (133) wood, mosaic, metal, textile; (128) printing arts; (135-136) sculpture media; (133-134) history of art; (335) advanced sculpture; (340) advanced painting; (450) seminar; (540) special problems; (699) thesis and terminal project.

Also required are Zoology 104-105, Microbiology 200 and Chemistry 101-102, 160 or 121-122-123. Recommended electives: Geography 301 (Conservation of Natural and Human Resources), 305, 306; Physics 111-112-113 or 221-222-223; Zoology 106. The foreign language requirement listed earlier in the catalog must be satisfied; French or German preferred.

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 Arts degree with a major in Biological Sciences including Botany 121-122 (General Botany), Botany 125 (Local Flora), Botany 223 (Plant Physiology), Zoology 161-163 (Elementary Zoology), Zoology 166 (Field Zoology), Zoology 201 (Comparative Vertebrate Zoology), Zoology 302 (Human Physiology), Microbiology 100 (Elementary Microbiology), General 500 (Conservation of Natural and Human Resources).

The following courses in allied sciences must be completed: Chemistry 101-102, 160 or 121-122-123 (students who plan to do advanced work should take the Chemistry 121-122-123) 24 credits of 123. Su prereq c/i. Techniques of various graphic media: (133) wood, mosaic, metal, textile; (128) printing arts; (135-136) sculpture media; (133-134) history of art; (335) advanced sculpture; (340) advanced painting; (450) seminar; (540) special problems; (699) thesis and terminal project.

Also required are Zoology 104-105, Microbiology 200 and Chemistry 101-102, 160 or 121-122-123. Recommended electives: Geography 301 (Conservation of Natural and Human Resources), 305, 306; Physics 111-112-113 or 221-222-223; Zoology 106. The foreign language requirement listed earlier in the catalog must be satisfied; French or German preferred.

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.
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

FOR GRADUATES

Phenomena. Outlines of plant classification with particular reference to drug-producing plants.

Introduction to plant science, including anatomy, physiology, reproduction, evolution, genetics and a survey of the plant kingdom.

Phenology of the Bryophytes and Pteridophytes. Identification, classification, distribution, life histories and limnological relationships of the algae of the Northern Rocky Mountains.

368 Agrostology 1Q W 5 (0-6) Given in summer at Biological Station for 3 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.

337 CYTOLOGY 1Q W 5 (0-6) Prereq 122, and Chem 101-102, 160 or 123. The finer structures of the plant cell in relation to its functions.

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

346 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.

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

385 Modern concepts in taxonomy with emphasis upon cytological techniques used in chromosomal studies related to problems of taxonomy.

381 MICROTECHNIQUE 1Q S V 2-3 (0-3/cr) Prereq 150 or 160 or 170, and c/l. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant physiology not taken up in regular courses.

325 PLANT BIOCHEMISTRY 1Q A 5 (3-4) Prereq 225, Chem 203, and Phys 113 or 223. The chemical aspects of plant physiology; photosynthesis, respiration; enzymes; carbohydrate, lipid, and protein metabolism; hormones and plant pigments; plant-microbe interaction.

327 PLANT VIRUSES 1Q a/o V S 3 (1-4) Prereq 122 or Microbiology 200, Chem 203, Chem 290 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.

334 MICROTECHNIQUE 1Q S V 2-3 (0-3/cr) R-5 Prereg 13 credits in Botany. Methods of preparing microscopic slides, with emphasis on the paraphrenum method. Prereq 121, 122, 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.

351 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.

343 MORPHOLOGY OF THE BRYOPHYTES AND PTERIDOPHYTES 1Q W o/y 4 (0-4) 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 (00) Prereq 121, 122, 123, or =. The morphology and life histories of the gymnosperms and angiosperms.

355 PROBLEMS OF PLANT ECOLOGY 1Q S 5 (3-4) Prereq 121, 122, 123, or =. Plants and plant communities in relation to their physical environment; succession, stratification, periodicity and energy relationships; introduction to population problems. Offered at the Biological Station.
BUSINESS ADMINISTRATION

The School of Business Administration of Montana State University is fully accredited by the American Association of Collegiate Schools of Business. Its program of studies is based on two primary divisions: (1) The pre-business administration, and (2) The School of Business Administration. The student must be approved by the School of Business Administration to provide a broad foundation in fundamentals so that the graduate may achieve a place of responsibility in the world of business as well as being a responsible citizen of his community. Since the individual in business is faced with the difficult intellectual task of problem solving, the student is encouraged to evaluate information and points of view, to reason logically, and to reach sound conclusions. In the business courses there is a common emphasis on the over-all management point of view so that the student may achieve an awareness of the many factors that enter into the administration of business affairs and the decision-making processes.

The student may prepare for a variety of jobs by taking a general program of courses or by specializing in such areas as: accounting, finance, marketing, production and personnel management, secretarial work and business teacher training. Alumni of the School of Business Administration are 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 and the wide variety of careers from which they may choose. Courses outside the School of Business Administration are also 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; Rhetoric 101-102-103; English 101-102-103; Mathematics 112; requirements from Group II including Economics 201-202-203; requirements from Group III; Speech 111; Business Administration 120, or have typing proficiency of 25 words per minute as determined by a test administered by the School of Business Administration; Business Administration 192, 202, and 250.

ADMISSION AND GRADE POINT REQUIREMENTS. Admission to the School of Business Administration requires junior standing with a "C" average and the necessary prerequisites. To continue work in the School of Business Administration the student must maintain a "C" average and master problem solving concepts 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:

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

2. Complete the business core course:

   - Business Administration 330, 230, 240, 250, 340, and one of the following: Business Administration 333, or 355, or 466.

3. 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.

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

5. Offer not less than a total of 75 credits in courses in the School of Business Administration which may count toward the 75 credit requirement are: All courses offered by the School of Business Administration, Courses outside the School of Business Administration.

6. Present not less than 96 credits (including Health and Physical Education) of work taken in departments and schools other than the School of Business Administration.

7. Offer 180 credits plus 6 credits in Health and Physical Education.

8. 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:

- Bus. Ad. 406-408—Cost Accounting
- Bus. Ad. 401—Income Tax

A minimum of 14 credits chosen from:

- Bus. Ad. 409-410—Advanced Accounting
- Bus. Ad. 365—Governmental Accounting
- Bus. Ad. 405—Accounting Systems
- Bus. Ad. 406—Managerial Accounting

Those students preparing for the public accounting profession are required to take the courses listed in the curricula of the areas of concentration.

FINANCE

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

- Bus. Ad. 405—Accounting Systems
- Bus. Ad. 409-410—Advanced Accounting
- Bus. Ad. 303-304—Cost Accounting
- Bus. Ad. 401—Income Tax
- Bus. Ad. 403-404—Auditing

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

- Bus. Ad. 305—Governmental Accounting
- Bus. Ad. 405—Accounting Systems
- Bus. Ad. 406—Managerial Accounting
- Bus. Ad. 359—Business Law

BUSINESS EDUCATION

"Business Education students are not required to take Speech 111, Math 112, Bus. Ad. 250, 353, 355, 466, or 468 and may substitute 383 for 340."

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 408—Administrative Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 306—Intermediate Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 324—Real Estate</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 420—Investments</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 421—Business Cycles and Business Forecasting</td>
<td>6</td>
</tr>
</tbody>
</table>

**GENERAL BUSINESS**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 408—Administrative Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 347—Managerial Economics</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 363—Advertising Principles</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 364—Marketing Management</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 421—Business Cycles and Business Forecasting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 441—Personnel Management</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 444—Regulation of Industry</td>
<td>4</td>
</tr>
</tbody>
</table>

**MANAGEMENT**

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

- Option A. Industrial Organization and Management
  - Bus. Ad. 303-304—Cost Accounting
  - Bus. Ad. 441—Personnel Management
  - Bus. Ad. 444—Regulation of Industry
  - Bus. Ad. 446—Industrial Purchasing and Traffic
  - Econ. 201-202—Labor Economics
  - Psych. 343—Industrial Psychology
  - Ecfin. 321-322—Labor Economics
  - 24 credits

- 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. 343—Industrial Psychology
  - Econ. 201-202—Labor Economics
  - 25 credits

**MARKETING**

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

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 363—Advertising Principles</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 364—Marketing Management</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 361—Industrial Marketing</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 362—Retailing Principles</td>
<td>5</td>
</tr>
<tr>
<td>Bus. Ad. 368—Salesmanship</td>
<td>5</td>
</tr>
<tr>
<td>Bus. Ad. 466—Market Survey Research</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 448—Administrative Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Econ. 304—Letter and Report Writing</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 343—Industrial Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>
| 30 credits

**SECRETARIAL SCIENCE**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 183—Advanced Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 184—Advanced Stenography</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 190-191—Advanced Shorthand Transcription</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 192—Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 193—Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 194—Records Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 262—Advanced Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>English 304—Letter and Report Writing</td>
<td>4</td>
</tr>
</tbody>
</table>

*Secretarial Science students are not required to take Speech 101.

**REQUIREMENTS OF THE COMBINED PROGRAMS LEADING TO THE DEGREES OF BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION AND BACHELOR OF LAWS**

A combined curriculum is offered which leads to the degree of Bachelor of Science in Business Administration at the end of four academic years and the degree of Bachelor of Laws at the end of six academic years. In this program a student must satisfy fully the general university and pre-business administration requirements and, during his junior year in the School of Business Administration, must complete Business Administration 230, 322, 339, 340, 360, plus 30 additional credits as electives within the School of Business Administration (other than Business Administration 237-353-359). The student must earn at least 141 credits outside the School of Law.

Upon completion of the foregoing program with at least a 2.0 index of grade points earned in courses undertaken, the student may be admitted to the School of Law. If so admitted, the student will not be eligible for the degree of Bachelor of Science in Business Administration at the end of the first academic year in the School of Law; provided the student is certified as having completed the work of the first year of law to the satisfaction of the School of Law.

Students planning to take accounting courses in preparation for the degree of Bachelor of Arts in Business Administration must fulfill the general university and pre-business administration requirements and, during his junior year in the School of Business Administration, must complete the general university and pre-business administration core courses listed above; the foreign language requirement; and Bus. Ad 421, 422, 431, 432, or the equivalent in Bus. Ad. courses to offer a minimum of 75 credit hours; the university requirements for graduation.

**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 requirements, and the business administration core courses listed above; the foreign language requirement; and Business Administration 421, 422, or 431, 432; and sufficient electives in Business Administration 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-five credits.

A maximum of nine credits may be for the required thesis. A minimum of twenty credits, and a maximum of thirty credits including credits for thesis, are to be completed in the following areas of concentration: accounting, business education, finance, management, or marketing. A minimum of six credits must be completed in work outside the School of Business Administration.

**ACCOUNTING**

**FOR UNDERGRADUATES**

*For explanation see Index under "Symbols"

201-202 ELEMENTARY ACCOUNTING 2Q A W S 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.

**FOR UNDERGRADUATES AND GRADUATES**

Bus. Ad. 303, 306, 307, 401, 408 and 409 are available for graduate credit to non-credit students.

**303-304 COST ACCOUNTING 2Q 303 A W 2, 304 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 management activities, which includes reports to management, budget preparation, break-even analysis, and cost-volume-profit relationship.

**305 GOVERNMENTAL ACCOUNTING 1Q A 3 Prereq 202.**

Auditing aspects of government financial statements; preparation of audit working papers, reports, and submission of the auditor's report.

**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 balance sheet and operating accounts; preparation of audit working papers, reports, and submission of the auditor's opinion.

**401-402 INCOME TAX 2Q 401 A W 3, 402 S 3 Prereq 202.**

The general scope and basic principles of auditing; encompassing generally accepted auditing standards and procedures, the audit program, and analysis of the control of financial statements. Preparation of 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 controllership function in modern management; preparation and use of business budgets; interpretation and analysis of balance sheet and operating accounts; preparation of audit working papers, reports, and submission of the auditor's opinion.

**407 C.P.A. REVIEW 1Q S 5 Prereq 304, 404, 410.**

Primarily for students preparing to take the examinations for the certificate of Certified Public Accountant. A 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
in mechanical techniques. Interpretation of financial statements, internal controls and financial statements. Significance and limitations of the various elements of income, statements of financial position, and the procedures involved in the analysis of financial statements. Preparation of accounts and the preparation of final accounts for public and private enterprises. Issues related to taxation, business law, and ethical considerations.


419 ACCOUNTING SEMINAR 1Q a/q 2. FOR GRADUATES

500 CONTROLLERSHIP PRINCIPLES AND PRACTICE 1Q A 3 Prereq 410 and approval of the graduate committee. Analysis of the controller's role in financial management. The controller's role in the management team and the role he plays in the solution of management problems.

520 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 1Q W 3 Prereq 410 and approval of the graduate committee. Modern accounting thought and practice. Analysis and interpretation of financial statements.

590 THEORY OF INCOME DETERMINATION 1Q S 3 Prereq 307. Study of income determination, the theories underlying the accounting calculation and disclosure of periodic net income. Theories of income distribution and the role of taxes.

595 RESEARCH 1Q a/q V R-6 Special research problems.

600 THESIS a/q V R-9. For graduate students.

BUSINESS LAW FOR UNDERGRADUATES

397-398 BUSINESS LAW 2Q 3 537 A W, 358 W S (357). Introduction to law, contracts, agency, nature of personal property, business organizations. Sales, warranties, negotiable instruments, business forms, credit, security, real property, introduction to the nature and types of negotiable instruments. Students taking the combined 6-year curriculum in Business Administration and Law are not eligible to take these courses.

399 C.P.A. LAW REVIEW 1Q S 3 Prereq 357-358. Primarily for majors intending to take the CPA examinations, but open to all students except those taking the combined 6-year program in Business Administration and Law. Contract law, sales contracts, negotiable instruments with interspersed review of other law subjects up to the time of the CPA examinations. Course examinations will usually be in form of CPA questions. Credit given by the American Institute of Certified Public Accountants.

FINANCE FOR UNDERGRADUATES

330 PERSONAL INVESTMENTS 1Q 2 Su. Savings accounts, purchasing a home, purchasing insurance, securities, investment trusts. The basic facts with which a layman should be acquainted.

FOR UNDERGRADUATES AND GRADUATES

350 FINANCIAL INSTITUTIONS 1Q A W 4, 330 S 3 Prereq 203. The financial system and the role of financial institutions.


370 REAL ESTATE 1Q A 3, 330 S 3. Principles of real estate valuation; real estate markets; location factors, buyer and seller behavior.

380 COMMERCIAL BANKING 1Q W 4 Prereq 300. Liquidity, loan and investment policies, credit analysis, interbank operations, bank operating costs, capital, dividends, and the factors affecting bank profitability.

390 COMMERCIAL LAW 1Q W 4 Prereq 300. Credit, payment terms, bankruptcy, creditors' rights, and the legal aspects of business transactions.

391 TAXATION 1Q W 4, 392 S 3 Prereq 300. Basic concepts of taxation, income tax law, estate taxes, and personal and corporate income taxes.

395 CORPORATION LAW 1Q W 4, 396 S 3 Prereq 300. Legal aspects of corporate organization and operation, corporate law, and the legal environment of business.

397-398 BUSINESS LAW 2Q 3 537 A W, 358 W S (357). Introduction to law, contracts, agency, nature of personal property, business organizations. Sales, warranties, negotiable instruments, business forms, credit, security, real property, introduction to the nature and types of negotiable instruments. Students taking the combined 6-year curriculum in Business Administration and Law are not eligible to take these courses.


419 ACCOUNTING SEMINAR 1Q a/q 2. FOR GRADUATES

500 CONTROLLERSHIP PRINCIPLES AND PRACTICE 1Q A 3 Prereq 410 and approval of the graduate committee. Analysis of the controller's role in financial management. The controller's role in the management team and the role he plays in the solution of management problems.

520 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 1Q W 3 Prereq 410 and approval of the graduate committee. Modern accounting thought and practice. Analysis and interpretation of financial statements.

590 THEORY OF INCOME DETERMINATION 1Q S 3 Prereq 307. Study of income determination, the theories underlying the accounting calculation and disclosure of periodic net income. Theories of income distribution and the role of taxes.

595 RESEARCH 1Q a/q V R-6 Special research problems.

600 THESIS a/q V R-9. For graduate students.

MANAGEMENT FOR UNDERGRADUATES

340 INDUSTRIAL ORGANIZATION AND MANAGEMENT 1Q A W 4, 340 S 3 Prereq 203. Basic principles of industrial organization and management, including industrial structure, industrial relations, and management practices.

341 INDUSTRIAL ORGANIZATION AND MANAGEMENT 1Q A W 4, 340 S 3 Prereq 203. Basic principles of industrial organization and management, including industrial structure, industrial relations, and management practices.

342 PERSONNEL MANAGEMENT 1Q W 4, 342 S 3 Prereq 203. Personnel function in the industrial production and marketing areas of: materials procurement, inventory control, production control, and labor relations.

343 AMERICAN INDUSTRIES 1Q S 4 Su 3 Prereq 340, 360. Economic problems and technological processes of selected manufacturing and communications industries. Location factors, company structures, mergers and acquisitions.
MARKETING

FOR UNDERGRADUATES

368. SALESMANSHIP 1Q A W S Su. The fundamentals and techniques of the selling process, including the pre-approach, approach, demonstration, handling of objections and the close.

369. MARKETING PRINCIPLES 1Q A W S Su 4 Prereq Econ 208. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation.

370. INDUSTRIAL MARKETING 1Q W 4 Prereq 360. Economic factors affecting marketing policy are analyzed. Deals with buying practices, channels, sales organization, industrial distributors, price, markets, and research policies.

371. RETAILING PRINCIPLES 1Q A W S Su 5 Prereq 360. Types of retail stores, location, buying, pricing, display, store selling, advertising, and cost control.

372. ADVERTISING PRINCIPLES 1Q A S Su 3 Prereq 360. The principles and techniques of advertising examined from the viewpoint of the business man.

373. MARKETING MANAGEMENT 1Q W 4 Prereq 360 and 388. Management of the sales force; planning, coordination, and control of the marketing program.

374. FOREIGN TRADE 1Q A W S 4 Prereq 360. (Prereq waived for seniors majoring in Political Science.) Theories, principles and methods of international trade.

376. MARKETING PROBLEMS 1Q A 4 Prereq 360 and 6 other credits in marketing courses. Case studies of problems facing the marketing executive.

377. ADVANCED RETAILING 1Q S 4 Prereq 362. Management problems of large and small retail stores. Emphasis on individual student projects and research.

378. CREDIT AND CREDIT ADMINISTRATION 1Q W 3 Prereq 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.

379. MARKET SURVEY RESEARCH 1Q A S 3 Prereq 250, 308. The design and conduct of sample surveys of consumer behavior. Introductions, habits, attitudes, and motivation.


479. MARKETING SEMINAR 1Q a/q 2 R-6 Prereq 15 credits in marketing and c/i.

FOR GRADUATES

506. MARKETING THEORY 1Q A S 3. A critical analysis and synthesis of marketing literature and marketing from the viewpoint of other disciplines.

508. CURRENT MARKETING PROBLEMS 1Q 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.

590. RESEARCH 1Q a/q V R-6. Special research problems.

699. THESIS a/q V R-9.

SECRETARIAL AND BUSINESS EDUCATION

Not more than 15 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

180-181-182 ELEMENTARY TYPWRITING 3Q A W S Prereq Placements for 182-182. Development of basic skills. With 1 H.S. entrance unit, no credit in 180; 2 units, no credit 180, 181.

183. ADVANCED TYPWRITING 1Q A W S 2 Prereq 182 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; 2 units, no credit 184, 185.

187-188-189 ADVANCED STENOGRAPHY 3Q A W S 5 Prereq 187. 186 or placement; 187-188 or 189. Review, speed development, Civil Service and State Merit tests. Concurrent enrollment in 180-181.

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

192. OFFICE MACHINES PRACTICE 1Q A W S 2. Calculators and Adding.

193. BEGINNING SECRETARIAL PRACTICE 1Q A W S 2 Prereq 162. Duplicating, dictating and transcribing machines.

194. RECORDS MANAGEMENT 1Q A S 2. Prereq 182 and c/i. Alphabetic, Numeric, Automatic, Geographic, Subject, Decimel, and Soundex filing.

FOR UNDERGRADUATES AND GRADUATES

386. METHODS OF TEACHING SHORTHAND, TYPWRITING, AND TRANSCRIPTION 1Q A W 2. Prereq 183, 185 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

387. METHODS OF TEACHING BOOKKEEPING AND BASIC BUSINESS 1Q W 2. Prereq 201 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

388. ADVANCED SECRETARIAL PRACTICE 1Q S. Alternate years. 6 Prereq 183, 187, 190, 192, 193, 194, Eng. 304, or c/i. Practical application to typical secretarial activities. Required for secretarial majors.

390. OFFICE MANAGEMENT 1Q W S 3. Principles of scientific office management.

391. GREGG SHORTHAND THEORY FOR TEACHERS 1Q W S 3 Prereq 184 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 1Q Su 3. Prereq 183 or business teaching experience, and c/i. Lecture, methods, and rotation-plan techniques in teaching newest office machines.

591. IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE 1Q Su 2. 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.

593. PROBLEMS IN TEACHING BOOKKEEPING 1Q Su 3 Prereq 201 or bookkeeping teaching experience and c/i. Developing a course of study using the latest methods and materials.

594. PROBLEMS IN TEACHING GREGG SHORTHAND 1Q Su 3 Prereq 184 or shorthand teaching experience and c/i. Developing a course of study using the latest methods and materials.

596. PROBLEMS IN TEACHING TYPWRITING 1Q Su 3 Prereq 184 or typewriting teaching experience and c/i. Developing a course of study using the latest methods and materials.

598. UNIT COURSES IN BUSINESS EDUCATION 1Q 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 summers. Each unit will carry a specific designation of topic covered.

699. RESEARCH 1Q a/q V R-6. Special research problems.

STATISTICS

FOR UNDERGRADUATES

250. INTRODUCTORY BUSINESS STATISTICS 1Q A W S 4 Prereq Math 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 1Q 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 a/q V R-4. Prereq 4 credits of statistics in 360 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 college admission, students desiring work in chemistry should have completed 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 this catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Chemistry: Chemistry 121-122-123, 245, 251-252-253, 344, 355, 371-372-373, 375-376-377, 431-432-433, and 8 credits selected from Chemistry 234, 236, 238, 333, 350, 352, 354, 356, 358, 452, 454, 456, 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. The principles and theories of chemistry are included in the presentation and discussion of current literature of the natural sciences. Students who have completed Chemistry 101-102 or an equivalent two quarters of general chemistry must have completed Chemistry 122 or 123 or an equivalent two quarters of the 3rd year general chemistry. For students desiring a one year general course only.

FOR UNDERGRADUATES AND GRADUATES

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

101 SURVEY OF ORGANIC CHEMISTRY 1Q S Su 5 (5-4). Nonmajors to follow Chemistry 101-102 as the 3rd quarter of chemistry for students in non-science majors desiring a one year general course in chemistry. Placement above 101 in Mathematics entrance exam or completion of Math 001. For science majors and those students wishing more than one year of chemistry. The principles and theories of chemistry are included in the presentation and discussion of current literature of the natural sciences. Students who have completed Chemistry 101-102 may not receive credit for 121-122 but are eligible for credit in 123.

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

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

FOR UNDERGRADUATES AND GRADUATES

344 ADVANCED QUANTITATIVE ANALYSIS 1Q A 3 (2-6) Prereq 245. The methods of quantitative analysis of mixtures and complex materials.

346 INORGANIC CHEMISTRY 1Q A W S A 3 (2-4) Prereq 246. Modern instrumental methods of analysis.

355 INORGANIC CHEMISTRY LABORATORY 1Q W 2 (0-6) Prereq 260 or 263, and C/I. The techniques in preparation of inorganic compounds.

360 ADVANCED ORGANIC ANALYSIS 1Q S Su V 2-5 (1 or 2—4 or 10) Prereq 250. Modern methods of separation of organic compounds.

370 SURVEY OF PHYSICAL CHEMISTRY 1Q S 5 (5-4) Prereq 122 or 260, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medical college.

CHEMISTRY CURRICULUM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121-122-123</td>
<td>9</td>
</tr>
<tr>
<td>Math 116-117-118</td>
<td>12</td>
</tr>
<tr>
<td>Eng. 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Mill. Science or Air Science 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Phys. Ed. (Optional) Elective-Group II or III</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>41-19</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 261-262-263</td>
<td>9</td>
</tr>
<tr>
<td>Math. 251-252</td>
<td>9</td>
</tr>
<tr>
<td>German 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Chem. 264-265</td>
<td>9</td>
</tr>
<tr>
<td>Mill. Science or Air Science 201-202-203</td>
<td>9</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>43-17</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 221-222-223</td>
<td>9</td>
</tr>
<tr>
<td>German 213 S &amp; 215</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 322</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 344</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>5-8</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 371-372-373</td>
<td>9</td>
</tr>
<tr>
<td>Chem. 375-376-377</td>
<td>9</td>
</tr>
<tr>
<td>Elective or Chem. 481-482</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Chem. courses</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>14-17</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

FOR GRADUATES

For explanation see Index under "Symbols"
For Undergraduates

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.
661-662-663 Advanced Organic Chemistry 3Q A W S 3 (3-0) Prereq 263.
664 Physical Organic Chemistry 1Q a/q 3 (4-0) 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-18.

For Graduates

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 2 (2-0). Principles of preparation and characterization with attention to expressive bodily action. Techniques of voice in acting and exercises for vocal flexibility, range, articulation, and enunciation.
131 Elementary Stagecraft 1Q A W S 2 (2-4). Principles and practice in the construction of stage scenery. Production of the one-act play and stage. The style of the teachers of major productions.
223 Elementary Direction 1Q W 3 (3-0) Prereq 121. Principles and practice in the direction of the one-act play and rehearsal. The production of the one-act play form will be considered and used in this course.
231 Stage Makeup 1Q A W 2. Principles of and practice in theatrical makeup. Students will work on makeup for major productions.

For Undergraduates and Graduates

301-302-303 History of the Theater. 3Q A W S 3 e/y. English 116, 121, 131, 166-180-1853; World Theater, 1650-1850; (303) World Theater 1850 to Modern Times.
306 The Writing of Drama 1Q A W S 2 R-6. Prereq Engl 106 or 202; 4 cr from Drama 121, 131, 223. Techniques and practice in writing the one-act play and the full-length play. Experimental performances of plays.
307-308-309 The Drama (see English)
313 Theatre in the Community 1Q A 2 e/y Prereq c/i. The place in society of the children's theater, and the community and little theater.
321 Theatre Production in the High School 1Q S Su 3. Problems of high school theater including play selection, staging, acting, promotion, organization.
323 Advanced Stagecraft 1Q S Prereq 131. Principles and practice in scene painting, properties, sound and music, and lighting techniques and practice. Students will work on major productions.
341 Stage Costuming 1Q 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.
342 Acting for Television 1Q W 3 Prereq 121. Theory and practice of acting before the television camera.
343 Stage Lighting 1Q A 3 Prereq 131. Principles and practice in stage lighting and its use in the production of plays. Students will work on lighting for major productions.
351 Advanced Acting 1Q A 3 Prereq 121. Study and practice in creating a role. Application of the principles of voice, bodily action, pantomime, characterization.
353 Dramatic Interpretation 1Q S 3 Prereq Speech 201. Theory and practice of play-reading using a wide variety of dramatic materials and forms.
354 Creative Dramatics for Children 1Q W Su V-4 Prereq c/i. Children's literature suitable for adaptation to dramatic form. Illusions and realizations, the dramatic method in teaching non-theater subjects, exercises with laboratory groups of children from the community.
374 Theatre for Children 1Q Su only 2 or 4. Prereqcontacting and c/i. History and objectives of theater for children; study of existing professional and community children's theater programs; techniques of acting, directing, and producing plays for children to be shown before child audiences in the community.
381 Art History of the Theater 1Q A 2 Visual arts of the theater as an important aspect of the aesthetic theories developed in selected periods of history.
394 Workshop in Theatre 1Q Su V 2-10 Prereq Previous work in theater and consent of instructor. Study and experience in the arts of the theater according to the needs, potential, and desires of the students; costume, make-up, lighting, stagecraft, backstage organization, stage design, directing, acting, rehersal and performance, business, and house organization and management.
401-402-403 Theater Projects 3Q a/q V 2-4 Prereq 10 credits in drama courses or in English 307-308-309, 341-342-343; and demonstrated ability in theater and drama; to others with c/i on basis of much work in drama and the theater. Independent work in design, lighting, costume design, direction, playwriting, study of drama.
422 Advanced Direction 1Q S Prereq 121, 131 and 223, Technique of rehearsing and directing long plays. Principles of producing farce, fantasy, comedy, melodrama, tragedy.
431 Stage Design 1Q W 3 Prereq 112, 131. The principles
ECONOMICS is that branch of the social sciences which deals with man's efforts to satisfy his wants by utilizing the scarce means provided by nature. The department considers its teaching goals to be three-fold: (1) To provide students with basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them as civic leaders. (2) To introduce students majoring in economics to the various special fields of study within economics. This training along with extensive work in the other liberal arts and sciences, is intended to instill breadth of intellectual interest, critical habits of thought, a problem-solving attitude, and facility of expression. (3) To help meet, through graduate work, the increasing demands for competent professional economists in industry, commerce, government and education.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 20 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. Unless circumstances peculiar to the student's best interest indicate otherwise, the student should take in the sophomore or junior year: Economics 201-202-205; Mathematics 126; Political Science 205-208; and two quarters of History 251-252-253; Anthropology 122 or Sociology 122. In the junior or senior year, Economics 201-203.

The following may be counted as part of the 50 credits required for a major in Economics: History 353 and 374, Political Science 266, Mathematics 302-303, Business Administration 306, 421. It is recommended that the student take Business Administration 201-202. A foreign language is required.

COMBINED MAJORS. Minimum of 60 credits. Combined majors in economics and political science or sociology may be earned by meeting the following requirements with the remainder of credits selected according to the student's interests. Economics 201-202-205; Mathematics 126; at least 12 additional credits in upper division courses. Political Science 101, 203-206 and 15 additional credits in economics and c/1.

ECONOMICS-LAW COMBINATION. In addition to the general requirements for graduation listed earlier in the catalog, a minimum of 50 credits in economics must be earned in three years. First year of law will complete requirements for the Bachelor of Science degree with a major in economics. Students should take as many as possible of the following courses: History 345, 346, 374; Political Science 275; Business Administration 205-209; Speech 112. Latin is recommended for meeting the foreign language requirements.

FOR GRADUATES

Students desiring to take graduate work in economics must be admitted to the Graduate School, have the equivalent of undergraduate work in economics required of majors, and show capacity to carry graduate level courses. To obtain a Master's degree the student must earn credits in each of the following: Economics 405, 410, and 415.

501 GRADUATE RESEARCH a/q V R-6.

698 THESIS a/q V R-15.

FOR UNDERGRADUATES

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

PRINCIPLES OF ECONOMICS 2Q a/q 3. (201) Nature of American economic, capitalist production, money and its use, economic instability; (202) Markets, value and price; (203) Functional distribution of income; selected economic topics.

ECONOMIC GEOGRAPHY (See Geography.)
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 satisfactorily completed certain specified courses, and have demonstrated competence in student teaching before they are 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 readily prepare for teaching 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 background 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 prepares for practising 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 Teachers 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 English 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 background of training.

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 advisers as to courses to be taken in their freshman and sophomore years. 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 including the following required courses totaling 35 credits: Education 200, 205, 300, 342, 405 (10 credits), 457, 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 and 30 or more credits in a teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in secondary education:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W</td>
<td>S</td>
<td>Cr.</td>
</tr>
<tr>
<td>Eng. 101-102-105—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Genl. 151-152-153—Introduction to Psychology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Genl. 151-152-155—Intro to the Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>16-18</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>History, Political Science, Sociology or Economics</td>
<td>(to fulfill Group II Requirements)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Psy. 110—Introduction to Psychology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Educ. 260—Orientation to Education</td>
<td>4-5</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Educ 342—The School Library in Teaching</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>18-20</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 205—Educational Psychology</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Educ 206—Secondary School Teaching Procedures</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Educ 314—The School Library in Teaching</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Educ Methods Course (in one or both teaching major)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Major Sequence (listed later)</td>
<td>4-5</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4-5</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>15-19</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 405—Student Teaching; Secondary</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>(or 2 quarters, 3 credits each, may be arranged with director)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educ 407—Curriculum Foundation</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Educ 450—Guidance in the Elem and Sec School</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Educ 452—Educational Measurement</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Educ 472—Educational Psychology</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Major or Minor Sequence, or Electives</td>
<td>4-10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>15-18</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

PREPARATION FOR TEACHING IN THE ELEMENTARY GRADES. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 37 credits: Education 200, 205, 206, 302, 303, 315, 340, 404 (minimum of 10 credits), 457, and elective courses totaling 3 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, 3 credits; Science, 13 credits; Mathematics, 5 credits; Health and Physical Education, 9 credits; Psychology, 10 credits; Art, 6 credits; and Music, 6 credits.

For elementary teachers, Group I requirements may be satisfied by General 125, 135, and Mathematics 135.

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>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101-102-103—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Genl 125—Physical Science for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Biol 126—Biological Science for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Hist 101—The Development of Western Civilization</td>
<td>5</td>
</tr>
<tr>
<td>Math 130—Theory of Arithmetic</td>
<td>5</td>
</tr>
<tr>
<td>Psy 110—Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Eng 101-102-103—Freshman Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103—Air or Military Science</td>
<td>2</td>
</tr>
<tr>
<td>HP&amp;E 101-102-103—Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</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>4</td>
</tr>
<tr>
<td>Engl 211-212-213—Intro to Major American Writers</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>Psy 215—Child and Adolescent Psychology</td>
<td>3</td>
</tr>
<tr>
<td>HP&amp;E 199—First Aid</td>
<td>2</td>
</tr>
<tr>
<td>Educ 201-202-203—Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Subject</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>4</td>
</tr>
<tr>
<td>Educ 311—Supervision and Teaching of Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>Genl 301—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Educ 450—Children's Literature</td>
<td>4</td>
</tr>
<tr>
<td>Hist 201-202-203—United States History</td>
<td>4</td>
</tr>
<tr>
<td>HP&amp;E 338—Teaching Phys Educ in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>P.Sci. 101—Intro. to Govt. or P.Sci. 202—Amer. Govt.</td>
<td>4</td>
</tr>
<tr>
<td>Elective course in Education</td>
<td>2</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 404—Student Teaching: Elementary (a/q)</td>
<td>10</td>
</tr>
<tr>
<td>Educ 406—Teaching Practicum: Minimum of 6 credits.</td>
<td>3</td>
</tr>
<tr>
<td>HP&amp;E 273—School Health Problems</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>4</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 must investigate specific requirements because they differ in various states.

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

1. A Bachelor's degree from 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. Bachelor's degree from Montana State University or other approved institution of higher education showing that the holder has completed a four-year course of elementary school education. A Bachelor's degree in this field is equivalent to a four-year course of study in elementary education. The candidate must prepare a professional paper for which 3 to 6 credits may be allowed. This paper should involve a practical problem growing out of the student's administrative or teaching interest and should comply in mechanical features with those required of a thesis. Two copies of this paper must be submitted to the Dean of the Graduate School.

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

Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarters preceding the quarter of practice teaching a statement of their intended teaching fields. Those students who expect to be certified to teach in the elementary grades will submit a statement setting forth their proposed programs. Each candidate for a certificate who has not already received credit in Student Teaching (Educ 404 or 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:** Psy 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 405, a minimum of 10 credits, Educ 407, 3 credits.

**SEQUENCE OF CERTIFICATION COURSES IN ELEMENTARY EDUCATION:** Since certification for teaching at the elementary level requires a major or minor in 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.

**Variation 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 described in the School of Education section of this catalog. Certification to meet the requirements of the Northwest Association of Secondary Schools and Colleges at the University of Montana is a minimum of 54 graduate credits for the Master of Arts in Library Science. The candidate must complete 54 graduate credits, including 15 credits in Library Science and 15 credits in an area of specialization. The candidate must submit a thesis for which 15 credits may be allowed. This thesis may not include courses that carry a dual listing shared by Library Science and any other school or department, and may not include any course that is primarily concerned with techniques or trends in specific skills. The candidate will present a thesis for which 3 to 6 credits may be allowed.

**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 15 quarter hours. Such courses may not include courses that carry a dual listing shared by Education and any other school or department, and may not include any course that is primarily concerned with techniques or trends in specific skills. The candidate will present a thesis for which 3 to 6 credits may be allowed.

**SPECIAL REQUIREMENTS FOR THE MASTER OF EDUCATION DEGREE:** Candidates must have completed two years of satisfactory teaching experience. At least 15 bachelor-level credits must have been completed following the two years’ teaching experience. All candidates for the Master of Education degree must complete a minimum of 15 graduate credits of graduate work in Education. The total number of credits in Education taken as undergraduate and graduate credit shall not be less than 54.

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 credit in Methods of Educational Research (Education 595 or equivalent) and not less than 15 credits in a teaching minor (see requirements for Master of Arts in Education).

The candidate must prepare a professional paper for which 3 to 6 credits may be allowed. This paper should involve a practical problem growing out of the student’s administrative or teaching interest and should comply in mechanical features with those required of a thesis. Two copies of this paper must be submitted to the Dean of the Graduate School.

Candidates electing this program leading to the Master of Education degree must take examinations covering the field of education and the professional area of specialization. This examination will be made by the Dean of the School of Education.

B. Master of Education Without Professional Paper. Candidates who choose not to do the professional paper will be required to complete a minimum of 54 graduate credits (Education 595 or equivalent), and a minimum of 10 credits of cognate work based upon a minimum of 15 credits in a teaching minor. They will take examinations covering the field of education—such examination to be arranged by the Dean of the School of Education.

Masters of Arts in Guidance and Counseling, and Masters of Arts in Science in Teaching. See statement under Graduate School.

**FOR UNDERGRADUATES**

*For explanation see Index under “Symbols”*

**200 ORIENTATION TO EDUCATION** 1Q A W S Su 2 Prereq: Psy 110. Teaching as a profession. The American public school and the process of teaching. Perspectives, issues, and debates today.

**202 THE ELEMENTARY SCHOOL CHILD** 1Q A W S 5, Su 3 Prereq: 200 and Psy 230. Principles of growth and development and psychological foundations of learning in the elementary school. A minimum of 2 hours per week will be spent in observation of children in the school environment.

**208 EDUCATION FOR THE ELEMENTARY SCHOOL** 1Q A W S 4 Prereq 200 and Psy 110. The growth and developmental characteristics of adolescents. Psychological foundations of learning in the junior and senior high school.

**210 OUTDOOR EDUCATION** 1Q Su 2. Outdoor activities and materials to enrich the elementary science program.

235 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 Y IQ A 4 Prereq c/l. Objectives of library service, library routines, and library buildings and equipment. The library's place in governmental organization, library extension work.

400 STUDENT TEACHING: ELEMENTARY 1 Q A W S Su V R-16 Prereq 201-203-205, 218 and consent of Director of Student Teaching. Students will do supervised teaching in cooperating schools in the elementary school. The student should expect to spend either a full morning or a full afternoon in the elementary school class-room during student teaching.

405 STUDENT TEACHING: SECONDARY 1 Q A W S Su V R-15 Prereq 205 or =, and consent of Director of Student Teaching. Observation and supervised teaching in Montana public schools under the supervision of cooperating 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 1 Q 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 1 Q W Su 3 Prereq teaching experience and c/l. Analysis of current methods in the teaching of language arts in the elementary school. Not a course in the teaching of reading.

312 SUPERVISION AND TEACHING OF READING 1 Q W Su 3 Prereq teaching experience and c/l. Characteristics of good reading programs and their development in accordance with present day understanding of children's learning.


315 SUPERVISION AND TEACHING OF ARITHMETIC 1 Q 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 1 Q Su 3 Prereq Gen 125, 126 and Educ 205. Curriculum planning, development and use of instructional materials, teaching procedures.

335 TEACHING OF CONSERVATION 1Q S Su 3 Prereq Gen 120 and 12 credits in Educ and c/l. Current conservation program and materials. Integral part of summer Conservation Education Workshop.

337 PROBLEMS IN CONSERVATION EDUCATION 1Q Su 3 Prereq Gen 120 and 12 credits in Educ and c/l. Current conservation program and materials. Integral part of summer Conservation Education Workshop.

339 EARLY CHILDHOOD EDUCATION 1Q S Su 3 Prereq 12 credits in Elementary Education or teaching experience, and c/l. Theory and techniques of teaching in the kindergarten and primary grades as a unified program.

340 REMEDIAL READING 1Q S Su 3 Prereq a basic course in teaching of reading or teaching experience, and c/l. Diagnosis and treatment of reading disabilities, strategies, and techniques of reading instruction. At elementary and college levels. Method and materials for specialists; classroom teachers, and administrators who wish to initiate remedial programs.

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

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

343 ORGANIZATION AND ADMINISTRATION OF THE SCHOOL LIBRARY 1Q A 4, Su 3. Objectives of school library service, library routines, and adequacy of materials and costs. For part-time teacher-librarians without library training.

344 CATALOGING AND CLASSIFICATION 1Q W, 4, Su 3 Prereq 341 or 343. Principles of classification and cataloging for small school libraries. Credit not allowed for this course and Music 385.

345 BIBLIOGRAPHY AND BOOK SELECTION 1 Q W 4, Su 3 Prereq 341 or 343. Book selection and order work for the small library. Book lists and bibliographies commonly found in small libraries; reference methods, citation, and bibliographic form.

347 AUDIO-VISUAL AIDS 1 Q A W S Su 3. Classroom utilization of projection—16 mm., filmstrip, photographic and handmade slides, overhead and opaque; technical and practical problems and materials. Credit not allowed for this course and Music 385.

350 EDUCATIONAL SOCIOLOGY 1 Q A Su 3. Education in modern social, economic, and political life; the school as a social institution; problems of American life which affect and are affected by the work of the public schools.

370 THE TEACHER AND SCHOOL ORGANIZATION 1 Q Su 3 Prereq teaching experience. The teacher's relationship to the organization, financing of American public education with special emphasis on personnel problems, community relations, and organizational structure of schools.

379 METHODS OF TEACHING SECONDARY SCIENCE 1Q Su 3 Prereq 12 credits in Secondary Education, science minor, and c/l. Problems involved in the development of an adequate high school science program; curriculum methods, instructional materials.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 2 Q W S Su 3. Historical and philosophical backgrounds of major developments in the field of education. For Education majors desiring the teacher Education center quarter. (461) to 1650; (462) 1650 to present.

490 INDEPENDENT STUDY 1 Q V R-10 Prereq c/l. Selected topics under the guidance of a staff member. Term papers may be required.

494 SEMINAR 1 Q V R-10 Prereq 12 credits in Education and...
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.


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

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

555 PRACTICE IN GUIDANCE 1Q S V 2-4 Prereq 455 or = and c/l. Guidance and counseling in neighboring schools. Seminar discussions weekly.

556 GUIDANCE INSTITUTE 1Q Su V 6-12 Prereq basic course in guidance and measurement and c/l. Guidance practices and techniques for teachers charged with guidance responsibilities.

551 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.

554 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.

555 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W Su 3 Prereq 550 or 564 or = and c/l. The background of education in the broadest sense as found in the religion, 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 control 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 revenues; related costs, inequalities, legal limitations, and proper expenditure; relationship of foundation programs and district reorganization.

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

577 PLANNING THE SCHOOL BUILDING PROGRAM 1Q Su V 2-4 Prereq 576 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 and procedures of personnel selection and evaluation; selection, in-service training, assignment, supervision, and welfare.

631 COLLEGE TEACHING 1Q S 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.

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

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

597 EDUCATIONAL STATISTICS 1Q A Su 4 Prereq Math 125, Educ 452 and 555 or concurrent registration therein and c/l.

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

699 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 380 Methods of Teaching Shorthand, Typewriting, and Transcription.
B Ad 381 Methods of teaching Bookkeeping and Basic Business.
### DRAMA (Minor Only) Teaching Minor (48 credits)

**Required Courses:**
- Dram 121—Elementary Acting 3
- Dram 131—Elementary Stagecraft 3
- Dram 223—Elementary Direction 3
- Dram 245—Stage Lighting 3
- Elective Drama 2-4

**Soc 111—Principles of Speech 3-5**

**ENGLISH**

**Teaching Major (60 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 201—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 211—Intro to Major British Writers</td>
<td>6</td>
</tr>
<tr>
<td>Eng 212—Intro to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Spch 111 or 261—Principles or Oral Interpretation</td>
<td>3-5</td>
</tr>
<tr>
<td>Spch 211 or 342—Shakespeare and Contemporaries</td>
<td>3</td>
</tr>
<tr>
<td>Spch 371—The English Language</td>
<td>3</td>
</tr>
<tr>
<td>Spch 361—Literature for the High School Teacher</td>
<td>3</td>
</tr>
<tr>
<td>Eng 481—Methods of Teaching English</td>
<td>4</td>
</tr>
<tr>
<td>Electives: Other courses in the department</td>
<td>3</td>
</tr>
</tbody>
</table>

**Teaching Minor (30 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 201—Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Eng 211—Intro to Major British Writers</td>
<td>6</td>
</tr>
<tr>
<td>Eng 212—Intro to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Spch 111 or 261—Principles or Oral Interpretation</td>
<td>3-5</td>
</tr>
<tr>
<td>Spch 211 or 342—Shakespeare and Contemporaries</td>
<td>3</td>
</tr>
<tr>
<td>Spch 371—The English Language</td>
<td>3</td>
</tr>
<tr>
<td>Spch 361—Literature for the High School Teacher</td>
<td>3</td>
</tr>
<tr>
<td>Eng 481—Methods of Teaching English</td>
<td>4</td>
</tr>
<tr>
<td>Electives: Other courses in the department</td>
<td>3</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-105—Elementary</td>
<td>15</td>
</tr>
<tr>
<td>F. L. 215—Intermediate</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 219—Advanced</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 217—Review of Grammar and Composition</td>
<td>3</td>
</tr>
<tr>
<td>F. L. 301-302-303—Survey of Literature</td>
<td>6</td>
</tr>
<tr>
<td>Electives: Any course numbered 300 or above</td>
<td>13</td>
</tr>
</tbody>
</table>

**Russian (Minor Only)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-102-103—Elementary</td>
<td>15</td>
</tr>
<tr>
<td>F. L. 213—Intermediate</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 219—Advanced</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 217—Review of Grammar and Composition</td>
<td>3</td>
</tr>
<tr>
<td>F. L. 301-302-303—Survey of Literature</td>
<td>4</td>
</tr>
</tbody>
</table>

**CLASSICAL LANGUAGES (Latin)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-102-103—Elementary</td>
<td>15</td>
</tr>
<tr>
<td>F. L. 213—Intermediate</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 219—Advanced</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 217—Latin Readings</td>
<td>5</td>
</tr>
<tr>
<td>Electives: F. L. 491—Seminar</td>
<td>17</td>
</tr>
</tbody>
</table>

**HISTORY AND POLITICAL SCIENCE**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (30 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 101-102-103—Dev. of West. Civ</td>
<td>15</td>
</tr>
<tr>
<td>Hist. 201-202-203—U. S. History</td>
<td>12</td>
</tr>
<tr>
<td>Pol. S. 202-203—American Government</td>
<td>8</td>
</tr>
<tr>
<td>Pol. S. 301—International Relations</td>
<td>4</td>
</tr>
</tbody>
</table>

### HEALTH AND PHYSICAL EDUCATION FOR MEN

**Teaching Major (43 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (33 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;PE 108—Intro to Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 199—First Aid</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 210, 310, 321—Coaching—Football, Basketball, Track</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 211—212, 311—312—Officiating—Football, Basketball</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 240—Care &amp; Prev. of Athletic Injury</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 325—Dance Methods &amp; Materials</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 335—Methods of Teaching Phys. Ed.</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 358—Organization &amp; Administration</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 378—School Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 380—Applied Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>H&amp;PE 403—Testing in Phys. Ed.</td>
<td>2</td>
</tr>
<tr>
<td>Electives: Other courses in the department</td>
<td>3</td>
</tr>
</tbody>
</table>

**Notes:**
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 (43 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (33 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;PE 108—Intro to Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 199—First Aid</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 210—335—Coaching—Women’s Athletics</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 211—312—Teaching of Team Sports for Women</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 231—232—Dance Methods and Materials</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 335—Methods of Teaching Phys. Ed.</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 358—Organization &amp; Administration</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 373—School Health Problems</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 376—Personal Health Problems</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives: Other courses in the department | 2 |

**Notes:**
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 (39 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (33 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 101-102-103—Dev. of West. Civ</td>
<td>15</td>
</tr>
<tr>
<td>Hist. 201-202-203—U. S. History</td>
<td>12</td>
</tr>
<tr>
<td>Pol. S. 202-203—American Government</td>
<td>8</td>
</tr>
</tbody>
</table>

**Electives:** Must include 9 credits of upper division courses.

### HOME ECONOMICS

**Teaching Major (50 credits)**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor (32-36 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Ec 102—Personal Management</td>
<td>5</td>
</tr>
<tr>
<td>H Ec 141—Introduction to Foods</td>
<td>5</td>
</tr>
<tr>
<td>H Ec 155—Textile Selection</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 157—Clothing Construction</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 161—Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 162—Household Economics</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 170—Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 171—Clothing for the Family</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 172—Clothing for Women</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 242—Meal Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 258—Clothing for the Family</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 258—School Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 302—Home Living Center</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 311—Home Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 321—Methods of Teaching Home Ec</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 398—Problems of the Consumer</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 399—Applied Clothing Design</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 399—Applied Clothing Design</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 399—Applied Clothing Design</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required Courses:**
- Econ 101-102-103—Principles of Economics (60 credits)
- Econ 301—Money and Banking, or Econ 311—Intermediate Econ Analysis (30 credits)
### JOURNALISM (Minor Only)

**Teaching Minor (31 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ. 150—Introduction to Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 155—Elementary Photography</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 154—Introduction to Radio and Television</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 156—Current Affairs</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 250—Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 290—History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 316—School Publications</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 330—Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 353—Advertising Layout and Copy</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 455—Editorial Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

### LIBRARY SERVICE (Minor Only)

**Teaching Minor (30 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 340—Org. &amp; Adm. of the School Library</td>
<td>3-4</td>
</tr>
<tr>
<td>Educ 344—Cataloging and Classification</td>
<td>3-4</td>
</tr>
<tr>
<td>Educ 345—Bibliography and Book Selection</td>
<td>3</td>
</tr>
<tr>
<td>Educ 346—Library Reference Materials</td>
<td>3-4</td>
</tr>
</tbody>
</table>

### ELECTIVES (14-18 credits from the following):

- Educ 347—Audio-Visual Aids
- Educ 348—Children’s Literature
- Educ 441—Evaluation of School Library Service & Materials
- Educ 442—Library Work with Children
- Educ 444—Library Seminar
- Educ 445—Library Practice
- Engl 381—Library for the High School Teacher

### MATHEMATICS

**Teaching Major Teaching Minor (45 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 116—College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>Math 117—Modern Trigonometry</td>
<td>5</td>
</tr>
<tr>
<td>Math 118—Introduction to Analytic Geometry and Calculus</td>
<td>5</td>
</tr>
<tr>
<td>Math 251—Sophomore Math I</td>
<td>5</td>
</tr>
<tr>
<td>Math 252—Sophomore Math II</td>
<td>5</td>
</tr>
<tr>
<td>Math 253—Special Electives (at least one of the following courses)</td>
<td>5</td>
</tr>
<tr>
<td>Math 300—Algebra for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Math 301—Geometry for Teachers</td>
<td>5</td>
</tr>
</tbody>
</table>

**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.

### MUSIC

**Teaching Major Teaching Minor (60 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 111, 119, 113—Theory I</td>
<td>6</td>
</tr>
<tr>
<td>Music 112—Singing, Keyboard and Dietation</td>
<td>3</td>
</tr>
<tr>
<td>Music 211—Sight Singing, Keyboard and Dietation</td>
<td>4</td>
</tr>
<tr>
<td>Music 241—242—243—Theory II</td>
<td>6</td>
</tr>
<tr>
<td>Music 330, 335—Intro to Music Lit.</td>
<td>6</td>
</tr>
<tr>
<td>Music 252, 253 or 285—Conducting</td>
<td>8</td>
</tr>
<tr>
<td>Music 331, 341, 351—School Music</td>
<td>9</td>
</tr>
<tr>
<td>Applied Music—Major Field</td>
<td>12</td>
</tr>
</tbody>
</table>

**Additional courses**:

- Music 111, 118, 116—Piano in class
- Music 117, 119, 113—Voice in class
- Music 125, 195, 177—Strings in class
- Music 127—3 Quarters—Winds in class

### BIOLOGICAL SCIENCE

**Teaching Major Teaching Minor (49 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 100—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 121—Botany</td>
<td>10</td>
</tr>
<tr>
<td>Bot 122—Local Flora</td>
<td>3</td>
</tr>
<tr>
<td>Bot 225 or 341—Plant Phys. or Morph. of</td>
<td>5</td>
</tr>
<tr>
<td>Thall</td>
<td></td>
</tr>
<tr>
<td>Gen 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Zool 101—Elementary Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Zool 104—Field Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 201—Com Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
<td>5</td>
</tr>
</tbody>
</table>

### PHYSICAL SCIENCE

**Teaching Major Teaching Minor (40 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 101, 102—General, Survey Org.</td>
<td>15</td>
</tr>
<tr>
<td>Hist 101—Introduction to Geology</td>
<td>5</td>
</tr>
<tr>
<td>Phys 111—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Pol. S. 202—American Government</td>
<td>15</td>
</tr>
<tr>
<td>Soc. 101—Introductory Sociology</td>
<td>5</td>
</tr>
</tbody>
</table>

### GENERAL SCIENCE (Major Only)

**Teaching Major (62-64 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 121—Botany</td>
<td>10</td>
</tr>
<tr>
<td>Chem 121—Local Flora</td>
<td>2</td>
</tr>
<tr>
<td>Chem 101, 102—General Chemistry, Survey Org.</td>
<td>15</td>
</tr>
<tr>
<td>Hist 111, 112—General History</td>
<td>15</td>
</tr>
<tr>
<td>Hist 202—U. S. History</td>
<td>15</td>
</tr>
<tr>
<td>Pol. S. 202—American Government</td>
<td>15</td>
</tr>
<tr>
<td>Soc. 101—Introductory Sociology</td>
<td>5</td>
</tr>
</tbody>
</table>

### SOCIAL SCIENCES (Major Only)

**Teaching Major (55 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ. 270—Reporting</td>
<td>5</td>
</tr>
<tr>
<td>Journ. 316—School Publications</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 353—Advertising Layout and Copy</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 455—Editorial Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

### SPEECH (Minor Only)

**Teaching Minor (30 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech 101—Choral</td>
<td>3</td>
</tr>
<tr>
<td>Speech 102—Oratory</td>
<td>3</td>
</tr>
<tr>
<td>Speech 241—Diction</td>
<td>3</td>
</tr>
<tr>
<td>Speech 242—Radio-Talking Speech</td>
<td>3</td>
</tr>
<tr>
<td>Speech 243—Beginning Oral Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Speech 244—Debate</td>
<td>3</td>
</tr>
<tr>
<td>Speech 331—Teaching of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Speech 332—Introduction to Speech Pathology</td>
<td>3</td>
</tr>
</tbody>
</table>

### ENGLISH

**Teaching Major Teaching Minor (49 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 100—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 121—Botany</td>
<td>10</td>
</tr>
<tr>
<td>Bot 122—Local Flora</td>
<td>3</td>
</tr>
<tr>
<td>Bot 225 or 341—Plant Phys. or Morph. of</td>
<td>5</td>
</tr>
<tr>
<td>Thall</td>
<td></td>
</tr>
<tr>
<td>Gen 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Zool 104—Elementary Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 101—Elementary Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 201—Com Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
<td>5</td>
</tr>
</tbody>
</table>

### SCIENCE

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

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

### BIOLOGICAL SCIENCE

**Teaching Major Teaching Minor (49 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 100—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 121—Botany</td>
<td>10</td>
</tr>
<tr>
<td>Bot 122—Local Flora</td>
<td>3</td>
</tr>
<tr>
<td>Bot 225 or 341—Plant Phys. or Morph. of</td>
<td>5</td>
</tr>
<tr>
<td>Thall</td>
<td></td>
</tr>
<tr>
<td>Gen 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Zool 101—Elementary Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 104—Field Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 201—Com Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
<td>5</td>
</tr>
</tbody>
</table>

### PHYSICAL SCIENCE

**Teaching Major Teaching Minor (40 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 101, 102—General, Survey Org.</td>
<td>15</td>
</tr>
<tr>
<td>Hist 101—Introduction to Geology</td>
<td>5</td>
</tr>
<tr>
<td>Phys 111—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Pol. S. 202—American Government</td>
<td>15</td>
</tr>
<tr>
<td>Soc. 101—Introductory Sociology</td>
<td>5</td>
</tr>
</tbody>
</table>

### GENERAL SCIENCE (Major Only)

**Teaching Major (62-64 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 121—Botany</td>
<td>10</td>
</tr>
<tr>
<td>Chem 121—Local Flora</td>
<td>2</td>
</tr>
<tr>
<td>Chem 101, 102—General Chemistry, Survey Org.</td>
<td>15</td>
</tr>
<tr>
<td>Hist 111, 112—General History</td>
<td>15</td>
</tr>
<tr>
<td>Hist 202—U. S. History</td>
<td>15</td>
</tr>
<tr>
<td>Pol. S. 202—American Government</td>
<td>15</td>
</tr>
<tr>
<td>Soc. 101—Introductory Sociology</td>
<td>5</td>
</tr>
</tbody>
</table>

### SOCIAL SCIENCES (Major Only)

**Teaching Major (55 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ. 270—Reporting</td>
<td>5</td>
</tr>
<tr>
<td>Journ. 316—School Publications</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 353—Advertising Layout and Copy</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 455—Editorial Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

### SPEECH (Minor Only)

**Teaching Minor (30 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech 101—Choral</td>
<td>3</td>
</tr>
<tr>
<td>Speech 102—Oratory</td>
<td>3</td>
</tr>
<tr>
<td>Speech 241—Diction</td>
<td>3</td>
</tr>
<tr>
<td>Speech 242—Radio-Talking Speech</td>
<td>3</td>
</tr>
<tr>
<td>Speech 243—Beginning Oral Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Speech 244—Debate</td>
<td>3</td>
</tr>
<tr>
<td>Speech 331—Teaching of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Speech 332—Introduction to Speech Pathology</td>
<td>3</td>
</tr>
</tbody>
</table>

Creative writing and composition are emphasized for those who wish to do graduate work, teach at the college level, teach in foreign countries, work in magazine or book publishing, do library work, or wish to sense and study the great currents of thought throughout the centuries.
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 requirements 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 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 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 121-125-131), 5 credits of which will be counted toward the English major. (General 360 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 365 (Chaucer); 3 credits from 491-492-493; 490-499. The remaining credits required for the completion of the 30 credits may be selected from courses in English, American, or General Literature numbered above 200. The total 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 3 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, 222-223, 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 required Field Electives. All Electives must be one course in American Literature and one British Literature.

Related Fields: Drama 231 (strongly recommended), 101, 121, 131, 245, 251; Journalism 127, 270, 316, 380; Speech 111, 112, 118, 214, 261, 231.

IV. The foreign language requirement listed earlier in the catalog must be satisfied. Art 221-222-223; Music 126-128; 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 for all credits required for his major in English in addition to that requirement as well as in his major field to become a candidate for honors.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ENGLISH. In addition to the general requirements of the Graduate School, candidates are required to take nine credits of 500-501-502 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.


NOTE: A special section will be reserved for foreign students. Prereq c/i.

106 CREATIVE COMPOSITION 1Q W S 3 Prereq 102 and c/i. The study and writing of verse and short fiction. (Credit in this course will not fill the requirement for 103, but also permits, with c/i, sophomore entrance into Eng 301.)

201-202-203 ADVANCED COMPOSITION AND CREATIVE WRITING 3Q A W S Su 3. Enter any quarter. Prereq 101-102-103; (301) Expository writing; (303) Short Fiction; (306) Techniques of poetry.

211-212-213 INTRODUCTION TO MAJOR BRITISH WRITERS 3Q A W 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 MAJOR 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 Hawthorne through; (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/i.

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 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 schedule 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 with special attention to his entire record as well as in his major field to become a candidate for honors.

344-345 THEORIES OF THE DRAMA 2Q A W S 2 e/y. Enter either quarter. Prereq 1, 2 quarters of 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.)


386-387-388 BRITISH LITERATURE: RENAISSANCE TO 1600 3Q A W S Su 3 Enter any quarter. Prereq 12 cr of literature.

FOREIGN LANGUAGES

provide instruction and practice in speaking, reading, and writing the tongues of other peoples for commercial, cultural, or other purposes. Intercommunica­tion among nations, the exchange of goods and ideas, the world depends upon knowledge of modern languages, and such understanding is particularly necessary as the importance of the United States in global affairs increases. Educated men and women find language skills not only important for social reasons, but as equipment for research in many fields of humanistic and scientific inquiry. Knowledge of a foreign language is also recognized as contributing greatly to the student's ability to use his own tongue. Such is particularly true of the classical languages, Latin and Greek, which are useful in the study of 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 graduate 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 various branches of the government.

HIGH SCHOOL PREPARATION. Language taken in high school may be both recognized by the University and may be eligible for 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 101; those with two units in 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 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 201, 202, 216, 217 or = .

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 ELEMENTARY FRENCH 1Q A W Su 5.
102 ELEMENTARY FRENCH 1W W Su 5 Prereq 101 or =.
103 ELEMENTARY FRENCH 1Q A Su 5 Prereq 102 or =.
111 FRENCH FOR ELEMENTARY TEACHERS 1Q a/q Prereq c/l. Grammar, conversation, and methods of teaching French in the elementary school.
213 INTERMEDIATE FRENCH 1Q A W Su 4 Prereq 103 or =.
215 ADVANCED FRENCH 1Q W Su 4 Prereq 213 or =.
217 FRENCH GRAMMAR REVIEW AND COMPOSITION 1Q A S Su 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

200 FRENCH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
201-202-203 SURVEY OF FRENCH LITERATURE 3Q A W S 2 Prereq 217.
205 ADVANCED FRENCH PHONETICS 1Q S Su 2 Prereq 217 or =.
311 MEDIEVAL FRENCH LITERATURE 1Q A 3 o/y Prereq 217.
321 FRENCH RENAISSANCE 1Q W 3 o/y Prereq 217.
321 17TH CENTURY FRENCH LITERATURE 1Q S 3 o/y Prereq 217.
341 18TH CENTURY FRENCH LITERATURE 1Q A S 3 o/y Prereq 217.
361 19TH CENTURY FRENCH LITERATURE 1Q W 3 o/y Prereq 217.
491 SEMINAR 1Q a/q V 2-3 R-15 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

GERMAN

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

1. German 101 to 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, 314, 321, 322.

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 Su 3 Prereq 215 or =.

FOR GRADUATES

699 THESIS a/q V R-15.

GREEK

No major is given in Greek.
101 ELEMENTARY GREEK 1Q W Su 5.
102 ELEMENTARY GREEK 1Q S 5 Prereq 101.
103 ELEMENTARY GREEK 1Q A Su 3 Prereq 102.
213 INTERMEDIATE GREEK 1Q W Su 3 Prereq 103.
215 ADVANCED GREEK 1Q S 3 Prereq 213.

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 S 4 Prereq 103.
215 ADVANCED ITALIAN 1Q W 4 Prereq 213.
217 ITALIAN REVIEW GRAMMAR 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).
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 or =.
213 INTERMEDIATE LATIN 1Q A Su 4 Prereq 103 or =.
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

699 THESIS a/q V R-15.

THE TEACHING OF FOREIGN LANGUAGES

591 SEMINAR ON TRANSLATION 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 curriculum 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 curricula 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 102 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 FORESTY. 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 courses offered by 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 by 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 conferred.

A senior student in the School of Forestry who has earned a total of at least 102 undergraduate credits, but still lacks as many as 15 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.

CURRICULUM 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

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 190-1-2—Survey of Forestry</td>
</tr>
<tr>
<td></td>
<td>Bot 111-112—Forest Botany</td>
</tr>
<tr>
<td></td>
<td>Chem 101-1—General Chemistry</td>
</tr>
<tr>
<td>Winter</td>
<td>For 100, 101; Electives</td>
</tr>
<tr>
<td></td>
<td>For 200, 230; Bot 225; ROTC 201; ROTC 202; Electives</td>
</tr>
<tr>
<td>Spring</td>
<td>For 200, 230; Bot 225; ROTC 201; ROTC 202; Electives</td>
</tr>
<tr>
<td></td>
<td>For 200, 230; Bot 225; ROTC 201; ROTC 202; Electives</td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 210, 230, 250; Bot 225; H&amp;PE 201; ROTC 201; Electives</td>
</tr>
<tr>
<td>Winter</td>
<td>For 230, 250, 253; Bot 250; ROTC 203; Electives</td>
</tr>
<tr>
<td>Spring</td>
<td>For 200, 230, 253; Bot 250; ROTC 203; Electives</td>
</tr>
<tr>
<td></td>
<td>For 200, 230, 253; Bot 250; ROTC 203; Electives</td>
</tr>
</tbody>
</table>

Third Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 300, 310, 360; Bot 225; H&amp;PE 203; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Winter</td>
<td>For 400, 421; Econ 202; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Spring</td>
<td>For 400, 421, 455; Econ 202; Speech 111; Econ 201</td>
</tr>
</tbody>
</table>

Fourth Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 420, 441, 453; Econ 202; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Winter</td>
<td>For 400, 421, 455; Econ 202; Speech 111; Econ 201</td>
</tr>
</tbody>
</table>

FIFTH YEAR

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 360, 420, 452, 454; Winter: For 400, 421, 455, 457</td>
</tr>
<tr>
<td>Winter</td>
<td>For 401, 410, 455; Winter: For 400, 421, 455, 457</td>
</tr>
</tbody>
</table>

WOOD UTILIZATION

Second Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 210, 232, 290; Phys 111; H&amp;PE 201; ROTC 201; Electives</td>
</tr>
<tr>
<td>Winter</td>
<td>For 230, 250, 253; Bot 250; ROTC 203; Electives</td>
</tr>
<tr>
<td>Spring</td>
<td>For 200, 230, 253; Bot 250; ROTC 203; Electives</td>
</tr>
</tbody>
</table>

Third Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 300, 310, 360; Econ 201; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Winter</td>
<td>For 300, 310, 360; Econ 201; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Spring</td>
<td>For 311, 341, 342; Bot 370; Psych 343</td>
</tr>
</tbody>
</table>

RANGE MANAGEMENT

Second Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 210, 232, 290; Phys 111; H&amp;PE 201; ROTC 201; Electives</td>
</tr>
<tr>
<td>Winter</td>
<td>For 230, 250, 253; Bot 250; ROTC 203; Electives</td>
</tr>
<tr>
<td>Spring</td>
<td>For 200, 230, 253; Bot 250; ROTC 203; Electives</td>
</tr>
</tbody>
</table>

Third Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td>For 420, 441, 453; Econ 201; Speech 111; Econ 201</td>
</tr>
<tr>
<td>Winter</td>
<td>For 400, 421, 455; Econ 202; Speech 111; Econ 201</td>
</tr>
</tbody>
</table>
### WILDLIFE MANAGEMENT

#### Second Year

| Autumn  | For 210, 252, 259 | Bot 201 | W 4 (3-0) Prereq Math 101 or 113. Enabling the student to supervise and direct the final location of wildlife projects. | For 330, 352, 370, 388; Bot 290. Winter: For 200, 230, 252; Bot 250; ROTC 203. | Spring: For 200, 230, 252. |  
| Winter   | For 250, 291; Bot 235; H&PE 202; ROTC 203. | Spring: | | |  

| Third Year | Autumn: For 300, 310, 360; Zool 101; H&PE 203. Winter: For 330, 352, 370; Bot 266. Spring: | For 311, 499; Jour 334; Zool 201; Bot 370. |  

### FOREST CONSERVATION

#### First Year

| Bot 111-112—Forest Botany  | A 3 | W 3 | S 3 | Cr S Cr |  
| Bot 123—Local Flora         | 4   | 4   | 3   |  
| Eng 101-2—General Chemistry  | 4   | 4   | 5   |  
| Eng 101-2—Survey of Organic Chemistry | 3   | 3   | 3   |  
| Chem 101-2—Survey of Forestry | 3   | 3   | 3   |  
| Math 112—Trigonometry       | 3   | 3   | 3   |  
| Speech 101-2—Principles of Speech | 3   | 3   | 3   |  
| H&PE 101-2—Physical Education | 1   | 1   | 1   |  
| ROTC 101-2-3—Military of Air Science | 0   | 0   | 0   |  

#### Second Year

| Autumn: For 210, 252, 259; Zool 101; H&PE 201; ROTC 201. Winter: For 290, 352, 370; Bot 252; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 250; H&PE 203; ROTC 203. |  
| Third Year: For 200, 230, 253. |  

#### Fourth Year

| Autumn: For 300, 310, 360; Zool 101; H&PE 203. Winter: For 330, 352, 370; Bot 266. Winter: Bot 353; Jour 334; Zool 201. | For 360, 370 |  
| Winter: For 358, 361, 411; Electives. | Spring: For 309, 361, 411; Electives. |  

### RANGE CONSERVATION

#### Second Year

| Autumn: Econ 201; For 210, 252; Phys 111; H&PE 201; ROTC 201. Winter: Bot 235; Econ 203; For 250; Psych 110; H&PE 202; ROTC 202. Spring: | For 255, 365; For 235; H&PE 202; ROTC 203. |  
| Third Year: For 300, 460, 482; Geol 101; Jour 334. Winter: | Bot 290; |  
| Autumn: For 330, 370; Electives. Spring: For 309, 361, 411; Electives. |  

### Winter


### SOIL AND WATER CONSERVATION

#### Second Year

| Autumn: Econ 201; For 210, 252; Phys 111; H&PE 201; ROTC 201. |  

### WILDLIFE CONSERVATION

#### Second Year

| Winter: | For 250, 291; |  
| Autumn: | For 250, 291; |  
| Winter: | For 250, 291; |  
| Autumn: | For 250, 291; |  
| Winter: | For 250, 291; |  

### FOR UNDERGRADUATES

For explanation see Index under "Symbols"

50 SLIDE RULE 1Q a/q 0 (3-0) Prereq Math 100 and 113 or consent of registration. Introduces the student to the solution of mathematics problems commonly encountered in the field of forestry.

190-191 SURVEY OF FORESTRY 2Q 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, logging, forest mapping and growth determination.

210 SOILS 1Q A W 4 (3-4) Prereq Chem 101-102 or 113. 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 SURVEYING 2Q A 4 (9-8), S 5 (2-8) Prereq Math 113 or 151 with a grade of C or better and For 290 prior to or concurrent with. For 292. Care and use of tape, compass, Abney level, Engineer's level, transit, plane table, and telescopic alidade. Introduction to differential leveling transit, stadia, and plane table surveys, public land survey methods; (253) Instrument adjustment. Establishment of a triangulation, horizontal and vertical control, and topographic survey. Topographic surveys and maps obtained by various combinations of instruments. Solar observations. Introduction to earthworks.

255 FOREST AESTHETICS 1Q W 4 (3-3) Prereq sophomore standing in the School of Forestry and C/H. Historical development and problems in recreational use of forests and wild lands. Appreciation of natural landscape values. Study of natural parks and wilderness areas and Introduction to planning. Field trip.

259 DENDROLOGY 2Q A W S 3 (2-3) Prereq sophomore standing in the School of Forestry and C/H. 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 290.
400 REGIONAL SILVICULTURE 1Q S 2 (6-Field) Prereq 310 and 311. Regional silviculture - forest dependencies, characteristics of forest properties, types, and regions of the United States.

410 FOREST SOIL CLASSIFICATION AND MAPPING 1Q S 4 (3-4) Prereq 310 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 (3-4) Prereq 210 and Bot 235 and 250. Relationship of the chemical, physical and biological properties of forest soils to their classification and management.

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 205. Economic problems and principles involved in the use of forest resources and in the distribution of forest products.

422 LAND USE POLICY 1Q A 4 (4-0) Prereq c/i. The development of forest renewal and reclamation projects, especially 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 the public and private forest industries.

440 MECHANICALLY DERIVED WOOD PRODUCTS 1Q A 3 (3-0) Prereq senior standing. Principles of mechanical wood technology, particularly wood properties, veneering, laminating, and production practices. By-products and residue utilization. Past trends and present day problems. Brief survey of drying operations.

450 RECREATIONAL STRUCTURES IQ S V Prereq junior standing. Several weeklong trips to study and observe full scale recreational structures on location.

451 MECHANICAL PROPERTIES OF WOOD 1Q A 3 (2-2) Prereq 340. Mechanical factors related to strength of wood; elementary graphic statics; timber testing. "Principles" and "Methods".

452 LOGGING 1Q A 3 (2-4) Prereq 351, 311. 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, 350-351, 454 and 455 are for engineering majors only. (454) The selection for a site and area plan for a forest region. Location of main and spur roads (Field work). (455) Earthwork calculations, mass diagrams, estimates of road and logging costs 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 333 and math-ematics 333. 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 survey conditions, stand trend analysis, utilization analysis, and project appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 1Q W 5 (3-4) Prereq 390 and c/i. The elements of animal nutrition. The nutritional characteristics of various feeds. The nutritional requirements 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 369, Econ 201 and forage appraisal. Range utilization - 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 local tracts. Range planning and organization and methods for regulation of grazing on public lands.

465 REGIONAL RANGE MANAGEMENT 1Q S 6 Prereq 460, 461, and 462 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 306, 309 or 360; Bot 375 or 335 and c/i. The application of...
GENERAL COURSES—47

population dynamics, ecology and behavior of birds and mammals to management.

471 WILDLIFE HABITAT MANAGEMENT 1Q S 5 (4-field weekends) Prereq 470 and c/l. May be taken concurrently with for 472. Principles and techniques involved in wildlife habitat manipulation, the effects of land and forest management practices on wildlife populations, the integration of overall land and wildlife management, and the assessment of management success.

472 BIG GAME MANAGEMENT 1Q W 3 (2-4) Prereq 390, 370 and c/l. A study of the habitat requirements of big game species. Competition between game and other land uses. Population control.

Ecological problems in game management.

473 FIELD WILDLIFE MANAGEMENT 1Q S 6 Prereq 471 or concurrent registration and c/l. Effects of land and wildlife management practices on wildlife populations.

480-481 RESOURCE MANAGEMENT AND CONSERVATION PLANNING 2Q W 4 (3-4) Prereq Econ 201-202-203. For S10, 390, 482 and c/l. (480) Methods of analyzing and planning the multiple use management of renewable resources: The physical, economic, social, and political problems involved in integrating resource development. Possible alternative uses of resources as a basis of decision in wildlife management planning. (481) Emphasis on field work in working out problems of integrated resource management and development conservation plans for selected land areas involving several land uses.

482 SOIL AND WATER CONSERVATION 1Q A 4 (3-4) Prereq 411 and c/l. Principles and methods of soil and water conservation related to soil type, condition and land use: Field techniques in land use planning and application for soil and water conservation.

484 WATERSHED MANAGEMENT 1Q W 6 (4-6) Prereq junior or senior standing and c/l. The controlling factors necessary for the intelligent application of prescribed types of watershed management. The movement and measurement of water, snow surveys, the applications of the principles of range, forest, and watershed management and the interpretation of their relationships to the control of soil erosion and water conservation.

490 FOREST METEOROLOGY 1Q W 4 (4-0) Prereq Physics 111, junior standing in Forestry and c/l. The basic meteorological factors that influence forest growth, the properties of weather elements, and the preparation and use of weather forecasts.

495 FORESTRY PROBLEMS 3Q a/q V Prereq completion of basic undergraduate work and c/l. Individual problem work. Offered by different instructors under various titles.

FOR GRADUATES

500 ADVANCED FOREST MANAGEMENT 1Q A 3 Prereq 401. Analysis of specific management problems by means of case studies.

511 ADVANCED SILVICULTURE 1Q S 3 (2-2) Prereq 311 and c/l. Analysis of silvicultural problems in selected forest types.

520 ADMINISTRATIVE LEADERSHIP Extension course W V Prereq undergraduate degree from a college or university of recognized standing or consent of the Dean of the School of Forestry based on applicants' experience and competence. Intensive instruction in the fundamentals of sociology, psychology, speech, writing, business administration, public relations, and related subjects. One month, 30 hr. per week. Staff of university specialists in fields involved.

530 FOREST FIRE BEHAVIOR 1Q A 3 (2-0) Prereq 390 and 489. The forest fire as a three dimensional problem involving fuels, weather, and topography and the influence of these on the behavior of wild fire. Emphasis is placed on high intensity fires and erratic fire behavior.

542 WOOD RESIDUE UTILIZATION 1Q a/q 4 (3-3) Prereq 341, 440, 441, 481. Techniques for volumetric classification. Classification and product evaluation in conservation plan. Emphasis on the type most pertinent to interests of student concerned.

543 WOOD RECONSTRUCTED BOARDS 1Q W 3 (1-8) Prereq 342, 440, 441, 481. Different types of boards with properties and uses of each. Flow materials, additives, production variables and product testing. Laboratory practice in making and testing sample boards.

550 ADVANCED RANGE MANAGEMENT 1Q a/q 3 Prereq 350 and 460. Analysis of range management problems by regions and forage types.

555 ADVANCED FOREST RECREATION 1Q A 5 (3-5) Prereq 385. Forest recreational land inventory, analysis and design, methods and planning. The factors involved in irregular sites, roadside planning. Theory, policy and problems in recreational land management. Individual problems.

561-562 RESEARCH METHODS 2Q A 3. Enter either quarter. Prereq at least one course in statistics or statistical elements of forest measurement and c/l. (561) The nature of scientific research, planning research projects, organization and direction of research tasks. (562) Application of statistical methods to the design of forester research, techniques of analysis of research data.

588 SEMINAR 2Q A W 1. Presentation by students and staff of papers in their field of specialization.

600 RESEARCH 5Q V Prereq. Independent research. The type of problem with identification of field management, silviculture, soils, economics, fire control, utilization, engineering, range management, wildlife management, conservation and protection.

600 THESIS a/q V R-15. (See English.)

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 particular fields is only permitted if a degree is specifically desired. (See Graduation Requirements.) But it has been found advisable to provide certain degree-curricula which overlap two or more fields; these are described below.

101-102-203 INTRODUCTION TO THE READING OF LITERATURE 3Q A W S 2 Enter any quarter. Training in the skill of reading literature, including the reading of, and the conditions producing, popular and inferior forms of literature. (101) Fiction. (102) Drama. (203) Poetry. (For undergraduate and graduate students.)

128 PHYSICAL SCIENCE FOR TEACHERS 1Q A W S 5. Open only to majors in Elementary Education. A survey of the physical aspects of the universe.

129 BIOLOGICAL SCIENCE FOR TEACHERS 1Q A W S 5. Open only to majors in Elementary Education. A survey of biology related to the plant and animal kingdoms with special reference to the laws governing living things.


151-152-153 INTRODUCTION TO THE HUMANITIES 3Q A W S 3. 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 aim of understanding and appreciation. Given by the departments of English and Foreign Languages.

311-312-313 STUDIES IN HUMANITIES 1Q A 3-3 (5-0) Prereq 310, 360, 482 and c/i. A study of the intellectual and cultural sources. A survey of human and cultural resources. The methods and implications of social implementation of desired practices. Primarily a teacher training course. Does not satisfy requirements for degrees in Botany or Zoology or the group requirements in science.

360 INTRODUCTION TO LINGUISTICS 1Q A S 3. A survey of the function of language and the techniques of linguistic science. The study of different languages and their relationship to English, except for 161. Courses numbered 307, 308, 440 and 491-492-493 may be applied toward a major in the Department of Foreign Languages.

391-392-393 LITERARY CRITICISM. (See English.)

FOR GRADUATES

395 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 1Q W Prereq c/l. The social need for improved conservation practices. A critical survey of climate, physical and cultural background of plant and animal resources, and human exploitation. The development of conservation practices. The methods of social implementation of desired practices. Primarily a teacher training course. Does not satisfy requirements for degrees in Botany or Zoology or the group requirements in science.

396 INTRODUCTION TO LINGUISTICS 1Q A S 3. A survey of the function of language and the techniques of linguistic science.

450 WILDLIFE SEMINAR 1Q A 2. Prereq senior standing in Wildlife Technology or Forestry. Legal problems, policy and administrative problems.

GENERAL LITERATURE

These courses may be applied toward a major in the Department of English, except for 161. Courses numbered 307, 308, 440 and 491-492-493 may be applied toward a major in foreign languages.

161 CLASSICAL MYTHOLOGY. (See Foreign Languages.)

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

FOR GRADUATES

307-308-309 THE DRAMA. (See English.)

344-345 THEORIES OF DRAMA. (See English.)

440 STUDIES IN COMPARATIVE LITERATURE. (See Foreign Languages.)

491-492 LITERARY CRITICISM. (See English.)
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, 215-216-217, 301, 310, 315, 320-321, 322, 355, 370, 371; Economics 201-202-203; History 251-252-253; Political Science 202-203; and Sociology 101 or Anthropology 152.

The following courses with the consent of the adviser may be counted toward a major in Geography: Botany 250 or 355, Business Administration 201-202-203; Geology 110, 310, Mathematics 111, Sociology 304, and Forestry 380.

The foreign language requirement listed earlier in the catalog must be satisfied: French or German are strongly recommended unless the student intends to specialize in a part of the world where the use of some other language prevails.

SUGGESTED CURRICULUM IN GEOGRAPHY

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eng 101-102-103—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ForL 101—Elementary French or German</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 110—General Geology</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Elective Group I or III</td>
<td>14-16</td>
<td>14-16</td>
<td>14-16</td>
<td>14-16</td>
<td>14-16</td>
</tr>
<tr>
<td>Sophomore Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ 201-202-203—Principles of Economics</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ForL 215—Intermediate French or German</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ForL 216—Advanced French or German</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol 101—Elements of Geography</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol 111-112-113—Economic Geography</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Soc 101—Elementary Sociology</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives Group I or III</td>
<td>14</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Geog 305—Geography of Europe</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog 310—Geography of North America</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog 315—General Geography</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geog 320—Climatology</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hist 101—Introductory History</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Pol S 202-203—American Political Institutions</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives in Geography</td>
<td>14</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

<table>
<thead>
<tr>
<th>101</th>
<th>ELEMENTS OF GEOGRAPHY</th>
<th>1Q</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Su 3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>111-112-113</td>
<td>ECONOMIC GEOGRAPHY</td>
<td>2Q</td>
<td>A</td>
<td>W</td>
<td>S</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>111</td>
<td>THE IMPORTANCE OF GEOGRAPHY</td>
<td>1Q</td>
<td>A</td>
<td>W</td>
<td>S</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>112</td>
<td>THE SIGNIFICANCE, STRUCTURE, AND DISTRIBUTION OF MANUFACTURING INDUSTRIES</td>
<td>1Q</td>
<td>A</td>
<td>W</td>
<td>S</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

101 ELEMENTS OF GEOGRAPHY 1Q A W S Su 3. Field content and method 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. Economic geography, analysis and synthesis of economic activities and world trends, with emphasis on economic geography.

FOR GRADUATES

GEOLOGY—It is the study of the earth, the processes by which it is changed and the history of its development. Geology aids in the location and exploitation of minerals and fuels, soils, building material, water, and other natural resources.

The Bachelor of Arts degree, the Master of Arts (or Master of Science), and the Ph.D. degrees are offered (See Graduate School). Instruction involves the use of mineral, rock, and fossil collections, geologic and topographic maps, aerial photographs, optical and chemical methods, X-ray methods and many others. Nearly all courses include an emphasis on using textbooks, bibliographies, library, and field exercises.

Petroleum companies, governmental agencies, such as federal and state geological surveys, and mining companies are the chief employers of geologists.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 130, 200, 202-203, 211-212, 230, 310, 320, 3 cr of 325, 330-331, 461. Also required are Mathematics 116, 117, 118; Chemistry 121-122-123; Physics 111-112-113 or 221-222-223; English 304; Zoology 104-105 or Mathematics 261-262-263. A foreign language, 2 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 these students in consultation with their advisor. This will, for example, allow special curricula planned for special areas of interest such 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 Geology 330-331, Math 116, 117, 118; Physics 111-112-113 or 221-222-223; Zoology 104-105; and English 304. Three quarters of Latin are recommended for part of the foreign language requirement.

The degree of Bachelor of Arts with a major in Geology is granted at the end of the first academic year in the School of Law provided the student is certified as having completed the work of the first year of Law to the satisfaction of the School of Law.

SPECIAL REQUIREMENTS FOR THE GRADUATE DEGREES. Not more than 9 credits of Geology 600 and 699 may be credited toward Master's degree requirements.

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.

CURRICULUM IN GEOLOGY

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 101-102-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem 121-122-123</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 110, 118</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>HAPE 101-102-103 Group I II courses</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>ROTC 101-102-103</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>or 120</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16-18</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 116, 117, 118</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol 211-212, 220</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Zool 104-105</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol 130</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HAPE 201-202-203 Group I II courses</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>ROTC 201-202-203</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>or 212</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19 18-19 17-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 111-112-113 or 221-222-223</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 200-202-203</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>ForL 101-102-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol 320, 321</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>17 17 17 17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 310</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol 325</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol 331</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Eng 304</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ForL 213, 215</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>17 17 17 17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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. Special electives (Math 15-25 cr, Chem 15 cr, Physics 15 cr, Zool 6-10 cr, Eng 3 cr.)
4. Military Science
5. Health and Physical Education
6. Electives

Total 166

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102 INTRODUCTION TO GEOLOGY 2Q, A W S Su 101, W S 102 S (3-4). (101) Minerals, rocks, and structure of earth's crust; the dynamic processes, volcanism, diastrophism, and glaciation which shape the earth's landscape; (102) the origin of the earth and its development through geologic ages of land and sea and their relation to the evolution of life. Not open to geology majors.

110 GENERAL GEOLOGY 1Q A 5 (3-4). Open to non-majors with c/i. Minerals, rocks, and structure of earth's crust; the dynamic processes, volcanism, diastrophism, and glaciation which shape the earth's landscape. Credit not allowed for 110 and 101.

120 INTRODUCTION TO AERIAL PHOTOS AND GEOLOGIC MAPS 1Q W 4 (2-4) Prereq 110. Interpretation of aerial photos and geologic maps, including construction of cross-sections; geologic illustration.

130 FIELD METHODS 1Q S 3 (1-3) Prereq 110, 120. Applied geologic map and aerial photo interpretation; field techniques including plane table mapping, use of Brunton compass, altimeter, Jacob staff, measurement and description of stratigraphic sections. Some all day field trips on Saturdays.

150 HISTORY OF LIFE ON THE EARTH 1Q W Night School only 3 (3-0). Primarily for elementary and secondary teachers and interested adults. General evolutionary advances and history of plants and animals throughout geologic time. Lectures, demonstrations and films. Not allowed toward a geology degree.

200 GENERAL PALEONTOLOGY 1Q A 4 (3-2) Prereq 110. General principles of paleontology, evolution, and history of plants and animals.

209-210 HISTORICAL GEOLOGY 2Q W 4 S (3-2) Prereq 110, 200, Zool 104-105 recommended. (209) the origin of the earth, Precambrian and Paleozoic history; (210) Mesozoic and Cenozoic history. Stratigraphic methods and principles, and North American stratigraphic successions are considered. Laboratories include map, fossil, library, and field exercises.

211-212 MINERALOGY 2Q A W 4 (2-6) Prereq Chem 111 and 120 or concurrent registration. Elements of crystallography, origin, classification and determination of common minerals by physical and chemical properties; special emphasis on ore and rock forming minerals.

220 PETROLOGY 1Q S 4 (2-6) Prereq 212. Common rocks, their mineral composition and physical characteristics, classification, identification in the field, origin and structural features.

310 GEOMORPHOLOGY 1Q A 4 (3-3) Prereq 233, 220. Topographic features that comprise the landscape; their origin, development, and classification.

320 FIELD GEOLOGY 1Q Su only 8 (5 1/2 days per week for 6 weeks in the field) Prereq 130, 203, 220. Given by Indiana University Geology Department staff at their discretion near Whittaker, Montana. Primarily detailed geologic mapping. Registration must be completed by April 1.

330-331 STRUCTURAL GEOLOGY 2Q A W 3 (2-4) Prereq 203, 220, Math 118, Physics 113 or 223 or concurrent registration. Structural features of earth's crust; their analysis by geometric and stereographic projection.

461 SEMINAR 1Q W 1 (2-0) Prereq senior standing in Geology.

FOR UNDERGRADUATES AND GRADUATES

300 GEOLOGY OF MONTANA 1Q S Su 3 (2-3) Prereq c/i. The study of the earth, the processes by which it is changed and the history of its development. Geology aids in the location and exploitation of minerals and fuels, soils, building material, water, and other natural resources.
Physically, chemistry in the study of origin, internal structure and synthesis of regional structural features including geosynclines, is.

305 MONTANA MINERAL RESOURCES 1Q Su only 3 (2-3) Prereq c.5. Primarily for teachers of natural science. Selected oil fields and metallic and non-metallic mineral deposits in Montana and vicinity with some field trips. Not allowed toward a geology degree.

308 INTRODUCTION TO VERTEBRATE PALEONTOLOGY 1Q A 4 (2-4, 1L) Prereq 305 or c.6. Fundamentals of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals and birds.

400-401 METALLIC MINERAL DEPOSITS 3Q A W 4 (3-3) Prereq 220. Theories and practical problems of origin, origin, classification and geologic environments of metallic mineral deposits.

405 NON-METALLIC MINERAL DEPOSITS 1Q S 4 o/y (3-2) Prereq 220. Theoretical and practical aspects of nature, origin, classification and geologic environments of non-metallic mineral deposits.

410-411 INVERTEBRATE PALEONTOLOGY 2Q A W 4 (2-4) Prereq 110, Zool 194-195 or concurrent registration. Fossil remains of invertebrate animals; emphasis on morphology of skeletal parts and classification.

420 OPTICAL MINERALOGY 1Q A 4 (2-6) Prereq 220, Physics 111 or 112. Use of optical accessory; theory of optical phenomena observed with microscope; identification of mineral fragments and minerals in thin section.

423-425 PETROGRAPHY 3Q W S 4 (2-4) Prereq 220, 420. (425) Introduction to identification and interpretation of thin section igneous and rocks by polarizing microscope; (426) similarly treats metamorphic and sedimentary rocks. Advanced petrologic considerations included in both quarters.

427-429 GEOCHEMISTRY 2Q A W 3 (3-0) Prereq Chem 123, Math 223. (427) Fundamental chemical principles governing abundance, distribution, and migration of elements within the earth. Chemistry of some of the more important minerals and crystal chemistry as applied to formation and transformation of rocks.

430 PRINCIPLES OF STRATIGRAPHY 1Q A 3 (2-3) Prereq 220. (430) Upper Paleozoic and Triassic; 410-411 recommended. Interrelationships of environment, economic, ecological, and history of life, isotopic, facies, paleogeologic and paleogeographic maps; field work.

432 PRINCIPLES OF SEDIMENTATION 1Q A 4 (2-2) Prereq 110. 220. Composition, texture, structure and classification of sedimentary rocks; related aspects of diapsis, lithification, diagenesis and provenance.

435 PETROLEUM GEOLOGY 1Q S S 3 (3-9) 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 (3-9) Prereq Physics 113, or 223, Math 119 or concurrent registration, Geol 331. Theory of tectonics and seismic, magnetic, electric and radiometric; emphasis on the interrelationships of geophysical anomalies and geologic structure. Geophysical case histories.


451 GROUND WATER GEOLOGY 1Q S S 3 (3-3) Prereq 220, Physics 113. Geologic and hydrologic conditions controlling occurrence and movement of ground water; emphasis on conditions in Montana and vicinity.

455 MARINE GEOLOGY 1Q W 4 (3-2) Prereq 110, Zool 105. Physical, chemical, biological and geological aspects of the ocean and its floor.

460 HISTORY OF GEOLOGY 1Q W W 3 (3-0) Prereq 30 credits in Geology. Analysis of the development of some of the fundamental concepts in geology. History of major branches of geology.

461-465 GEOLOGY 1Q W S 4 (2-4) Prereq Zool 201 or Geol 305 or c.6. (464) The lower vertebrates. Taxonomy, paleontology, paleoecology, and paleobiology of fishes, amphibians and reptiles o/y. (465) Taxonomy and morphology of reptiles and birds.

500 ADVANCED SEDIMENTATION 1Q W S 4 (3-3) Prereq 335, 420. Formation of sedimentary rocks including origin of sediments, their transportation, deposition, compaction and lithification; concepts of size, shape, and roundness.

501 CLAY MINERALOGY 1Q S S 3 (3-0) Prereq Chem 123, Geol 220, with 465 recommended. Crystal structure and composition of clay minerals; reactions of clay minerals with inorganic and organic chemicals; x-ray diffraction, clay-water systems, chemistry of formation of clay minerals.

505 ADVANCED GEOCHEMISTRY 1Q S S 3 o/y (3-0) Prereq Chem 123, Physics 113 or 223, Geol 420, 427-428. Application of physical chemistry in the study of origin, internal structure and chemical composition of earth.
HEALTH & PHYSICAL EDUCATION

A student may not repeat a class in beginning skills of any sport in which he has received a grade. 5 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.


190 HISTORY OF PHYSICAL EDUCATION 1Q W 2. Basic survey of history from primitive cultures through the modern era.

198 INTRODUCTION TO PHYSICAL EDUCATION 1Q W 3. Su o/y Prereq major or minor in Physical Education or c/i. 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 1Q A W S 2, Su o/y. Recognition and treatment of common injuries. Red Cross certification may be secured upon completion of the course.

206 ADVANCED COACHING TECHNIQUES 1Q Su only 1 week. Techniques of coaching in selected football and basketball and in athletic training. (Special coaching school.)

210 COACHING OF FOOTBALL 1Q W 3.

211 THEORY OF OFFICIATING FOOTBALL 1Q W 1. Principles, rules and techniques.

212 FOOTBALL OFFICIATING FIELD WORK 1Q A 1 Prereq 211. Practical experience.

220 COACHING OF BASEBALL 1Q W 3.

221 THEORY OF OFFICIATING SOFTBALL AND BASEBALL 1Q W 1. Principles, rules and techniques.

222 SOFTBALL AND BASEBALL OFFICIALING FIELD WORK 1Q S 1 Prereq 221. Practical experience.

231 OFFICIATING VOLLEYBALL (WOMEN) 1Q A 1. Theory, principles, rules and techniques. Practical experience in officiating intercollegiate matches. Ratings given by Women's National Officials Rating Committee upon successful completion of requirements.

232 OFFICIATING BASKETBALL (WOMEN) 1Q W 2. Theory, principles, rules and techniques. Practical experience in officiating intercollegiate matches. Ratings given by Women's National Officials Rating Committee upon successful completion of requirements.

233 TECHNIQUES OF TEACHING SWIMMING 1Q S 2 Prereq completion of University swimming test. Methods of teaching swimming, and use of tests for classifying students.

234 WATER SAFETY AND LIFE SAVING 1Q S 2. Prereq Red Cross Senior Life Saving Certificate. Fundamentals of swimming and save the life and body and the structure of organs composing these systems.

240 CARE AND PREVENTION OF ATHLETIC INJURIES 1Q W 2, Su o/y. Common athletic injuries, their causes, prevention and care. Practical work in bandaging and wrapping.

250 HUMAN ANATOMY 1Q 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 1Q W 2 Prereq 335. Methods and materials.

302 TEACHING OF INDIVIDUAL-DUAL SPORTS FOR WOMEN 1Q S 2 Prereq 335. Methods and materials.

310 COACHING OF BASKETBALL (MEN) 1Q A 3, Su 3. Theory and practice in handling work in basketball.


312 BASKETBALL OFFICIALING FIELD WORK (MEN) 1Q W 1 Prereq 311 or 312. Practical experience.

321 COACHING OF TRACK 1Q W 2, Su 3. Theory.

322 COACHING OF TRACK 1Q S 2. Practice.

324 METHODS AND MATERIALS IN SOCIAL DANCING AND TAP DANCING 1Q A 2.

325 METHODS AND MATERIALS IN MODERN DANCE 1Q W 2.

326 METHODS AND MATERIALS IN FOLK DANCING AND SQUARE DANCING 1Q S 2.

333 METHODS OF TEACHING PHYSICAL EDUCATION 1Q
A 3, Su e/y Prereq 115 through 120. Required of all teaching majors and minors in HAE. Materials for junior and senior high school programs. Demonstration and practice in teaching techniques. Lesson planning.

362 RECREATION LEADERSHIP (SOCIAL RECREATION) 1 Q W 3 Prereq Sociology 101. Principles and practice in group leadership, group skills for various age groups and groups such as the handicapped. Credit not allowed for this and Social Welfare 362.

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1 Q S 3 Prereq Sociology 101. Principles and practice in leadership in the organization and administration of high school physical education departments. Management of the physical plant.

FOR UNDERGRADUATES AND GRADUATES

332 INSTRUCTOR’S FIRST AID 1 Q S 2, Su o/y 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.

237 THE ELEMENTARY SCHOOL PHYSICAL EDUCATION PROGRAM 1Q S Su 3 Prereq 196 and 335. Theory and practice in selecting and presenting activities for different age levels; characterization of 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 Su 3 Prereq major in elementary education and 328 or teaching experience. Prerequisites: completion of elementary school physical education; theory and practice in selecting, organizing and teaching physical fitness and skill activities, with special attention given to problems of the grade school teacher. Credit not allowed for this and 357.

350 PLAYGROUNDS 1Q A 4 Prereq 337. Theory of play. History and development, equipment, planning and supervision of playgrounds. Credit not allowed for this and 359.

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.

266 CURRICULUM CONSTRUCTION 1Q W 4 Prereq 237. Classification and analysis of physical education activities; criteria for selecting activities; construction of programs for specific situations.

267 PROBLEMS IN PHYSICAL EDUCATION 1Q on demand Prereq = of a teaching minor in physical education. Class and department management, policies, public relations, problems in competition, intramurals, O.R.A., teaching of sex hygiene, recreation, facilities, and fund raising. Credit not allowed for this and 357.

269 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.

273 SCHOOL HEALTH PROBLEMS 1Q W S Su 4. Required of all teaching majors and minors in HAE and of all students seeking elementary teaching certification. School health problems in the areas of health services, healthful school environment, and health education.

275 PERSONAL HEALTH PROBLEMS (WOMEN) 1Q W S o/y. Fundamentals of healthful living; health counseling problems frequently encountered by physical educators.

278 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.

290 APPLIED ANATOMY 1Q W 5, Su o/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.

295 KINESIOLOGY 1Q W 5, Su o/y Prereq 350. Advanced study of muscle action and joint mechanics of the body.

296 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 1Q S 5, Su o/y Prereq 380. Prevention and detection of common injuries of health, physical education, and recreation majors. Follow-up programs possible under medical supervision.

298 INTRODUCTION TO PHYSICAL THERAPY 1Q G 4 Prereq 386 or concurrent registration. Theory and practice of massage. The treatment of defects which come within the field of physical education.

299 CLINICAL TRAINING IN PHYSICAL THERAPY 1Q a/q V 1-4 Prereq 386 and c/l. Practical experience in local physical therapy centers.

469 SEMINAR 1Q A W 5 Su V 1-3 R-3. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

495 TESTING IN PHYSICAL EDUCATION 1Q A 3, Su e/y. Orientation to methods of training, interpretation of tests, elementary statistical techniques and procedures.

496 SUPERVISION IN PHYSICAL EDUCATION 1Q Su Prereq 385 or =. Roles and responsibilities of supervisors in exerting effective leadership.

499 TEACHING OF COLLEGE PHYSICAL EDUCATION ACTIVITIES 2 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 producing individual projects.

502 ADVANCED TESTS AND MEASUREMENTS 1Q W 4, Su o/y Prereq 405 or =. Specific tests for evaluation of organic, neuromuscular, psychological and social outcomes. Practice in construction and application of tests, and interpretation of results.

600 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 some particular occupation, this department offers a program of instruction calculated to provide knowledge and understanding of the backgrounds and the possibilities of present 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 background of the study of history, but also furnishes knowledge and perspective for intelligent leadership in community action.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation, the bachelor of arts degree in History requires special requirements must be completed for the Bachelor of Arts degree with a major in History. A minimum of 45 credits is required, with 20 credits courses numbered over 300 and 20 credits courses numbered under 300. The student must successfully complete 6-12 credits in History involving the completion of an acceptable thesis. History majors must elect a minimum of 15 credits in American and 15 credits in European 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 in Political Science with 10 credits numbered over 300 including either History 401 or 402 or Political Science 401. Only one of courses History 401 or 402, or Political Science 401 will count in fulfilling the minimum of 20 credits for the B.A. degree.

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, 384-385, 331, 332 and in Journalism 300 in partial fulfillment of the major requirements for a degree.

To earn a Bachelor of Arts degree a major in History and Political Science must successfully complete a Bachelor's degree in six academic years the student must fulfill all the customary University and departmental requirements including a recommendation 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
For History 241, 242 and 243, 251, 252 and 253, and Political Science.
202, 203 leaving free approximately seven hours per quarter for the completion of requirements and for electives. As a junior, the student will select a minimum of 3 hours from the offerings of the Department with Political Science 332 and 333, and History 376, 345, and 346 as required or highly recommended courses.

For undergraduates

101-102-103 THE DEVELOPMENT OF WESTERN CIVILIZATION 3Q A W S Su 3. Enter any quarter. (101) Ancient world through the Mediterranean period. Greek and Roman civilization, barbarian invasions; Medieval society to 1000. Age of Absolutism; Period of Enlightenment; French Revolution and Napoleon: Industrial Revolution; Congress of Vienna and Age of Reaction.

190 RENAISSANCE AND REFORMATION 1Q S S Su 3. The political, economic, and social development of Europe from 1500 to 1600.

202-203 MEDIEVAL EUROPE 2Q A W 3. Enter either quarter. (202) Medieval society to 1400. (203) 1400 to the fourteenth century. Some attention will be paid to cultural, religious and intellectual trends.


251-252-253 UNITED STATES HISTORY 3Q A W S Su 4. Enter any quarter. (251) Discovery and settlement; development of colonial society; relations; the growth of the Canadian West.

303 HISTORY OF ANCIENT GREECE 1Q A 4 PreReq 101 or pr.

306 MEDIEVAL CIVILIZATION 1Q S S Pr 101, 207-208 or institutional, social, and economic development of Europe from the third century to the eleventh century. Emphasis is placed on the political, economic, and social development of Europe from 1660 to the outbreak of the French Revolution.

311 THE AGE OF ABSOLUTISM 1Q W 3 Prereq 102. The political, economic, and social development of Europe from 1660 to the present.

312-313 CENTRAL EUROPE 2Q W S 4 Prereq a college course in modern European history. Internal development of Britain and of the colonial powers. International rivalry prior to the First World War. The War and its aftermath.

319 CONTEMPORARY EUROPEAN HISTORY 1Q S S Prereq 304, 312-313, and 316. A survey of the history of Europe from the 17th century to the present, with emphasis on the role of the Supreme Court in United States history.

321-322 CENTRAL EUROPE 2Q W S 4 Prereq a college course in modern European history. The growth and development of the states of Central Europe in the Balkans and the Middle East from 1815 to 1914.

323 ECONOMIC HISTORY OF EUROPE 1Q A Su 4 PreReq Economic development of Europe from the early Middle Ages to the present time.

324 MODERN WAR AND WESTERN SOCIETY 1Q S S Prereq 3 PreReq 8 cr in History. A history of warfare from the French Revolution to the present era, with emphasis on the development of military technology. The contributors of leading 19th-century European historians to the development of modern historical interpretation and analysis.

329 HISTORY OF CANADA 1Q A, S 3 PreReq 102, 251, or 253. A unified account of the history of Canada to the present with emphasis on Canadian-American diplomatic and economic relations; the growth of Canada as a nation.

330-331 EUROPEAN DIPLOMACY 2Q A W 3. The foreign relations of the United States in the 19th and 20th centuries. Emphasis is placed on the political, economic, and social factors and the interplay between the frontier and the older regions of the United States and Europe; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.

332-333 MODERN FRANCE AND SPAIN 1Q A 4 Prereq 251 or 253. Discovery and settlement; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.

334-335 EUROPEAN HISTORY OF ENGLAND 1Q A S 4 PreReq 241-242. The political, economic and social development of modern England; the growth of England.

335 AMERICAN COLONIAL HISTORY 1Q W 4 PreReq 232 or 251. Discovery and settlement; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.

336-337 MODERN AMERICAN REVOLUTION 1Q S S PreReq 241-242 or 251. Discovery and settlement; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.

338 MODERN AMERICAN HISTORY 1Q S S PreReq 252 or 253. Discovery and settlement; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.


340-341 THE FAR EAST 2Q A W 4. Enter either quarter. PreReq 5 cr. in History. A history of warfare from the French Revolution to the present era, with emphasis on the development of military technology. The contributors of leading 19th-century European historians to the development of modern historical interpretation and analysis.

342 STUDIES IN MODERN HISTORY 1Q a Q 1-2 R 4 PreReq 301. Directed study of a topic selected from the standard text books in the field.
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.

Opportunities for Home Economics graduates are many and varied. Homemaking and home management, teaching, nutrition, institutional planning and household equipment, consumer buying, clothing selection, care and construction, food selection and preparation, textiles and textile treatment, and marriage and family relationships, are some of the fields offered.

Positions may be with schools, hospitals, industrial concerns, manufacturers of food or appliances, utilities companies, retail stores, and others, such as magazines and newspapers. Many students avail themselves of the broad opportunities for graduate work to qualify themselves for greater professional responsibilities.

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.

9. AMERICAN DIETETIC ASSOCIATION INTERNSHIP: These requirements are variable and the student should consult his adviser.


FOR GRADUATES


For all women: Home Economics 102, 141, 155, 157, 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 258 or 259, 266, 316, 311, and 307.

2. TEACHING: Home Economics 238 or 239, 304, 306, 310, 311, 321, 344, 350, and 351; teaching minor acceptable to the School of Education; twenty-four hours in Education including Education 200, 205, 305, 406 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 322; 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 255, 256, and 257; Psychology 241.

JOURNALISM—55

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, typography, 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 specialize in reporting in foreign countries. Many are editors, publishers, or hold positions on radio and television stations, with technical magazines, in public relations firms or advertising agencies, and government agencies. Some are distinguished scholars, authors and teachers.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that the high school preparation include study of a foreign language and typing.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. In addition to the general requirements the candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 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, 270-271, 290, 291, 304, 305, 306, 307, 308, 309, 431, Foreign Language, and Art courses required for graduation. The School of Journalism recommends that the student take Journalism 100, 270, 271, 290, 291, and 304-309 and complete the recommended core curriculum of 39 hours, plus the requirements of his major, and 15-35 additional courses to meet University requirements. The School of Journalism recommends at least 135 recommended hours in General Education. The School of Journalism recommends the following distribution of credits:

JOURN 270-271—Reporting ______________________________ 2-3
Journ 290—History and Principles of Journalism ___________ 3
ROTC 101-102-103—Military Science or Air Sci (Men) ______ 4-5
ROTC 201-202-203—Military Science or Air Sci (Men) ______ 4-5
H&PE 101-102-103—Health and Physical Education ____________ 3
Additional courses to meet University requirements _________ 31-39
Journ Electives (including sequence requirements) _________ 15-35
Total recommended hours in Journalism __________________ 70-90

JOURNALISM—55

FOR GRADUATES

Journ 360—Principles of Advertising ______________________ 3
Journ 361—Advertising and Salesmanship ____________ 3
Journ 371—History and Principles of Journalism ___________ 3
ROTC 201-202-203—Military Science or Air Sci (Men) ______ 4-5
H&PE 201-202-203—Health and Physical Education ____________ 3
Additional courses to meet University requirements _________ 31-39
Total recommended hours in Journalism __________________ 70-90
Total recommended hours in General Education __________ 105
### JOURNALISM CURRICULUM

**NEWS-EDITORIAL SEQUENCE:** Additional 9 hours required to be chosen from Journalism 327, 330, 470, 471, 495.

**ADVERTISING SEQUENCE:** An additional 9 hours required to be chosen from Journalism 346, 352, 363, 364.

**MAGAZINE SEQUENCE:** An additional 9 hours required to be chosen from Journalism 327, 332, 333, 334.

**RADIO-TELEVISION SEQUENCE:** An additional 9 hours required to be chosen from Journalism 242, 245, 246, 248.

**COMMUNITY JOURNALISM SEQUENCE:** An additional 9 hours required to be chosen from Journalism 290, 351, 352, 364, 495.

Note: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The College of Arts and Sciences and the School of Journalism also offer a curriculum leading to a Bachelor of Arts degree with a major in Radio-Television (See Radio-Television).

### FOR UNDERGRADUATES

**FOR UNDERGRADUATES AND GRADUATES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>INTRODUCTION TO JOURNALISM</td>
<td>1</td>
<td>AQ A W S Su 3</td>
<td>Open to non-majors. History, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper staff.</td>
</tr>
<tr>
<td>218</td>
<td>TYPOGRAPHY</td>
<td>1</td>
<td>AQ A W S Su 2 Prereq c/l.</td>
<td>Problems of typographical design and application. Elementary work in printing and in the handling of type.</td>
</tr>
<tr>
<td>240</td>
<td>INTRODUCTION TO RADIO AND TELEVISION</td>
<td>1</td>
<td>Q W S 3</td>
<td>Open to non-majors. History, organization, economics, social and legal relationships, and basic electronic theory of radio and television as media of mass communication.</td>
</tr>
<tr>
<td>267</td>
<td>ELEMENTARY PHOTOGRAPHY</td>
<td>1</td>
<td>AQ A W S Su 3 Prereq c/l.</td>
<td>Open to non-majors. Photographic equipment, materials, and facilities with practice in taking of pictures under varied conditions and processing of film and prints.</td>
</tr>
<tr>
<td>269</td>
<td>STUDIO OPERATIONS</td>
<td>1</td>
<td>A 1 (1-2)</td>
<td>Open to non-majors. Operation of broadcasting and recording equipment. Production of programs.</td>
</tr>
<tr>
<td>282</td>
<td>RADIO-TELEVISION CONTINUITY</td>
<td>1</td>
<td>Q S 3 Prereq 149 and Engl 201.</td>
<td>The techniques of writing for radio and television. Writing programs for broadcasting.</td>
</tr>
<tr>
<td>270-271</td>
<td>REPORTING</td>
<td>2</td>
<td>Q A W S 3 Prereq 100.</td>
<td>Open to non-majors. Groundwork in gathering, writing and evaluating news.</td>
</tr>
<tr>
<td>289</td>
<td>HISTORY AND PRINCIPLES OF JOURNALISM</td>
<td>1</td>
<td>Q S 3</td>
<td>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.</td>
</tr>
<tr>
<td>287</td>
<td>NEWS PHOTOGRAPHY</td>
<td>1</td>
<td>Q S 3 Prereq 227.</td>
<td>Photograph reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.</td>
</tr>
<tr>
<td>292</td>
<td>MAGAZINE MAKEUP AND EDITING</td>
<td>1</td>
<td>A 3 Prereq c/l.</td>
<td>Open to non-majors. Theory and practice of editing magazines. Practice includes the use of type and illustrations, and adapting format to content.</td>
</tr>
<tr>
<td>333</td>
<td>MAGAZINE ARTICLE WRITING</td>
<td>1</td>
<td>Q W S Su 3 Prereq c/l.</td>
<td>Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.</td>
</tr>
<tr>
<td>334</td>
<td>TRADE AND TECHNICAL JOURNALISM</td>
<td>1</td>
<td>A 3 Prereq c/l.</td>
<td>Open to non-majors. The writing and editing of trade and business journals, technical and specialized publications.</td>
</tr>
<tr>
<td>335</td>
<td>PROMOTION AND PUBLIC RELATIONS</td>
<td>1</td>
<td>A W S Su 3 Prereq c/l.</td>
<td>Open to non-majors. The techniques and theories of promotion and public relations.</td>
</tr>
<tr>
<td>346</td>
<td>RADIO-TELEVISION PUBLIC AFFAIRS</td>
<td>1</td>
<td>W S 3 Prereq 345.</td>
<td>Radio and television special events and information programs, community affairs, sports, interviews and interpretation. Practice in newscasting.</td>
</tr>
<tr>
<td>348</td>
<td>RADIO-TELEVISION ADVERTISING AND MANAGEMENT</td>
<td>1</td>
<td>W S 3 Prereq 140.</td>
<td>Planning and broadcasting of advertising campaigns. Station management and sales principles.</td>
</tr>
<tr>
<td>352</td>
<td>NEWSPAPER MANAGEMENT</td>
<td>1</td>
<td>AQ A W S 3 Prereq 360.</td>
<td>Problems of operation of daily and weekly newspapers.</td>
</tr>
</tbody>
</table>

### 351 ADVANCED JOURNALISM PROBLEMS 1-3 | AQ W S Su 3 | Prereq 360. | Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules. |

### 352 ADVERTISING MEDIA 1 | AQ W S 3 | Prereq c/l. | Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules. |

### 353 ADVERTISING LAYOUT AND COPY 1 | AQ S 3 Prereq 360. | Open to non-majors. Integration of advertising media. Technical aspects of advertising schedules for retail stores. |

### 354 RETAIL STORE ADVERTISING 1 | AQ S 3 Prereq 360. | Open to non-majors. Integration of advertising media. Technical aspects of advertising schedules for retail stores. |

### 357 ADVANCED REPORTING 1 | AQ S 3 Prereq 270. | News coverage, reporting and publishing problems. |

### 358 NEWS EDITING 1 | AQ W S 3 Prereq 270. | Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing. |

### 359 ADVANCED NEWS EDITING 1 | AQ W S 2 Prereq 380. | Editing and makeup problems. |

### 361 ADVANCED SALES 1 | AQ W S 2 Prereq 360. | Open to non-majors. Preparation, promotion, and sales of advertising谋求. Lecture and newspaper staff work. |

### 362 ADVERTISING MANAGEMENT 1 | AQ W S 3 | Prereq c/l. | Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules. |

### 363 EDITORIAL WRITING 1 | AQ W S 3 | Prereq 360. | Open to non-majors. The editorial pages of newspapers. Practice in revision of copy, headline writing, use of references and principles of local and wire news editing. |

### 364 INTERNATIONAL COMMUNICATIONS 1 | AQ W S 3 | Prereq c/l. | Media of communication in other countries, with emphasis on newspapers. |

### FOR GRADUATES

### 365 THEORIES OF COMMUNICATION 1 | AQ A 3 | Prereq consent of the dean. Structure, processes and effects of communication. |

### 366 METHODS OF JOURNALISM RESEARCH 1 | AQ W S 3 | Prereq consent of the dean. Problems and techniques in study and analysis of communications. |

### 367 RESEARCH IN JOURNALISM 1-3 | AQ W S Su V | Prereq consent of the dean. |

### 369 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 decreed and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions collected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and legal technical language. 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.

A number of specializations and advanced courses are offered to reflect the diversity of the practice of law in many large cities of the United States.

CALENDAR

FALL SEMESTER 1961
September 18-20, Monday through Wednesday Registration and Orientation of New Law Students (Including Transfer Students from other schools)

September 22, Thursday Classes begin at 8:00 a.m.

September 23, Friday Registration of Upperclass Law Students

September 24, Saturday Classes commence at 8:00 a.m.

October 2, Thursday Classes commence at 8:00 a.m.

October 17, Wednesday Classes commence at 8:00 a.m.

November 7, Monday Classes commence at 8:00 a.m.

November 9, Wednesday Classes commence at 8:00 a.m.

November 14, Monday Classes commence at 8:00 a.m.

December 12, Monday Classes commence at 8:00 a.m.

January 2, Monday Classes commence at 8:00 a.m.

January 22-27, Monday through Saturday Semester Examinations

SPRING SEMESTER 1962
January 31, Wednesday Registration for Spring Semester

February 1, Thursday Classes begin at 8:00 a.m.

February 6, Wednesday Registration for Spring Quarter

February 7, Thursday Classes begin at 8:00 a.m.

February 28, Friday Classes commence at 8:00 a.m.

March 5, Monday Classes commence at 8:00 a.m.

March 10, Wednesday Classes commence at 8:00 a.m.

March 12, Friday Classes commence at 8:00 a.m.

March 19, Thursday Classes commence at 8:00 a.m.

April 1, Monday Classes commence at 8:00 a.m.

April 4, Thursday Classes commence at 8:00 a.m.

April 6, Saturday Classes commence at 8:00 a.m.

May 1, Friday Classes commence at 8:00 a.m.

May 14, Monday Classes commence at 8:00 a.m.

May 28-29, Wednesday through Tuesday Semester Examinations

June 10, Monday Commencement

FALL SEMESTER 1962
September 24-29, Monday through Wednesday Registration and Orientation of New Law Students (Including transfer students from other schools)

September 29, Monday Classes commence at 8:00 a.m.

October 2, Thursday Classes commence at 8:00 a.m.

October 17, Wednesday Classes commence at 8:00 a.m.

November 7, Monday Classes commence at 8:00 a.m.

November 9, Wednesday Classes commence at 8:00 a.m.

November 14, Monday Classes commence at 8:00 a.m.

December 12, Monday Classes commence at 8:00 a.m.

January 2, Monday Classes commence at 8:00 a.m.

January 22-27, Monday through Saturday Semester Examinations

SPRING SEMESTER 1963
February 6, Wednesday Registration for Spring Quarter

February 7, Thursday Classes begin at 8:00 a.m.

February 14, Thursday Classes begin at 8:00 a.m.

March 3, Friday Classes commence at 8:00 a.m.

March 10, Friday Classes commence at 8:00 a.m.

March 17, Friday Classes commence at 8:00 a.m.

March 20, Monday Classes commence at 8:00 a.m.

March 30, Monday Classes commence at 8:00 a.m.

April 1, Monday Classes commence at 8:00 a.m.

April 4, Thursday Classes commence at 8:00 a.m.

April 6, Saturday Classes commence at 8:00 a.m.

May 1, Friday Classes commence at 8:00 a.m.

May 14, Monday Classes commence at 8:00 a.m.

May 29-30, Wednesday through Tuesday Semester Examinations

June 10, Monday Commencement

GENERAL STATEMENT: The Law School is accredited by the American Bar Association and the Association of American Law Schools. Organization of instruction is upon the semester and academic year basis, eighteen weeks each, including vacation periods. For detailed information concerning the Program of Instruction below; all procedure courses (includ-
### Courses

#### Administrative Law

#### Agency and Business Organizations
- **Sem 1 & 2.** Frey, *Cases and Materials on Corporations and Partnerships*.

#### Civil Procedure
- **Sem 1 & 2.** Atkins & Chadbourn, *Cases and Materials on Civil Procedure*.

#### Commercial Transactions
- **Sem 1 & 2.** Chatham, *Cases and Materials on Commercial Transactions*.

#### Constitutional Law
- **Sem 1.** Atkinson & Chadbourn, *Cases and Materials on Civil Procedure*.

#### Evidence
- **Sem 1.** Mason, *Cases and Materials on Courts and Types of Procedure*.

#### Federal Taxation

#### Evidence
- **Sem 1.** McCormick, *Cases on Evidence*.

#### Law Review
- **Sem 1.** Mason, *Cases and Materials on Courts and Types of Procedure*.

#### Legal Ethics

#### Intro to Law

#### Property
- **Sem 1 & 2.** Sullivan, *Handbook of Oil and Gas Law*, Cases and Materials on Oil and Gas (mimeographed).

#### Restitution
- **Sem 1.** Durfee and Dawson, *Cases and Remedies*, Volume II.

#### Secured Transactions
- **Sem 1 A 2.** Hanna, *Cases and Materials on Security*.

#### Trade Regulations
- **Sem 1 S 3.** Smith, *Cases on Trade and Regulation*.

#### Wills
- **Sem 1.** Turrentine, *Cases and Text on Wills and Administration*.

#### Water Law
- **Sem 1 S 2.** Mimeographed materials of instructor.

### Major Requirements (Courses under 300)

**1.** Humanities

**2.** Literature (English 211-212-213 and 231-232-233 recommended)

**3.** Physical Education

**4.** Military Science (men)

**5.** Foreign Language (5 quarters)

**6.** Economics, Psychology, Sociology, Anthropology

**7.** History and Political Science, (History 101-102-103 recommended)

**8.** Humanities

**9.** Literature (English 211-212-213 and 231-232-233 recommended)

**10.** Philosophy

**11.** Free Electives

### General Requirements Credits

- **English Composition 101-102-103**
- **Group I.** Lab, sciences and mathematics
- **Group II.** Humanities
- **Group III.** Physical Education
- **Group IV.** Military Science (men)

### Master's Degree in Library Service

- **59-62**

**University Requirements**

**5.** Humanities

**6.** Literature (English 211-212-213 and 231-232-233 recommended)

**7.** Physical Education

**8.** Philosophy

**9.** Free Electives

**10-7**

### Liberal Arts

In addition to the requirements for the Bachelor of Arts degree with a major in Liberal Arts:

- **University Requirements**
- **59-62**

### Liberal Arts, Library Service

**1.** Humanities

**2.** Literature (English 211-212-213 and 231-232-233 recommended)

**3.** Philosophy

**4.** Free Electives

### University Requirements

**5.** Humanities

**6.** Literature (English 211-212-213 and 231-232-233 recommended)

**7.** Philosophy

**8.** Free Electives

### 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 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.
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:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 101-103-105—Freshman Composition</td>
<td>9</td>
</tr>
<tr>
<td>History 101-102-105—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>
</tr>
<tr>
<td>Health &amp; PE 101, 102, 103</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 101, 102, 103</td>
<td>2-4</td>
</tr>
</tbody>
</table>

Total: 47 or 51

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 134—Introduction to Concert Music</td>
<td>2</td>
</tr>
<tr>
<td>French or German 213, 215—Intermediate and Advanced</td>
<td>8</td>
</tr>
<tr>
<td>History 322—History of the Modern World</td>
<td>3</td>
</tr>
<tr>
<td>Eng 211, 212, 213—Intro to Major British Writers</td>
<td>9</td>
</tr>
<tr>
<td>Econ 201-202-203—Principles of Economics</td>
<td>10</td>
</tr>
<tr>
<td>Group I Requirements</td>
<td>10</td>
</tr>
<tr>
<td>Health &amp; PE 201, 202, 203</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 201, 202, 203</td>
<td>4-5</td>
</tr>
</tbody>
</table>

Total: 49 to 54

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 223, 225—Intro to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Political Science 101—Intro to Government</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 303—Social Science Methods</td>
<td>3</td>
</tr>
<tr>
<td>Educ 341—Public Library Administration</td>
<td>4</td>
</tr>
<tr>
<td>Educ 344—Cataloging and Classification</td>
<td>4</td>
</tr>
<tr>
<td>Educ 345—Bibliography and Book Selection</td>
<td>4</td>
</tr>
<tr>
<td>Educ 346—Reference Materials</td>
<td>4</td>
</tr>
<tr>
<td>Educ 347—Audio-Visual Aids</td>
<td>3</td>
</tr>
<tr>
<td>Art 231, 232, 233—History of Art</td>
<td>3</td>
</tr>
<tr>
<td>Group I Requirements</td>
<td>5 to 8</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
<td></td>
</tr>
</tbody>
</table>

Total: 51 to 54

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 340—Children’s Literature</td>
<td>4</td>
</tr>
<tr>
<td>Educ 443—Library Work with Children</td>
<td>4</td>
</tr>
<tr>
<td>Educ 444—Library Seminar</td>
<td>4</td>
</tr>
<tr>
<td>Educ 445—Library Practice</td>
<td>4</td>
</tr>
<tr>
<td>Educ 448—Seminar (bibliography)</td>
<td>2</td>
</tr>
<tr>
<td>Journalism 335—Promotion and Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>History 481—Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>History 481—Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>History 481—Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
<td>20 to 28</td>
</tr>
</tbody>
</table>

Total: 46 to 59

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 many 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 250, 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 360 or 364; 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

For explanation see Index under “Symbols”

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. Annuitics, 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 113 and 117.

116 COLLEGE ALGEBRA 1Q A W S 5 Prereq 100 or satisfactory performance in examination in intermediate algebra. College algebra, presented in such books as Allendoerfer and Oakley’s “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; Cⁿ; Sⁿ, Cⁿ; Sⁿ. Credit not allowed for both 117 and either 151 or 113.

118 INTRODUCTION TO ANALYTIC GEOMETRY AND CALCULUS 1Q A S 5 Prereq 117 or 151 and 116 or 152. Credit not allowed for both 118 and 119.

125 STATISTICS 1Q A W S 5 Prereq 100 or 112 or satisfactory performance in examination in intermediate algebra.

130 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 or 153. 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 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 Alternate years 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 o/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 Alternate years Prereq c/i. The subject matter of high school geometry compared with that of other geometries.

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 background in mathematics. Content varied to meet the needs of the student. Not allowed to count toward 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 S 3 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 225. (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 ordinary differential equations: series solutions, Bernoulli's Method, Legendre equations; integrals to Sturm-Liouville systems; Picard's Method.

314 LINEAR GROUPS 1Q S 1 Prereq 312.

315 MODERN ALGEBRA 1Q Su S 5 Prereq 15 credits of mathematics and c/i. (Intended primarily for those enrolled in NSF...
Institute. A limited number of other students may enroll by special permission.

218 MODERN ALGEBRA 1Q Su 5 Prereq 315 or = and c/l. Continuation of 315. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

219 PRINCIPLES OF ANALYSIS 1Q Su 5 Prereq 317 or = and c/l. Continuation of 317: Limits, continuity, differentiation, and integration. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

220 SYNTHETIC PROJECTIVE GEOMETRY 1Q given on demand 3 Prereq 309. Projective transformations, projective invariants, and conics by means of coordinate systems.

221 ANALYTIC PROJECTIVE GEOMETRY 1Q given on demand 3 Prereq 309. Projective transformations, projective invariants, and conics by means of coordinate systems.

222 ELEMENTARY NUMBER THEORY 1Q given on demand 5 Prereq at least 20 cr in Math with a grade of C+ or better.

341-342-343 MATHEMATICAL STATISTICS 3Q A W S 5 Prereq 251 and c/l. (341) Development of necessary mathematical concepts, probability, random variables and distribution function. (342) Random variables, distribution functions, sampling, testing hypothesis. (343) A continuation of 342.

399 SEMINAR 1Q a/q V R-15 Prereq c/l. Guidance in special work for advanced students.

409 INTRODUCTION TO FUNCTIONS OF A COMPLEX VARIABLE 1 1Q A 3 Prereq 310. Beginning complex variables and basic concepts of topology.

410 INTRODUCTION TO FUNCTIONS OF A COMPLEX VARIABLE II 1Q W 3 Prereq 409.

413 REAL VARIABLES 1Q S 3 Prereq 300-310.


421 ANALYSIS II: TOPOLOGY 1Q A 3 Prereq 310. The theory of plane sets of points, of general sets of points and properties invariant under continuous and topological transformations.

422 ABSTRACT ALGEBRA I 1Q A 3 Prereq 310 and 312. Groups, rings, isomorphisms, homomorphisms, integral domains, fields, ideals.


424 ABSTRACT ALGEBRA II 1Q W 3 Prereq 422. Theory of fields, field extensions, Galois fields, norms and traces.

425 ANALYSIS III: MEASURE AND INTEGRATION 1Q S 3 Prereq 425. Set functions, semi-rings, and fields of set measures. The general theory of integration with respect to a measure function.

426 ABSTRACT ALGEBRA III 1Q S 3 Prereq 424. Groups with operators, normal series and composition series, Galois theory, real fields, fields with valuations.

FOR GRADUATES

Before beginning work on an M.A. a student should have an undergraduate major in mathematics with a B average in upper division courses in mathematics. As preparation for graduate courses, he should have Math 309, 310, 311, 312. These courses are not required for the M. A. or M.S. in teaching.

600 GRADUATE SEMINAR 1Q a/q V Prereq c/l. This course provides guidance in graduate subjects or research work.

609 THESIS a/q V R-15.

ASTRONOMY

111 DESCRIPTIVE ASTRONOMY 1Q S 5. An introductory course.

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 a 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 desired, students 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 requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3½ years of academic studies at the University and 12 months of hospital practice. Although this Certification is desired, students with Option II have an 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, 320, 330; Physics 111, 112, 113; Zoology 304, 305, 306, 345; Chemistry 346, 347, 370, 384, 461, 463; Biology 331, 332, 333, 334; and other medical laboratory procedures.

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 desired, students 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 requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3½ years of academic studies at the University and 12 months of hospital practice. Although this Certification is desired, students with Option II have an 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, 320, 330; Physics 111, 112, 113; Zoology 304, 305, 306, 345; Chemistry 346, 347, 370, 384, 461, 463; Biology 331, 332, 333, 334; and other medical laboratory procedures.
Microbiology and Public Health

Microbiology is the study of bacteria, molds, yeasts, rickettsia, protozoa, and viruses. The field includes General Medical, Sanitary, and Industrial Microbiology, as well as Food and Water Microbiology, Immunology, and Serology, and certain aspects of Agricultural Microbiology.

A Bachelor of Arts degree is given in this department. The first two years are spent mainly in developing a sound foundation in Mathematics, Physics, Chemistry, Biology and Social Sciences. The last two years are spent for the most part, in taking courses in Microbiology and related subjects. Senior students who have shown interest and ability during their undergraduate work are encouraged to continue their studies toward an advanced degree. The Department offers a graduate program leading to the Master of Arts, the Master of Science, and the Doctor of Philosophy degrees. Any student with a baccalaureate degree in Microbiology, Biological Sciences, Pharmacy, Chemistry or related fields, who has a good undergraduate record, may take graduate work as his major field of study.

In the senior year, a minimum of 15 elective hours in residence and successful completion of the hospital practice in a hospital approved by the American Society of Clinical Pathologists and the Department of Microbiology and Public Health is required. The student will receive the equivalent of not more than 30 credit hours towards his B.S. degree for the successful completion of the hospital practice.

Microbiology and Public Health—61

Microbiology Laboratory 1Q S Su 3 (3-0) Prereq 100. General principles of immunity and extensive laboratory work including basic bacteriology (304) Principles and techniques of basic bacteriology; (309) Pathogenic bacteriology, immunology, and chemotherapy as they apply to the field of Pharmacy.

Pharmaceutical Microbiology 2Q A W 5 (3-4) Prereq Chem 263, Phys 113 or 223. Principles and techniques of basic bacteriology; (303) Principles and techniques of basic bacteriology; (304) Pathogenic bacteriology, immunology, and chemotherpay as they apply to the field of Pharmacy.

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.

Public Health 1Q W 2 (3-0). Sanitation problems as they involve health and disease.

General Microbiology 1Q A 5 (3-4). Principles and techniques of basic bacteriology; (304) Pathogenic bacteriology, immunology, and chemotherpay as they apply to the field of Pharmacy.

Bacteriology Laboratory 1Q S Su 3 (3-0) Prereq 200. General principles of immunity and extensive laboratory work in serology, animal experimentation, and clinical diagnosis.

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.

Food Microbiology 1Q W 3 (3-0) e/y. Microbiology of foods with emphasis on production, preservation and spoilage of foods.

Food Microbiology Laboratory 1Q W 2 (3-0) e/y Prereq 350. Techniques for the investigation of microorganisms in foods.

Microbiology for Teachers 1Q Su 5 (3-4). Introduction of Microbiology to high school science teachers. Not open to Microbiology majors.

Advanced Immunology 1Q On demand 3 (3-0) Prereq 310. Advanced theories of immunity and recent immunological technics.

Hematology 1Q A 4 (2-4) e/y. Blood elements and blood chemistry in health and disease as applied to hospital laboratories.

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. Implications of microorganisms in food and fermentation industries, agriculture and public health. (Not allowed towards a major in microbiology.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 1Q S Su 2 (0-6) on demand 100 or concurrent registration. 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 (3-0). 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 bacteria; microbiology of soil, water, milk and foods; and industrial microbiology.

FOR UNDERGRADUATES AND GRADUATES

202 MEDICAL MICROBIOLOGY 1Q A 5 (3-4) Prereq 200. Pathogenic microorganisms including bacteria, fungi, viruses, and rickettsia.

PHARMACEUTICAL MICROBIOLOGY 2Q W 5 (3-4) Prereq Chem 263, Phys 113 or 223. Principles and techniques of basic bacteriology; (303) Principles and techniques of basic bacteriology; (304) Pathogenic bacteriology, immunology, and chemotherpay as they apply to the field of Pharmacy.

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.

IMMUNOLOGY AND SEROLOGY 1Q W 5 (3-4) Prereq 302. General principles of immunity and extensive laboratory work in serology, animal experimentation, and clinical diagnosis.

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.

FOOD MICROBIOLOGY 1Q W 3 (3-0) e/y. Microbiology of foods with emphasis on production, preservation and spoilage of foods.

FOOD MICROBIOLOGY LABORATORY 1Q W 2 (3-0) e/y Prereq 350. Techniques for the investigation of microorganisms in foods.

MICROBIOLOGY FOR TEACHERS 1Q Su 5 (3-4). Introduction of Microbiology to high school science teachers. Not open to Microbiology majors.

ADVANCED IMMUNOLOGY 1Q On demand 3 (3-0) Prereq 310. Advanced theories of immunity and recent immunological technics.

HEMATOLOGY 1Q A 4 (2-4) e/y. Blood elements and blood chemistry in health and disease as applied to hospital laboratories.
MUSIC

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 sequences of courses are given to prepare a student for (A) a career as teacher or supervisor of music in the public schools, or for (B) a career directed toward composition, private teaching, and concert work, or for (C) thorough training in music within the structure of a broad liberal arts curriculum.

The 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 freshman 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 six 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 in the School of Music. Students who are wind instrument majors in their applied field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter; voice majors must register for choir every quarter. Piano and organ majors must fulfill this requirement by the election of 45 credits. 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

For majors and non-majors who register for applied music for less than a full quarter or who withdraw before the end of the quarter, a charge of $1.75 per quarter will be made. Refunds are based on the number of weeks elapsed since the beginning of the quarter.

Lessons in applied music missed by the instructor will be made up within the quarter. Lessons missed by students or lessons falling on a legal holiday will not be made up.

Rentals, Per Quarter

Practice room without piano, one hour daily $2.00
Additional hour 1.00
Piano and practice room one hour daily 3.00
Additional hour 2.00
Organ and practice room one hour daily 6.00
Additional hour 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. Curricula 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 and notable ability in music, Montana State University offers three major courses, each leading to the degree of Bachelor of Music with a major in Music Education.

Students desiring of teaching and directing both vocal and instrumental music may enroll for the General Course. Separate courses for vocal and instrumental majors are available. Students must complete six credits of study meet the state requirements for certification for public school teaching (see Education).

General Supervisor Major

FRESHMAN YEAR

*Music 101, 103, 103 (Applied) 1.1.1
Music 111 (Organ) 2.2.2
Music 112-112-113 (Theory I) 1.1.1
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) 0.0.0

Music 114, 115, 116 (Piano in Class) 1.1.1
Music 121, 127, or 128 (Strings or Winds in Class) 0.0.0
Music 135, 136, 137 (Introduction to Music Literature) 2.2.2
English 101-102-103 3.3.3
Health & Physical Educ. 101-102-103 1.2.2
R.O.T.C. 101-102-103 (Men) 0.0.0

Sophomore Year

Music 202, 205, 205 (Applied) 1.1.1
Music 105-110 (Organization) 1.1.1
Music 241, 242, 243 (Theory II) 2.2.2
Music 257, 258, 259 (Sight Singing, Keyboard, and Dictation) 2.2.2
Music 215, 216, 217 (Piano in Class) 1.1.1
Music 117, 118, 119 (Voice in Class) 1.1.1

Credits per Quarter

1.1.1
2.2.2
0.0.0
1.1.1
2.2.2
1.1.1
1.1.1
2.2.2
**MUSIC—63**

**MAJOR IN ORCHESTRAL INSTRUMENTS**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 351, 352, 353</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**SENIOR YEAR:**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 351, 352, 353</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**JUNIOR YEAR:**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 106-110</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Sight Singing, Keyboard, and Dictation)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 215, 216, 217 (Piano in Class)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**FRESHMAN YEAR:**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 231, 232, 233</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 106-110</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 106-110 (Organization)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**INTERINSTRUMENTAL MAJOR**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 351, 352, 353</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**MAJOR IN INSTRUMENTAL MUSIC**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**MAJOR IN COMPOSITION OR THEORY**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 106-110</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.2.2.</td>
</tr>
<tr>
<td>Music 251, 252, 253 (Applied)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**MAJOR IN VOICE**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 451, 452, 453 (Applied)</td>
<td>4.4.4.</td>
</tr>
<tr>
<td>Music 106-110</td>
<td>1.1.1.</td>
</tr>
<tr>
<td>Music 106-110 (Organization)</td>
<td>1.1.1.</td>
</tr>
</tbody>
</table>

**ADDITIONAL REQUIREMENTS:**

Students taking voice or instrumental music courses must take Music 106-110—Piano until a jury examination has been passed.

**Theory Majors** are required to complete Music 100-110 Series, except Music 115-116, 125, 126, 127, and 129.
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 two years of teaching experience, a thesis or comprehensive examination, and 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, 6-10 credits of 560, 562, 563, 564, and/or 565; 6-10 credits of 550, 552; 5-6 credits of 421, 422, 423; 3-6 credits of 125, 126, 127; 2-3 credits of 311-312-313, 370, 379-380-381; 3-4 credits of 424; 2-3 credits of 501-502-503; 6-10 credits of 560; 5-6 credits of 421, 422, 423, 424; and 2-3 credits selected from Band, Orchestra, Choir, or 140 summer only.

Required courses (music unless otherwise indicated): 6 credits of 421, 422, 423, 424, 425, 426; 6-10 credits of 501-502-503; 6-10 credits of 550, 552; 5-6 credits of 421, 422, 423; 3-6 credits of 125, 126, 127; 2-3 credits of 311-312-313, 370, 379-380-381; 3-4 credits of 424; 2-3 credits of 501-502-503; 6-10 credits of 560; 5-6 credits of 421, 422, 423, 424; and 2-3 credits selected from Band, Orchestra, Choir, or 140 summer only.

A total of 23 quarter credits may be offered toward the major in music education.

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.

General 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 applied major or for special purposes. 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)

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 field, 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 IQ Su V 1-2.

106 UNIVERSITY CHOIR

107 CHORAL UNION

108 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 credit.

111-112-113 THEORY I 3Q A W S Su 1 Prereq pass music placement test.

114-115-116 MUSICAL INSTRUMENTS 3Q A W S Su 1-2; 1-2. Enter any quarter. To enable music educationists to know and understand the wealth of music in the world. Not open to music majors.


120-121-122 STRING INSTRUMENTS 3Q A W S Su 1-2. In any quarter following spring term, or as off-campus registration. A note of scales, keys, intervals, chords, cadences, melodic writing, modulation, and rhythm.

123-124-125-126 STRING INSTRUMENTS IN CLASS 3Q A W S Su 1-2. In any quarter following spring term, or as off-campus registration. Specialized instruction. Not open to music majors.

127 WIND AND PERCUSSION INSTRUMENTS IN CLASS 3Q A W S Su 1-2. In any quarter following spring term, or as off-campus registration. Specialized instruction. Not open to music majors.

128-129-130 STRING INSTRUMENTS IN CLASS 3Q A W S Su 1-2. In any quarter following spring term, or as off-campus registration. Specialized instruction. Not open to music majors.

354 INSTRUMENTAL REPAIR 1Q Su 3. The care and maintenance of woodwind, brass, string, and percussion instruments with special attention given to repair projects covering those problems which most often confront the high school instrumental teacher.


379-380-381 SIXTEENTH CENTURY COUNTERPOINT 3Q A W S 2 Prereq 243 or concurrent registration. Writing and analysis, Renaissance vocal and instrumental style.


423 MUSIC OF THE ROMANTIC PERIOD 1Q S Su 3 Prereq 137 and 243. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 1Q S Su 3 Prereq 137 and 243. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Twentieth Century.

431 ADVANCED CONDUCTING 1Q A W S 3 B-6 Prereq 232 (Choral majors), 233 (others), and c/l. A continuation of 231-232-233. Class and/or individual study of the art of conducting with emphasis on applied work with university performing groups.

440-441-442 INTERPRETATION AND STYLE 3Q A W S 1. Offered 1961-62 and alternate years. Prereq 245. Piano composition of different national schools and periods, and characteristics of each from the standpoint of the individual composer.

450-460-461 COMPOSITION 3Q A W S 2 Prereq 241. A continuation of composition with writing in the larger forms.

471-472-473 ADVANCED ORCHESTRATION 3Q A W S Su 2 Prereq 351, (471) Styles in orchestral techniques from 1750 to present. (472-473) Scoring for concert band and symphonic orchestra with emphasis upon larger forms and use of original ideas in tone color.

FOR GRADUATES

501-502-503 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.

521 MUSIC EDUCATION IN AMERICA 1Q W Su 3. The history and philosophy of music education in America and their relation to general educational thought.

523 SCHOOL MUSIC ADMINISTRATION 1Q 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.

535 BAROQUE CHAMBER MUSIC 1Q 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.

558 PEDAGOGY OF THEORY 1Q W Su 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of standard harmony texts. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

582 SEMINAR a/q V 1-6 R-15. Investigation of research in fields of individual interest.

599 COMPOSITION a/q V R-12.

601-602-603 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.

609 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 all their allied sciences. It includes botany, zoology, pharmacology, pharmacy, physical and biological sciences, and takes 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. Pharmacists' prescriptions. Pharmaceutical chemistry is the application of the principles of chemistry to substances used in pharmacy and medicine with emphasis on preparation, identification, properties, 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 the identification, selection, and instrumental methods used in the analysis of pharmaceutical preparations.

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" of 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.

The School of Pharmacy was established in 1907 at Montana State College and was transferred to the State University campus in 1933.

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 courses below and acceptable college work in any recognized college or university. The professional curriculum of the School of Pharmacy covers three years and must be taken at Montana State College for a period of at least two years. Students transferring from other accredited schools of pharmacy may be admitted to an advanced standing determined on the basis of credits presented.

Upper class students may choose approved elective courses designed to prepare them specifically for either retail pharmacy, sales and marketing, and dispensing. Such elective courses will be determined by the area of specialization chosen by the student, and must be approved by the faculty advisor.

A program of study leading to the Master of Science degree in the areas of pharmacy, pharmaceutical chemistry, pharmacognosy, and pharmaceutical administration is offered. The School of Pharmacy also offers an M.S. degree.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry. Preparation for Pharmacy includes advanced algebra, trigonometry, chemistry, physics, and particularly if the student may pursue advanced studies in pharmacy, a foreign language.

REQUIREMENTS FOR ADMISSION TO THE PROFESSIONAL CURRICULUM. 1. The general requirements for admission to Montana State University as listed elsewhere in the catalog. 2. At least two years as prescribed in the pre-pharmacy curriculum (may be transferred from accredited colleges).

First year: Chemistry 121-122-123, English 101-102-103, Health and Physical Education 100 or 101, Mathematics 100 and 112, ROTC 101-102-203, Zoology 101 and electives. (Students satisfactorily passing the mathematics placement examination will be exempt from Mathematics 100 in which case they will substitute Group I or Group II elective.)


Each applicant presenting two years of satisfactory college work but with certain deficiencies in the above list may be admitted, but such deficiencies must be removed.

For explanation see Index under "Symbols".

SURVEY OF PHARMACY 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) Metrology, pharmaceutical arithmetic, pharmaceutical Latin, and the fundamentals of good dosage calculations.

PHARMACOGNOSY 2Q W 4 (3-2), S 4 (3-2) Prereq Microbiology 304. Botanicals, antibiotics, vitamins, hormones, and other medicinal products of biological origin.

PHARMACEUTICAL CHEMISTRY 1Q A 3 (3-0) Prereq Zool 341. Methods of drug administration and the quantitative chemical examination of drugs, foods and spices.

ORGANIC MEDICINAL PRODUCTS 2Q A W 4 (2-6) Prereq 463. The herbarium study of medicinal plants.

DISPENSING 2Q A W 4 (2-6) Prereq 466. Drug Microscopy and instrumental methods used in the analysis of pharmaceutical preparations.

Each applicant for admission to the professional curriculum must have an adequate grade point index of 2.0 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 must not have a grade point deficiency of more than 10. In the event of greater deficiency, he will not be granted senior standing but will be required to retake such deficiency courses. If he has received grades of "D" or "F" until he has reduced his deficiency to 10 or less, then he may be admitted to senior standing and may become a candidate for a degree upon the satisfactory completion of the senior year.

Candidates for the degree of Bachelor of Science in Pharmacy must:

1. Meet the general University requirements for graduation.
2. Complete not less than five full academic years of training, including pre-pharmacy and pharmacology and a minimum of three years of professional instruction.
3. Complete not less than 225 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 an examination by the State Board of Pharmacy. To be qualified for this examination, the applicant shall be a citizen of the United States, of good moral character, at least twenty-one years of age, and must have graduated from an accredited school of pharmacy. However, such an applicant shall not receive a license until he has completed an internship and, following graduation, in an approved pharmacy in the state of Montana.

PHARMACY CURRICULUM

First year: Microbiology 303-304; Business Administration 201; Chemistry 245; Pharmacy 206 or Elective, 220 or Elective, 324-325, Zoology 245-451; English 101-102; Health and Physical Education 100-120.

Second year: Business Administration 306; Chemistry 384; Pharmacy 414-415-416, 441, 452, 461, 462, 463; and electives.

Third year: Pharmacy 505, 506, 505-506, 516, 517-518, 519, 540-541, 542, 550, 577; Microbiology 411; and electives.

FOR UNDERGRADUATES

505-506 DISPENSING 2Q A W 4 (2-6) Prereq 463. The microscopic and micro-chemical examination of drugs, foods and spices. The detection of adulterants and impurities.

505-506 BIOLOGICAL MEDICINAL PRODUCTS 3Q W S 3 (3-0) Prereq Microbiology 304. Biologicals, antibiotics, vitamins, hormones, and other medicinal products of biological origin.

505-506 DISPENSING 2Q A W 4 (2-6) Prereq 466. The fundamental principles of prescription compounding by means of a detailed study of the common dosage forms and special forms of medication.
PHILOSOPHY—67

PHILOSOPHY is the search for wisdom by carefully reasoned reflection. Philosophical enquiry is concerned with such questions as: How can we distinguish reality from appearance? Is the world to be understood as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge, and what kinds of knowledge? Are values derived from personal feelings or from standards which may be impersonal, cultural, or universal? These and many other questions are the subject of scientific investigation among philosophers.

Courses in philosophy acquaint the students with the views of great philosophical thinkers, past and present. Discussion and written work are largely concerned with evaluating the reasoning by which each thinker develops his point of view.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits, including Philosophy 110, 201, 202, 203, and three or more credits in courses numbered 400 or 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, a minimum of 30 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, 120, 201, 202, 203, 322, and either 350 or 351, and should take as many as possible of the following courses: Philosophy 209, 350, 354, 360, 369 and 372.

FOR UNDERGRADUATES

100 INTRODUCTION TO PHILOSOPHY 1 Q 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.

101-102-103 INTRODUCTION TO PHILOSOPHY 3 Q A W S 2 (101) Theory of Knowledge. (102) Metaphysics. (103) Moral Philosophy. Credit not allowed for both this course and 100.

110 LOGIC 1 Q A 5. The valid forms of reasoning, the methods of science, and the detection of fallacies.

120 ETHICS 1 Q A 5. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations.

121-122 ETHICS 2 Q A 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 1 Q A 3. Introduction to the major philosophical problems involved in theories of being and the possibilities of knowing reality.

201 HISTORY OF ANCIENT PHILOSOPHY 1 Q A 5.

202 HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 1 Q W 5 Prereq 201.

203 HISTORY OF MODERN PHILOSOPHY 1 Q S Prereq 202.

210 SYMBOLIC LOGIC 1 Q W 5. Theory and practice in the use of logic as known also as formal or mathematical logic. Application to problems in the foundations of mathematics and in theory of scientific investigation.

FOR UNDERGRADUATES AND GRADUATES

201-202-203 GREAT PHILOSOPHERS 3 Q A W S 1. (Given in the summer for 3 cr as 204). Enter any quarter. (201) Greek, Roman, and early Christian thinkers. (202) late medieval, Renaissance, and modern philosophers. (203) Recent and contemporary thinkers.

204 PHILOSOPHY IN LITERATURE 1 Q S Prereq 10 credits in Philosophy preferably 201-202-203.

211-212 ETHICS 2 Q A 3. The nature of moral concepts; these will include naturalism, intuitionism, and relativism. Credit not allowed for this course and 120.

213 PHILOSOPHY IN LITERATURE 1 Q S 3. A historical approach to the major works of literature. The claims of realism, empiricism, pragmatism, mysticism, authoritarianism, and skepticism.

214 PHILOSOPHY OF LAW 1 Q A 3 Prereq 5 credits in Philosophy. Various concepts of law in their relation to individual freedom and to the social order; philosophical justification of different forms of authority.

300 PHILOSOPHY IN THE TWENTIETH CENTURY 1 Q A 5 Prereq 15 credits in Philosophy preferably 201-202-203.

320 MODERN ETHICS 1 Q W 5 Prereq 120. Recent theories on the nature of moral concepts; these will include naturalism, intuitionism, emotionalism, and relativism. Credit not allowed for this course and 120.

321 SOCIAL ETHICS 1 Q S Su 3 or 4 Prereq 120. Implications of different social systems with respect to rights and responsibilities.

322 PHILOSOPHY OF LAW 1 Q A 3 Prereq 5 credits in Philosophy. Various concepts of law in their relation to individual freedom and to the social order; philosophical justification of different forms of authority.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 1 Q A 5 Prereq 15 credits in Philosophy preferably 201-202-203.

AESTHETICS 1 Q S 3. The nature of aesthetic experience, of the standards of art, and of the kinds of knowledge communicated by art. Readings from philosophers, artists and art critics.

PHILOSOPHY IN LITERATURE 1 Q A W S 1. Prereq 10 credits in Philosophy or 10 credits in English. Critical and philosophical evaluation of leading ideas in selected masterpieces of literature of both classical and modern.

THEORY OF KNOWLEDGE 1 Q S 3 or 4 Prereq 150 or 150 credits in Philosophy. Foundations of belief and related knowledge; the claims of realism, empiricism, pragmatism, mysticism, authoritarianism, and skepticism.

METAPHYSICS 1 Q W 3 Prereq 150 or 150 credits in Philosophy. Theories dealing with the foundations of belief and related knowledge, especially the concepts as being, form, substance, causation, universal, particular, and process.

PHILOSOPHY OF LANGUAGE 1 Q S 3 or 4 Prereq 5 credits in Philosophy. An introduction to the structure of ordinary and ideal languages as systems of signs and resulting conclusions for Philosophy.

CONTEMPORARY PHILOSOPHIES OF SCIENCE 1 Q A 3 or 4 Prereq 150 or 150 credits in Philosophy. A consideration of some contemporary theories concerning the nature and limits of science, including logical empiricism and operationalism.
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.

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.

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 physical sciences.

For Undergraduates

For explanation see Index under "Symbols"
SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be met to earn a Bachelor of Arts degree with a major in Political Science: A minimum of 45 credits in Political Science is required, with 20 credits from courses numbered over 300 and including Political Science 491 or Economics 491.

A student may offer 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 40 credits must be earned from courses numbered over 300 including either Political Science 491 or Economics 491.

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 Political Science and 20 credits in Economics. Twelve of the Political Science credits must be from upper division courses. Additionally, seniors will take comprehensive examinations in the fields of Political Science offered. Either Political Science 491 or Economics 491 will be 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 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 credit earned in Economics 365, 304, 305, 331, 332, and in Journalism 390 in partial fulfillment of the major requisites for a degree.

To earn a Bachelor of Arts degree with a major in Political Science and History together with a Bachelor of Laws degree in six academic years, the student must fulfill all the customary university, university, and departmental requirements. The study of Latin is recommended in fulfilling the foreign language requirement. The student must satisfy as many requirements for graduation as is possible during his freshman year. As a sophomore, he will be expected to register for History 251, 252, 253, 254, and Political Science 202, 203, leaving approximately seven hours per quarter for the completion of requirements and additional credits. As a junior, the student will select a minimum of 31 hours from the offerings of the Department with Political Science 332, 333, 334, and Political Science 202, 203 and History 301, 302, 303, and 304. 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 recommended. At the conclusion of his senior year, the student must pass a senior comprehensive examination.

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 in the social 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.

POLITICAL SCIENCE—69
PRE-MEDICAL SCIENCES are designed for students who wish to prepare for entry into medical, dental, or nursing schools. Medical schools require four 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. These requirements 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 a 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 student have four years of 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 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 pre-medical sciences, (2) the major requirements listed below, and (3) the major requirements in his selected field. The student should consult with the pre-medical sciences adviser during the freshman year and consult with both the pre-medical sciences adviser and the adviser in the selected major beginning not later than the sophomore year in residence.

MINIMUM COURSE REQUIREMENTS FOR THE PRE-MEDICAL SCIENCES STUDENT. English, Phys. Ed., Mil. Sci., Group and other University requirements listed earlier in the catalog; Chemistry through Organic Chemistry and Quantitative Analysis; two years of French or German or Russian. A reading Knowledge or 23 credits in French, German, or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR IN PRE-MEDICAL SCIENCES. In addition to the minimum course requirements listed immediately above the student must take Psychology 6-10 credits; 15 credits in the major department (or the equivalent); At least two electives selected from the non-sciences to complete university credit requirements for graduation.

Students who complete a total of 135 credits of pre-medical work (plus six credits in 391) 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 University requirements specified above 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, or 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-103</td>
<td>English</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Mathematics 116, 117, 118</td>
<td>Mathematics</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Chemistry 121-122-123</td>
<td>Chemistry</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
<td>2 2</td>
</tr>
<tr>
<td>H&amp;PES and ROTC (see below)</td>
<td>H&amp;PES and ROTC</td>
<td>2 2</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 104-105, 201</td>
<td>Zoology</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Chemistry 261-262, 243</td>
<td>Chemistry</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Psychology 101</td>
<td>Psychology</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Social Science</td>
<td>Social Science</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
<td>2 2 2</td>
</tr>
<tr>
<td>H&amp;PES and ROTC (see below)</td>
<td>H&amp;PES and ROTC</td>
<td>2 2 2</td>
</tr>
</tbody>
</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 MA 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 with a major in psychology: 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 299; Mathematics 125; and a reading knowledge of five or more quarters (23 to 45 credits) in one modern language. Other courses recommended for psychology majors include Philosophy 210 and 353; Psychology 210 or 220.

RECOMMENDED COURSE SEQUENCE

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 110—Introduction to Psychology</td>
<td>5 W</td>
</tr>
<tr>
<td>Mathematics 100—Intermediate Algebra</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics 125—Statistics</td>
<td>5</td>
</tr>
<tr>
<td>Modern Language: 101-102-103</td>
<td>5</td>
</tr>
<tr>
<td>English 101-102-103</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 220—Psychological Statistics</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>PS 101-102-103—Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>5</td>
</tr>
<tr>
<td>(Men)</td>
<td></td>
</tr>
<tr>
<td>(Freshman and Sophomore)</td>
<td>16-18</td>
</tr>
<tr>
<td>(Seniors)</td>
<td>16-18</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 210-211-212—General Psychology</td>
<td>5</td>
</tr>
<tr>
<td>Modern Language 213-215</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>PS 201-202-203—Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military or Air Science</td>
<td>2</td>
</tr>
<tr>
<td>(Men)</td>
<td></td>
</tr>
<tr>
<td>(Seniors)</td>
<td>15-17</td>
</tr>
<tr>
<td>(Junior Year)</td>
<td>16-17</td>
</tr>
<tr>
<td>(Senior Year)</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice of 300-level Psychology courses</td>
<td>4-5</td>
</tr>
<tr>
<td>PS 210-211 or Elective</td>
<td>4-5</td>
</tr>
<tr>
<td>Zoology 202—Human Physiology</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>(Sophomore Year)</td>
<td></td>
</tr>
<tr>
<td>(Junior Year)</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 411—Systematic Psychology</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>(Senior Year)</td>
<td></td>
</tr>
</tbody>
</table>

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 299, which may include not more than 10 credits in Psychology 650, and which must include Psychology 505-506-507, 511, and 531. 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 (5-6).
Psychological methods and principles, and their application to problems of human adjustment.

190 PSYCHOLOGICAL INVESTIGATION 1Q A W S V 1-3 R-5
PreReq 110 and c/i. Supervised investigation of psychological problems.


220 PSYCHOLOGICAL STATISTICS 1Q S 5 (4-2) PreReq 110 and Math 100. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 1Q W S 5 (5-6)
PreReq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 1Q A 5 (5-6) PreReq 110. Effects of social environment upon human behavior.

241 PSYCHOLOGY OF BUSINESS 1Q A W S 5 (5-6) PreReq 110.

244 PSYCHOLOGY OF LEADERSHIP 1Q A 3 (3-9) PreReq 110. The leadership role examined in terms of behavioral principles.

FOR UNDERGRADUATES AND GRADUATES

220 CORRELATIONAL ANALYSIS 1Q W 5 (3-4) a/y PreReq 220.
Psychological applications of correlational methods.

242 PERSONNEL PSYCHOLOGY 1Q W 3 (3-4) a/y PreReq 210.
Selection, classification, and training; worker efficiency and adjustment problems.

243 INDUSTRIAL PSYCHOLOGY 1Q S 3 (3-4) PreReq 110.
Applications of psychology in industry.

350 PSYCHOMETRICS 1Q S 5 (3-4) a/y PreReq 250. Psychophysical and psychological scaling.

351-352-353 PSYCHOLOGICAL TESTING 3Q A W S 4 (3-2) PreReq 220; 352 is not a prereq for 353. (351) Test construction techniques; (352) Objective tests of personality, interests, attitudes, and values; (353) Development of tests.


361 ABNORMAL PSYCHOLOGY 1Q A W S 5 (5-6) PreReq 110.
Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

409 SCIENTIFIC METHOD IN PSYCHOLOGY 1Q W S 5 (5-6) PreReq 220.
The critical evaluation of psychological research.

410 HISTORY OF PSYCHOLOGY 1Q W 3 (3-0) PreReq 210.
The historical development of concepts, methods, and theories in psychology.

411 SYSTEMATIC PSYCHOLOGY 1Q S 3 (3-0) PreReq 210.
Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis, etc.

412 PHYSIOLOGICAL PSYCHOLOGY 1Q A 3 (2-2) a/y PreReq 210.
The physiological foundations of behavior. Major areas of current research.

413 COMPARATIVE PSYCHOLOGY 1Q S 3 (2-2) a/y PreReq 210.
A comparative study of human and animal behavior, and a survey of the phylic scale.

414 THOUGHT PROCESSES 6 S 5 (3-4) PreReq 10 credits from 210-211-212, 220, Experimental and theoretical analysis of problem solving, imagination, concept formation, and other cognitive processes.

430 SURVEY RESEARCH 1Q S 5 (3-4) a/y PreReq 220 or c/i.
Survey methods and techniques of research, with review of areas of application.

444 GROUP DYNAMICS 1Q A 5 (3-4) a/y PreReq 444.
Social processes within small and large groups.

444 THEORY AND METHODS IN SOCIAL PSYCHOLOGY 1Q W 5 (5-6) PreReq 210.
Corequisites: 110, 210, 211, 212. Effects of social structure upon human interaction. Field test of several hypotheses.

451 INDIVIDUAL DIFFERENCES 1Q A S 5 (3-9) 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-television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers and executives of radio and television stations, or as radio-television specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree 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.

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 the goals and 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 S 3. The beliefs and practices of Judaism, Protestantism, Roman Catholicism, and representative sects.


224 LIFE AND TEACHINGS OF PAUL 1Q W S 3. The origins, backgrounds, problems, occasions, motifs and messages of the New Testament.

230 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—73

Physical and cultural features of a state in relation to problems of unity and diversity. Introduction presenting the navigational aspects of seamanship, as navigational charts, dead reckoning, navigation, globes and maps in the air age world. Introduction to weather such as temperature, pressure and air masses. (402) Natural conditions of outstanding theologians in critical analysis of the United States and selected states in Europe and Asia. Also study of new national power and policy, forces inducing tension, legal and institutional devices for adjustment of conflict. (1) Leadership Laboratory: Practical work as Cadet officers in staff and command positions, with primary responsibility for the preparation and conduct of cadet drill training program. (Material on International Relations is presented in Pol Sci 231, material on Geography in Geog 331-332.)

MILITARY SCIENCE

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs adequate algebra, geometry, and trigonometry. High school preparation include trigonometry, physics and either French, German, Spanish, or Russian.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE WITH A MAJOR IN MILITARY SCIENCE

University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Physical Education</td>
<td>6</td>
</tr>
<tr>
<td>Military Science 101-102-103 and 201-202-203</td>
<td>20-29</td>
</tr>
</tbody>
</table>

(In his freshman and sophomore year, the student must select one of the academic electives listed below)

Major Requirements

Prerequisites:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101, 102, 103, 201, 202, 203</td>
<td>15</td>
</tr>
<tr>
<td>History 101, 102, 201, 231, 232</td>
<td>16</td>
</tr>
<tr>
<td>Geography 301-302</td>
<td>6</td>
</tr>
<tr>
<td>English 201, 202, 204</td>
<td>5</td>
</tr>
<tr>
<td>Foreign Language (French, German, Spanish or Russian 101-202-231, 232 and 235)</td>
<td>16-115</td>
</tr>
</tbody>
</table>

Electives

(50% must be in upper division courses. A second major in one of the areas listed above is recommended) (39-42)

ELECTIVE: Before the requirement of six quarters of Military Science, the student may, if desired, complete one of the following courses and 18 credits (301-302-303, 401-402-403, and 313-314-315) and may be substituted for the above requirement of Military Science.

186

ELECTIVE: Before the requirement of 6 quarters of Military Science, the student may, if desired, complete one of the following courses and 18 credits (301-302-303, 401-402-403, and 313-314-315) and may be substituted for the above requirement of Military Science.

186

101-102-103 INTRODUCTION TO THE ARMY 3Q A 2, W 0, S 2. Enter any Quarter. (101) Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command. (201) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command. (203) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command.

201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 3Q A 2, W 0, S 1. Prereq 101-102-103. Enter any quarter. (201) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command. (203) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command.

201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 3Q A 2, W 0, S 1. Prereq 101-102-103. Enter any quarter. (201) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command. (203) American Military History; a survey of American Military History from the origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense. Continuation of leadership, drill and command.

ADVANCED COURSE: OFFICER TRAINING

Enrollment in the advanced course is by application only. An applicant must pass a physical examination and the mental screening test prescribed by Department of Army. Further, he must be
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 90c 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 3Q A W S 3 Enter any quarter. (301) Leadership and instructional principles, including characteristics, qualities, requirements, problem solving and theoretical and practical exercises in giving military instruction on 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 3Q 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 services, functions and techniques of command and control of tactical operations. Leadership, Drill and Command; Leadership and instructional principles, including characteristics, qualities, requirements, problem solving and theoretical and practical exercises in giving military instruction on 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. (492) Military Administration and Logistics, including personnel and supply management and procedures, troop movements by foot and motor, motor pool management, military justice and administrative procedures with practical work in moot court. Continuation of Leadership, Drill and Command. (493) Continuation of Military Administration, orientation on life in active military service. Continuation of Leadership, Drill and Command.

SECRETARIAL - HOME ARTS is a curriculum, designed especially for women, combining work in Secretarial Science and Home Economics. Home Economics provides a base for successful home and family life; and Secretarial Science provides training for a vocation for immediate or future use. Opportunity is provided for election of additional secretarial courses if added proficiency is desired. The work in home economics includes the study of nutrition, home equipment, house planning and furnishing, budgeting, child development, and family living. In addition, a general education is provided in areas outside the major fields.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN SECRETARIAL-HOME ARTS.

University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Phys. Ed. 210</td>
<td>9</td>
</tr>
</tbody>
</table>

Group Requirements

<table>
<thead>
<tr>
<th>Group</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>12-15</td>
</tr>
<tr>
<td>Group III</td>
<td>24-30</td>
</tr>
</tbody>
</table>

Major Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Economics 102, 141, 155, 157</td>
<td>15</td>
</tr>
<tr>
<td>210</td>
<td>3</td>
</tr>
<tr>
<td>242</td>
<td>3</td>
</tr>
<tr>
<td>244 or 246</td>
<td>3</td>
</tr>
<tr>
<td>248</td>
<td>3</td>
</tr>
<tr>
<td>252</td>
<td>3</td>
</tr>
<tr>
<td>255</td>
<td>3</td>
</tr>
<tr>
<td>264</td>
<td>3</td>
</tr>
<tr>
<td>266, 267, 268 or Soc. 402</td>
<td>3</td>
</tr>
<tr>
<td>1 other course above 260</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
</tr>
</tbody>
</table>

Home Economics courses with credit toward major with 186 total credits not to exceed 39 credits.

Business Administration 182 (Placement test required) 2
183 (Placement test required) 2
194, 195, 186 (1 year in H.S., no cr. in 194; 2 yrs. in H.S., no cr. in 184 or 185) 15
197 | 5
198 | 2
199 | 3
301 | 5
302 | 5
303 | 5
304 | 3

Total | 29
Business Administration courses with credit toward major with 186 total credits not to exceed 39 cr.

Social requirement courses include: Sociology 101, Psychology 101 or 102, Political Science 101, History 101, 102, 103 or 2 quarters. Total 10

Free Electives 28

SOCIAL WELFARE explores the ways in which social problems affect people; the agencies which help people deal with these problems; and the methods used in such endeavor. Social Welfare courses involve case records and some field work or observation in addition to regular class work. Broad studies in other social sciences are required.

Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is preparatory. Social workers are employed in such positions as caseworkers, group 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 103; Economics 201-202-203; History 102-103 or 252-253; Political Science 202-203; Psychology 110; Sociology 191; 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 limited number of courses which present Social Welfare content and method. Group methods are freely used.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

181 THE FIELD OF SOCIAL WELFARE 1Q a/q 5. Social welfare functions. Development of modern social welfare and the distinctive features of the profession.

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 H&PE 361.

362 RECREATION LEADERSHIP (SOCIAL RECREATION) 1Q W Prereq Sociology 101. Principles and practice in group leadership, program skills for various age groups and for special groups such as the handicapped. Credit not allowed for this and H&PE 362.

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1Q S 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&PE 363.
SOCIOLOGY, SPEECH—75

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 35 of the 50 major credits must be in sociology courses, including Sociology 101, 205, 303 and 310. Anthropology 120 or 133 and Social Welfare 111 must 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 440.

For those who plan to go into work that requires a background in both sociology and another area, the following courses 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

For explanation see Index under "Symbols"

101 INTRODUCTORY SOCIOLOGY 1Q A W S Su 5. A general study of interhuman relations.

102 SOCIAL PROBLEMS 1Q A W S Su 5 Prereq 101. A general study of social and personal disorganization.

202 COLLECTIVE BEHAVIOR 1Q W 3. Prereq 101 or Psych 110. Theories relating to mass behavior. The characteristics of such social aggregates as crowds, mobs, and social movements.

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) 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 minimum of 45 credits in Speech, including Speech 111,
112, 113, 214, 261, 353, and either 344 or 345; Speech Pathology
231, 300, and 312. The course coherence of the requirements listed
earlier in the catalog 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, students should take Speech 318, Philosophy 110 or 210 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 2Q A W S Su 3. See note
above. Group discussion, oral reading, and public speaking, to
develop constructive attitudes, organized thinking, and discrimina-
tive listening as these contribute to effective communication and
honesty of thought.

111 PRINCIPLES OF SPEECH 1Q A W S 5. See note
above. This course aims, through various experiences in group
discussion, oral reading, and public speaking, to develop construc-
tive attitudes, organized thinking, and discriminatory listening as
these contribute to effective communication and human relations.

112 ARGUMENTATION 1Q A W S 5. The principles by which
belief and conduct are influenced through appeals to logical
reasoning, organizational thinking, and discriminative listening as
these contribute to effective communication and human relations.

113 PARLIAMENTARY PROCEDURE 1Q A W S 2. The prin-
ciples and practice of parliamentary procedures used in the con-
don of fraternal, professional and community meetings.

118 VOICE AND DICTIO 1Q A W S 3. Application of prin-
ciples to the improvement of voice and diction.

19 PHONETICS 1Q A S. The speech mechanism in relation to
the production of auditory symbols. Introduction to the use of
phonetic symbols.

123 PUBLIC SPEAKING 1Q A W S Su 3. Prereq 101-102 or
111. A beginning course in public speaking, offering additional
theory and practice to what is offered in 101-102.

214 DISCUSSION TECHNIQUES 1Q 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 1Q W 3. Prereq 118 and
Journalism 119. Principles and practice of public speaking;
articulation and vocal pattern to the various forms of speaking for
radio and television. Analysis of individual voices by tape recording.

260 BEGINNING ORAL INTERPRETATION 1Q A 3. Prereq
118. Development of competences in the meaning of literature
and of the ability to read orally so as to communicate this apprecia-
tion to others.

262 INTERMEDIATE ORAL INTERPRETATION 1Q W 3 Pre-
req 261. Further development of the principles in the meaning of
literature.

265-266-267 DEBATE 3Q A W 2 2 Prereq 112. (265) The tech-
niques, strategy and style of debate; (266) Intercallegiate debating;
(267) Famous historical debates. The principles of public
speaking as they relate to the technique of debate.

315 PUBLIC PERFORMANCE 1Q A W S V 1-2 R-6 Prereq
C/. The principles of public performance. Practice in presenting
before public audiences oral readings, lecture recitals, choral read-
ing or public addresses.

FOR UNDERGRADUATES AND GRADUATES

316 BUSINESS AND PROFESSIONAL SPEAKING 1Q A W S
3 Prereq 101-102. The methods and techniques of speaking by
leaders in business, labor, education, and the professions.

317 SPEECH IN TEACHING AND LEARNING 1Q A 3 Prereq
5 or in major. The development of the roles of the teacher in his
work with the student in speech education and teaching.

318 APPLIED PHONETICS 1Q S 3 Prereq 119 or —. The nar-
rower treatment of the principles of phonetics, deviations from,
and variations within standard American speech, their causes and
frequency of occurrence.

321 THE TEACHING OF SPEECH 1Q W 3 Prereq 10 credits in
Speech. Planning the speech curriculum and its relationship to
other school subjects; instructional materials, and methods of
teaching Speech.
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 game conservation and management. Wildlife Technology stresses biological concepts; Wildlife Management the relationship of wildlife to problems of land management.

Closely allied are the operations of the Cooperative Wildlife Research Unit at the University which is controlled, staffed, and supported by the Montana Fish and Game Commission, the United States Fish and Wildlife Service, the Wildlife Management Institute of Washington, D. C., and Montana State University "to provide full active cooperation in the advancement, organization, and operation of wildlife education, research, extension and demonstration programs."

The Unit investigates current wildlife problems in order to preserve and improve wildlife resources. It engages in research which contributes to the training of graduate students only.

Four years are required for the Bachelor of Science degree. The degree of Master of Science in Wildlife Technology is also offered (see Graduate Studies). Undergraduate courses are selected from other curricula as prescribed below. Instruction proceeds through use of textbooks, collateral readings, laboratory and field work.

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.

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 WILDLIFE TECHNOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the student should have completed for the degree of Bachelor of Science in Wildlife Technology:

- Required courses in the first two years and in the last two years in the Aquatic and Terrestrial options are listed below.
- Students electing the Aquatic option should elect additional courses from the following: Zoology 306, 339, 353; Botany 368; Chemistry 101, 102, 103; General 450; Geology 101; Microbiology 200; General 450.

CURIricula IN WILDLIFE TECHNOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 111, 112, or 123—General Botany</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 101, 102, 103—General, Survey Organic</td>
<td>4</td>
</tr>
<tr>
<td>English 101, 102, 103—Freshman Composition</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 100—Intermediate Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 115—Prerequisite</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements</td>
<td>3</td>
</tr>
<tr>
<td>Health &amp; Physical Education 101, 102, 103</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 101, 102, 103—Military or Air Science</td>
<td>2</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 104-105, 201—Elem. Zoology, Comparative Ver tebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Phys 111, 112—General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements (5 or 10 credits winter or spring depending on physics 112 or 113)</td>
<td>5</td>
</tr>
<tr>
<td>H&amp;PE 201-202-203—Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military or Air Science</td>
<td>2</td>
</tr>
</tbody>
</table>
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, and so on.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY.** In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree: 45 credits in Zoology including Zoology 104-105, 106, 201, 302, 385, 386, 387, 388, 389, 390, 401, and one course from Microbiology and Public Health, or from Botany or one course from Zool 106, 306, 309, 310, 321, 323, 324, 326, 341; any one course from Microbiology and Public Health, or from Botany or one course from Zool 306, 309, 310, 321, 323, 324, 326, 341; any one course from Microbiology and Public Health, or from Botany or one course from Zool 306, 309, 310, 321, 323, 324, 326, 341.

Senior examinations are given only to candidates for honors.

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

**SUGGESTED CURRICULUM IN ZOOLOGY**

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 104, 105</td>
<td>5</td>
</tr>
<tr>
<td>Zool 302 VERTEBRATE EMBRYOLOGY</td>
<td>5</td>
</tr>
<tr>
<td>Bot 201 COMPARATIVE VERTEBRATE ANATOMY</td>
<td>5</td>
</tr>
<tr>
<td>Zool 202—Vertebrate Embryology</td>
<td>5</td>
</tr>
<tr>
<td>Math 125—Statistics</td>
<td>5</td>
</tr>
<tr>
<td>GERMAN, Russian, or French</td>
<td>5</td>
</tr>
<tr>
<td>Health &amp; Physical Education 101-102-103</td>
<td>5</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>5</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 308 or 309—Ornithology, Mammalogy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 306—Entomology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 415—Fishery Science</td>
<td>5</td>
</tr>
<tr>
<td>Bot 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>For 360—General Range Management</td>
<td>5</td>
</tr>
<tr>
<td>Elective (vary depending on Zool. 308 or 309)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 308 or 309—Ornithology, Mammalogy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 306—Entomology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 415—Fishery Science</td>
<td>5</td>
</tr>
<tr>
<td>Bot 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>For 360—General Range Management</td>
<td>5</td>
</tr>
<tr>
<td>Elective (vary depending on Zool. 308 or 309)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 308 or 309—Ornithology, Mammalogy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 306—Entomology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 415—Fishery Science</td>
<td>5</td>
</tr>
<tr>
<td>Bot 355—Plant Ecology</td>
<td>5</td>
</tr>
<tr>
<td>For 360—General Range Management</td>
<td>5</td>
</tr>
<tr>
<td>Elective (vary depending on Zool. 308 or 309)</td>
<td>5</td>
</tr>
</tbody>
</table>

**FOR UNDERGRADUATES**

For explanation see Index under "Symbols"

Courses also offered at Biological Station (courses only at Biological Station): 165, 268, 309, *264, 385, 386, 388, 431, 433, 434, 436, 461, 521, 531, 561; 591.

101 GENERAL ZOOLOGY 1Q A W Su 5 (3-4). Certain basic biological principles as exemplified by the study of the characteristics of animal protoplasm and selected invertebrates and a vertebrate form.

104-105 ELEMENTARY ZOOLOGY 2Q A W 5 (3-4). A survey of the invertebrates and the chordates, anatomy, physiology, phylogeny and various zoological principles.

106 FIELD ZOOLOGY 1Q S 3 (3-4). Su at Biological Station Prereq 101 or 104. Collection, identification and preservation of animals. Field work.

201 COMPARATIVE VERTEBRATE ANATOMY 1Q S 5 (3-4) Prereq 101 or 104 and one laboratory course in Zool. The comparative anatomy, morphology, and physiology of the vertebrates.

202 HUMAN PHYSIOLOGY 1Q S 5 (3-4) Prereq Sophomore standing or two quarters of college Zool. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

FOR UNDERGRADUATES AND GRADUATES

301 GENERAL COMPARATIVE EMBRYOLOGY 1Q A 5 (3-4) alternate years Prereq 211-212. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

302 VERTEBRATE EMBRYOLOGY 1Q W 5 (3-4) Prereq 201. The early stages of development of the vertebrates including the organogens, with emphasis on birds (chick) and mammals (pig).

303 PARASITOLOGY 1Q W 5 (3-4) Prereq 104-105. Morphology, physiology, systematic, and life histories of representative animal parasitae and their techniques of diagnosis, treatment, and control.

305 HISTOLOGY AND MICROTECHNIQUE 1Q W 5 (3-4) Prereq 201, 101, or 105 and c/l. Basic tissues are studied and a limited amount of work is done on organology. Microtechnique with emphasis on the paraffin method.
308 HERPETOLOGY 1Q W 3 (3-2) o/y Prereq 201. The taxonomy, distribution, and life histories of amphibians and reptiles.

309 AQUATIC BIOLOGY 1Q S 5 (3-7, 10) Prereq 106 and Bot 123. The biota of fresh water with emphasis upon the flora and fauna, with consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, interrelation and classification of aquatic organisms below vertebrates.

310 ORNITHOLOGY 1Q S 5 (3-6), Su 3 at Biological Station, Prereq 261. The structure, classification and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

311 MAMMALOLOGY 1Q A 5 (3-4), Su 6 at Biological Station, Prereq 201. The classification, identification and life histories of mammals. Saturday field trips.

312 VERTEBRATE ENDOCRINOLOGY 1Q S 3 (2-4) Prereq 201. The anatomy and physiology of the endocrine system of vertebrates. Correlative problems and laboratory techniques may be undertaken.

313 VERTEBRATE PHYSIOLOGY 2Q A W 5 (3-4) Prereq 201 or =. Prereq 103 or 123. Ecology of lake, stream and pond biota, with emphasis on some major glands of internal secretion of vertebrates. Correlative problems emphasizing surgical and experimental techniques may be undertaken.

314 VERTEBRATE PHYLOGENY 2Q A W 5 (3-4) Prereq 201 or =. Prereq 103 or 123. Phylogeny of major groups of vertebrates, including the fishes, amphibians, reptiles, birds, and mammals. Correlative problems involving the physical, chemical and biotic factors which determine their habitats and certain fundamentals of the physiology of fish are considered. Field trips.

315 VERTEBRATE ZOOLOGY 2Q A W 5 (3-4) o/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 ANIMAL ECOLOGY 1Q S 5 (3-9) o/y Prereq 106, Bot 123 or =, Zool 307 or 311, 312 recommended. The relationships between animals and their environment with special emphasis on the invertebrates. Saturday field trips.

325 VERTEBRATE ENDOCRINOLOGY 1Q S 3 (2-4) Prereq 201, 302. The microscopic anatomy and the normal physiology of the major systems of internal secretion of vertebrates. Correlative problems employing surgical and experimental techniques may be undertaken.

326 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.

327 INVERTEBRATES OF THE INTERMOUNTAIN REGION 1Q Su 3 (3-12) Prereq 105. The ecology, taxonomy, and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.

328 ENTOOMOLOGY 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.

329 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.

330 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 235.

331 EVOLUTION 1Q A 3 (3-0) o/y Prereq 106 and Bot 121, 122, 123, 125 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 236.

332 CELLULAR PHYSIOLOGY 1Q W 5 (3-4) Prereq 113 or 123, Chem 263, and 2 in Botany, Microbiology, or Zoology. The life processes at the cellular level emphasizing the methods of physical science.

333 COMPARATIVE PHYSIOLOGY 1Q W 5 (3-4) o/y Prereq 113 or 123, Chem 263, and 2 in Botany, Microbiology, or Zoology. A survey of the diverse ways in which different kinds of animals meet their functional requirements.

334 FISHERY SCIENCE 1Q W 3 (3-6) o/y Prereq 267, 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.

335 BIOLOGICAL LITERATURE 2Q A W 1 (2-0) Prereq 29 credits in Bot or Zool. Student reports of literature of the trend of investigation and experimentation in biological fields.

336 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.

337 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.