1-1-1963

1963-1964 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/111

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.
The wilderness is almost next door to the University. Scores of hidden lakes, and the ever-present mountain peaks make this one of the most handsome and rugged scenic areas of the nation.

—Photo by Ernst Peterson
Climax to the academic year is the parade of mortar boards and gowns with their wearers bound for graduation ceremonies.
The campus has one of the most stunning backdrops of any American University—Mount Sentinel. The mountain itself is actually an extension of the campus, a guardian wall at the edge of historic Hellgate canyon.
Endless miles of forest roadways invite the visitor deep into the heart of the Montana mountains. The countryside abounds in gushing trout streams; wildlife is as near as the next upland forest clearing.

Photo courtesy Montana Highway Commission
THE UNIVERSITY OF MONTANA

Alfred J. Dubbe, Acting 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, 1915).

The general control and supervision of the University is vested in the State Board of Education, ex-officio Regents of the University of Montana. 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

TIM BABCOCK, Governor Ex-Officio President

FORREST H. ANDERSON, Attorney General Ex-Officio

HARRIET E. MILLER, Sup't. of Public Instruction Ex-Officio

GEORGE N. LUND, 1964 Miles City

MRS. F. H. PETRO, 1965 Ronan

BOYNTON G. PAIGE, 1966 Philipsburg

JOHN D. FRENCH, 1967 Ronan

G. D. MULLENDORE, 1968 Glendive

GORDON L. DOERING, 1969 Helena

JOHN COYNEILL, 1970 Butte

A. A. ARRAS, 1971 Cut Bank

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

MONTANA STATE UNIVERSITY, MISSOULA

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
The School of Education
The School of Fine Arts
The Graduate School

The Biological Station (Flathead Lake)
The Forest and Conservation Experiment Station
The Forest Service
The Lubrecht Experimental Forest
The Division of Extension and Public Service
The Montana Cooperative Extension Service
The Wildlife Research Unit
The University Press

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 Home Economics
School of Nursing
The Agricultural Experiment Station
The Montana Grain Inspection Laboratory
The Montana Wool Laboratory
The Central Montana Branch Station (Moccasin)

Leon H. Johnson, Acting 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

The Course in Geological Engineering
The Course in Petroleum Engineering
The Graduate School
The Bureau of Mines and Geology

Summer Field Courses

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
The Summer Quarter
The Teacher Service Division
The Graduate Division

James E. Short, President

EASTERN MONTANA COLLEGE OF EDUCATION, BILLINGS

Established March 12, 1925, and consisting of:

The Division of Education, Elementary, Secondary, and Vocational
The Division of Humanities
The Division of Language and Literature

Herbert L. Steele, President

NORTHERN MONTANA COLLEGE, HAVRE

Established March 8, 1929, and consisting of:

The Four-year Course in Teacher Education, Elementary
The Summer Quarter
The Teacher Service Division
The Graduate Division

Joseph R. Crowley, President

CONDEMNED CALENDAR

The University of Montana

Winter Quarter, 1963 through Summer, 1965

MONTANA STATE UNIVERSITY

Missoula

Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963
Autumn Quarter opens September 23, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 30, 1964
Summer Quarter opens June 15, 1964
Autumn Quarter opens September 21, 1964
Winter Quarter opens January 4, 1965
Spring Quarter opens March 29, 1965
Summer Quarter opens June 14, 1965

MONTANA STATE COLLEGE

Bozeman

Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 18, 1963
Autumn Quarter opens September 23, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 30, 1964
Summer Quarter opens June 16, 1964
Autumn Quarter opens September 21, 1964
Winter Quarter opens January 4, 1965
Spring Quarter opens March 29, 1965
Summer Quarter opens June 15, 1965

MONTANA SCHOOL OF MINES

Butte

Second Semester opens February 4, 1963
First Semester opens September 23, 1963
First Semester opens September 20, 1964
Second Semester opens February 8, 1963

WESTERN MONTANA COLLEGE OF EDUCATION

Dillon

Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963
Autumn Quarter opens September 25, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 31, 1964
Summer Quarter opens June 15, 1964
Autumn Quarter opens September 21, 1964
Winter Quarter opens January 4, 1965
Spring Quarter opens March 29, 1965
Summer Quarter opens June 14, 1965

EASTERN MONTANA COLLEGE OF EDUCATION

Billings

Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 17, 1963
Autumn Quarter opens September 25, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 31, 1964
Summer Quarter opens June 15, 1964
Autumn Quarter opens September 21, 1964
Winter Quarter opens January 4, 1965
Spring Quarter opens March 29, 1965
Summer Quarter opens June 14, 1965

NORTHERN MONTANA COLLEGE

Havre

Winter Quarter opens January 2, 1963
Spring Quarter opens March 26, 1963
Summer Quarter opens June 12, 1963
Autumn Quarter opens September 24, 1963
Winter Quarter opens January 4, 1964
Spring Quarter opens March 30, 1964
Summer Quarter opens June 14, 1964
Autumn Quarter opens September 21, 1964
Winter Quarter opens January 4, 1965
Spring Quarter opens March 29, 1965
Summer Quarter opens June 16, 1965
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 objectives may attend for a year or two as “General” majors, taking courses that meet general requirements for graduation and that provide general education as a foundation for more specific work selected at least by the end of the sophomore year.

USE OF CATALOG

1. Students should study with care those sections on REGISTRATION AND GENERAL REGULATIONS and on GRADUATION REQUIREMENTS. This information should be reviewed before registration periods.

2. When checking on particular courses, be sure to review the EXPLANATION OF SYMBOLS (See Index).

3. Plan your program at least a year in advance and double-check it against the printed schedules of classes since there are often deviations from the listings in the Catalog.

4. If you have selected a major, study carefully the specific additional requirements for graduation listed under your chosen field.

5. When in doubt as to meanings or interpretation of listed information, consult your adviser or department chairman.

TABLE OF CONTENTS

The University of Montana Condensed Calendar 1
Official Directory 3
Montana State University, general information 10
Accreditation 10
Support and Endowment 10
Control and Administration 10
Functions and Goals 10
Campus and Facilities 10
Requirements for Admission 12
Registration and General Regulations 13
Degrees and Majors 14
Grading System 14
Requirements for Graduation 14
Summer Session 16
The Graduate School 16
Financial Obligations 20
Student Services 21
Standards of Student Conduct 23
Absences from Class 24
Student Contracts and Obligations 24
Activities 24
Organizations 25
Organization of Instruction 26
Course Numbering System 26
Explanation of Symbols 27
Details of Curricula 27
Index 84

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

MONTANA STATE UNIVERSITY

CALENDAR 1963 - 1964

1963

AUTUMN QUARTER
September 23-28, Monday through Saturday Orientation
September 26-27, Thursday and Friday Registration
September 28, Monday Instruction begins
November 11, Monday Veterans’ Day, a holiday
November 25-December 1, Wednesday through Sunday Thanksgiving Holiday
December 16-20, Monday through Friday Examinations
December 20, 8:20 p.m. Autumn Quarter ends

1964

WINTER QUARTER
January 6, Monday Registration
January 7, Tuesday Instruction begins
February 17, Monday Charter Day
March 16-20, Monday through Friday Examinations
March 20, 8:20 p.m. Winter Quarter ends

SPRING QUARTER
March 30, Monday Registration
March 31, Tuesday Instruction begins
May 30, Saturday Memorial Day, a holiday
June 3, Monday Commencement
June 8-12, Monday through Friday Examinations
June 12, 8:20 p.m. Spring Quarter ends

SUMMER SESSION
June 15, Monday (10 weeks and first term) Registration
June 16, Tuesday Instruction begins
July 4, Saturday Independence Day
July 20, Second term begins
August 21, Friday Session ends

AUTUMN QUARTER
September 21-26, Monday through Saturday Orientation
September 24-25, Thursday and Friday Week and Registration
September 25, Wednesday Instruction begins
November 11, Monday Veterans’ Day, a holiday
November 26, Thursday Thanksgiving Day, a holiday
December 14-16, Monday through Friday Examinations
December 18, 8:20 p.m. Autumn Quarter ends

1964

FALL SEMESTER, 1964
September 23-24, Monday and Tuesday Orientation of New Law Students
Registration
September 24, Tuesday Classes begin at 8:00 a.m.
September 25, Wednesday Classes begin at 8:00 a.m.
November 11, Monday Veterans’ Day—No classes
November 27, Wednesday Thanksgiving vacation begins after last class
December 2, Monday Classes resume at 8:00 a.m.
December 21, Saturday Christmas vacation begins after last class
January 6, 1964, Monday Classes resume at 8:00 a.m.
January 27-February 1, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1964
February 5, Wednesday Registration
February 6, Thursday Classes begin at 8:00 a.m.
March 21, Saturday Spring vacation begins after last class
March 30, Monday Classes resume at 8:00 a.m.
May 28-June 2, Tuesday through Tuesday Semester Examinations
June 8, Monday Commencement

FALL SEMESTER, 1965
September 21-22, Monday and Tuesday Orientation of New Law Students
Registration
September 22, Tuesday Classes begin at 8:00 a.m.
September 23, Wednesday Classes begin at 8:00 a.m.
November 11, Wednesday Veterans’ Day—No classes
November 25, Wednesday Thanksgiving vacation begins after last class
November 30, Monday Classes resume at 8:00 a.m.
December 15, Saturday Christmas vacation begins after last class
January 4, 1965, Monday Classes resume at 8:00 a.m.
January 25-30, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1965
February 5, Wednesday Registration
February 9, Thursday Classes begin at 8:00 a.m.
March 20, Saturday Spring vacation begins after last class
March 29, Monday Classes resume at 8:00 a.m.
May 25-June 1, Tuesday through Tuesday Semester Examinations
June 6, Monday Commencement
LOCAL EXECUTIVE BOARD

Theodore Jacobs, Missoula

Mrs. Thomas E. Mulrony, 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; Dean of the Graduate School

Robert T. Pantez, LL.B., Montana State University, Financial Vice President

Troy F. Crowder, M.A., State University of Iowa, Assistant to the President; Director of Extension and Public Service

Paul B. 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

Charles B. Bolen, Ph.D., Indiana University, Dean of the School of Fine Arts

Arnold W. Bolle, D.P.A., Harvard University, Dean of the School of Forestry

Lennie J. Carleton, 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; Director of the Summer Session

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

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

Maurine Clow, Ph.D., Stanford University, Associate Dean of Students

Leo Smith, M.A., University of Washington, Registrar

Kathleen Campell, M.S., University of Denver, Librarian (on leave Autumn Quarter)

THE FACULTY

COLLEGE OF ARTS AND SCIENCES

Coonrod, Robert W., Ph.D., Stanford University, Dean; Director of the Summer Session

Botany and Microbiology

Diettert, Reuben A., Ph.D., State University of Iowa, Professor and Chairman

Behar, Mark J., Ph.D., University of Washington, Instructor (on leave Autumn Quarter)

Chesnek, Myrle, Ph.D., University of California, Professor

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

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

Gerhart, James W., Ph.D., Ohio State University, Associate Professor, Biology (also Education) (on leave 1962-63)

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

Haseck, 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

Hoyte, Bill H., Ph.D., University of Minnesota, Lecturer (Courtesy)

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

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

Larsen, Carl L., M.D., University of Minnesota; Sc.D. (hon.), Montana State University, Professor; Director, Stella Duncan Memorial Institute

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

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

Preece, Sherman J., Jr., Ph.D., Washington State University, Assistant Professor

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

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

Solberg, Richard A., Ph.D., University of California at Los Angeles, Assistant Professor (also Education); Acting Director, Biological Station

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

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

Choate, Charles (Mrs.), B.S., Colorado State University, Graduate Assistant

Clark, James H., B.A., Park College, Graduate Assistant

Gilliland, Victor C., M.A., Humboldt State College, Graduate Assistant

Lombell, Donald B., Northwestern University, Graduate Assistant

Muir, Jan O., B.S., Colorado State University, Graduate Assistant

Overholtzer, Donald L., B.S., Oregon State University, Graduate Assistant

Stephenson, Least W., B.S., University of Redlands, Graduate Assistant

Thullen, Robert J., B.S.F., Montana State University, Assistant (Autumn Quarter)

Chemistry

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

Bateman, William G., Ph.D., Yale University, Professor Emeritus

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

Osterheld, Robert K., Ph.D., University of Illinois, Associate Professor

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

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

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

Adamowicz, Norman C., B.S., Wayne State University, Graduate Assistant (Autumn and Winter Quarters)

Carhill, William F., B.A., Montana State University, Graduate Assistant

DuVall, Gary A., B.A., Montana State University, Graduate Assistant (Autumn Quarter)

Economics

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

Heliker, George B., Ph.D., University of Michigan, Associate Professor

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

Shannon, Richard E., Ph.D., Ohio State University, Associate Professor

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

Fry, Paul R., B.A., Montana State University, Graduate Assistant (Autumn Quarter)

Timmons, Gordon D., M.S., Montana State College, Graduate Assistant (Spring Quarter)

Wagner, Jerome R., B.A., Montana State University, Graduate Assistant

English

Coonrod, Robert W., Ph.D., Stanford University, Chairman; Dean, College of Arts and Sciences; Director, Summer Session

Allen, James D., Ph.D., University of Washington, Instructor

Berry, Seymore, Ph.D., Harvard University, Professor (on leave 1962-63)

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

Jones, Agnes V., Ph.D., University of Minnesota, Associate Professor

Bowden, James H., M.A., University of Louisville, Instructor

Brown, Walter L., Ph.D., University of California, Professor

Carpenter, Nan C., Ph.D., Yale University, Professor
4—OFFICIAL DIRECTORY

CLAPP, MARY B. (Mrs.), M.A., University of North Dakota, Associate Professor Emeritus
CLARK, MERRILL D., Jr., Ph.D., University of Michigan, Associate Professor
COLEMAN, RUPUS A., Ph.D., Boston University, Professor Emeritus
DUNDAS, JUDITH, Ph.D., University of Wisconsin, Assistant Professor
FIEDLER, LESLIE A., Ph.D., University of Wisconsin, Professor
FREEMAN, EMMUND L., M.A., Northwestern University, Professor Emeritus
GILBERT, VEDDER M., Ph.D., Cornell University, Professor; Foreign Student Advisor
GOMME, ANDOR H., M.A., University of Cambridge (England), Visiting Lecturer
GUTHRIE, JACk S., M.A., University of Washington, Instructor
HARRIS, PHYLLIS L. (Mrs.), M.A., Montana State University, Instructor
KING, WALTER N., Ph.D., Yale University, Associate Professor
MCLEOD, DONALD B., M.A., Montana State University, Instructor
MERRIAM, HAROLD G., Ph.D., Columbia University, Professor Emeritus
MOORE, JOHN E., M.A., University of Michigan, Professor
RICHARD, JEROME M., San Francisco State College, Instructor
ROBERTS, DEXTER M., B.A., Colgate University, Instructor
VINOCUR, JACOB, Ph.D., University of Wisconsin, Associate Professor
WINTEROWD, W. ROSS, B.S., Utah State University, Instructor
ZUCK, LOUIS M., University of Michigan, Instructor
CLEARMAN, MARY R. (Mrs.), B.A., Montana State University, Graduate Assistant
FARLEY, LELAND W., Graduate Assistant
HIGHAM, NANCY (Mrs.), B.A., Montana State University, Graduate Assistant
MORGARTY, LUANN R. (Mrs.), B.A., Montana State University, Graduate Assistant

Foreign Languages
BURGESS, ROBERT M., Ph.D., University of California at Los Angeles, Professor and Chairman
BENNETT, VELDON J., M.A., Brigham Young University, Instructor
BISHOFF, PAUL A., M.A., Oberlin College, Professor Emeritus
BRETT, KENNETH C., M.A., State University of Iowa, Instructor
BROCK, ROBERT R., M.A., University of Washington, Instructor
GRANIERE, BRUNO, Licence et Lettres, University of Paris, Instructor
EBISU, MARQUERITE H. (Mrs.), M.A., Montana State University, Associate Professor
FLIGHTNER, JAMES A., M.A., Montana State University, Instructor
HOFFMAN, RUDOLPH O., M.A., University of Wisconsin, Professor Emeritus
JARA, HOBBS, Ph.D., University of Vienna, Assistant Professor
KLUCHE, NATALIE (Mrs.), Visiting Instructor
LACKSCHWITZ, GERHARD (Mrs.), Ph.D., Goettingen University (Germany), Assistant Professor
LAPKEN, PETER P., Ph.D., University of California, Associate Professor
NONNENMACHER, PATRICIA J. (Mrs.), M.A., Northwestern University, Instructor (Winter and Spring Quarters)
MEADOW, BARBARA F., M.A., University of Kentucky, Visiting Instructor (on leave January 21-April 16, 1963)
NITZI, DOMENICO, Ph.D., University of California, Associate Professor
POWELL, WARREN H., Ph.D., University of Colorado, Associate Professor (on leave Winter Quarter)
SHEPARD, DOUGLAS C., Ph.D., University of Wisconsin, Associate Professor (on leave 1962-63)
SHOEMAKER, THEODORE H., Ph.D., University of Wisconsin, Professor
SOBSEN, THORA, Ph.D., Mexico National University, Professor
SOHN, DOROTHY R., B.A., College of Great Falls; Graduate Assistant (Autumn and Spring Quarters)
BRETT, CAROL J. (Mrs.), B.A., New York State College for Teachers, Albany, Graduate Assistant (Winter Quarter)
KRYGER, ADOLPH H., B.A., Montana State University, Graduate Assistant (Autumn and Winter Quarters)
KUENZEL, MARY R. (Mrs.), B.A., Montana State University, Assistant (Winter Quarter)
WEIgHT, DOLORES D. (Mrs.), B.A., Montana State University, Graduate Assistant

Geology
HONKALA, FRED S., Ph.D., University of Michigan, Professor and Chairman
FIELDS, ROBERT W., Ph.D., University of Wisconsin, Associate Professor
HOWEY, JOHN JR., Ph.D., Washington University (St. Louis), Associate Professor
SILVERMAN, ARNOLD J., M.A., Columbia University, Assistant Professor
WEISHELMER, JOHN P., Ph.D., University of Illinois, Associate Professor
WEISSMAN, ROBERT M., Ph.D., University of California, Assistant Professor
WINSTON, DONALD H., M.A., University of Texas, Instructor
BERG, RICHARD E., B.S., Beloit College, Graduate Assistant
CHASE, RONALD B., M.S., Montana State University, Graduate Fellow
HALL, FRANK W., M.A., Montana State University, Graduate Fellow
HALL, MINARD L., M.A., University of California, Graduate Assistant
MAXWELL, DWIGHT T., B.S., University of Kansas City, Graduate Assistant
REIL, STANLEY J., B.A., University of New Hampshire, Graduate Assistant

Health, Physical Education and Athletics
SCHWANK, WALTER C., Ph.D., State University of Iowa, Director and Professor
ADAMS, HARRY F., M.S., University of Washington, Professor; Head Track Coach
ADKINS, JUDY B., B.S., Texas Woman's University, Instructor
CHINSEK, EDWARD S., B.A., Montana State University, Assistant Professor
CROSS, GEORGE W., M.S., Indiana University, Assistant Professor
DARBIN, GEORGE P., B.A., Montana State University, Professor
DAVIDSON, HUGH, B.S., University of Colorado, Instructor; Assistant Football Coach
HEYDLE, CHARLES F., M.A., Columbia University, Professor
HORAT, SONDRA, B.S., University of Utah, Instructor
JENKINS, RAY, M.S., University of Colorado, Assistant Professor; Head Football Coach
Lorenz, Mayra M., M.S., University of Washington, Assistant Professor
NORD, RONALD V., B.S., University of Wisconsin, Instructor; Head Basketball Coach
REINKE, NASBY, B.A., Montana State University, Instructor; Trainer
SCHREIBER, WILLIAM E., B.A., University of Wisconsin, Professor Emeritus
SCHWENK, MILTON E., M.E., Eastern Washington College of Education, Instructor; Assistant Football Coach
SINNING, WAYNE E., M.S., South Dakota State College, Assistant Professor
STERN, FREDERICK A., M.S., Purdue University, Instructor; Head Varsity Swimming Coach; Manager, University Swimming Pools
STOOGEL, AGNES L., ELD., Stanford University, Professor
SWANSON, HARLAN L., M.S., University of Oregon, Instructor
WILSON, VINCENT, M.A., New York University, Associate Professor
ANDERSON, FLOYD R., B.A., Concordia College, Graduate Assistant
FRIESEN, ANGELINE L., B.A., State University of Iowa, Graduate Assistant
NUSSBAUM, E. GALEN, B.A., Pacific Lutheran University, Graduate Assistant
OWEN, GUY M., B.A., William Jewell College, Graduate Assistant
THIEL, BART, B.A., Coe College, Graduate Assistant
OFFICIAL DIRECTORY—5

History

When, Melvin C., Ph.D., State University of Iowa, Professor and Chairman (on leave 1962-63)
Borzen, Morton, Ph.D., Columbia University, Associate Professor and Acting Chairman
Bennett, Edward E., Ph.D., University of Wisconsin, Professor Emeritus
Coonrod, Robert W., Ph.D., Stanford University, Professor; Dean, College of Arts and Sciences; Director of the Summer Session
Hammel, Oscar J., Ph.D., University of Wisconsin, Professor
Karlin, Jules A., Ph.D., University of Minnesota, Professor (also Political Science)
Kilcoyne, Martin, Ph.D., University of Washington, Visiting Lecturer
Kittel, Allan H., Ph.D., Stanford University, Assistant Professor
Miller, J. Earl, Ph.D., University of Illinois, Professor Emeritus
Rader, Benjamin, M.A., Oklahoma State University, Instructor
Snow, Vernon F., Ph.D., University of Wisconsin, Associate Professor
Turner, Robert T., Ph.D., University of California at Los Angeles, Professor; Director of Museum
Van de Watering, John E., Ph.D., University of Washington, Assistant Professor
Barnhill, Norvis V., B.A., Montana State University, Graduate Assistant (Autumn Quarter)
Burke, William L., B.A., Montana State University, Graduate Assistant
Crayen, Gary A., Graduate Assistant
Dennison, George M., B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)
Lynch, Robert G., B.S., Western Montana College of Education, Graduate Assistant
McGivern, Edward R., B.A., Carroll College, Graduate Assistant

Home Economics

Endres, Emma H. (Mrs.), M.S., Colorado State University, Associate Professor and Chairman
Chambelaine, D. Gertrude, B.S., University of Alberta, Instructor; Director, Food Service
Etheridge, Fannie E., M.S., Washington State University, Assistant Professor
Garrett, Merle M.E., Colorado State University, Instructor
Gleason, Helen M.A., Columbia University, Professor Emeritus
Lewis, Vanetta (Mrs.), M.Ed., Montana State University, Assistant Professor
Lyons, Harriet L. (Mrs.), M.S., Iowa State University, Assistant Professor
Platt, Anne C., M.S., University of Washington, Professor Emeritus
Sidwell, Dorothy M. (Mrs.), M.S., University of California, Assistant Professor
Barr, Dorothy D. (Mrs.), B.A., Western Reserve University, Assistant Professor
Bartholomew, Zoe (Mrs.), B.A., Montana State University, Assistant Professor
Malouf, Arline (Mrs.), B.S., University of Utah, Assistant

Mathematics

Myers, William M., Jr., Ph.D., Ohio State University, Associate Professor and Acting Chairman
Ballard, William R., Ph.D., University of Chicago, Associate Professor
Bingham, Ralph L., M.A., Montana State University, Instructor
Gowarawa, Krishna K., Ph.D., University of Delhi (India), Assistant Professor
Hewitt, Gloria C. (Mrs.), Ph.D., University of Washington, Assistant Professor
Kimble, Gerald W., Ph.D., University of California at Los Angeles, Associate Professor; Director, Computer Center (beginning February 1, 1963)
Manis, Merle E., M.A., Montana State University, Instructor
Merrill, A. S., Ph.D. University of Chicago, Professor Emeritus; Vice President Emeritus; Dean Emeritus of the Faculty
Peterson, John A., M.A., Montana State University, Assistant Professor
Reinhart, Howard E., Ph.D., University of Michigan, Associate Professor

Philosophy

Martin, Edwin L., M.A., Harvard University, Professor and Chairman
Jensen, Henning, B.A., University of British Columbia, Instructor
Kersten, Fred, M.A., New School for Social Research, Instructor
Lawry, John M., Ph.D., Harvard University, Assistant Professor
Schuster, Cynthia A. (Mrs.), Ph.D., University of California at Los Angeles, Associate Professor

Physics

Jeppesen, C. Rulon, Ph.D., University of California, Professor and Chairman
Hayden, Richard J., Ph.D., University of Chicago, Professor
Jakobson, Mark J., Ph.D., University of California, Professor
Jeppesen, Randolph H., M.S., University of Illinois, Instructor
Shallenberger, G. D., Ph.D., University of Chicago, Professor Emeritus
Dulmage, Harold L., B.S., Northwestern University, Graduate Assistant

Political Science

Payne, Thomas, Ph.D., University of Chicago, Professor and Chairman
Abbott, Frank C., Ph.D., Harvard University, Professor; Academic Vice President; Dean of the Graduate School
Gibbons, Gerard A., M.A., Woodstock College, Assistant Professor
Karlin, Jules A., Ph.D., University of Minnesota, Professor (also History)
Kirschchen, Harvey G., Ph.D., University of Illinois, Assistant Professor
Walston, Ellis L., Ph.D., University of Wisconsin, Professor
Boushiman, George B., B.A., Carroll College, Graduate Assistant
Gravette, Sharen L., B.A., Montana State University, Graduate Assistant
Hoyle, Burton A., B.A., Montana State University, Graduate Assistant
Loring, Emilie S. (Mrs.), B.A., Swarthmore College, 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
Burgess, Thomas C., Ph.D., University of Minnesota, Associate Professor
Clow, Maureen, Ph.D., Stanford University, Professor; Associate Dean of Students
DuMas, 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, Professor
Sappensfield, Bert R., Ph.D., New York University, Professor
Baker, Blaine L., B.A., Montana State University, Graduate Assistant
Bark, Joanne D. (Mrs.), B.S., University of Wisconsin, Graduate Assistant
Bauer, Richard B., B.A., Montana State University, Graduate Assistant
Benson, Emery, B.A., Montana State University, Graduate Assistant
Leuthold, Betty L., B.A., Montana State University, Graduate Assistant
McLaughlin, Mary, B.A., Dakota Wesleyan University, Graduate Assistant
Stevens, Frank H., B.A., Western Washington State College, Graduate Assistant

 Reserve Officers Training Corps
Air Science
Velle, Robert L., Lieutenant Colonel, USAF, M.A., University of Colorado, Professor and Chairman
Emmert, Merle W., Captain, USAF, B.S., Montana School of Mines, Assistant Professor
Gannett, William L., Captain, USAF, M.S., Springfield College, Assistant Professor
McCollor, Rosalyn C., Major, USAF, B.E., University of Minnesota, Associate Professor
Baldwin, John (A/IC), Assistant
Lebsack, Raymond (M/Sgt.), Assistant
Maas, Albert H. (T/Sgt.), Assistant
Walden, Edward (S/Sgt.), Assistant

 Military Science (Army)
Moucha, M. F., Colonel, U.S. Army, B.S., U.S. Military Academy, Professor and Chairman
Cannon, Max E., Captain, U. S. Army, Assistant Professor (Beginning February 18, 1963)
Fox, Donald C., Major, U.S. Army, B.G.E., University of Omaha, Associate Professor
MacDonald, Angus, Captain, U.S. Army, B.S., Texas A. & M. College, Assistant Professor
Pedenen, Alfred L., Captain, U.S. Army, B.S., Wagner College, Assistant Professor
Stone, Hardy O., Captain, U.S. Army, B.S., Mississippi State University, Assistant Professor
Allen, Charles G. (S/Sgt.), Assistant
French, Wallace D. (S/Sgt.), Assistant
Shurz, Duane E. (S/Sgt.), Assistant
Simpson, Loren E. (M/Sgt.), Assistant

 Sociology, Anthropology, and Social Welfare
Brownlee, W. Gordon, Ph.D., University of North Carolina, Professor and Chairman
Dwyer, Robert J., Ph.D., University of Missouri, Associate Professor
Evans, Iride W., Ph.D., University of Texas, Assistant Professor; Administrative Assistant to Dean, College of Arts and Sciences, and to Director of Summer Session
Gold, Raymond L., Ph.D., University of Chicago, Associate Professor
Griff, Mason, Ph.D., University of Chicago, Assistant Professor
Heinrich, Albert C., M.Ed., University of Alaska, Instructor
Maloof, Carlin I., Ph.D., Columbia University, Associate Professor
Swift, John L., M.S., Boston University, Lecturer (Courtesy)
Tascher, Harold, Ph.D., University of Illinois, Professor
Taylor, Dee C., Ph.D. University of Michigan, Associate Professor
Bolin, Twila K., B.A., Montana State University, Graduate Assistant
Cardona, Glenn A., B.A., Montana State University, Graduate Assistant
Hardy, Mabelle G. (Mrs.), B.A., Montana State University, Graduate Assistant
Leonard, Anne (Mrs.), B.A., University of Texas, Graduate Assistant
Shimp, Anne, B.A., Montana State University, Graduate Assistant
Zoren, Edwin F., B.A., Yankton College, Assistant

 Speech
McGinnis, Ralph Y., Ph.D., University of Denver, Professor and Chairman
Brommer, Richard M., Ph.D., State University of Iowa, Associate Professor, Speech Pathology and Audiology
Emery, Forrest L., Ph.D., State University of Iowa, Associate Professor
Hansen, Bert, M.A., University of Washington, Professor
McGurr, Jesse B., M.A., University of Washington, Assistant Professor of Speech Pathology and Audiology (Winter and Spring Quarters)

Owen, James, M.A., University of Denver, Instructor
Parker, Charles D., Ph.D., State University of Iowa, Associate Professor of Speech Pathology and Audiology; Director, Speech and Hearing Clinic
Smith, Robert G., Ph.D., University of Minnesota, Assistant Professor
Witt, Daniel M., M.A., University of Denver, Instructor
Bassett, John R., B.A., Montana State University, Graduate Assistant
Brady, Darlyne J. (Mrs.), B.A., University of Denver, Graduate Assistant (Winter and Spring Quarters)
Diedrich, Mary M., M.A., Montana State University, Assistant, Speech Pathology and Audiology
Ewing, Charlotte (Mrs.), B.S., Montana State College, Graduate Assistant (Spring and Summer Quarters)
Haber, Richard B.A., Montana State University, Graduate Assistant
Pettersen, Duane D., B.S., Eastern Montana College of Education, Graduate Assistant

 Zoology
Weltz, Philip L., Ph.D., University of Wisconsin, Professor and Chairman
Bartelmez, George W., Ph.D., University of Chicago, Guest Investigator (Courtesy)
Brown, Ludwig G., Ph.D., University of Chicago, Professor
Brunson, Royal E., Ph.D., University of Michigan, Professor
Craighead, John J., Ph.D., University of Michigan, Professor (also Forestry); Leader, Montana Cooperative Wildlife Research Unit
Froschner, Richard C., Ph.D., Iowa State University, Associate Professor
Graves, Lynne E., Ph.D., The Ohio State University, Assistant Professor
Hoffmann, Robert S., Ph.D., University of California, Associate Professor (on leave, effective May 1, 1963)
Holmes, John C., Ph.D., Rice University, Visiting Lecturer (Beginning May 1, 1963)
Keppler, E. W., Ph.D., University of California, Assistant Professor
Philip, Cornelius B., Ph.D., University of Minnesota; Sc.D. (hon.), University of Nebraska, Lecturer (Courtesy)
Senge, Clyde M., Ph.D., Utah State University, Assistant Professor
Weiss, George F., Ph.D., University of California at Los Angeles, Professor
Choate, Thomas S., M.A., Montana State University, Graduate Fellow
Eaton, Alden W., B.A., University of New Hampshire, Graduate Assistant
Mead, Rodney A., M.A., University of California at Davis, Graduate Fellow
Rauscher, James L., B.S., University of Wisconsin, Milwaukee, Graduate Assistant (Spring Quarter)
Roberts, Stella E. (Mrs.), B.S., Montana State College, Graduate Assistant (Winter Quarter)
Ronny, Ernest E., B.A., Bowdoin College, Graduate Assistant
Sullivan, John O., M.S., Utah State University, Graduate Assistant (Spring Quarter)
Vereske, Nicolaas A., B.S., University of British Columbia, Graduate Assistant

 SCHOOL OF BUSINESS ADMINISTRATION
Blobsmeir, Paul B., D.B.A., Indiana University, Dean and Professor; Director, Bureau of Business and Economic Research
Barnes, Glenn R., M.B.A., Harvard University, Assistant Professor
Cubbage, Kenneth W., M.B.A., University of Washington, C.P.A. (Wash.), Assistant Professor
Dobbins, Jack R., B.A., Montana State University, C.P.A. (Mont.), Instructor (part time)
Emelen, Donald J., Ph.D., Columbia University, C.P.A. (Mont.), Professor
Erion, Gene L., Ph.D., University of Wisconsin, Associate Professor
Haring, Robert C., Ph.D., Indiana University, Assistant Professor
Helberg, Albert T., Ph.D., Johns Hopkins University, Professor
Henningsen, Frederick A., M.A., Montana State University, C.P.A. (Mont.), Assistant Professor
Kempner, Jack J., Ph.D., Ohio State University, C.P.A. (Mont.), Professor (on leave 1962-63)
SCHOOL OF EDUCATION

CARLETON, LINUS J., Ed.D., University of Oregon, Dean and Professor
AMES, WALTER R., Ph.D., University of Wisconsin, Professor Emeritus

COLBY, EDMUND K., Ed.S., Indiana University, Assistant Professor; Director, Audio-Visual Centralized Services

GEBHART, JAMES W., Ph.D., Ohio State University, Associate Professor (also Biology) (on leave 1962-63)

GORMAN, ROBERT E., Ed.D., Indiana University, Associate Professor; Director, Counseling Center

GROOM, IRENE D., M.A., State University of Iowa; M.A. (L.S.), George Peabody College for Teachers, Assistant Professor

HARPER, AARON W., Ed.D., University of Colorado, Associate Professor

JAY, ROBERT H., Ed.D., University of Oregon, Assistant Professor

LOTES, KENNETH V., Ed.D., Harvard University, Professor (on leave Spring Quarter)

MADDOCK, WILLIAM E., M.A., Stanford University, Professor Emeritus

MATTIL, CHARLES R., M.Ed., Montana State University, Assistant Professor Emeritus

MILLS, GEORGE H., Ed.D., University of Illinois, Associate Professor

MUNRO, JAMES J. R., M.Ed., T. University of Washington, Associate Professor

RIESE, HARLAN C., Ed.D., Montana State University, Assistant Professor

SLEETEN, VERNON O., Ed.D., University of Oregon; Professor; Director, Education Research and Service

SMITH, LEO, M.A., University of Washington, Professor; Registrar

SOLBERG, RICHARD A., Ph.D., University of California at Los Angeles, Assistant Professor (also Botany); Acting Director, Biological Station

VAN HORNE, GENEVA T. (Mrs.), M.A., University of Wisconsin, Assistant Professor

WATSON, FRANK J., M.A., Northwestern University, Associate Professor

BAKER, GORDON D., B.E., Montana State University, Graduate Assistant

CONSTANS, H. P., M.E., University of North Dakota, Graduate Fellow

JENSEN, CLARENCE G., M.S., Brigham Young University, Graduate Fellow

JESKA, ALLAN E., Graduate Assistant

MACK, EUGENE A., B.A., Carroll College, Graduate Assistant

THE SCHOOL OF FINE ARTS

BOLLEN, CHARLES W., Ph.D., Indiana University, Dean

HOOKE, WALTER H., M.A., University of New Mexico, Professor and Chairman

ARNOLD, ADEN F., M.A., State University of Iowa, Professor

AVAD, A. RUBY, M.F.A., Washington State University, Assistant Professor (on leave Spring Quarter)

BLACKMER, MAXINE (Mrs.), M.A., Montana State University, Instructor (part time)

Dew, James E., M.A., Oberlin College, Associate Professor

Lee, James A. M., Michigan State University, Assistant Professor

Takeyoto, Henry, M.F.A., Los Angeles County Art Institute, Visiting Lecturer (Spring Quarter)

Enskroft, Roy A., B.A., Montana State University, Graduate Assistant

Meier, Deanne, B.S., Northern State Teachers College, South Dakota, Graduate Assistant

Netzel, Herbert P., B.A., Idaho State College, Graduate Assistant

Drama

Brown, Firman H., Jr., Ph.D., University of Wisconsin, Assistant Professor and Chairman

Bain, DOUGLAS H., Ph.D., University of Washington, Associate Professor

James, Robert H., M.A., Northwestern University, Instructor

DeBourg, Roger G., B.S., Eastern Montana College of Education, Graduate Assistant

Music

Oakland, Lloyd C., M.Mus., Northwestern University, D.Mus. (hon.), Cornell College, Professor and Chairman

Anders, Eugene M., University of Washington, Professor

Bollen, Charles W., Ph.D., Indiana University, Professor; Dean of Fine Arts

Crittell, Carol D., M.M., Eastman School of Music, Instructor

Dott, Gerald H., Ed.D., Indiana University, Associate Professor (on leave Winter Quarter)

Eversole, James A. M.Mus., College-Conservatory of Music at Cincinnati, Assistant Professor

Hersen, Harold K., M.Mus., Eastman School of Music, Instructor (part time)

Heynen, Muriel M., M.Mus., College-Conservatory of Music at Cincinnati, Instructor

Hummel, J. George, M.A., Columbia University, Associate Professor

Johnston, Donald O., Ph.D., Eastman School of Music, Assistant Professor

Leifer, John L., B.Mus., Southwestern University, Professor

Lewis, George D., M.Mus., Montana State University, Assistant Professor

Manning, William M., M.Mus., Drake University, Assistant Professor

Musselman, Joseph A., M.Mus., Northwestern University, Assistant Professor

Perry, Laurence E., M.Mus., Syracuse University, Instructor

Ramskill, Bernice B. (Mrs.), Associate Professor Emeritus

Reynolds, Florence M., M.Mus., Eastman School of Music, Associate Professor (on leave 1962-63)

Richards, William H., D.M.A., University of Kansas City, Assistant Professor

Riecken, Luther A., Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music at Cincinnati, Professor

Woolley, Eugene H., Yale University, Professor

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

Cuthbert, Richard A., B.Mus., Montana State University, Graduate Assistant

Hartfelder, Gene B., Ripon College, Graduate Assistant

Simonsen, Laura, B.Mus., Houghton College, Graduate Assistant

Strecker, Dale H., B.A., Washington State University, Graduate Assistant

SCHOOL OF FORESTRY

Bolles, Arnold W., D.P.A., Harvard University, Dean and Professor; Director of Montana Forest and Conservation Experiment Station

Blake, George M., M.S., University of Minnesota, Instructor

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

Faust, James L., M.F., University of Washington, Assistant Professor

Gerard, Frederick L., M.F., Montana State University, Assistant Professor

Gibson, William K., M.F., Montana State University, Instructor

Hagen, Manfred L., B.S., Montana State University, Instructor
SCHOOL OF JOURNALISM
Blumberg, Nathan B., Ph.D., Oxford University, Dean and Professor
Baker, Warren J., Ph.D., State University of Iowa, Associate Professor
Cosswell, Andrew C., M.A., University of Minnesota, Professor; Dean of Students
Duggan, Edward B., M.A., University of Missouri, Professor
Hess, Philip J., M.A., State University of Iowa, Assistant Professor; Acting Director, Radio-Television Studios
Johnson, Dorothy M., B.A., Montana State University, Assistant Professor (part time)
Mullenborrow, William, M.S., Columbia University, Assistant Professor
Madden, Ray S., Jr., B.A., Montana State University, Graduate Assistant
Richards, Ronald P., B.A., Montana State University, Assistant
Rollins, Judith B., B.A., Montana State University, Graduate Assistant

SCHOOL OF LAW
Sullivan, Robert E., LL.B., University of Notre Dame, Dean and Professor
Brog, Edwin W., LL.M., Harvard University, Professor
Cromwell, Gardner, S.J.D., University of Michigan, Associate Professor
Edison, Larry M., S.J.D., University of Michigan, Assistant Professor
Houghton, Rodney M., M.A. (L.S.) University of Denver; LL.B., University of San Francisco, Assistant Professor; Law Librarian
Leahy, Charles W., S.J.D., Harvard University, Dean Emeritus; Professor Emeritus
Lohn, Sherman V., LL.M., Harvard University, Assistant Professor (part time)
Martin, David R., S.J.D., Harvard University, Professor
Rusoff, Lester R., LL.M., University of Michigan, Professor
Smith, Russell E., LL.B., Montana State University, Assistant Professor (part time) (Fall Semester)
Stone, Albert W., LL.B., Duke University, Professor
Toelle, J. Howard, LL.M., Harvard University, Professor Emeritus
Anderson, Robert G., B.A., Montana State University, Assistant
Foster, Stephen H., B.S., Montana State College, Assistant

SCHOOL OF PHARMACY
Van Horn, Robert L., Ph.D., State University of Iowa, Dean and Professor
Bryan, Gordon H., Ph.D., University of Maryland, Professor
Caniham, Donald H., Ph.D., University of Wisconsin, Assistant Professor (Winter and Spring Quarters)
Mollett, Charles F., M.S., University of Kansas, Professor Emeritus
Petralito, Frank A., Ph.D., University of Washington, Assistant Professor
Suchy, John F., Ph.D., University of Colorado, Professor Emeritus
Wailes, John L., Ph.D., University of Colorado, Professor

AFFILIATED SCHOOL OF RELIGION
Tatsuya, Toshimi, Th.D., Boston University, Assistant Professor and Director
Anderson, James M.A., Columbia University, Visiting Lecturer (Winter Quarter)

SERVICES
Library
Campbell, Kathleen M.S., University of Denver, Librarian (Professor) (on leave Autumn Quarter)
Brewer, Mabel M. (Mrs.), B.A., Montana State University, Reference Librarian (Assistant Professor)
DeLancey, Mary F. (Mrs.), B.S. in L.S., University of Washington, Catalog Librarian (Assistant Professor)
Midgett, Adeline S. (Mrs.), B.A., Montana State University, Assistant Catalog Librarian (instructor)
Mills, Douglas E., M.A., B.L.S., University of California, Acquisitions Librarian; Head, Technical Processes Department (Assistant Professor)
Nelson, Rita (Mrs.), B.A., Montana State University, Assistant Acquisitions Librarian (Assistant Professor)
Speer, Lucile E., M.A., University of Chicago, Documents Librarian (Professor)
White, M., Catherine, M.A., Montana State University, Assistant Librarian and Reference Librarian Emeritus (Professor Emeritus)

Bureau of Business and Economic Research
Blomgren, Paul B., D.B.A., Indiana University, Director; Dean and Professor, Business Administration
Johnson, Maxine C. (Mrs.), M.A., Montana State University, Assistant Director and Research Associate
Bragg, Patricia P. (Mrs.), Assistant (Winter and Spring Quarters)

Biological Station
Solberg, Richard A., Ph.D., University of California at Los Angeles, Acting Director; Assistant Professor, Botany and Education
Harrill, Leroy D., Ph.D., University of Michigan, Assistant Director; Professor of Botany
Staff of Botany and Zoology Departments

Forest and Conservation Experiment Station
Bolle, Arnold W., D.P.A., Harvard University, Director; Dean and Professor of Forestry
Baldwin, Don, B.S.F., University of Minnesota, Superintendent, Tree Nursery; Supervisor, School Forest
Cooney, Robert F., B.S.F., Montana State University, Research Associate (Courtesy)
Staff of Forestry School
Conrad, Ralph M., B.S., Montana State University, Research Fellow (Winter and Spring Quarters)
Le Nove, Martin D., B.S., Montana State University, Research Fellow (Winter and Spring Quarters)
Moorehouse, James A., B.S.F., Montana State University, Research Fellow (Autumn Quarter)
Reese, Lloyd L., B.S.F., Montana State University, Research Fellow (Autumn and Winter Quarters)

Wildlife Research Unit
Craighead, John J., Ph.D., University of Michigan, Leader; Professor, Forestry and Zoology
Craighead, Frank C., Ph.D., University of Michigan, Research Associate
Cooney, Robert F., B.S.F., Montana State University, Unit staff member; Research Associate, Forest and Conservation Experiment Station (Courtesy)
Hoffmann, Robert S., Ph.D., University of California, Unit Staff member; Associate Professor, Zoology
Pensley, W. Leslie, Ph.D., Utah State University, Lecturer
Sencer, Clyde M., Ph.D., Utah State University, Unit staff member; Assistant Professor, Zoology
Tabor, Richard D., Ph.D., University of California, Unit staff member; Associate Professor, Forestry
White, Philip L., Ph.D., University of Wisconsin, Unit staff member; Professor, Zoology
Woodard, Wesley R., 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 and Public Service
Crowder, Troy F., M.A., State University of Iowa, Director; Assistant to the President (Assistant Professor)
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.

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

SUPPORT AND ENDOWMENT—Federal land grants made available during territorial days were allocated to 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, a local three-member Executive Board for each institution, is a separately chartered and managed trust which receives, manages, and distributes private contributions for University purposes.

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

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

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.

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

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

In law, where education beyond the normal baccalaureate is a prerequisite to professional competence and licensing, advanced professional education is offered.

At Montana State University graduate education, which emphasizes advanced training in the disciplines of research and critical analysis, affords the able student opportunities to advance his knowledge in areas of his interest and competence and extend his unique intellectual capabilities; increase his potential for significant contribution to man's fund of knowledge; and enlarge his capacity for leadership in scientific or professional service.

The graduate program exploits special advantages of location, faculty interests and qualifications, and facilities. Master's degrees are offered in most fields, some for terminal purposes and others to lead to more advanced work. Fifth and sixth year programs not involving a degree are offered in some areas. Doctoral programs are offered in a number of selected disciplines.

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-three 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 264,000 volumes in the library building and all other libraries, receives over 1,850 periodical titles, and has a collection of more than 38,000 maps. The library is also a depository for United States government documents.

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 opportunity for research in many fields of Biology.

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 possibility and social concern. The Bureau's mission 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 QUARTERLY; 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), George M. Blake (Silviculture), Arnold W. Bulle (Directs a Robert F. Coohey (Research Associate), John P. Krier (Wood Utilization), Robert A. McKinsey (Lubrecht Forest Field Assistant), Lawrence C. Merriam (Recreation), Melvin S. Morris (Range Management), Thomas J. Nimlos (Forest Soils), William R. Pierce (Forest Management), Robert W. Steele (Forest Fire Control), Richard D. Tabor (Wildlife 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, 16-U.S.C.-567), and Chapter 141, Laws of Montana of 1937. The Dean of the School of Forestry was designated as director. The Act specifies that the purpose of the Station is:

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

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

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

The station is supported by funds appropriated by the Congress and the State of Montana, income from the sale of forest products, nursery products, grazing, mining and special leases, and by private grants. Some research is concentrated on the 22,000 acre Lubrecht Experimental Forest, and at appropriate locations throughout the State—much of it in cooperation with private, state and federal agencies.

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

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

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

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

Graduate work in wildlife may be taken with the area of concentration either in wildlife management or in wildlife technology. It will 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 or more graduate research fellowships for students working toward the degree of Master of Science in Wildlife Technology, or Master of Science in Forestry with the area of concentration in wildlife management. Candidates for fellowships should submit formal applications with a transcript of college credits and letters of reference by March 1.

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

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

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

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

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

THE DIVISION OF EXTENSION AND PUBLIC SERVICE is the agency through which the University carries on off-campus activities and services. In it are the departments of Home Study, 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 high school principal 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) Completed application and 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 of interest the following month before registration. The following credentials are required: (a) Completed application and 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.

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 as part of the information used to determine non-resident admissions.

New students who do not take the AMERICAN COLLEGE TESTING PROGRAM examination in advance will pay the $4.00 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 Montana 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.

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 used as a basis for such courses are indicated under “High School Preparation.” The “recommended courses” under “High School Preparation” would be helpful, but no loss of time would be involved if the student did not take them in high school.

STUDENTS FROM NON-ENGLISH SPEAKING COUNTRIES who wish to qualify for admission to Montana State University must give evidence of proficiency in English. Formal tests with certification by appropriate American diplomatic officers are now available at some United States diplomatic posts. If such tests are not available, the applicant must arrange for testing, with cost payable in his own currency, by writing:

Testing and Certification
English Language Institute
University of Michigan
Ann Arbor, Michigan, U. S. A.

The student should indicate that he wishes to study at Montana State University, the level (undergraduate or graduate), and the field in which he proposes to study. The English Language Institute will inform the student how to complete arrangements for testing and, following examination, will send the results directly to Montana State University.

NON-RESIDENT ADMISSIONS. Entering freshmen (no previous college work) must be in the upper 50 percent of their high school graduating class or pass an entrance examination which establishes the equivalent level of competency. The American College Testing Program examination will be used for this purpose.

Non-resident transfer students must: (a) meet general admission requirements, (b) be eligible to return to the school from which they are transferring, and (c) have a C average on all college work attempted.

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

ADVANCE REGISTRATION FEE. For all new applicants, except graduate students, the registration fee of $10.00 ($15.00 semester) must accompany the application for admission. If the student registers, this fee is credited to him as pay-in-advance of the required fee for the term for which application was made (see STUDENT FEES), but it is not refundable if the student fails to register for the term indicated for entrance. This fee will be refunded if admission is refused.

ADMISSION BY EXAMINATION. A person not a graduate of an accredited high school may meet regular admission requirements by passing examinations on not less than fifteen units of secondary school work. These examinations must cover the specifically required courses in English and American history and government. Credit is allowed the student for any courses taken in an accredited high school; thus the examinations need only cover those units of work lacking for general admission.

The State Superintendent of Public Instruction issues a high school equivalency certificate under authorization of the State Board of Education on the basis of the General Educational Development Tests to service personnel, honorably discharged veterans and non-veteran adults, provided the applicant meets the following requirements: (1) A minimum standard score of 35 or above on each of the five tests and an average standard score of 45 on all five GED tests for age 18-21 age group. If personnel taking GED tests before age 18 may not apply for an equivalency certificate before they are 19 years of age. (3) Applicant must be a legal resident of Montana, or employed regularly in the state, or assigned by military authority to a station in Montana for a period of 30 days prior to examination. (4) Previous high school enrollment is not required. (5) A knowledge of American government, including the principles of national, state and local government, is required. This requirement may be met by submitting at the time of GED testing an official transcript of credits for an American government course completed either in an accredited high school, through a correspondence school approved by the National Extension Association or the National Home School Council, through the United States Armed Forces Institute, Marine Corps Institute or Coast Guard Institute; or by obtaining a passing score in an American Government examination administered by the University Counseling Service or by an authorized Testing Service Agency in Montana.

Application for the GED tests is made on a special form obtainable from the Registrar. Results of GED tests taken in the service can be accepted only when reported officially by the United States Armed Forces Institute, by official agencies of the Veterans Testing Service of the American Council on Education, or by the manager of a Veterans Administration hospital which has an authorized Educational Therapy Program.

A fee of $4.00 is required and this includes administration of the American Government examination to those who must take it. A fee of $1.00 is charged for administration of
the American government test, only. The same fee applies for a retest on all five parts of the GED and the American Government examination if taken with the five parts of the GED test. A fee of $1.00 per test is charged for a retest on one or more separate tests of the GED battery, and for retest on the American Government examination (except as noted above). Maximum charge for any retest period is $4.00. No fee is charged for issuing high school equivalency certificates.

A waiting period of six months is required before applicants may re-take the American Government examination or any part or all of the test of General Educational Development. A waiting period of twelve months is required for any subsequent retest on the GED tests or the American Government examination.

High School diplomas are not issued on the basis of GED tests, nor are Montana high schools authorized to issue diplomas or certificates on the basis of the General Educational Development Tests.

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

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 and 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 as 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. (This paragraph applies only to Montana residents.)

ADVANCED PLACEMENT with college credit may be granted from high schools offering college level courses. Such courses are to be agreed upon in advance by the high school involved and the University. Suitable means of validation by comprehensive examinations will be determined by the University. Advanced placement examinations of the College Entrance Examination Board may be accepted.

ADMISSION AS SPECIAL STUDENTS. Persons 21 years of age or over who are not graduates of high schools, who cannot offer all the requirements for admission, and who are not candidates for degrees may be permitted as special students upon passing general aptitude and English placement tests and the submission of satisfactory evidence that they are prepared to pursue successfully the courses they desire. Such special students may acquire status as regular students and become candidates for degrees either (a) by taking entrance examinations or (b) by transferring to entrance credit sufficient credits earned in the University to make up all entrance requirements for admission to regular standing. A special student may not register for his seventh quarter of residence, including summer sessions, until all entrance units required for admission to regular standing are made up.

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

REGISTRATION AND GENERAL REGULATIONS

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

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

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

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 approximately B 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 this added credit.

Pre-college courses in English Composition or Mathematics which carry no credit, count toward the maximum load according to the number of class hours per week.

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

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

CHANGES IN PROGRAM OF STUDIES. To drop or add courses, change from credit to listener or vice versa, the student must secure a Drop-Add card from the Registrar's Office and return it to that office after obtaining the required signatures. Withdrawal from a course scheduled for a full quarter is permitted during the first five weeks of instruction with a "W" (withdrawal, no credit) and an "F" is assigned if a student drops a course after the fifth week. An "F" is assigned for dropping a 5-week course after the third week and also for any unofficial withdrawal from a class.

Changes from credit to listener or vice versa are allowed only within these same time limits. Ordinarily no course may be added after the second week.

WITHDRAWALS FROM THE UNIVERSITY. Students who withdraw from the University during a quarter are required to fill out withdrawal forms in the Registrar's
Office. If this is not done the student will not be entitled
to certification of honorable dismissal and "F" grades are
assigned. When withdrawal forms signed by the Dean or
Associate Dean of Students are filed before the end of the
ninth week of a quarter grades of "W" are assigned. After
the ninth week, the student who withdraws receives a grade,
usually incomplete.

REPETITION OF A COURSE. When a course in which
a student has previously received a grade is repeated, the
first grade and any credit received are automatically can­
celled and the credit and the last grade received are re­
corded, 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 ap­
approval of the departments concerned and with the super­
vision of instructors. Such work must be registered for at
the beginning of the quarter. The student cannot obtain a
larger number of credits than he is registered for, but a
smaller number may be completed and credit obtained with
the instructor's approval.

VETERAN REGISTRATION. Veterans' subsistence pay­
ments from the Veterans' Administration are based on the
number of hours of work for which the student is regis­
tered. A minimum of 14 credit hours is required for full
payment under the Korean G. I. Bill.

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

DEGREES AND MAJORS
Bachelor's, Master's, Doctor of 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 deal­
ing 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 and Physical Education
History
History-Political Science
Home Economics
Latin
Law
Bachelor of Science, with majors in:
Health and 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 DEGREES
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 Arts in Radio-Television
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 aver­
age; 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.

The cumulative grade-point average is computed by
dividing total grade points earned to date by the number
of hours undertaken, excluding courses in which grades of
W, P, I, or N (unfinished continuous course) are received.

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 de­
partment chairmen to graduate under a later catalog.
Students changing majors are governed by the catalog in
effect at the time of such change.

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

CREDITS REQUIRED FOR A DEGREE. The work in
Montana State University is measured in terms of credit.
One credit represents three hours of time per week for one
quarter of twelve weeks. The time required for 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, Law and Pharmacy. Candidates for the degree of Bachelor of Science in Forestry must complete 192 credits in addition to regular requirements in Physical Education and ROTC. Candidates for the degree of Bachelor of Laws must complete three years of Law totaling 90 semester hours in addition to the entrance requirements of the School of Law. Candidates for the degree of Bachelor of Science in Pharmacy must complete a four year course. Candidates for the Bachelor of Arts degree in the College of Arts and Sciences must complete 93 credits in that college, except that credits in Art and Drama may be included.

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

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

CREDITS REQUIRED FOR A MAJOR. Students may be required to complete from 45 to 60 credits in the chosen field. For degrees in education, 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. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.

CREDIT LIMITATIONS. Not more than 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 towards 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.

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.

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

CREDIT BY EXAMINATION. Under certain circumstances, a student may challenge and receive credit for a course in which he has not been regularly registered. The challenge system does not apply to law or pre-law courses.

Each school or department determines which, if any, courses within the department may be challenged. The dean of the school or head of the department must approve any arrangements prior to testing for challenge credit.

A student must have a 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 on a grade of B or better earned in an examination which must be at least in part written.

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

A fee of $3.00 per credit hour is charged. Such examinations are available only to regularly enrolled students.

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

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

1. Physical Education, 6 consecutive quarters (6 credits) required of all freshmen and sophomore students unless excused for cause. Discharged veterans and students who are not freshmen or sophomores 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 first six weeks of the fall quarter. It is recommended that the test be completed by all other students by the end of the sophomore year. All 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 by 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 elect to complete the six weeks summer camp in the third year are required to 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 or its equivalent.

Less than six months—None

Six months but less than 12 months—8 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 103 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 without credit before enrolling in English 101. Students who receive "A" in English 102 may substitute English 201 for 103.

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

GROUP REQUIREMENTS. All candidates for the bachelor's degree must present for graduation at least twelve credits from each of the groups I, II, and III following. Credits must be included from at least two sub-groups listed for groups I, II and III. Exceptions to these groups are available only to regularly enrolled students.

INTRODUCTION TO BIOLOGICAL SCIENCES will satisfy group I.
THE GRADUATE SCHOOL

The following advanced degrees are conferred by the University:

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

Master of Science—Major in Botany, Chemistry, Geology, Health & Physical Education, Home Economics, Mathematics, Microbiology, Physics and Zoology.
ADM ISSION 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 undergraduate work. Three 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. 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 a clear promise of satisfactory graduate work, with particular reference to the amount and level of performance in prior academic preparation, possession of a Bachelor's degree from an accredited institution, and satisfactory recommendations.

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

Students admitted to the University on probation are not admitted to the Graduate School. With special permission they may, without receiving graduate credit, take courses to demonstrate capacity for work in a graduate program or to rectify deficiencies in prior preparation.

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 ASSISTANTSHIPS AND FELLOWSHIPS are available in most schools and departments and carry stipends currently ranging from $1,600 to $5,000. They require up to fifteen hours per week of laboratory or teaching assistance, and allow the holder to carry up to twelve credits per quarter. Most fees, including the non-resident fees are remitted. In addition, other fellowships, scholarships, assistantships, and other employment opportunities are available in many departments and schools of the University.

GRADUATE RECORD EXAMINATIONS. The following schools and departments may require entering graduate students to take the Graduate Record Examination not later than the first quarter of graduate residence: Botany & Microbiology, Business Administration, Chemistry, Economics, Education, English, Foreign Languages, Geography, Geology, Health & Physical Education, History, Journalism, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Speech, 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 expected at the end of the fifth or sixth week of the autumn quarter and at the end of the fourth week of the summer session.

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 constitute the usual graduate registration. The maximum credit load which may be applied toward the degree 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.

REGISTRATION. At the time of registration for each quarter the student's program must be submitted to the office of Graduate Dean for review as to 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 major field of specialization. At least 45 credits of graduate work must be presented, and at least 30 of these credits, including credit for the thesis or professional paper, must be in the student's major department or school. With consent of the graduate adviser and of the Dean of the Graduate School, as much as 15 credits of graduate work may be offered in studies outside the major department or school. Proficient use of the English language is required of all candidates for Master's degrees.

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 at least 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 in 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 if such transfer is recommended by the school dean or department chairman. Residence requirements for the Master's degree may not be met by transfer except by students from Montana State College, who may transfer a maximum of 15 credits and 10 weeks of residence, on recommendation of the graduate adviser.

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. No more than fifteen credits of thesis (course No. 699) may be applied toward the Master's degree; lesser limits may be specified by individual departments or schools.

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 approved by the thesis director. If approved by the Dean, this committee draft will then be submitted by the candidate to the examining committee for 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, except for students in music with major in applied music or composition, and for the Master of Education degree.

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. 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.

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 major in which the graduate degree is sought, and approval by a committee composed of two staff members from the major field and one staff member from the School of Education. This committee, appointed by the Dean of the Graduate School, will advise the student in the preparation of the major in Biological Sciences; it will comprise one member from Botany and Microbiology, 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, and with a recommendation that 10 of these 17 credits be in allied fields, 8-9 credits in research and thesis, and final oral examination (written examination may be required).
B. Fifty-four graduate credits including a minimum of 35 in the major field, with a recommendation of 10 in allied fields, 9 credits electives, and final oral and written comprehensive examinations.

C. Sixty credits including a minimum of 35 graduate credits in the major field, with a recommendation of 10 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 10 approved 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 only after one quarter in residence at Montana State University and after the demonstration of satisfactory performance in graduate courses taken at Montana State University.

MAJOR AND MINOR AREAS. A student normally will spend two-thirds of his time in a major area of study. Work on the dissertation will be considered part of the work in the student's major area. The other third may be devoted to work in one or more minor fields. If such work is approved by the major department.

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

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

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

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

DISSERTATION. The candidate must submit a dissertation which demonstrates competency in independent research. The dissertation must be an original contribution to knowledge; it must be presented in acceptable literary form and be 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 include 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.

DISSERTATION. 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.

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 prior to admission to candidacy, and 30 of the last 45 credits must be taken in residence at Montana State University.

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

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

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

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

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

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

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

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

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

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

The candidate will submit three copies of a committee draft of the dissertation and of a dissertation abstract to the Dean of the Graduate School at least three weeks before the date of the final oral examination. The abstract is limited to 600 words. Other dissertation provisions under the Doctor of Philosophy degree above, apply.

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.

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES. This does not include fees for 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 $32.00 to $85.00 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.

NON-RESIDENT STUDENTS are those who have not resided in Montana for at least 12 months immediately preceding 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 1963-64 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.

ALL STUDENTS REGISTERED FOR SEVEN OR MORE CREDITS:

Registration ___________________________ $ 10.00

(Many Honor Scholarships entitle the holder to a waiver of the Registration and Incidental fees)

Incidental (for laboratory supplies in all courses, locker fees, gymnasium towel service, diploma, etc.) ___________________________ 40.00

Building ______________________________________ 5.00

Student M.S.U. Building _______________________ 15.00

Student Union Building _______________________ 4.00

Student Activity _____________________________ 16.00

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.)

Health Service ________________________________ 10.00

(Required of all students enrolled for class work.)

General deposit (charges for loss, breakage, and fines deducted) _____________________________ 10.00

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

Total, first quarter in attendance ___________________________ $110.00

Non-residents (out-of-state) pay, in addition to the fees listed above, per quarter ($90.00 plus $22.50 student M.S.U. Building fee) ___________________________ $112.50

(If registered for less than 7 credits, the Non-resident fee is based on a charge of $12.00 per credit, plus an $11.25 student M.S.U. Building fee.)

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

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

LIMITED REGISTRANTS (students registered for less than seven credits): Registration Fee $10.00; Incidental Fee $20.00; General Deposit $5.00; Building Fee $5.00; Student M.S.U. Building fee $7.50; Student Union Building $2.00; Health Service $10.00; Student Activity $16.00 (optional). Non-residents pay (in addition to other fees stated here) $13.00 per credit, plus $11.25 additional M.S.U. Student Building 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. This applies to regularly registered students only.

GRADUATE STUDENTS pay the same fees as undergraduate students except that graduate students whose programs require expensive equipment, laboratory supplies and additional books may be required to pay a graduate laboratory-incidental fee not to exceed $50.00 per quarter. The student activity fee is optional to students who have a B.S. or B.A. degree.

FEES FOR SPECIAL PURPOSES:

LATE REGISTRATION, payable by students who did not register during the period designated for registration, unless their late registration was due to the fault of the University. The fee is also payable by students who register during the prescribed registration period except for payment of fees or securing a defermnt. If a bank declines payment of a personal student check and returns it to the University, and such action is due to fault of the student, the fee shall be charged from the date of the check tendered by the student to the University. ($5.00 for the first day, plus $2.00 per day thereafter to a maximum of $15.00.)

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

CHANGE OF ENROLLMENT. First week no charge; thereafter $2.00.

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

REMOVAL OF INCOMPLETE. $2.00 per course.

TRANSCRIPT OF RECORD. $1.00 each after the first which is free of charge.

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

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.

—WEEK OF INSTRUCTION—

REGULAR STUDENTS

- First
- Second
- Third

Registration None None None
Incidental 75% 50% 50%
Building 50% 50% 50%
Student M.S.U. Building 100% 50% 50%
Student Union Building None None None
Student Activity 100% 50% 50%
Health Service 100% 50% 50%

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

Non-Resident Tuition ($90.00) 80% 60% 40%

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

REGULAR STUDENTS WHO DROP TO LIMITED REGISTRANTS

- First
- Second
- Third

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

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

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 is 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 must be 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 loans, and undergraduate scholarships.

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

THE COUNSELING CENTER has a general function of giving guidance and assistance to students in the following areas: 1) selection of appropriate area of major study; 2) assessment of abilities and the most efficient, effective application of those abilities to allow for maximum learning in college; 3) diagnoses of difficulties leading to less than maximum performance academically, and 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 standardized tests; 2) act as a consultant to University departments and high schools in the establishment of effective testing programs; 3) assist University personnel and welfare groups in their guidance function; 4) assist advisers, upon request, in working with students.

THE STUDENT HEALTH SERVICE, financed by a health service fee paid by students each quarter, provides medical care for students during the autumn, winter, and spring quarters. The plan was developed through a contractual arrangement between the University and the Western Montana Medical Society. A supplemental, but optional, health care program under Montana Blue Cross is available (see below) to students who wish to extend their protection to periods between quarters and through the summer months.

The services under the Student Health Service Plan are comprehensive and are available at a low cost made possible by group participation and infirmary type facilities. They are available, however, only while the student is enrolled for the Autumn, Winter, and Spring quarters. Preventive care and early treatment of illness are stressed. The cost of an illness that might deprive a student of his education is minimized.

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

The full-time student dispensary is staffed by physicians practicing in Missoula. Laboratory service, x-ray, and limited physical therapy are provided also. 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 may pay for 15-day hospitalization at $15 per day, and $100 additional cost. Extended hospitalization is provided for under the supplementary Blue Cross plan.

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

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

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

Particular services provided by the Health Service, and exclusions, are as specifically mentioned in this 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 OPTIONAL BLUE CROSS SUPPLEMENTAL HEALTH PLAN has been worked out through the Faculty-Student Health Committee to make it possible for students to obtain low-cost year-around health care protection during the four or more years they are undergraduates at Montana State University, and to allow married students health care protection for their dependents. Under this plan which costs the single student $3.00 per quarter for the autumn, winter and spring quarters and $4.50 for the summer, the student may protect himself against the costs of illnesses that exceed 15 days per quarter of hospitalization (the limit under the Student Health Service Plan) and illness and accidents occurring between quarters and during the summer months. The married student, under this optional plan, can gain health care protection for his dependents, who cannot be covered under the University plan, at a cost of $18.00 per quarter for the autumn, winter and spring quarters and for the summer period. Details of the plan are available from the Blue Cross headquarters in Great Falls, from the Dean of Students Office and from the University Health Center.

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 occupations for which University personnel are qualified. The Placement Service also aids University graduates in later years respecting opportunities for which both a degree and experience are required. A registration fee of $5.00 is charged for placement services.

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

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

Freshmen, both men and women, who do not live in their own homes while attending the University are required to live in the residence halls unless excused in special cases by the Dean or Associate Dean of Students. Upper-class 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 and married women 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 Admissions Office, Montana State University. A $90 prepayment on board and room reservation is required with completed 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 4 for winter quarter, and March 5 for spring quarter. 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. Adult counselors cooperate with the students in making living in the halls enjoyable.
and beneficial. A fee of $2 per quarter is assessed the residents in each hall. This fund is expended for social activities which are planned by the group.

Board is provided 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, shall 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, three and four-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. FRATERNITY AND SORORITY HOUSES. Nine national fraternities and six national sororities maintain their own residences under University supervision. Membership in fraternities and sororities is by invitation, but eligibility for pledging is based on satisfactory scholarship accomplishment in high school; and eligibility for initiation is based on satisfactory academic performance in the University. Sorority houses are under the immediate supervision of resident housemothers, who are appointed with the approval of the Associate Dean of Students.

STUDENT ACTIVITIES CENTERS. The Lodge is the extra-curricular center of student life. It is the home of student social and governmental activities. Every student registered at Montana State University is a member of this program and entitled to use the building. Here students may hold meetings, have parties, meet friends, and participate in activities. Facilities in the Lodge include a student organizations center, conference rooms, social center, reading room, coffee shop, lounge, recreation room, and food service. Bowling alleys and a swimming pool are also maintained by the Lodge management.

FINANCIAL AIDS. National Defense loans, United Student Aid, and loans from University sources are available to qualified students in need of financial aid to complete their college work. Information about these may be obtained from the Office of the Dean of Students.

Many students meet costs of attending the University by part-time work and scholarships. For freshmen to try to earn all expenses is inadvisable. Students should plan to use their available funds 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. Application 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.

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, each generation of students feels it has a responsible stewardship and desires to leave for future generations of students a University even better in fame and reputation than the one they have known.

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

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

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

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

I. USE OF MOTOR VEHICLES of any form on the campus or in the city or county of Missoula for the 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. All other undergraduate students who cannot show an index of 2.0 (C average) on all credits attempted.

C. Minors, who are otherwise qualified, who do not present written permission of their parents for the use of a motor vehicle.

Students 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 may result in 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 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 intent to marry must be filed with the Registrar at least 5 days before the marriage. All students on matriculation must indicate on the entrance blank whether married or single.

VII. FALSIFICATION OR WILLFUL SUPPRESSION of any information called for on any university form will be grounds for cancellation of registration.

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

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

ABSENCES FROM CLASS

DUE TO ILLNESS. Students who are confined to the infirmary or who report to the Health Service because they have received 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 fill out a leave of absence card obtained from either the Dean of Students office or the person in charge of the activity. This card must be presented to the student’s instructors for their signatures before being returned to the Dean of Students office.

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

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

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

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 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. Mov- able 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 concerts. Two large lobbies serve for displays and smaller meetings. It is used for convocation, 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. Aid to students participating in athletics may be given only in conformity with the regulations of the National Collegiate Athletic Association.

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, four days a week. 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.

The Montana Masquers is the University dramatics organization, open to students who have distinguished themselves in dramatics in any capacity such as acting, stage managing, costuming, designing, etc. A series of plays is given throughout the year in Missoula, and occasionally a tour is made of the state.

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

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

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

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

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

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

The “M” Club (Women) is an athletic honor society for women. Alpha Lambda Delta is a national honorary for freshman women who have maintained high scholarship.

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

The Association of United States Army 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 consideration of leadership qualities, military proficiency and academic ability.

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

The Kadettes is a local women’s honor society that serves the same purpose for the Army as the Angel Flight does for the Air Force.

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

COLLEGE OF ARTS AND SCIENCES

Biological Sciences
Botany and Microbiology
Chemistry
Economics
English
Foreign Languages
French
German
Greek (no major)
Italian (no major)
Latin
Russian (no major)
Spanish
Geography
Geology
Health and Physical Education
History
Home Economics

Graduate School

SCHOOL OF BUSINESS ADMINISTRATION

Accounting
Banking and Finance
Business Teaching
General Business
Industrial Organization and Management

SCHOOL OF EDUCATION

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

THE SCHOOL OF FINE ARTS

Art
Drama
Music

Music Education
Elementary Teacher Training
Secondary Teacher Training
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
Community Journalism
Magazines

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 Graduate School. Courses under the last heading may be taken by graduate students only.

Thesis and independent studies courses may be so listed as to provide for indication of the subject matter on the permanent record.

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

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.

IQ, 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.

e/y—Course offered even numbered years only.
o/y—Course offered odd numbered years only.

=—Equal, or equivalent course.
c/i—Consent of instructor required.

Prereq—Prerequisite, or what must be taken before taking this course. Unless otherwise stated, numbers appearing after "Prereq" are courses within the particular school or department.
ANTHROPOLOGY, ART—27

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, Social Welfare 111 or 131, 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.

252 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

351 PREHISTORIC CULTURES 1Q W 3 e/y Prereq 152 or 153 or =. Prehistoric man and his cultures, up to the Neolithic, in Europe and Near East. Gr.

352 ARCHEOLOGY OF MONTANA 1Q S 3 e/y Prereq 152 or 153 or =. The origins and distribution of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field trips in which actual archaeological sites will be excavated, and techniques demonstrated.

353 ARCHAEOLOGICAL SURVEY Any quarter in which field parties are organized. Art 123, 124, 125, 126, 127, 128 Prereq 152 or 153 or =. A field course in Montana Archaeology.

354 OLD WORLD ARCHAEOLOGY 1Q S 4 Su 3 o/y Prereq 152 or 153 or =. The development of civilization from the Neolithic Age to the dawn of written history.

355 ARCHAEOLOGY 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.

356 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.

357 INDIANS OF THE SOUTHWESTERN UNITED STATES 1Q S o/y Prereq 152 or =. The development of Indian cultures in southwestern United States from the most ancient evidences of man to the present.

361 INDIANS OF NORTH AMERICA 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 aboriginal cultures of Africa.

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 152 or 153 or 16 credits in Social Sciences, 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.

375 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. Some significant theories and the methodological assumptions of selected schools of linguistic theory.

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 2 Prereq 16 credits in Anthropology. Enter any quarter. Selected problems in Anthropology.

480 LINGUISTIC METHODS 1Q S 3 e/y Prereq 152 or 153 or =, and Gen. 360 or Sph. 119. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant.

FOR GRADUATES

551 RESEARCH a/q V.

899 THESIS a/q V R-15.

ART
is man's visual means of expression in two and three dimensional form. Creative visual expression has existed since the beginning of man. An art student is concerned with the study of art history, the acquisition of skills to suit his personal needs for expression, and the development of judgment and taste. A student generally places major emphasis in painting, design, ceramics, or sculpture, although he is expected to work in all areas of art. Personal experience is the basis and point of departure for effective, significant expression. A broad general educational background outside of the art field enlarges the scope of personal experience and awareness of one's environment, making possible a greater variety of art productivity. Those interested in study and development beyond the Bachelor of Arts degree may continue in graduate work leading to a Master of Arts degree. Graduate study requires evidence of a high level of proficiency in both studio and academic work prior to acceptance. Specific requirements may be obtained direct from the Art Department.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for graduation with a major in Art. 55 or more credits including Art 123 (3 cr.), 125-126-231-232-233-118, 130, 140, 151, and 152, plus 12 credits from minor 207 is taken instead of 450. (The foreign language requirement listed earlier in the catalog must be satisfied.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ART. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for graduation with a major in Art. 55 or more credits including Art 123 (3 cr.), 125-126-231-232-233-118, 130, 140, 151, and 152, plus 12 credits from minor 207 is taken instead of 450. (The foreign language requirement listed earlier in the catalog must be satisfied.

FOR UNDERGRADUATES
For explanation see Index under "Symbols"

125 DRAWING 3Q A W S 4, Su 2 or 4, R-12. V when taught by extension. Objective and expressive drawing, using varied methods and subject matter.
201 COLOR AND DESIGN 3Q A W 3, Su 2 or 4. Creative design and use of color, theories, methods and art problems.

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

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

123-124 PRINTING ARTS 2 Q A W 2 Prereq 6 credits of 123. Enter either quarter. Techniques of various graphic media: (123) etching, woodcut; (124) lithography, silk screen.

125 SCULPTURE 2Q W S 3 R-6 Prereq 8 credits of 123. Methods and techniques.

130 WATERCOLOR 1Q S S 3, Su 2 or 4 Prereq 5 credits of 123. Offered by extension for 1 credit. Watercolor techniques and expressive use of subject matter.


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

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

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

FOR UNDERGRADUATES AND GRADUATES


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

325 ADVANCED DESIGN 3Q A W S V 1-4 R-12 Prereq 125-126. Advanced problems of a specialized nature.

330 ADVANCED CERAMICS 3Q A W S V 1-6 R-12 Pre req 4 cr of 129. Advanced problems in ceramic techniques.


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

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

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

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

373 HISTORY OF AMERICAN PAINTING 1Q S 3 Pre req c/1. American painting and artistic theories from the Columbus Age to the present day.

450 SEMINAR 1Q a/q V 1-3 R-6 Pre req c/1. 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 Pre req c/1. Specialized advanced work in three-dimensional media.

540 SPECIAL PROBLEMS 3Q A W S V R-15 Pre req c/1. Specialized advanced work in two-dimensional media.

550 SPECIAL PROBLEMS 3Q A W S V R-15 Pre req c/1. 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. In most cases positions in the field require a master's or doctor's degree. For most teaching positions in colleges and universities the doctorate is essential.

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

**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 **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 wish 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
FOR UNDERGRADUATES

For explanation see Index under “Symbols”

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

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

120-131 PHARMACEUTICAL BOTANY 2Q W S 3 (2-3). Anatomical and physiological characteristics of plants upon which growth and development are based, with emphasis on drugs contained in nature.

225 PLANT PHYSIOLOGY 1Q A W S 5 (3-4) Prereq 122 and Chemistry 121 or 122. The interrelationships of the processes of plants under controlled conditions in the laboratory and greenhouse.

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

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

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

349 PROBLEMS IN MORPHOLOGY IQ a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 343 or 345 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant morphology not taken up in regular courses.

359 PROBLEMS IN PLANT ECOLOGY IQ a/q V 2-6 (0-3/cr) R-6 Prereq 250 or 335, and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant ecology not taken up in regular courses.

369 PROBLEMS IN TAXONOMY IQ a/q V 2-6 R-6 Prereq 365 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant taxonomy not taken up in regular courses.

379 PROBLEMS IN MYCOLOGY AND PHYTOPATHOLOGY IQ a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 370 or 375, and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of plant mycology and plant pathology not taken up in regular courses.

FOR UNDERGRADUATES AND GRADUATES

325 PLANT BIOCHEMISTRY 1Q A 5 (3-4) Prereq 225, Chem 263, and Phys 113 or 223. The chemical aspects of plant physiology; photosynthesis and respiration, enzymes, photosynthetic and protein metabolism; hormones, by-products of plant metabolism.

337 PLANT VIRUSES 1Q V S 3 (1-4) Prereq 122 or Microbiology 206, Chem 123; Chem 260 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.

343 MICROTECHNIQUE 1Q S V 2-6 (0-3/cr) R-3 Prereq 15 credits in Botany. Methods of preparing microscopic slides, with emphasis on the paraffin method.

353 PLANT ANATOMY 1Q A 5 (0-16) o/y Prereq 121, 122, 123, or c. The origin of organs and tissues and the anatomy of the vascular plants.

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

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

334 MORPHOLOGY OF THE BRYOPHYTES AND PTERIDOPHYTES 1Q W o/y 4 (0-8) Prereq 121, 122, 123, or c. The morphology and life histories of the Bryophytes and Pteridophytes.

345 MORPHOLOGY OF THE SPERMATOPHYTES 1Q S o/y 4 (0-8) Prereq 121-122-123-125. The morphology and life histories of the gymnosperms and angiosperms.

342 MORPHOLOGY OF THE PLANT—BIOLOGY 1Q S 5 (3-4) Prereq 123-225, or c. Plants and plant communities in relation to their physical and biotrematic environment.

361 FRESH WATER ALGAE 1Q S 3 (0-7) Only given at the Biological Station. Prereq 121, 122, 123, or c. Identification, classification, distribution, life histories and limnological relationships of the algae of the Northern Rocky Mountains.

374 BRYOPHYTES 1Q S 3 (0-7) Only given at the Biological Station. Prereq 121, 122, 123, or c. The taxonomy, morphology and ecology of the Bryophytes of the Northern Rocky Mountains.

365 GENERAL SYSTEMATIC BOTANY 1Q S 5 (0-8). Given in summer at Biological Station for 3 credits. Prereq 121, 122, 123, or c. 365 recommended: Identification, classification, and ecological relationships of grasses, sedges, and rushes.

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

370 FOREST PATHOLOGY 1Q S 4 (2-4) Prereq 250 or 355, and For 230-291. The agencies of disease and decay of trees and structural timbers.

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

369 GENETICS 1Q S 5 (3-4) Prereq Zool 201 or Bot 225. The mechanics of heredity, involving consideration of Mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not allowed for this course and Zool 365.

358 EVOLUTION 1Q A 3 (3-6) o/y Prereq 121-122-123, and 358 or concurrent registration: Zool 101 or 104-105, and 106. The theories of evolution from the historical point of view; the nature of the evolutionary processes. The evidence for evolution, and the factors of evolution. Credit not allowed for this course and Zool 365.

346 CYTOTAXONOMY 1Q S 5 (3-5) Prereq 337, 355, 356, and 365. Modern concepts in taxonomy with emphasis upon cytological techniques used in chromosome studies related to problems of taxonomy.

350 PHYTOGEOGRAPHY 1Q A 4 (4-0) Prereq 355, 365, 366, and Geol. 101-102 or 110. Vegetation types of the world and their history in North America.

491 SEMINAR IN BOTANY 1Q S 2-6. Special problems in biology. Offered at the Biological Station.

FOR GRADUATES

502 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 1Q S 3 (3-0) Prereq 223 or graduate standing in a biological science. Credit not allowed for this course and Zool 502.

521 RADIATION-BIOLOGY 3 Q A W S 3 (2-3), Su 5 (6-15) Prereq Bachelor's degree: major preparation in Physics, Chemistry, or Biology, with at least one year of college work in each of the other two fields. Introductory nuclear physics and the influence of nuclear radiation on biological systems. Offered at the Biological Station.

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

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

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

551 GENERAL ECOLOGY 1Q S Su 6 (6-15) Prereq Bachelor's degree: major preparation in Botany, Biology, or Zoology. Comprehensive treatment of population, community, succession, stratification, periodicity and energy relationships; introduction to population problems. Offered at the Biological Station.

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

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

579 ADVANCED MYCOLOGY AND PATHOLOGY a/q V 2-6 (0-3/cr.) Prereq c/l.

600 ADVANCED BOTANICAL PROBLEMS a/q V (0-3/cr) Prereq 15 credits in Botany. Original investigations on a research problem under the guidance of a staff member.

699 THESIS a/q V R-15

BUSINESS ADMINISTRATION

The School of Business Administration of Montana State University is fully accredited by the American Association of Collegiate Schools of Business and the program of studies is based on two primary divisions: (1) The pre-business administration, and (2) The School of Business Administration. At the undergraduate level the aim of the School of Business Administration is 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 through course work and the teaching methods employed 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, insurance and secretarial 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 which are involved in the production and distribution of goods, the administration of the financial affairs of business activity, and the rendering of business services. For example, graduates secure positions in banks, investment houses, finance companies, insurance and credit agencies, certified public accounting firms, government, and industrial, wholesaling or retailing establishments. Training is available for those who desire to teach business subjects in secondary 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 develop research techniques by carrying on a research project and in obtaining 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 pre-business course work for courses to be taken subsequently in the School of Business Administration.

The general university and pre-business administration requirements include: Health and Physical Education 101-102-103, 201-202-203, ROTC (men); Eng 111; Group I including Mathematics 112; requirements from Group II including Economics 201-202-203; requirements from Group III; Speech 111; Business Administration 180 or have a typing proficiency of 25 words per minute as determined by a test administered by the School of Business Administration; Business Administration 201-202, and 250.

ADMISSION AND GRADE POINT REQUIREMENTS. Admission to the School of Business Administration requires junior standing, completion of the pre-business requirements, and a minimum of a "C" average on all credits attempted. To continue work in the School of Business Administration the student must maintain at least a "C" average in all course work in Business Administration and for course work in the area of concentration selected.

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:

- Complete the general university and pre-business administration requirements.
- Complete core courses: Economics 301, Bus. Ad. 322, 340, 357-358, 360 and 446.
- Select before the beginning of the third quarter of the junior year an area of concentration from the following: Accounting, Business Education, Finance, General Business, Management—Option A or Option B, Marketing, 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 by filing the completed form in that office.
- Complete the course work required in the selected area of concentration as indicated by the appropriate curriculum of the area of concentration below.
- Offer not less than a total of 75 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credit requirement are: all courses offered by the Department of Economics; English 304; History 333, 344; courses listed in the curricula of the areas of concentration.
- 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.
- Offer 180 credits plus 6 credits in Health and Physical Education.
- Attend a graduation profession and take the following additional courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 303-304</td>
<td>Cost Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 401-402</td>
<td>Income Tax</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 409</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 412</td>
<td>Accounting Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 305</td>
<td>Governmental Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 403-404</td>
<td>Auditing</td>
<td>8</td>
</tr>
<tr>
<td>Bus. Ad. 410</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 414</td>
<td>Data Processing</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 418</td>
<td>C.P.A. Review</td>
<td>5</td>
</tr>
</tbody>
</table>

BUSINESS EDUCATION

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 183</td>
<td>Advanced Typewriting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 184</td>
<td>Business Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 192</td>
<td>Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 194</td>
<td>Records Management</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 304</td>
<td>Gregg Shorthand Theory for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 380</td>
<td>Methods of Teaching Shorthand, Typewriting and Transcription</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 381</td>
<td>Methods of Teaching Bookkeeping and Basic Business</td>
<td>2</td>
</tr>
</tbody>
</table>

FINANCE

This program is designed to give a broad understanding of the role of finance in society 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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 320</td>
<td>Principles of Insurance</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 406</td>
<td>Administrative Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 420</td>
<td>Investments</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 421</td>
<td>Federal Income Tax</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 430</td>
<td>Banking and Finance Seminar</td>
<td>2</td>
</tr>
<tr>
<td>Econ. 303</td>
<td>Public Finance</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 311</td>
<td>Intermediate Economic Analysis</td>
<td>3</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:

- Bus. Ad. 408—Administrative Accounting
- Bus. Ad. 347—Managerial Economics
- Bus. Ad. 363—Advertising Principles
- or Bus. Ad. 304—Marketing Management
- Bus. Ad. 421—Business Cycles and Business Forecasting
- Bus. Ad. 444—Regulation of Industry

MANAGEMENT

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

- Option A. Industrial Organization and Management (Production)
- Option B. Personnel Management and Human Relations

MARKETING

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

SECRETARIAL SCIENCE

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

- Bus. Ad. 183—Adv. Typewriting
- Bus. Ad. 184-185-186—Stenography
- Bus. Ad. 187-188—Advanced Stenography
- Bus. Ad. 198-199—Advanced General Office Work
- Bus. Ad. 192—Office Machines Practice
- Bus. Ad. 194—Records Management
- Bus. Ad. 352—Advanced Secretarial Practice
- English 394—Problems in Composition

SECRETARIAL SCIENCE

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

- Bus. Ad. 183—Advanced Typewriting
- Bus. Ad. 184—Stenography
- Bus. Ad. 187—Advanced Stenography
- Bus. Ad. 199—Advanced Shorthand and Transcription
- Bus. Ad. 192—Office Machines Practice
- Bus. Ad. 194—Records Management
- Bus. Ad. 352—Advanced Secretarial Practice
- English 394—Problems in Composition

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 250, 322, 340, 360, plus 25 additional credits as electives within the School of Business Administration (other than Business Administration 357-358-359). The student must earn at least 114 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 receive 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.

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 listed above; the business administration core courses listed above; the foreign language requirement; and, in addition, the following upper core program courses required by the School:

In addition to the general requirements of the Graduate School, the candidate's preparatory work must include Econ 201-202-203, 301; Bus. Ad. 201-202, 250, 340 and 360; or equivalent. The student must complete a total of 30 credits in upper division course work in order to be awarded the B.A. degree.

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, 301; Bus. Ad. 201-202, 250, 340 and 360; or equivalent. The student must complete a total of 30 credits in upper division course work in order to be awarded the M.S. degree in Business Administration.

ACCUSSION

FOR UNDERGRADUATES

For explanation see Index under "Symbols" 301-202 ELEMENTARY ACCOUNTING 2Q A W S Su 4. The basic principles underlying accounting procedures: including the terminology of accountkeeping, simple business transactions, accounting 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. 365, 366, 367, 401, 402 and 490 are available for graduate credit to non-accounting majors only.

303-304 COST ACCOUNTING 2Q 303 A W 3, 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 managerial activities, which includes reports to management, budget preparation, break-even analysis, and cost-volume-profit relationship.

306-307 INTERMEDIATE ACCOUNTING 2 Q 306 A S 4, 307 A W 4 Prereq 202. The fundamental accounting principles of valuation as applied to the balance sheet, and income determination as related to the operating statement. Problems involving the application of the above theories.

401-402 INCOME TAX 2 Q 401 A W 3, 402 S 3 Prereq 201. The tax law as it relates to the filing of the federal income tax return (1040). The tax statutes as applied to individual problems which emphasize the filing of individual returns; (402) corporate and partnership returns, and the problems of federal estate and gift taxes. Federal and state tax research.

403-404 AUDITING 2Q A W 4 Prereq 307. The general scope and nature of auditing; encompassing generally accepted auditing standards and its purpose as an analysis of internal control. Procedures for verifying the reliability of balance sheets and operating statements; preparation of audit working papers, reports, and submission of the auditor's opinion.

408 ADMINISTRATIVE ACCOUNTING 1Q A W S 4, 307 S 3 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 the mechanical techniques. Interpretation of financial statements, internal control and its significance, budgeting, and the financial statements of products and a sole, and accounting reports to administrators. Credit not allowed for this course 306-307.


412 ACCOUNTING THEORY 1Q W 3 Prereq 307. A critical examination of accountancy postulates and principles underlying current accounting procedures with emphasis on the problem of valuation as it relates to the measurement of periodic income. Reading of current accounting literature. Credit not allowed for this course.

414 DATA PROCESSING 1Q S 4 Prereq 202. Programming and use of data processing equipment. The use of basic analytical tools in programming machines and designing systems and procedures. Use of data processing equipment in business decision making.

417 ACCOUNTING INTERNSHIP 1Q W 3 Prereq c/l. Students are placed with public accounting firms to receive training during the winter quarter. Written reports are required.

418 C.P.A. REVIEW 1Q S 5 Prereq 204, 404, 410. Primarily for students preparing to take the examinations for the certificate
of Certified Public Accountant. Comprehensive review of questions and problems in practice, theory, and auditing given by the American Institute of Certified Public Accountants.

419 ACCOUNTING SEMINAR 1Q a/q 2.

FOR GRADUATES

502 CONTROLLERSHIP PRINCIPLES AND PRACTICE 1Q A 3 Prereq 410 and approval of the graduate committee. Analysis of the controllership function and organization of the controller’s department. The controller’s place in the management team and the role he plays in the solution of management problems.

503 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 1Q V 3 Prereq 410 and approval of the graduate committee. Modern accounting theory and practice. The development of accounting thought since 1900 and the social significance.

504 THEORY OF INCOME DETERMINATION 1Q S 3 Prereq 410 and approval of the graduate committee. The underlying the accounting calculation and disclosure of periodic net income. Economic, legal and tax concepts of income.

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

699 THESIS a/q V R-9.

BUSINESS LAW

FOR UNDERGRADUATES

330 CONCENTRATED ANALYSIS OF COVERS; INSURANCE MANAGEMENT; PROBLEMS FACING SPECIFIC TYPES OF BUSINESS AND PERSONAL INSURANCE PROBLEMS. Statistical and legal perspectives for planning and analyzing underwriting, claims procedures, and loss payment. Emphasis on the importance of insurance products in the management of risk.

331 LIFE AND HEALTH INSURANCE 1Q A W S 3 Prereq 330. Analysis of individual and group contracts; human life values and insurance needs; establishing values, and contracts; the liability peril; automobile insurance coverages; insurance laws; claims procedure; government regulation.

332 PROPERTY AND CASUALTY INSURANCE 1Q A W S 3 Prereq 330. Concentrated analysis of coverage; insurance management principles; problems facing specific types of business and personal risks; multiple-line policies; legal interpretation and analysis; practical case problems; liability and direct loss situations.

420 INVESTMENTS 1Q S 4 Prereq 301. Investment principles and their application in formulating investment policies for individuals and insurance companies. Current analytical techniques used in determining the value of securities.

421 BUSINESS CYCLES AND BUSINESS FORECASTING 2Q (421) A 4 S 3 (422) W 2 S 3 Prereq 301. History, measurement, and analysis of fluctuations in business activity; factors influencing employment, production, prices, and national income; problems in interpretation and forecasting; consideration of policies intended to stabilize business conditions.

423 MORTGAGE BANKING 1Q W 2 Prereq 324. The organization and operation of credit and administrative agencies, private and governmental, in the urban and rural mortgage banking fields.

424 MONEY MARKETS AND FISCAL POLICY 1Q S 4 Prereq 423. The policy and planning problems of short- and long-term money markets. Analysis of the influence of the money supply, bank reserves, institutional portfolio policies, treasury cash balances and refunding operations, the influence of changing needs and instruments of corporate finance. Designed to develop in the student an ability to analyze and appraise current money market developments.

439 BANKING AND FINANCE SEMINAR 1Q a/q 2.

FOR GRADUATES

520 THEORY AND MANAGEMENT OF CENTRAL BANKING 1Q A 3. The functions and operation of central banking in the current environment. The influences of central banking operations on conditions in the money market and on the general level of business activity.

521 PROBLEMS OF CORPORATE FINANCIAL MANAGEMENT 1Q W 3 Prereq 322. Problems associated with corporate financing of current and long term operations. The nature of securities and money markets and their relationship to corporate financing. Federal legislation affecting the flow of funds to business enterprises. Case problems and readings in current literature will be used extensively.

522 SECURITY ANALYSIS 1Q S 3 Prereq 521. Principles and techniques. Technical preparation for security analysis work with financial organizations (banks, insurance companies, trust institutions, investment companies, investment banking firms, security dealers and brokers, and others).

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

699 THESIS a/q V R-9.

MANAGEMENT

FOR UNDERGRADUATES

341 INDUSTRIAL PURCHASING AND TRAFFIC MANAGEMENT 1Q W 4 Prereq 340, 360. Current practice and problems in the industrial production areas of: materials procurement, inventory control, warehousing, materials handling.

344 AMERICAN INDUSTRIES 1Q S 4 Prereq 340, 360. Economic problems and technological processes of selected manufacturing and communications industries. Location factors, company structures, mergers and competition, and national policy relating to oligopoly.

FOR UNDERGRADUATES AND GRADUATES

346 INDUSTRIAL ORGANIZATION AND MANAGEMENT 1Q A W S 4 Prereq Econ 301. Basic production management problems and practices: organization and administration; plant facilities, location and layout; production control; work simplification and personnel.

347 MANAGERIAL ECONOMICS 1Q A 4 Prereq 340. The application of economic analysis to the operation of a business. Demand and costs analysis; production planning; pricing; multi-line production and marketing problems.

441-442 PERSONNEL MANAGEMENT 1Q 2Q 441 A W 4, S 3, 442 S Prereq 340 and Psych 110. (441) Personnel function in the industrial organization; selection, employment and executive development, job evaluation, human relations. (442) Analyzing selected problems such as: job evaluation, executive and supervisory appraisals and development, work simplification and labor management relations.

444 REGULATION OF INDUSTRY 1Q A W 4, S 3 Prereq 340, 360, and Econ 301. Economic concentration and maintaining competition. Changing relationships between government and industry emphasizing regulatory legislation, administrative agencies, national policies and social controls.

446 ADMINISTRATION AND BUSINESS POLICIES 1Q A W S 4 Prereq 340, 360, and Econ 301. Top-management oriented to develop an integrated view of the organic specialization. Practice in analytical tools involved in problem solving and in coordination.

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

FOR GRADUATES

540 SEMINAR IN PRODUCTION MANAGEMENT 1Q A 3. Analysis of selected topics involving developing trends in production technology and management practice.

543 SEMINAR IN MANAGEMENT POLICIES AND PERSONNEL RELATIONS 1Q W S 3. Policy formulation, organizational problems; the human relations and personnel approach.

549 GENERAL ADMINISTRATIVE MANAGEMENT PROBLEMS 1Q S 3. Theory and practice in general management; objectives, planning, policy formulation, organization structuring and executive selection and development.

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

699 THESIS a/q V R-9.
MARKETING
FOR UNDERGRADUATES
363 SALESMANSHIP 1 Q A W S Su 2. The fundamentals and techniques of the selling process, including the pre-approach, approach, demonstration, handling of objections and the close.

FOR UNDERGRADUATES AND GRADUATES
360 MARKETING 1Q A W S Su 4 Prereq Econ 203. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation.
361 INDUSTRIAL MARKETING 1Q W 4 Prereq 360. Economic factors affecting marketing policy are analyzed. Deals with buying practices, channels of distribution, industrial distributors, price, markets, and research policies.
362 RETAILING 1Q A W 4 Prereq 360. Types of retail stores, location, building, pricing, display, store selling, advertising and cost control.
363 ADVERTISING 1Q A S 4, Su 3 Prereq 360. The principles and techniques of advertising examined from the viewpoint of the businessman.
364 SALES MANAGEMENT 1Q W 4 Prereq 360. Management of the sales force, planning, coordination, and control of the marketing program.
400 FOREIGN TRADE 1Q S 4 Prereq 360 (Prereq waived for seniors majoring in Political Science). Theories, principles and methods of international trade.
401 MARKETING PROBLEMS 1Q A 4 Prereq 360 and 361 or 362. Case studies of problems facing the marketing executive.
402 PRICING POLICIES AND PRACTICES 1Q S 4 Prereq 401. The roles of pricing strategy and competition in marketing decision-making. Administrative marketing problems related to elasticity of demand, cost curves, marginal analysis and competitive price behavior. Marketing policies and strategies as they relate to competition.
404 ADVANCED RETAILING 1Q S 4 Prereq 362. Management problems of large and small retailers. Emphasis on individual student projects, and research.
406 MARKET RESEARCH 1Q A S 3 Prereq 250, 360. Research techniques and methods including statistical analysis, quantitative experimentation, and simulation. Survey of current research practices in marketing and a partial bibliography in class field project.
408 MARKET ANALYSIS AND PLANNING 1Q W 2 Prereq 250, 360. Utilization of statistical and accounting techniques in analyzing past and planning future marketing performance.
479 MARKETING SEMINAR 1Q a/q 2 R-6 Prereq 15 credits in marketing and c/l.

FOR GRADUATES
500 MARKETING THEORY 1Q A 3. A critical analysis and synthesis of marketing literature and marketing from the viewpoint of other disciplines.
501 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.
509 RESEARCH 1Q a/q V R-6. Special research problems.
609 THESIS a/q V R-9.

SECRETARIAL AND BUSINESS EDUCATION
Not more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189, and 190-191 may be applied toward graduation by students not majoring in Business Administration, Secretarial-Home Arts, or earning a teaching major or minor in Business Administration. To register for any course in shorthand or stenography a student must be concurrently registered in English 101, or have completed 101 or its equivalent.

FOR UNDERGRADUATES
180-181-182 ELEMENTARY TYPWAREING 3 Q A W S 2 Prereq Placements for 181-182. Development of basic skills. With 1 H.S. entrance unit, no credit in 180; 2 units, no credit 180, 181.
183 ADVANCED TYPWAREING 1Q A W S 2 Prereq 182 or placement. Application of basic skills to production jobs.
184-185-186 STENOGRAPHY 3 Q 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 3 Q A W S 5 Prereq 187: 186 or placement; 188: 187 and 190 or placement; 189: 188 and 191 or placement. Review of general stenography, minutes, court tests, typewriting, and stenography. Concurrent enrollment in 190-191.
190-191 ADVANCED SHORTHAND TRANSCRIPTION 2Q W S 1 Prereq 186 or placement. Concurrent enrollment in 197-198 re- quired.
192 OFFICE MACHINES PRACTICE 1Q A W S 2. Calculators and Adding.
193 BEGINNING SECRETARIAL PRACTICE 1Q A W S 2 Prereq 182. Duplicating, dictating and transcribing machines.
194 RECORDS MANAGEMENT 1Q A S 2 Prereq 182 and c/l. Alphabetic, Numeric, Automatic, Geographic, Subject, Decimal, and Soundex filing.

FOR UNDERGRADUATES AND GRADUATES
360 METHODS OF TEACHING SHORTHAND, TYPWRITING, AND TRANSCRIPTION 1Q A 2 Prereq 183, 188 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.
361 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.
362 ADVANCED SECRETARIAL PRACTICE 1Q S. Alternate years. 5 Prereq 183, 187, 190, 192, 193, Eng. 304, or c/l. Practical application to typical secretarial activities. Required for secretarial majors.
363 OFFICE MANAGEMENT 1Q W Su 3. Principles of scientific office management.
364 GREGG SHORTHAND THEORY FOR TEACHERS 1Q W Su 3 Prereq 180 or teaching experience and c/l. Required of teaching majors and minors in Bus. Ad.

FOR GRADUATES
380 IMPROVEMENT OF INSTRUCTION IN OFFICE MACHINES PRACTICE 1Q Su 3 Prereq 183 or business teaching experience, and c/l. Lecture, methods, and rotation-plan techniques in teaching newest office machines.
381 IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE 1Q Su 2 Prereq 183 or business teaching experience, and c/l. Lecture, methods, and rotation-plan techniques in teaching secretarial machines. Duplication processes in producing the high school newspaper.
382 PROBLEMS IN TEACHING BOOKKEEPING 1Q Su 3 Prereq 201 or bookkeeping teaching experience and c/l. Developing a course of study using the latest methods and materials.
383 PROBLEMS IN TEACHING GREGG SHORTHAND 1Q Su 3 Prereq 186 or shorthand teaching experience and c/l. Developing a course of study using the latest methods and materials.
384 PROBLEMS IN TEACHING TYPWRITING 1Q Su 3 Prereq 183 or typewriting teaching experience and c/l. Developing a course of study using the latest methods and materials.
505 UNIT COURSES IN BUSINESS EDUCATION 1Q Su V R-16. Prereq major or minor in Bus. Ad., or business teaching experience and c/l. Several units may be taken in one or more semesters. Each unit will carry a specific designation of topic covered.
599 RESEARCH 1Q a/q V R-6. Special research problems.
699 THESIS a/q V R-9.

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
333 SAMPLING AND STATISTICAL CONTROL 1Q W 3 Prereq 256 or Math 125. Applications of sampling to business, statistical control of product quality, industrial processes, and inventories.
355 TIME SERIES ANALYSIS 1Q S 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.
450 BUSINESS STATISTICS SEMINAR a/q V R-6 Prereq 6 credits of statistics in 200 courses and c/l. 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 governmental agencies, with hospitals, and with testing agencies. Good students are encouraged to continue their studies toward the M.S. or Ph.D. degrees in chemistry and are aided in obtaining graduate teaching assistantships or fellowships to help them finance these goals.

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN CHEMISTRY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Chemistry: Chemistry 121-122-123, 245, 246, 261-262-263, 344, 353, 371-372-373, 374-376-377, 431-432-433, and 5 credits selected from Chemistry 434, 436, 437, 438, 433, 355, 356, 404, 494, 496, 474, 475, 476, 481, 482, 490. At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or five quarters of German. College Physics and Mathematics through 225 are required. Every student is required to pass a senior comprehensive examination in Chemistry.

CHEMISTRY CURRICULUM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A W S</td>
<td></td>
</tr>
<tr>
<td>Chem. 121-122-123</td>
<td>5-5-5</td>
</tr>
<tr>
<td>Math. 116-113-118</td>
<td>5-5-5</td>
</tr>
<tr>
<td>Eng. 121-122-123</td>
<td>2-2-2</td>
</tr>
<tr>
<td>Elective - Group II or III</td>
<td>1-1-1</td>
</tr>
<tr>
<td>Mil. Science or Air Science 101-102-103</td>
<td>2-0-0</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
<td>1-1-1</td>
</tr>
<tr>
<td>16-19</td>
<td>16-17-16-19</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>5-5-5</td>
</tr>
<tr>
<td>Math. 251-253</td>
<td>5-5-5</td>
</tr>
<tr>
<td>German 101-102-103</td>
<td>5-5-5</td>
</tr>
<tr>
<td>Chem. 245</td>
<td>2-2-2</td>
</tr>
<tr>
<td>Mil. Science or Air Science 261-262-263</td>
<td>1-1-1</td>
</tr>
<tr>
<td>Phys. Ed. 100</td>
<td>2-2-2</td>
</tr>
<tr>
<td>16-18</td>
<td>16-18-15-17</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys. 221-222-223</td>
<td>5-5-5</td>
</tr>
<tr>
<td>German 213 &amp; 215</td>
<td>4-4-4</td>
</tr>
<tr>
<td>Chem. 352</td>
<td>3-3-3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-2-2</td>
</tr>
<tr>
<td>14-17</td>
<td>14-17-15-17</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>3-3-3</td>
</tr>
<tr>
<td>Chem. 375-376-377</td>
<td>4-4-4</td>
</tr>
<tr>
<td>Elective - Group IV</td>
<td>1-1-1</td>
</tr>
<tr>
<td>Chem. 431-432-433</td>
<td>3-3-3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-2-2</td>
</tr>
<tr>
<td>Adv. Chem. courses</td>
<td>3-3-3</td>
</tr>
<tr>
<td>14-17</td>
<td>15-18-15-18</td>
</tr>
</tbody>
</table>

For Undergraduates

For explanation see Index under "Symbols"

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

121-122-123 COLLEGE CHEMISTRY 3Q A W S Su 5 (5-4). For science majors and those students wishing more than one year of chemistry. The principles and theories of chemistry, properties and reactions of elements and inorganic compounds, including qualitative analysis. Students who have completed Chem 101-102 may not receive credit for 121-122 but are eligible for credit in 123.

160 SURVEY OF ORGANIC CHEMISTRY IQ S Su 5 (5-4). Normally to be taken in the 3rd quarter of Chemistry for students in non-science majors desiring a one year general course only. Chemistry 160 is also open for credit to students who have completed Chemistry 121-122 or have completed two quarters of a full year course in general or college chemistry.


261-262-263 ORGANIC CHEMISTRY 3Q A W S 4 (4-4). Prereq 102 or 122.

For Undergraduates and Graduates

329 CHEMICAL PRINCIPLES IQ Su 5 (5-4). Prereq 101 or 121. A course in general chemistry designed to lead to the master of science in teaching.

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

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

346 INSTRUMENTAL ANALYSIS a/q V 2-5 R-5 (2-5 or 10) Prereq 245. Modern instrumental methods of analysis.

348 MICROCHEMICAL ANALYSIS 1Q S 2 (1-4) Prereq 245. The use of microchemical techniques in chemical analysis.

349 ADVANCED QUANTITATIVE ANALYSIS 1Q A 3 (2-4) Prereq 245. The use of modern techniques and methods of qualitative analysis.

352 INORGANIC CHEMISTRY 1Q W 3 (3-0) Prereq 123 and 263. The principles of systematic inorganic chemistry.

353 INORGANIC CHEMISTRY 1Q S 3 (3-0) Prereq 262. Chemistry of the representative elements.

355 INORGANIC CHEMISTRY LABORATORY 1Q W S 4 (3-0) Prereq 123, 263, and c/l. The techniques in preparation of inorganic compounds.

358 ORGANIC QUALITATIVE ANALYSIS 1Q S W 3-3 (2-4 to 6) Prereq 263. Lab work and study of the organic compounds and mixtures; general class reactions of organic chemistry.

370 SURVEY OF PHYSICAL CHEMISTRY 1Q S 5 (5-4) Prereq 123 or 160 and 261, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medicine.

371-372-373 PHYSICAL CHEMISTRY 3Q A W S 3 (3-0) Prereq Math 228 and Physics 221 or concurrent enrollment. The more important methods, results and problems of theoretical chemistry.

375-376-377 PHYSICAL CHEMISTRY LABORATORY 3Q A W S 1 (0-4) Prereq 346, and 371-372-373 or concurrent enrollment.

384 PHYSIOLOGICAL CHEMISTRY 1Q S 3 (3-0) or 5 (5-4) Prereq 109 or 262. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; colloids.

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

462-464 THEORETICAL ORGANIC CHEMISTRY 2Q a/q 3 (4-0) Prereq 263.

465 ADVANCED ORGANIC LABORATORY TECHNIQUES 1Q a/q 2 (0-9) Prereq 263 and c/l. The basic and instrumental applied to organic problems.

466 INSTRUMENTAL TECHNIQUES OF ORGANIC CHEMISTRY 1Q a/q 2 or 3 (1-4 or 6) Prereq 463. Modern instrumentation.

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

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

476 RADOCECHEMISTRY 1Q W 3 (2-4) Prereq 102 or 122. The principles of nuclear reactions and application of radiochemistry.

481-482 ELEMENTARY BIOCHEMISTRY 2Q A W 4 (3-4) Prereq 263. Primarily for science majors.
the area of concentration, 10 credits of non-drama electives and a maximum of 10 credits for the thesis. Students with a major interest in technical theater may, upon selection by the Drama staff, present a production project in lieu of the regular research thesis. Such a project will include design and execution of all technical aspects of a full-length play to be produced in the University Theater. Completed designs and plans for the project must be presented in proper thesis form.

Also required are: direction of a full length play, a foreign language, and a final oral comprehensive examination.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 REHEARSAL AND PERFORMANCE 3q a/q 1 R-6. Enter any quarter. Prereq c/l. Students engaged in any aspect of production including acting, directing, lighting, stagecraft, makeup, costumes, properties, business and publicity, etc. are eligible for registration.

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 A W S 2 (2-2). Principles of pantomime 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, rigging, and handling of stage scenery. Students will work on construction crews of major productions.

223 ELEMENTARY DIRECTION 1q W 3 (3-2) Prereq 121. Principles and techniques of stage direction and rehearsal. The production of the one-act play form will be considered and used in this course.

251 STAGE MAKEUP 1q A W S 2. Principles of and practice in theatrical makeup. Students will work on makeup for major productions.


FOR UNDERGRADUATES AND GRADUATES


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 THEATER IN THE COMMUNITY 1q A 2 e/y Prereq c/l. The place in society of the children's theater, and the community and little theater.

321 THEATER PRODUCTION IN THE HIGH SCHOOL 1q S Su 3. Problems of high school theater including play selection, staging, acting, promotion, organization.

333 ADVANCED STAGECRAFT 1q S 3 Prereq 151. Principles and practice in scene painting, properties, sound, music, and elements of lighting and costume. 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 the practice of acting before the television camera.

343 STAGE LIGHTING 1q A 3 Prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment and installation and use. 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, body action, and characterization.

352 DRAMATIC INTERPRETATION 1q S 3 Prereq Speech 261. Theory and practice of play-reading using a wide variety of dramatic materials and forms.

364 CREATIVE DRAMATICS FOR CHILDREN 1q W Su V 2-4 Prereq c/l. Children's literature suitable for adaptation to dramatic form: improvisational and other playmaking techniques; the dramatic method in group counseling for use in a variety of settings.

374 THEATER FOR CHILDREN 1q Su only 2 or 4. Prereq teaching experience and c/l. History and objectives of theater for the child audience; survey 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.
ECONOMICS

is that branch of the social sciences which deals with man's efforts to satisfy his wants by utilizing the scarce means provided by nature. The department considers its teaching goals to be three-fold: (1) To present to students the basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them in becoming effective 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, 36 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 230-231-232; Mathematics 101-102; Business Science 203-205; and two quarters of History 231-232-233; Anthropology 102 or Sociology 101; in the junior or senior year, Economics 301 and 311.

The following may be counted as part of the 60 credits required for a major in Economics: History 235 and 374, Political Science 260, Mathematics 302-303, Business Administration 360, 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 201-202-203; Mathematics 125, 301, 311; and at least 12 additional credits in upper division courses. A comprehensive examination is required of seniors with a major in the Economics-Political Science concentration.

ECONOMICS-LAW COMBINATION. In addition to the general requirements for graduation, the following additional requirements for the Bachelor of Arts degree with a major in economics. Students should take as many as possible of the following courses: History 345, 346, 376; Political Science 201-202; Speech 112. Latin is recommended for meeting the foreign language requirement.

FOR UNDERGRADUATES


FOR UNDERGRADUATES AND GRADUATES

ECONOMICS 1Q A S 4. Role of money; banks as suppliers of money; Federal Reserve System as regulator of money; monetary theories, history and policy. 301 MONEY AND BANKING 1Q A S 4, Su 4, Prereq 203. 302 SOCIAL SCIENCE METHODS (See Sociology).

ECONOMICS 2Q A W 3, Su 3, Prereq 203. Principles and problems of Federal financing. 303 PUBLIC FINANCE 1Q W 4, 3, Prereq 203. 305 STATE AND LOCAL TAXATION 1Q S 4, Prereq 203. Revenues and expenditures on state and local levels.


ECONOMICS 3Q A W 4, S 4, Prereq 203. 309-310-311 INTERNATIONAL ECONOMIC ANALYSIS 2Q A W, S 4, Su 3, Prereq 203. (312) Theories of imperfect markets and workable competition as applied to public policy.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 312-313-314 COMPARATIVE ECONOMIC SYSTEMS 1Q 3, Su 3, Prereq 203. (315) Comparative analysis; (316) Problems of policy-making.

ECONOMICS 3Q A W 4, S 4, Su 3, Prereq 203. 315-316 DEVELOPMENT OF ECONOMIC THEORY 2Q W 4, S 4, Prereq 203. (317) Economic ideas from early times to 1890. 318 ECONOMIC theories from 1890 to the present.


ECONOMICS 3Q A W 4, S 4, Prereq 203. 322-323-324 INDUSTRIAL RELATIONS 1Q S 3, Prereq 203. Problems and public policy in labor-management relations.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 323-324-325 COMPARATIVE ECONOMIC SYSTEMS 1Q 4, S 4, Prereq 203. (326) Comparative analysis; (327) Problems of policy-making.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 328-329-330 ECONOMIC DEVELOPMENT 1Q 3, Prereq 203. (331) Economic determinants of economic growth in poor and rich countries.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 331-332-333 PUBLIC UTILITY ECONOMICS 2Q A W 3, Prereq 203. Analysis of costs and pricing policies; economic aspects of regulation.


ECONOMICS 3Q A W 4, S 4, Prereq 203. 337-338-339 COMPARATIVE ECONOMIC SYSTEMS 1Q 5, S 4, Prereq 203. (334) Comparative analysis; (335) Problems of policy-making.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 336-337-338 COMPARATIVE ECONOMIC SYSTEMS 1Q 5, Prereq 203. Theories of imperfect markets and workable competition as applied to public policy.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 339-340-341 AGRICULTURAL ECONOMICS 1Q A W 3, Prereq 203. Agricultural industry, supply of and demand for farm products, farm finance, taxation, agricultural policies.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 342-343-344 ECONOMIC DEVELOPMENT 1Q S 3, Prereq 203. (341) Economic determinants of economic growth in poor and rich countries.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 345-346-347 MONOPOLY AND COMPETITION 1Q W 3, Prereq 203. Theories of imperfect markets and workable competition as applied to public policy.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 348-349-350 ECONOMICS OF MONTANA 1Q W 3, Prereq 203. Factors and forces determining the economic well-being of the people of Montana.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 351-352-353 AGRICULTURE ECONOMICS 1Q A W 3, Prereq 203. Agricultural industry, supply of and demand for farm products, farm finance, taxation, agricultural policies.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 354-355-356 COMPARATIVE ECONOMIC SYSTEMS 1Q S 4, Prereq 203. (357) Comparative analysis; (358) Problems of policy-making.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 357-358-359 THE RUSSIAN ECONOMY 1Q S 4, Prereq 203. (356) Economic determinants of economic growth in poor and rich countries.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 360-361-362 ECONOMICS OF MONTANA 1Q 4, Prereq 203. Factors and forces determining the economic well-being of the people of Montana.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 363-364-365 AGRICULTURE ECONOMICS 1Q A W 3, Prereq 203. Agricultural industry, supply of and demand for farm products, farm finance, taxation, agricultural policies.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 366-367-368 COMPARATIVE ECONOMIC SYSTEMS 1Q S 4, Prereq 203. (365) Economic determinants of economic growth in poor and rich countries.

ECONOMICS 3Q A W 4, S 4, Prereq 203. 369-370-371 MONOPOLY AND COMPETITION 1Q W 3, Prereq 203. Theories of imperfect markets and workable competition as applied to public policy.
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. It is evident 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 become eligible for recommendation to the School of Education. Montana State University offers graduate work leading to the master's degree major in Education or in Library Service; those preparing for counseling, supervising, administering, or research work usually major in Education.

Undergraduates considering careers in guidance and counseling or professional teaching in psychology at the high school level should, in addition to meeting the requirements for a baccalaureate degree, plan to take psychology courses which are basic to advanced courses. At least 30 hours of such work are strongly recommended, including Psychology 310-311 and 312.

Students taking Education courses for purposes of meeting certification requirements or for the purpose of obtaining additional information as to the student's individual aptitudes for teaching.

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.

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

Introduction to Psychology, although not a graduation requirement, is prerequisite to all courses in Education and should be taken in the freshman or sophomore year. Students preparing for teaching in the subject of English, or for advanced work in Psychology in the senior year and Child and Adolescent Psychology in the sophomore year.

SOPHOMORE OBSERVATION REQUIREMENT. Each student preparing for elementary or secondary teaching must spend a minimum of two weeks in a public school prior to the opening of the school year. This experience should be between the junior and senior years and should have been preceded by completion of Education 200 Orientation to Education. Usually, the two weeks will be spent in a school in the student's home town. A complete record of the experience must be on file in the Office of the Director of Student Teaching before the student may enroll for student teaching. No classroom teaching will be done by the student.

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

ELEMENTARY: To qualify for this assignment, the student must: (1) be eligible to continue in Teacher Education, (2) have a minimum grade point average of 2.3 in all courses attempted, (3) have the consent of the Director of Secondary Teacher Education. The professional quarter for the student preparing for elementary certification entails student teaching for an entire year for one full quarter (15 credits) and enrollment in Education 407, Curriculum Foundations (3 credits).

SECONDARY: To qualify for this assignment, the student must: (1) be eligible to continue in Teacher Education, (2) have completed at least 50% of the work in the teaching major (and minor, if any), with a minimum grade point average of 2.3 in all courses attempted in the teaching major (and minor, if any) and a minimum overall grade point average of 2.3 in all courses attempted, and (3) have the consent of the Director of Secondary Teacher Education.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN EDUCATION. In addition to the general requirements for graduation, the candidate must take the following courses:

- Freshman Year:
  - English: 101-102-103—Freshman Composition
  - General: 131-132-133—Introduction to Biol Sci
  - Electives

- Sophomore Year:
  - English
  - General: 152-153-154—Intro to the Humanities
  - Electives

- Junior Year:
  - Electives

- Senior Year:
  - ROTC 101-102-103—Military or Air Science

Suggested Curriculum in secondary education:
38—EDUCATION

Sophomore Year
History, Political Science, Sociology or Economics
(to fulfill Group II requirements) 4 4 4
Pscy. 110—Introduction to Psychology 5 5 5
Educ. 200—Orientation to Education 2
Teaching Major Sequence (listed later) 4-5 4-5 4-5
Teaching Minor Sequence (listed later) 4-5 4-5 4-5
Electives 2 2 2

16-19 15-19 15-18

Junior Year
Educ 205—Educational Psychology 4
Educ 321—The School Library in Teaching 1
Educ Methods Course (in one or both teaching areas) 4
Teaching Major Sequence (listed later) 4-5 4-5 4-5
Teaching Minor Sequence (listed later) 4-5 4-5 4-5
Electives 3 3 3
15-17 15-17 15-17

Senior Year
Educ. 305—Sec. Sch. Tchgr. Procedures 10
Educ. 405—Student Teaching: Secondary 10
Educ. 407—Curriculum Foundations 5
Educ. 450—Guidance in the Elem and Sec School 4
Educ 452—Educational Measurement 4
Effective Courses in Education 3
Teaching Major or Minor Sequence, or Electives 10-12 10-12 10-12
18 18 18

PREPARATION FOR TEACHING IN THE ELEMENTARY GRADES. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 40 credits: Education 200, 202, 301, 302, 303, 346, 404, 467.

In addition, the student will complete work in the following areas: English, 25 credits; History and Political Science, 26 credits; Geography, 8 credits; Science, 15 credits; Mathematics, 9 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 12 credits of the following: General 125, 126, 127, and Mathematics 130, 220.

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.

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

Suggested curriculum in elementary education:

Freshman Year
Engl 101-102-103—Freshman Composition 4 4 4
Gen 125-126-127—Science for Elementary Teachers 12 12 12
Speech 111—Principles of Speech 3
Psych 110—Introduction to Psychology 4
Gen. 151-152-153—Introduction to Humanities 3 3 3
Geog 101—Elements of Geography 5
H&PE 106—Physical Education 2 2 2
ROT 101-102-103—Military or Air Science
or
Medical Technology 4 4 4

16-18 16-18 16-18

Sophomore Year
Educ 200—Orientation to Education 2
Educ 202—The Elementary School Child 5
Music 122-123—Music Educ in Elem Schools 3 3 3
Math 130—Theory of Arithmetic 3
Psych 220—Child and Adolescent Psych 5
H&PE 199—First Aid 3
Hist 251-252-253—United States History 4 4 4
Pol Sci 101—Intro. to Am. Gov. 4
Math 220—Intuitive Geometry 4
H&PE 100—Physical Education 1 1 1
ROT 201-202-203—Military or Air Science
or
Medical Technology 2 2 2

16-18 15-17 17-19

Junior Year
Art 303-304—Elementary School Art 3 3 3
Gen 301-302-305—The Child and the Curriculum 5 5 5
Gen. 306—Conservation 3
Educ 340—Children’s Literature 4
H&PE 206—Teaching in the Elem School 3
Social Science Electives 5
H&PE 373—School Health Problems 3 3 3
Electives

16 17 17

Senior Year
Educ 404—Student Teaching: Elementary 15
Electives—Curriculum Foundations 3 3 3
18 16 16

RECOMMENDATIONS FOR MONTANA TEACHING CERTIFICATION. Montana State University recommends to the State Department of Public Instruction that the 30 credits be approved for the School of Education. The student who expects to teach in states other than Montana should investigate specific requirements because the State of Montana is primarily a teacher-licensing state.

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 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 and meet the requirements for the School of Education.

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

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.

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 similarly submit a statement setting forth their proposed programs. Each candidate for a certificate who has not already received credit in Student Teaching (Educ 404 or 405) will be assigned definite quarters in which he must register for that course.

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

Freshman year: Psych 110 (not counted among the 24 credits required for secondary teaching).

Sophomore year: Educ 200, 2 credits.

Junior year: Educ 205, 4 credits.

Senior year: Educ 305, 5 credits; 405, 10 credits; 407, 3 credits.

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

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

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

PREPARATION FOR PROFESSIONAL CERTIFICATION. The Montana professional certificate is issued to applicants having 3 or more years successful teaching experience who have completed a minimum of 45 quarter credits in approved courses beyond the bachelor’s degree. Students intending to qualify for this certificate are required to register at the beginning of the program to outline such programs with and receive approval from the Dean of the School of Education.

PREPARATION FOR SCHOOL LIBRARIANS. The library service program is designed to train school and teacher-librarians to meet the requirements of the Northwest Association of Secondary and Higher Schools and of the State of Montana. The minimum requirement is a sequence of 30 credits including Education 343, 344, and 345. The student planning a more extended program should consult the library service instructor for advice on additional courses.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN EDUCATION. In addition to the general requirements of the Graduate School (e.g., language requirement), candidates must include a minimum of 12 credits of cognate work based on a minimum of 9 credits in each of the above areas. Such courses must be approved by the candidate's advisor and must 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 a teacher-pupil relationship or in special skills. The candidate will present a thesis for which 6 to 9 credits may be applied.

SPECIAL REQUIREMENTS FOR THE MASTER OF EDUCATION DEGREE. Candidates must have completed two years of satisfactory teaching experience before the degree is conferred. At least 16 credits of course work offered must have been completed follow-
ing the two years' teaching experience. All candidates for the Master of Education degree must also complete a minimum of 15 residency credits in 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 at least 18 credits in professional work in the field of education. The candidate must prepare a professional paper for which 3 to 6 credits may be allowed. This paper should include an initial, critical, problem solving growing out of the student's administrative or teaching interest and should be a substantial contribution to the field of education with the requirement of an acceptable thesis. Two copies of this paper must be submitted to the Dean of the Graduate School.

B. Master of Education Without Professional Paper. Candidates who choose not to do the professional paper will be required to offer a total of 54 graduate credits, including Methods of Educational Research (Education 295 or equivalent) and not less than 15 credits of cognate work. They will take examinations covering the field of education—such examinations to be arranged by the Dean of the Graduate School.

MADON NA RLA: 200, 205, 305, Sophomore Observation Experience, and consent Weekly meeting with Director of Library Service.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

200 ORIENTATION TO EDUCATION 1Q S Su 2 Prereq Psyc 105. A study of educational, administrative, and practical aspects of the American public school and its purposes. Problems, issues, and trends in education today.

202 THE ELEMENTARY SCHOOL CHILD 1Q A W S 5, Su 3 Prereq 200 and Psyc 230. Principles of growth and development and the psychology of learning as applied to the elementary school child. A minimum of 2 hours per week will be spent in observation of children in the school environment.

205 EDUCATIONAL PSYCHOLOGY 1Q A W S 4 Prereq 200 and Psyc 105. The growth and developmental characteristics of children. Psychological foundations of learning in the junior and senior high schools.

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

301-302-303 THE CHILD AND THE CURRICULUM 3Q 301 A 5, 202 W 3, 303 A 4, Su 3. Prereq 200. Teaching the elementary school: (301) reading and the other language arts; (302) arithmetic; (303) science and the social studies.

305 SECONDARY SCHOOL TEACHING PROCEDURES 1Q A Q Prereq 300. Methods of planning, presentation, evaluation, and discipline. The materials of classroom teaching, Demonstration, observation, and related activity involving student participation.

311 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 1Q A 4 Prereq c/l. Objectives of library service, library routines and procedures, library buildings and equipment, the library's place in governmental organization, library extension work.

404 STUDENT TEACHING: ELEMENTARY a/q V R-15 Prereq Educ 200, 202, 301, 302, 303, 240. Sophomore Observation Experience, and consent. A classroom teaching experience. Student teaching is a full day's work for a complete quarter and, although some observation and participation is included, the main emphasis is upon teaching. The objectives are to familiarize the student with the many of the regular duties and responsibilities of a teacher as can be included.

405 STUDENT TEACHING: SECONDARY a/q V R-10 Prereq Educ 200, 202, 301, 302, 303, 240. Sophomore Observation Experience, and consent. A classroom teaching experience. The objectives are to familiarize the student with the many of the regular duties and responsibilities of a teacher as can be included.

407 CURRICULUM FOUNDATIONS 1Q A V S Su 3 Prereq 404 or 403 or consent of Director of Student Teaching. Classroom teaching at the secondary level. Student teaching is a full day's work for a period of six weeks, and is preceded in the instructional quarter by Educ 205. Secondary School Teaching Procedures, 5 hours. Although some observation and participation is included, the main emphasis is upon teaching. The objectives are to familiarize the student with the many of the regular duties and responsibilities of a teacher as can be included.

445 LIBRARY PRACTICE 1Q A W S Su 5 Prereq 20 26 0 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public, school library under the supervision of a trained professional librarian. Weekly meeting with Director of Library Service.
40—EDUCATION

428 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOL 1Q S Su 1 Prereq 12 credits in Education. Emphasis on the teaching of social studies in junior and senior high schools, curriculum development, and presentation of units of instruction, selection and use of materials.

431 THE SLOW AND RETARDED LEARNERS 1Q W Su 3 Prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.

432 THE BRIGHT AND GIFTED PUPILS 1Q S Su 3 Prereq 12 credits in Education. Needs, aims, traits, identification, curriculum, teaching methods, and research.

434 REMEDIAL READING LABORATORY 1Q Su 5 or 10 weeks; 3 or 5 credits. Prereq Edu 233 (or taken concurrently) and consent of instructor. Supervised practice in diagnosis and remedial instruction, 1 hour per day work with selected beginner, secondary, or college students.

438 THE JUNIOR HIGH SCHOOL 1Q S 4, Su 3 Prereq 12 credits in Education. Objectives, organization, class scheduling, curriculum, and extra-curricular activities.

441 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 1Q S Su 2 Prereq 12 credits in Library Service. Methods of evaluating and improving school library services to teachers and students.

442 LIBRARY WORKSHOP 1Q W, Su 4 Prereq 341 or 343 and a course in children's literature. Work with children in school and public libraries, including story telling and organization of the children's department in the public library.

443 LIBRARY WORKSHOP 1Q Su 3 Prereq 9 credits in Library Service. Problems of Library Service. General sessions and committee meetings; individual work on problems of special interest within the workshop topic.

444 LIBRARY SEMINAR 1q a/q V 1-5 R-I Prereq 20 or more hours in Library Service and consent of the Director of Library Service. Independent study and discussion of individual projects.

450 GUIDANCE IN THE ELEMENTARY AND SECONDARY SCHOOL 1Q W, Su 4 Prereq 201-202-203 or 305, or teaching experience. Orientation to the need, organization, and methodology of guidance services in the elementary and secondary schools.

452 EDUCATIONAL MEASUREMENT 1Q A W S Su 4 Prereq 12 credits in Education. Basic principles of measurement of educational outcomes in elementary and secondary teaching; application of statistical techniques to educational; evaluation of standardized tests; construction and use of teacher-made tests.

454 OCCUPATIONAL INFORMATION 1Q W Su 3 Prereq 450 or-. Sources, including job analysis and surveys; occupational trends, information filing system, evaluation, selection, and use of occupational information.

455 TECHNIQUES OF COUNSELING 1Q W S Su 3 Prereq 450, 452 and c/i. Evaluation of guidance instruments and techniques, analysis of referral.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 2Q W S Su 3. Historical and philosophical backgrounds of present day problems and issues in Education. Enter either quarter. (461) 1650 to 1660; (462) 1660 to present.

460 INDEPENDENT STUDY a/q V R-10 Prereq consent of adviser and instructor. Selected topics under the guidance of a staff member. Term papers may be required.

469 SEMINAR a/q V R-10 Prereq 12 credits in Education and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

FOR GRADUATES

505 INTERNSHIP 2Q V 1-6 R-I. Supervised field experiences in administration, guidance, special education, curriculum. (Admission by application only.)

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


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

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

552 PRACTICE IN GUIDANCE 1Q S Su V 2-4 Prereq 455 or-. Supervised practice in testing and counseling, and observation in neighboring schools. Seminar discussions weekly.

555 GUIDANCE INSTITUTE 1Q Su 15 Prereq 15 semester hours (or 22 quarter hours) of credits in counseling and guidance with a B average or better, and not more than 30 semester hours (45 quarter hours). Guidance practices and techniques for teachers charged with guidance responsibilities.

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

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

568 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W Su 3 Prereq 360 or 564 or- and c/i. The background of education in its broadest sense as found in the "religion," the economic system, 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 competencies 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. Roles and responsibilities of assigned leaders for improving instruction and promoting in-service growth of personnel.

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

577 PLANNING THE SCHOOL BUILDING PROGRAM 1 Q V V 2-4 Prereq 570 or- and c/i. Procedures in determining building needs, site selection, planning the building, financing, and supervision of construction.

578 LEGAL BASIS OF PUBLIC EDUCATION 1Q Su 3 Prereq 570 or- and c/i. Legal concepts of education in the United States; legal implications of the concept of education as a state function. Legal problems affecting pupils, parents, teachers, administrators, and school board members in relation to the school.

579 PERSONNEL ADMINISTRATION 1Q Su 3 Prereq 570 or- and c/i. Problems of certified and non-certified personnel (not student); selection, in-service training, assignment, supervision, and welfare.

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

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

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

595 METHODS OF EDUCATIONAL RESEARCH 1Q A 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 505 or concurrent registration therein and c/i.

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

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

799 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 397 Methods of Teaching Secondary Art.

B Ad 339 Methods of Teaching Shorthand, Typewriting, and Transcription.

B Ad 381 Methods of Teaching Bookkeeping and Basic Business.

B Ad 384 Gregg Shorthand Theory for Teachers.

B Ad 582 Problems in Teaching Bookkeeping.

B Ad 583 Problems in Teaching Gregg Shorthand.

B Ad 584 Problems in Teaching Typewriting.

B Ad 585 Unit Courses in Business Education.

Eng 481 Methods of Teaching English.

For L 391 Methods of Teaching Foreign Languages.

For L 401 Foreign Language Workshop.

H & PE 335 Methods of Teaching Physical Education.

H & PE 373 School Health Problems.

H Ec 321 Methods of Teaching Home Economics.
**EDUCATION—41**

**ECONOMICS AND SOCIETY (Minor Only)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anh 133—Social Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>or 132—Elementary Anthropology</td>
<td>5</td>
</tr>
<tr>
<td>Econ 201-202-203—Principles of Econ</td>
<td>5</td>
</tr>
<tr>
<td>Econ 301—Money and Banking, or Econ 311—Intermediate Econ Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Soc 101—Introductory Sociology</td>
<td>5</td>
</tr>
<tr>
<td>Soc 102—Social Problems</td>
<td>5</td>
</tr>
<tr>
<td>Educ 420—Methods of Teaching Social Studies in the Secondary Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

**ENGLISH**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives: Soc 302, 304 or 402</td>
<td>3-5</td>
</tr>
</tbody>
</table>

The majors must elect at least 10 credits in the related fields below. Other electives may be chosen from courses in the Department of English. Students should elect one course in American literature, one in British literature, and one in creative writing.

**RELATED FIELDS:** Drama 221 (strongly recommended), 121, 131, 343, 251; Journalism 227, 270, 316, 360, 380; Speech 111, 112, 118, 214, 261 and 291. Three credits of Humanities will be allowed.

**ENGLISH (Broadfields Major)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 201 (or 308 for Drama majors)—Advanced Composition (or Writing of Drama)</td>
<td>3</td>
</tr>
<tr>
<td>Engl 211-213—Major British Writers</td>
<td>6</td>
</tr>
<tr>
<td>Engl 223—Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Engl 342 or 343—Shakespeare and Contemporary</td>
<td>3</td>
</tr>
<tr>
<td>Engl 371—The English Language</td>
<td>3</td>
</tr>
<tr>
<td>Engl 381—Literature for the High School Teacher</td>
<td>3</td>
</tr>
<tr>
<td>Engl 481—Methods of Teaching English</td>
<td>4</td>
</tr>
<tr>
<td>Engl 496—Seminar</td>
<td>2</td>
</tr>
<tr>
<td>Engl 499—Seminar</td>
<td>2</td>
</tr>
<tr>
<td>Electives (From Dept. of English)</td>
<td>13</td>
</tr>
<tr>
<td>Spch 111 or 291—Principles of Oral Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>Spch 291—The Teaching of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Jour 280—History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Jour 316—School Publications</td>
<td>3</td>
</tr>
<tr>
<td>Drama 221—Elementary Direction</td>
<td>3</td>
</tr>
<tr>
<td>Drama 321—Theater Production in the High School</td>
<td>3</td>
</tr>
<tr>
<td>Electives chosen from courses in one of these departments: Drama, Journalism, or Speech</td>
<td>10 or 12</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.

All students preparing to do practice teaching in a modern foreign language must take a proficiency examination administered by the Department of Foreign Languages. Students failing to pass this examination will not be recommended to the School of Education as qualified to do practice teaching.

**Modern Languages (French, German or Spanish)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-102-105—Elementary</td>
<td>15</td>
</tr>
<tr>
<td>F. L. 213—Intermediate</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 215—Advanced</td>
<td>4</td>
</tr>
<tr>
<td>F. L. 217—Review Grammar and Composition</td>
<td>3</td>
</tr>
<tr>
<td>F. L. 300—Conversational</td>
<td>3</td>
</tr>
<tr>
<td>F. L. 301-302-305—Survey of Literature</td>
<td>6</td>
</tr>
<tr>
<td>F. L. 301—Methods of Teaching (may be taken for Educ. credit)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required Courses:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
</table>

**Drama (Minor Only)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drama 112—Introduction to the Theater</td>
<td>2</td>
</tr>
<tr>
<td>Drama 121—Elementary Acting</td>
<td>2</td>
</tr>
<tr>
<td>Drama 131—Elementary Stagecraft</td>
<td>2</td>
</tr>
<tr>
<td>Drama 225—Elementary Direction</td>
<td>2</td>
</tr>
<tr>
<td>Drama 261—Modern Drama</td>
<td>2</td>
</tr>
<tr>
<td>Drama 261-262-263—Dramatic Literature (any 2)</td>
<td>4</td>
</tr>
<tr>
<td>Drama 325—Advanced Stagecraft</td>
<td>3</td>
</tr>
<tr>
<td>Speech 118—Voice and Diction</td>
<td>3</td>
</tr>
<tr>
<td>Speech 281—Oral Interpretation</td>
<td>3</td>
</tr>
</tbody>
</table>

**Drama Electives (may not include 101)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives: Courses numbered above 300</td>
<td>6</td>
</tr>
</tbody>
</table>
HEALTH AND PHYSICAL EDUCATION FOR MEN

<table>
<thead>
<tr>
<th>Teaching Minor</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 credits</td>
<td>33 credits</td>
</tr>
</tbody>
</table>

Required Courses:
- HAP 198—Intro to Physical Education 3
- HAP 199—First Aid 2
- HAP 210, 211, 212—Coaching—Football, Basketball, Track 8
- HAP 211-212, 311-312—Officiating—Football, Basketball 4
- HAP 249—Care and Prevention of Athletic Injury 2
- HAP 326—Dance Methods & Materials 2
- HAP 336—Methods of Teaching Physical Education 3
- HAP 337—Elem. School Phys Ed Prog. 3
- HAP 355—Organization and Administration 4
- HAP 373—School Health Problems 4
- HAP 389—Applied Anatomy 3
- HAP 465—Testing in Phys. Ed. 3

Electives: Other courses in the department

Notes:
1. Majors and Minors substitute courses 115-116, 117-118, 119-120 for course 100 (6 quarters, 6 credits) required of other lower division students.
2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.

HEALTH AND PHYSICAL EDUCATION FOR WOMEN

<table>
<thead>
<tr>
<th>Teaching Minor</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 credits</td>
<td>33 credits</td>
</tr>
</tbody>
</table>

Required Courses:
- HAP 198—Intro to Physical Education 3
- HAP 199—First Aid 2
- HAP 231—Volleyball, Basketball 4
- HAP 301-302—Teaching of Team Sports for Women; Teaching of Individual Sports for Women 4
- HAP 324-325-326—Dance Methods and Materials 6
- HAP 335—Methods of Teaching Physical Education 3
- HAP 337—Elem. School Phys Ed Prog. 3
- HAP 355—Organization and Administration 4
- HAP 373—School Health Problems 4
- HAP 375—Personal Health Problems (Women) 2
- HAP 389—Applied Anatomy 3
- HAP 465—Testing in Phys. Ed. 3
- HAP 499—Teaching of College Physical Education Activities 2

Electives: Other courses in the department

Notes:
1. Majors and Minors substitute courses HAP 115-116, 117-118, 119-120 for course 100 (6 quarters, 6 credits) required of other lower division students.
2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.
### Additional Courses:

- **Music 114, 115, 116—Piano in class**
- **Music 117, 118, 119—Voice in class**
- **Music 125, 126, 127—Strings in class**
- **Music 129—3 Quarters—Winds in class**

*All majors and minors must demonstrate piano ability equivalent to 3 quarters of piano study (private or in class).*

Vocal majors and minors may substitute other music courses with approval of the chairman of the Music Department.

### Science

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

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

### Biological Science

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Teaching Major Credits</th>
<th>Teaching Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(49 credits)</td>
<td>(31 credits)</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 121-2-3—College Chemistry</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Chem 245—Quantitative Analysis</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chem 261-2—Organic Chemistry</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Chem 352—Inorganic Chemistry</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>or Chem 371—Physical Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or Chem 384—Physiological Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or Chem 481—Elementary Biochemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective Chemistry</td>
<td>courses numbered over 300</td>
<td>4-7</td>
</tr>
</tbody>
</table>

*In the minor the following substitutions will be allowed: Chem 160 for Chem 261 and Chem 262 for Chem 352 or Chem 371.*

### Chemistry

- **Teaching Major (45 credits)**
- **Teaching Minor (32 credits)**

### General Science*

- **Broad Fields Major Only**

### Geology

- **Minor Only (33 credits)**

### Physical Science

<table>
<thead>
<tr>
<th>(Broad Fields Major Only)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 221-2-3—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Phys 322-2—Light</td>
<td>4</td>
</tr>
<tr>
<td>Phys 332-3—Atomic Physics</td>
<td>6</td>
</tr>
<tr>
<td>Chem 121-2-3—College Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>or Chem 261—Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>or Chem 262—Physics</td>
<td>5</td>
</tr>
<tr>
<td>or Chem 264—Physiological Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>or Chem 481—Elementary Biochemistry</td>
<td>4-7</td>
</tr>
<tr>
<td>Elective Chemistry</td>
<td>courses numbered over 300</td>
</tr>
</tbody>
</table>

*Does not qualify for teaching chemistry or physics*

### Physics

<table>
<thead>
<tr>
<th>Teaching Major Credits</th>
<th>Teaching Minor Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>(45 credits)</td>
<td>(31 credits)</td>
</tr>
<tr>
<td>Phys 221-2-3—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Phys 314—Electricity</td>
<td>3</td>
</tr>
<tr>
<td>Phys 315-6—Electricity</td>
<td>7</td>
</tr>
<tr>
<td>Phys 271—Vector Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Phys 322-2—Light</td>
<td>4</td>
</tr>
<tr>
<td>Phys 332-3—Atomic Physics</td>
<td>6</td>
</tr>
<tr>
<td>Phys 354—Nuclear Physics</td>
<td>3</td>
</tr>
<tr>
<td>Phys 471—Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>Phys 480—Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

*(Math 113, 116, 118, 251-252-253 are prerequisites to Physics courses.)*

### Social Sciences

- **Broad Fields Major Only**

### Speech

- **Teaching Major Credit**
- **Teaching Minor Credit**

*Available only if accompanied by a teaching minor in English or by another teaching major.*
ENGLISH

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

Literature is stressed for those who wish to do graduate work, teach at the college level, prepare for such work, work in magazines or book publishing, do library work, or wish to sense and study the great currents of thought throughout the centuries.

Creative writing and composition are emphasized for those who wish simply to express themselves well and for those who become interested in the writing of poetry, drama and fiction, or who wish to combine these abilities with other forms of writing such as advertising, public relations, film and television writing.

The teaching sequence prepares students for teaching in the high schools, emphasizing composition, linguistics, and 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 minimum of 60 credits in the major but not more than 60 credits in the department. The required courses in English are listed in the three schedules given below, one for students primarily interested in preparing for advanced work in literature, one for students seeking experience and guidance in writing, and one for students preparing for the secondary schools. In choosing his major in his junior year the student should have decided definitely which of the schedules he is to follow.

Senior in Schedules A and C must present for graduation a paper, critical or scholarly, prepared in English 490-491. Students in Schedule B may substitute for this a body of creative writing.

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

CORE CURRICULUM

I. All prospective English majors are expected to take, in their freshman year, the Introduction to Humanities (General 151-152-153), 3 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.

SCHEDULE A: LITERATURE

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

English 395 (Chaucer); 3 credits from 401-402-403; 496-490. The remaining credits required for the completion of the minimum 50 may be selected from courses in English, American, or General Literature numbered above 200. The maximum of courses up to 60 credits may include 305 and 401-402-403.

SCHEDULE B: CREATIVE WRITING

Students whose major interest is in writing 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 an introduction to creative 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 202-203; 3 credits from 211-212-213; 3 credits from 231-232-233.

JUNIOR AND SENIOR YEARS

English 301-302-303, 305; 3 credits from 310-311-312, 341, 491-492-493; 401-402-403; 496. The credit earned in the 53 credits above may be taken from the courses in Literature numbered above 200.

SCHEDULE C: TEACHING

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

OPTION I

English 211, 213, 223, 233, 371, 381, 491, 496, 499; Speech 111 or 261.

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


Students electing this option must qualify for a teaching minor in order to meet Montana State teaching certification requirements.

OPTION II

English 211, 213, 223, 233, 371, 381, 491, 498, 499; Speech 111 or 261.

English electives: 13 credits (must include one advanced course in British Literature, one advanced course in American Literature, and may include General 380 and 5 credits from General 151-152-155).

Related Fields Requirements: Speech 321; Journalism 290, 316; Drama 223, 321.

10-12 credits of electives chosen from one of the following Related Fields: Drama, Journalism, Speech.

Students following Option II must take a minimum of 45 credits in English and 30 credits in the related fields above. This program qualifies the student for the Montana State teaching certificate in English (Broad Fields). This certificate does not require a teaching minor.

III. The foreign language requirement listed earlier in the catalog must be satisfied. Art 231-232-233; Music 135-136-137; Psychology 240-241; Philosophy 100 and 104, 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 passed by all students admitted to the College of Arts and Sciences. An incoming senior, by the beginning of his last quarter, must have an average of 3.5 for his college work to be in position for in his entire record as well as his junior year 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 equivalent. 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"

101 PREPARATORY COMPOSITION 1Q A W 0. For freshmen who fail to establish an acceptable college performance in the placement examination.

101-102-103 FRESHMAN COMPOSITION 3Q A W S Su 3. Students who receive a grade of "A" in 102 may substitute 201 for 103.


211-212-213 INTRODUCTION TO MAJOR BRITISH WRITERS 3Q A W S Su 3. Each quarter. A student with 6 credits of British Literature excluding Humanities cannot take this course. (211) Chaucer through Spenser. (212) Dryden through Blake. (213) Wordsworth through Yeats.

221-222-223 INTRODUCTION TO MAJOR AMERICAN WRITERS 3Q A W S Su 3. Each quarter. A student with 6 credits of American Literature cannot take this course. (221) Franklin through Thoreau. (222) Hawthorne through Twain. (223) James through Hemingway.


301-302-303 PROBLEMS IN COMPOSITION 1Q A W S. Open to any major. Common problems in writing including: organization, development, sentence structure, word usage, and tone. Students also do special work in their weakest areas.

306 THE WRITING OF DRAMA (See Drama).

381 LITERATURE FOR THE HIGH SCHOOL TEACHER 1Q A Su 3. The literature usually taught in grades 7 through 12 with intensive study of a few selections.
FOREIGN LANGUAGES—45

FOR UNDERGRADUATES AND GRADUATES

305 TECHNIQUES OF THE MODERN NOVEL 1Q A 3. The intentions and methods of such innovators as Conrad and Faulkner. Primarily for advanced writing students who are preparing the creative writing schedule, but also to aid the reading awareness of advanced students in the literary and teaching schedules.


321-322-333 STUDIES IN AMERICAN LITERATURE 3Q A W S Su 3. Prerequisites. 9 credits in literature. Major American writers. (321) American Literature to 1850; (322) Late Nineteenth and Early Twentieth Centuries; (333) Contemporary American writing.


341-342-343 SHAKESPEARE AND CONTEMPORARIES 3Q A W S 3. Enter any quarter. Prerequisite 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. (343) Extensive reading of Shakespeare's plays with attention to dramatic conventions, Renaissance ideology, and Shakespeare's artistic development.

344-345 THEORIES OF DRAMA 2Q W S Su 2 e/y. Enter either quarter. Prerequisite 1 quarter of 307-308-309. The critical literature from Aristotle to contemporary criticism and the impact of contemporary playwriting plays from Aeschylus to the modern dramatists. (344) Tragedy. (345) Comedy.

350 INTRODUCTION TO LINGUISTICS (See General Courses).


392-393-394 BRITISH LITERATURE: MEDIEVAL PERIOD 3Q A W S 3. Enter any quarter. Prerequisite 12 cr of literature.

395-396-397 BRITISH LITERATURE: RENAISSANCE TO 1660 3Q A W S Su 3. Enter any quarter. Prerequisite 12 cr of literature.

498-499 SEMINAR 2Q A W Su 2. First instruction and practice in research. Students in Schedule B take 499 only.

FOR GRADUATES

300-301-302 SEMINAR: PROBLEMS IN BRITISH LITERATURE Enter any quarter, V R-R. Students not admitted or offered from various points of view: a period, a person, a genre.

506 WORKSHOP 1Q Su only V R-10. Prerequisite teaching experience and c/l.

600 SEMINAR: PROBLEMS IN RESEARCH a/q V R-6. Guidance in graduate subjects and research.

699 THESIS a/q V R-6 to 9.

FOREIGN LANGUAGES

provide instruction and practice in speaking, reading and writing the tongues of other peoples for commercial and governmental, or cultural purposes. Intercommunication among the nations of the world depends upon knowledge of modern languages, and such understanding is particularly necessary as the importance of the United States increases in global affairs. Educated men and women find language skills not only important for social reasons, but as equipment for research in many fields of humanitarian 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 for studies of the literature and thought of ancient times. These classical languages, as well as modern French, German, Italian, Russian, and Spanish, are offered at the University.

Students of the modern languages are given an opportunity to supplement their classroom instruction with practice in a modern language laboratory.

The time needed to meet requirements for a major in one of the languages depends on language study prior to college entry, and concentration of studies in college. The department offers a Master of Arts degree as well as an undergraduate major in all the above listed languages except Greek, Italian, and Russian.

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

HIGH SCHOOL PREPARATION. Language taken in high school may be recognized by the University in meeting foreign language requirements and in fulfilling the requirements for a major in a foreign language. 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 160, those with two units, course 215; those with three units, courses numbered 300 or over.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. Not more than 60 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 work.

Language majors are set forth below in connection with each language.

FRENCH

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

1. French 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.
4. Two quarters in history of Europe, chosen from the following: History 207, 208, 210, 215, 216, 311, 314, 318, 328.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 ELEMENTARY FRENCH 1Q A W Su 5.
102 ELEMENTARY FRENCH 1Q W S Su 5, Prerequisite.
46—FOREIGN LANGUAGES

103 ELEMENTARY FRENCH 1Q A S 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 S Su 4. Prereq 213 or =.
217 FRENCH GRAMMAR REVIEW AND COMPOSITION 1Q A S Su 3. Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 FRENCH CONVERSATION 1Q a/q 2 R-4. Prereq 217.
301-302-303 SURVEY OF FRENCH LITERATURE 3Q A W S 2 Prereq 217.
305 ADVANCED FRENCH PHONETICS 1Q S 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.
331 17th CENTURY FRENCH LITERATURE 1Q S 3 e/y. Prereq 217.
341 18th CENTURY FRENCH LITERATURE 1Q A 3 e/y. Prereq 217.
351 19th CENTURY FRENCH LITERATURE 1Q W 3 o/y. Prereq 217.
361 CONTEMPORARY FRENCH LITERATURE 1Q S 3 o/y Prereq 217.

FOR GRADUATES

699 THESIS a/q V R-15.

GENERAL LITERATURE

161 CLASSICAL MYTHOLOGY 1Q a/q 2. Delites and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.
221 FOREIGN LITERATURES IN TRANSLATION 1Q A W W S S Su 2. Works of foreign authors in English translation. Periods and literatures vary from quarter to quarter. No knowledge of foreign languages necessary.
440 STUDIES IN COMPARATIVE LITERATURE 1Q a/q 3. The origin and dissemination of important literary ideas, trends, and movements.

GERMAN

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in German must meet the following 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 18 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, 216, 215, 216, 311, 314, 321, 322.

FOR UNDERGRADUATES

101 ELEMENTARY GERMAN 1Q A W S Su 5.
102 ELEMENTARY GERMAN 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY GERMAN 1Q A S Su 5 Prereq 102 or =.
111-112-113 GERMAN FOR ELEMENTARY TEACHERS 3Q a/q 2 Prereq c/l. Grammar, conversation, and methods of teaching German in the elementary school.
200 ELEMENTARY GERMAN CONVERSATION 1Q a/q 1 R-2 Prereq 102 or =. Primarily for majors and minors.
213 INTERMEDIATE GERMAN 1Q A W Su 4 Prereq 103 or =.
215 ADVANCED GERMAN 1Q W S Su 4 Prereq 213 or =.
217 GERMAN GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 GERMAN CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF GERMAN LITERATURE 3Q A W S 2 Prereq 217.
341 18TH CENTURY GERMAN LITERATURE 1Q A 3 o/y Prereq 217.

FOR GRADUATES

699 THESIS a/q V R-15.

GREEK

No major is given in Greek.
101 ELEMENTARY GREEK 1Q W S Su 5.
102 ELEMENTARY GREEK 1Q S 3 Prereq 101.
103 ELEMENTARY GREEK 1Q A Su 3 Prereq 102.
213 INTERMEDIATE GREEK 1Q W S 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 A 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).
3. The Ancient World, History 203-204.
4. Greek 101-102 may be substituted for a Latin course above 217.

FOR UNDERGRADUATES

101 ELEMENTARY LATIN 1Q A S Su 5.
102 ELEMENTARY LATIN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY LATIN 1Q S 5 Prereq 102.
213 INTERMEDIATE LATIN 1Q A S 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 UNDERGRADUATES AND GRADUATES

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.

ROMANCE PHILOLOGY

375 INTRODUCTION TO ROMANCE PHILOLOGY 1Q S 3 a/y Prereq Foreign Language 217. The development of the Romance languages from Latin to their present-day forms.

RUSSIAN

No major is given in Russian.
101 ELEMENTARY RUSSIAN 1Q A 5.
102 ELEMENTARY RUSSIAN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY RUSSIAN 1Q S 5 Prereq 102 or =.
213 INTERMEDIATE RUSSIAN 1Q A 4 Prereq 103 or =.
215 ADVANCED RUSSIAN 1Q W 4 Prereq 213 or =.
217 RUSSIAN REVIEW GRAMMAR AND COMPOSITION 1Q S 3 Prereq 215 or =.
301-302-303 SURVEY OF RUSSIAN LITERATURE 3Q A W S 2 Prereq 217.
SPANISH

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in Spanish must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. Spanish 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.
4. Two quarters in history of Europe or Spanish America, chosen from the following: History 210, 215, 216, 285, 286, 287, 228.

FOR UNDERGRADUATES

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

FOR UNDERGRADUATES AND GRADUATES

300 SPANISH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF SPANISH LITERATURE 3Q A W S 2 Prereq 217.
307 ADVANCED SPANISH COMPOSITION 1Q S 3 e/y Prereq 217 or =.
331 CERVANTES 1Q A 3 e/y Prereq 217.
335 PICARESQUE NOVEL 1Q S 3 e/y Prereq 217.
351 19th CENTURY SPANISH NOVEL 1Q A 3 o/y Prereq 217.
352 19th CENTURY SPANISH DRAMA 1Q W 3 e/y Prereq 217.
361 CONTEMPORARY SPANISH DRAMA 1Q A 3 e/y Prereq 217.
363 CONTEMPORARY SPANISH NOVEL 1Q W 3 o/y Prereq 217.
371-372 SPANISH-AMERICAN LITERATURE 2Q W S 3 o/y Prereq 217. (371) General survey from Colonial times through the Modernista movement; (372) contemporary prose writers with emphasis on the novel.
381 SPANISH POETRY 1Q A 3 o/y Prereq 217.
401 SEMINAR 1Q W S V 2-5 R-15 Prereq 217.

FOR GRADUATES

659 THESIS a/q V R-15.

THE TEACHING OF FOREIGN LANGUAGES

391 METHODS OF TEACHING FOREIGN LANGUAGES 1Q S Su 3 Prereq 217 or = or concurrent registration. Fundamental principles, concepts, objectives, and methods involved in the teaching of a foreign language. Required of teaching majors and minors in modern languages.
394 FOREIGN LANGUAGE WORKSHOP 1Q Su 3 Prereq q/l. New methods of techniques in foreign language instruction. May be taken for education credit. Offered by extension for 2 credits.
591 SEMINAR ON LANGUAGE TEACHING 1Q Su 9 Prereq 2 yrs of college language instruction or =. For language teachers. (NDEA participants only.) (Credits may be applied toward a graduate degree in either language or Education.)
### Forestry

#### First Year
- **A**  W  S
- **Cr**  Cr  Cr
- **Bot 121-122—Forest Botany** 4 4 3
- **Bot 123—Local Flora**
- **Chem 101—General Chemistry** 4 4 5
- **Chem 109—Survey of Organic Chemistry**
- **Engl 101-2—Freshman Composition** 3 3 3
- **Math 113, 116—Trigonometry and College Algebra** 5 5 5
- **Speech 111—Principles of Speech**
- **H&PE 100—Physical Education**
- **ROTC 101-2-3—Military or Air Science** or 0 0 2

#### Second Year
- **Autumn:** For 50, 210, 232, 290; Physics 111; H&PE 100; ROTC 201. Winter: For 250, 291; Bot 225; H&PE 100; ROTC 202; Group Electives. Spring: For 200, 230, 253; Bot 250; ROTC 203.

#### Third Year
- **Autumn:** For 300, 310, 330, 360. Winter: For 301, 340, 352; Econ 201. Spring: For 311, 312; H&PE 100; Econ 202; Bot 370; Jour 344 or Engl 304.

#### Fourth Year
- **Autumn:** For 420, 441, 453; Group Electives. Winter: For 400, 421; Forestry Electives. Spring: For 401, 410, 456.

#### WOOD UTILIZATION

#### Second Year
- **Autumn:** For 50, 210, 252, 290; Physics 111; H&PE 100; ROTC 201. Winter: For 250, 291; Bot 225; Econ 201; Electives; H&PE 100; ROTC 202. Spring: For 200, 230, 233; Bot 250; ROTC 203.

#### Third Year
- **Autumn:** For 330, 441; Econ 202; Geol 101; H&PE 100; Winter: For 352; Engl 304; Physics 112. Spring: Math 118; Physics 113; Psych 110; Electives.

#### Fourth Year
- **Autumn:** For 300, 310; Math 231; Electives. Winter: For 301, 340, 353, 442, 450; Electives. Spring: For 311, 350-1; Psych 342; Bot 370.

#### Fifth Year
- **Autumn:** For 300, 420, 452, 454. Winter: For 400, 421, 455, 457. Spring: For 401, 410, 456.

#### RANGE MANAGEMENT

#### Second Year
- **Autumn:** For 50, 210, 252, 290; Physics 111; H&PE 100; ROTC 201. Winter: For 250, 291; Bot 225; Phys 112; H&PE 100; ROTC 202. Spring: For 200, 230, 233; Bot 250; ROTC 203.

#### Third Year
- **Autumn:** For 300, 310, 330, 360. Winter: For 349, 353; Econ 201; Engl 384; Psy 342. Spring: For 311, 341, 342; Bot 370; Econ 202.

#### WILDLIFE MANAGEMENT

#### Second Year
- **Autumn:** For 420, 440, 441, 451. Winter: For 400, 421, 442. Spring: For 442; Bot 354; B Ed 360.

#### RECREATION MANAGEMENT

#### Second Year
- **Autumn:** For 50, 210, 252, 290; Physics 111; H&PE 100; ROTC 201. Winter: For 250, 285, 291; Bot 225; H&PE 100; ROTC 202. Spring: For 200, 230, 253; Bot 250; ROTC 203.

### Conservation

#### Conservation

**CURRICULA LEDING TO THE DEGREE OF BACHELOR OF SCIENCE IN FOREST CONSERVATION**

**FOREST CONSERVATION**

(AT all group requirements are not included)

**CONSERVATION is the scientific management of natural resources. The term management as used here pertains more specifically to the "wise use" of our renewable natural resources and involves in many instances the multiple and coordinated use of several resources existing on the same, adjacent or associated areas. Forests and forestry play an important part in the solution of many conservation problems, however, the forester's training is from necessity specialized to meet the demands of the profession and the accreditation agency. Many conservation problems demand a broader training than that called for in the professional fields of forestry, agriculture, geology, ecology, hydrology and others. On the other hand, it is generally conceded that there is a limited field of employment for the Conservation Generalist.

For these reasons, it is desirable for the student to specialize in one of the several fields that play an important part in Conservation, but to have a broad background of basic courses. The four year curriculum leads to the degree of Bachelor of Science in Forest Conservation. The Master of Science in Forest Conservation is also offered.

This training prepares the graduate for employment with Federal and State Conservation agencies that usually require the applicant to qualify under a civil service examination. The requirements are available with private companies.

High School preparation and special requirements for the degree in Forest Conservation are the same as for Forestry.

With few exceptions the first year is the same for all students enrolled for this degree. With the assistance of their advisers, students are expected to select a specific course of study before they begin the autumn quarter of their second year.

#### First Year
- Bot 121-122—Forest Botany... 4 4 3
- Bot 123—Local Flora... 4 4 5
- Chem 101-2—General Chemistry... 4 4 5
- Engl 101-2—Freshman Composition... 3 3 3
- Math 113, 116—Trigonometry and College Algebra... 5 5 5
- Speech 111—Principles of Speech... 1 1 5
- H&PE 100—Physical Education... 2 2 2
- ROTC 101-2-3—Military or Air Science... 16-18 16 20

#### Second Year
- Autumn: For 50, 210, 252, 290; Zool 101; H&PE 100; ROTC 201. Winter: For 250, 285, 291; Bot 225; Econ 201; H&PE 100; ROTC 202. Spring: For 200, 230, 253; Bot 250; ROTC 203.

#### Third Year
- Autumn: For 300, 330, 360; Geol 101. Winter: For 352, 387; Econ 202; Geol 102; Psych 110 or Phil 100. Spring: For 383; Econ 203; Soci 101; Engi 213 or Group 3 Elect; Pol Sci 101; H&PE 100.

#### Fourth Year

#### RANGRE CONSERVATION

#### Second Year
- Autumn: Econ 201; For 210, 252; Phys 111; H&PE 100; ROTC 201. Winter: Bot 225; Econ 302; For 250; Psych 110; H&PE 100; ROTC 202. Spring: Bot 285, 365; For 253; H&PE 100; ROTC 203.

#### Third Year
- Autumn: For 300, 482; Geol 101; Jour 334. Winter: Bot 366; For 332, 376; Electives. Spring: For 360, 361, 411; Electives.

#### Fourth Year

#### SOIL AND WATER CONSERVATION

#### Second Year
- Autumn: Econ 201; For 210, 252; Phys 111; H & PE 100; ROTC 201. Winter: Bot 225; Econ 202; For 250; Psych 110; H&PE 100; ROTC 202. Spring: Bot 250; For 250, 252, 253; H&PE 100; ROTC 203.
WATERSHED MANAGEMENT

Second Year
Autumn: For 320, 329, 330, 331; Zool 110; H&PE 100; ROTC 201, 202; Bot 255, 256; Psy 110; H&PE 100; ROTC 205. For 320, 255, 230, 253, ROTC 203.

Fourth Year
Autumn: For 420, 441, 442; Geol 200. Winter: For 400, 421, 484; Geol 262. Spring: For 481; Geol 265.

WILDLIFE CONSERVATION

Second Year
Autumn: For 350, 250, 290, 280; Physics 111; H&PE 100; ROTC 201, 202; Bot 255, 256; Psy 110; H&PE 100; ROTC 205. Spring: Bot 256; For 200, 230, 253; ROTC 203.

Third Year
Autumn: For 320, 310, 390; Geol 110. Winter: For 301, 325, 456, 490; Econ 112; Physics 113; H&PE 100. Spring: For 211; H&PE 100; H&PE 202; Electives.

Fourth Year
Autumn: For 420; Econ 201; Electives. Winter: For 250, 470, 472, 480; Econ 202; Electives. Spring: For 471, 481; Econ 202; Electives.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

50 SLIDE RULE 1Q A 0 (1-0) Prereq Math 100 and 113 or concurrent registration. Use of the slide rule in the solution of mathematics problems.

190-191-192 SURVEY OF FORESTRY 3Q A W S 1 (1-0). Enter any quarter. General survey of the field and subject matter of forestry and introduction to the profession; functions and characteristics of forests, their benefits, use, distribution, importance, and conservation.

200 ELEMENTARY FOREST MENSURATION 1Q S 4 (2-5) 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 4 (3-4) Prereq Chem 101-102 or =. Soils of forest and range lands; biological, physical, and chemical properties; soil erosion control.

230 ELEMENTS OF FOREST PROTECTION 1Q S 3 (3-0) Prereq sophomore standing, Bot 121 and For 290-291. Protection of the forest against exotic agents; fire, disease; insects; wildlife; man, grazing, and climatic factors.


252-253 SURVEYING 2Q A 4 (0-4), S 5 (2-6) Prereq Math 113 and 116 and For 56 prior to or concurrently with For 252. (252) Care and use of tape, staff compass, Abney level, Engineer's level, transit, plane table, and telescopics alidade. Introduction to differential leveling techniques, stadia, and plane table methods. Surveying, public land survey methods; (253) instrument adjustment. Establishment of a triangulation system and coordinate system. Horizontal and vertical control. 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/. Historical development and problems in recreational use of forests and wild lands. Appreciation of natural landscape values. State, national park and wilderness areas and trails. Field trips.

258-291 DENDROLOGY 2Q A W 3 (2-3) Prereq sophomore standing in the School of Forestry and c/. The taxonomic relations and distribution of the principal forest and ornamental trees of the United States and Canada. Identification, uses, range, and silvical characteristics.

290-301 FOREST MENSURATION 2Q A W 4 (3-3). (300) The application of statistical methods to forest mensuration problems. (290) Prereq 206. Analysis and presentation of field data for volume tables and other methods to yield analysis and their computations.

300 FOREST REGULATION 1Q S 3 (2-4) Prereq sophomore standing in the School of Forestry. The application of forest mensuration, management, silviculture and soils to small woodland holdings.

310 SILVIC CULTURAL METHODS 1Q S 5 (4-4) Prereq 206. The foundations of silviculture upon an ecological basis. The effects of climate, edaphic, biotic, and genetic factors on the growth and development of trees and stands, and the influences upon the structure and productivity of the forest stand. Principles underlying the regeneration, care, and protection of forest stands.

311 SILVIC CULTURAL METHODS 1Q S 5 (4-4) Prereq 310. The production of forest products through methods, intermediate cuttings, and cultural operations. Field trips.

312 PLANTING AND PLANTING 1Q S 3 (2-4) Prereq 311. Afforestation and replanting of the forest; collection, extraction, storage, and testing of forest tree seeds; direct seeding; nursery practice; forest planting. Field trips.


321 FOREST FIRE PLAN S 1Q W 3 (3-0) Prereq junior standing in the School of Forestry and 320. Area pre-suppression fire plans, action planning on small and large project fires, fuel type mapping, and fire prevention techniques.

340 WOOD TECHNOLOGY 1Q W 4 (3-5) Prereq 291. Wood identification and anatomy; introducing the relationships of the physical, chemical and mechanical properties to specific uses.

341 CHEMICALLY DERIVED WOOD PRODUCTS 1Q S 3 (3-0) Prereq Chem 201 or c =. Generalized chemical and physical properties of wood. Survey of chemically derived products and processes including Naval Stores, pulp, paper and modified woods.

342 WOOD GLUING AND PHYSICAL PROPERTIES 1Q S 3 (3-0) Prereq 340 and Junior standing in the School of Forestry. Theory and practice of wood gluing. Familiarization with glues, general types of wood construction. Bent wood, painting and finishing, nail holding capacity, insulation values, and other physical properties.

350-331 ADVANCED SURVEYING 2Q W S 2 (3-0) Prereq 250, 252 and 291. Surveying; their current use and development (251) Selected topics of surveying not covered in For 252-253.

352 AERIAL PHOTOGRAMMETRY 1Q W 3 (1-4) Prereq 253 or c/. The elements of photogrammetry and their applications with emphasis on the measurement of forest variables. Application of photogrammetric methods to planimetric and topographic physics. Introduction to the principles of photo interpretation.

353 TIMBER MECHANICS 1Q W 3 (0-6) Prereq Physics 111. Graphic and analytic study of simple structures; simple beam and truss design; use of timber connectors.

354 AERIAL PHOTO INTERPRETATION 1Q S 3 (0-6) Prereq 352 and c/l. Co-ordinated work between laboratory and field. Map interpretation, surveying, and cartography. Reading, interpreting and reading of maps and documents based on aerial photography. Field trips.

360 WOOD PRODUCTS INDUSTRY 1Q W 3 (4-2) Prereq 361. The principles of population dynamics and their application to the management of wildlife as a land resource.

362 WOOD PRODUCTS INDUSTRY 1Q W 3 (4-2) Prereq 361. An introduction to the field of range management, class of stock, grazing season, forage production and use (351) Selected topics of surveying not covered in For 252-253.

361 RANGE FORAGE PLANTS 1Q S 4 (4-0) Prereq 360, Bot 366 and c/l. Economic range forage plants; forage value to different kinds of range animals; management problems in their use.

370 GENERAL WILDLIFE MANAGEMENT 1Q W 4 (3-3) Prereq c/. The principles of population dynamics and their application to the management of wildlife as a land resource.

372 WILDLIFE RESOURCES AND CONSERVATION 1Q A W 3 (3-0) Prereq 210 and Bot 250. The interrelation of wildlife and resource conservation problems and programs. The need for conservation to maintain our renewable resources and manage their development and use to meet the needs of our present and future generations. Conservation programs and the practices and agencies involved in their application. (Not open for doctoral credit.)

375 FOREST RECREATION 1Q S 4 (4-0) Prereq 285. Physical development, objectives and planning in the recreational use of forest and other wild lands. Field and class.

376 PARK MANAGEMENT 1Q W 3 (3-0) Prereq 285. Theory, evaluation and improvement of park system development in the United States, state, national and local level. Forestry aspects related thereto.

400-401 FOREST MANAGEMENT 2Q W S 5 (5-0), S 8 Prereq 311 and 420 (420 may be taken concurrently). (400) Organization and management of forest properties; determination of allowable cut and regulation of the growing stock. (401) Prereq 360 and 400. Emphasis on field work necessary in applying forest management, timber cruising, determination of growth, and timber marking.
410 REGIONAL SILVICULTURE 1Q S 3 (6-Field) Prereq 310 and 311. Silvicultural methods and their application to the various commercial forest species, types, and regions of the United States.

411 FOREST SOIL CLASSIFICATION AND MAPPING 1Q S 4 (3-4) Prereq 210 and Geol 101. Classification of forest soils as natural bodies. Mapping of forest soils, land use classes, and forest site classes.

412 ADVANCED FOREST SOILS 1Q W 3 (2-4) Prereq 310 and 319. Basic soil chemistry, physical and biological properties of soils to forest tree growth.

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 (5-0) Prereq Econ 201 and For 420. 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/l. The development of forestry and public land policies, especially in the United States. Policy objectives, programs, and groups.

423 FOREST ADMINISTRATION 1Q S 2 (2-0). Principles and practices of forest administration and dealing with personnel in executing private and public forest policies.


441 SAWMILLING AND LUMBERING 1Q A 3 (2-4) Prereq junior standing in the School of Forestry. Various types of sawmilling and planing operations, and equipment. Grades and uses. By-products and residue utilization. Past and present day trends and problems. Brief survey of drying operations.

442 SEASONING AND PRESERVATION 1Q W 3 (3-0) Prereq junior standing in the School of Forestry. Principles involved in seasoning and preservation treatments of woods. Related wood anatomy. Application to present commercial practices.

443 UTILIZATION FIELD 1Q A S (3-0). Prereq junior standing. Utilization in forest industries. Several weekend trips to study and observe full scale wood products industries on location.

450 HYDRAULICS 1Q W 2 (2-0) Prereq c/l. Elementary study of the physical properties of water.

451 MECHANICAL PROPERTIES OF WOOD 1Q A 3 (2-5) Prereq 322. Mechanical factors related to strength of wood; elementary graphic statics; timber testing.

452 LOGGING 1Q A 3 (2-4) Prereq 361, 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.

453 LOGGING-ENGINEERING 1Q A 5 (4-4) Prereq 322-233, 311. Credit not allowed for this course and For 452. A survey of logging practices and applications. Principles involved in the intelligent application of sound management practices to watershed management. The movement and measurement of water, soil, and wildlife; the use of maps, forest, wildlife and water conservation plans to watersheds and their relationships to the control of soil erosion and water conservation.

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) Collection field data for a logging plan. Location of appurtenances and road locations. The basic factors of road planning and location for forest development. Service course for non-engineering majors.

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) Collection field data for a logging plan. Location of appurtenances and road locations. The basic factors of road planning and location for forest development. Service course for non-engineering majors.

457 TIMBER DESIGN 1Q W 4 (2-6) Prereq 335 and mathematics 231. Forces in three dimensions; combined stresses; columns; 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/l. Range surveying, conditions, and trend analysis, utilization analysis, damage appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 1Q W 5 (3-0) Prereq 360 and c/l. The digestion and utilization of nutrients by ruminants. Nutritional characteristics of range forage plants. The nutritional requirements of livestock and range management.

462 RANGE LIVESTOCK PRODUCTION 1Q S 2 (2-0) Prereq 390 and c/l. Selection, production, and management of range livestock.

463 RANGE ECONOMICS 1Q S 3 (2-0) Prereq 390, Econ 201 and c/l. Range regions from an economic standpoint. 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/l. Legal and political principles involved in the administration of federal, state and private range properties. Administration, organization and methods for regulation of grazing on public lands.

465 REGIONAL RANGE MANAGEMENT 1Q S 6 Prereq 460, 461, 462 and c/l. Regional range management problems and situations. Work done on senior spring trip.

470 ADVANCED WILDLIFE MANAGEMENT 1Q W 5 (4-2) Prereq Zool 200, 300 or 309; Bot 250 or 355 and c/l. The principles of population dynamics, ecology and behavior of birds and mammals to wildlife conservation and administration. The relations of land use practices to wildlife diversity and abundance.

471 WILDLIFE HABITAT MANAGEMENT 1Q S 5 (4-field weekends) Prereq 251 and c/l. The biology of big game mammals and its application to problems of conservation and propagation. Principles and techniques of management on wildlife populations through habitat modification.

472 BIG GAME MANAGEMENT 1Q W 3 (2-4) Prereq 360, 370 and c/l. The biology of big game mammals and its application to problems of conservation and propagation. Principles and techniques of management of big game mammals on wildlife populations.

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.
GENERAL COURSES

are offered as surveys or introductions to broad fields of learning, but there is no "general course" in which a degree is offered. Any University student is compelled to study in many fields as a matter of general education; and specialization in one curriculum, although required for a degree is strictly limited (see Graduation Requirements) and advisable to provide certain degree-curricula which overlap two or more of the curricula described in other pages of the catalog and in which the specialized instruction is drawn from several fields.

The curricula in Biological Sciences, Liberal Arts, Physical Sciences, Secretarial-Home Arts, Pre-Medical Science and Wildlife Technology are examples. It also has been found desirable to provide particular courses which overlap two or more fields; these are described below.

100 DESCRIPTIVE ASTRONOMY 1Q S 4. An introductory course: The earth and the sky, seasons, telescopes and their uses, planets and their satellites, stars, galaxies. (Applies toward Group I.)

101-102-103 INTRODUCTION TO THE READING OF LITERATURE 3Q S 2 S 1 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. (103) Poetry. (See General English requirements.)

125-126-127 SCIENCE FOR ELEMENTARY TEACHERS 3Q A W S Su 4 (3-2) Open only to majors in Elementary Education. A survey of fundamental aspects of physical science, including force and motion, electricity, magnetism, wave motion, gravity, heat, states of matter, the universe, geological structure, atomic structure, and related topics. (126) An investigation of the intersubjectives of physical and biological sciences: the elements, chemical reactions, genetics, biological evolution, metabolism, cell structure, relationship of cell structure and function, cell division, basic genetics, origin of life and related topics. (127) A survey of the animal and plant kingdoms, including taxonomy, morphology, physiology, life cycles, ecology, evolution, and related topics.

131-132-133 INTRODUCTION TO BIOLOGICAL SCIENCE 3Q A W S 5. The essential structure and function of living organisms. Principles of heredity, Morphology, physiology, classification and potential evolution of the plant and animal groups. Introduction to the morphogenesis, physiology and behavior within the principal animal phyla, with emphasis upon man. History and theory of evolution; evidences for evolution from all fields of biology; the concepts of mechanism of evolution. Principles of bio-ecology and their implications to man in the field of conservation. Given by the departments of Botany and Microbiology, and Zoology.

151-152-153 INTRODUCTION TO THE HUMANITIES 3Q A W S 3. Enter any quarter. Those who have completed 8 or more credits in literature may receive credit in this course. A general survey of the field of Humanities. Acquaintance with literature through surveys of the literature from the Greeks to the Amerindians. The primary aims of understanding and appreciation. Given by different instructors under various titles.

FOR UNDERGRADUATES AND GRADUATES

300 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 1Q W S 3 Prereq c/q. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare, and the development of principles underlying improved management of the natural resources. A survey of human and cultural resources. The methods of social implementation of desired practices. Primarily a teacher training course. Does not satisfy requirements for degrees in Botany or Zoology or the group requirements in science.

360 INTRODUCTION TO LINGUISTICS 1Q A S 3. A survey of linguistic science. The nature of language and the techniques of the descriptive linguist. (See English.)

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, 344 and 491-492-493 will allow a major in English with the permission of the instructor.

161 CLASSICAL MYTHOLOGY. (See Foreign Languages.)

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

FOR UNDERGRADUATES AND GRADUATES

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

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

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

491-492-493 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, the 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 Bachelors of Arts degree with a major in Geography: a minimum of 20 credits in Geography including Geography 101, 201 and two of five Geography courses 301, 311, 335, 343, and 371; Economics 201-202-203; Geology 110; History 251-252-253; and Political Science 262-263; and Sociology 101 or Anthropology 102.

The following courses with the consent of the advisor may be counted toward a major in Geography: Botany 250 or 355, Business Administration 244, Economics 330, General 106, Geology 210, Sociology 304, and Forestry 360.

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>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</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>
</tr>
<tr>
<td>F. L. 101-102-103—Elementary French or German</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 110—General Geology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective Group I or III</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H&amp;PE 100—Freshman Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sophomore Year</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>
</tr>
<tr>
<td>F. L. 213—Intermediate French or German</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>F. L. 215—Advanced French or German</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geog 101—Elements of Geography</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 111-112-113—Economic Geography</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Soc 101—Elementary Sociology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives Group I or III</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 100—Sophomore Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military or Air Science</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Junior Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 300—Geography of North America</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 300—Geography of Europe</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 300—Geography of Europe</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 309—Climatology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 399—Cartography</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hist 201-202-203—United States History</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>
</tr>
<tr>
<td>Electives in Geography</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Senior Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geog 450—Seminar in Geography</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electives in Geography</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
111-112-113 \textbf{ECONOMIC GEOGRAPHY} 3Q A W S.2. Enter any quarter.
(111) The industries producing food and raw materials; (112) the significance, structure and distribution of manufacturing industries; (113) service industries with an emphasis on trade and transportation. A review of economic regions.

201 \textbf{MAP INTERPRETATION} 1Q A 3. Map and chart evaluation. The analysis of human and physical features on maps; progress, coverage, and quality of world mapping.

300 \textbf{CARTOGRAPHY} 1Q A 3. The interpretation, construction, and uses of important map projections. Cartographic techniques utilized in the presentation of data.

\textbf{FOR UNDERGRADUATES AND GRADUATES}

300 \textbf{GEOGRAPHY OF NORTH AMERICA} 1Q W Su 3. Prereq 101 or =. Natural and cultural regions of the continent, with emphasis on economic developments.

301 \textbf{PHYSIOGRAPHY OF NORTH AMERICA} 1Q A 3 Prereq 101, Geography 116, or =. The geomorphic regions of the continent, their topography, climate, soils, and vegetation.

310 \textbf{GEODESIC SURVEYS} 1Q A 3 o/y Prereq 101 or =. The relation of the physical environment to natural areas of the United States, with emphasis on economic development.

312 \textbf{REGIONAL ECONOMIC GEOGRAPHY} 1Q A 3 o/y Prereq 101 or =. Regional differentiation and development, with emphasis on economic activities with special reference to population problems.

320 \textbf{GEOGRAPHY OF THE PACIFIC NORTHWEST} 1Q S 3 Prereq 101 or =. The physical and cultural features of the region in relation to problems of unity and diversity. (322) The nature and scope of geopolitics. A geopolitical analysis of the United States and selected states in Europe and Asia.

325 \textbf{HUMAN GEOGRAPHY} 1Q A 3. Human societies in their environmental setting. A comparative approach to man, space and resources.

345 \textbf{URBAN GEOGRAPHY} 1Q W 3 Prereq 101 or =. The growth, morphology and functions of towns and cities. Examination of the contemporary urban scene.

360 \textbf{CLIMATOLOGY} 1Q W 5 Prereq 101 or =. Elements and controls of weather and climate. Classification and distribution of climatic types.

370 \textbf{LANDFORM ANALYSIS} 1Q S 3 Prereq 101 or =. Topographic phenomena of the earth’s surface with emphasis on processes of morphologic change.

371 \textbf{PHYSICAL GEOGRAPHY OF ARID LANDS} 1Q W 3 Prereq 101, Geography 110, or =. Landform development in the desert environment.

405 \textbf{THE HISTORY OF GEOGRAPHY} 1Q W 3 Prereq 12 credits in Geography or =. Geography from early Greek and Roman times to the close of the nineteenth century.

410 \textbf{PROBLEMS IN GEOGRAPHY} 1Q a/q V 1-2 R-6 Prereq 12 credits in Geography.

450 \textbf{SEMINAR IN GEOGRAPHY} 1Q a/q V R-6 Prereq 16 credits in Geography including 101, or =.

\textbf{FOR GRADUATES}

500 \textbf{MODERN GEOGRAPHIC THOUGHT} 1Q S 3. The analysis of geographical concepts, approaches, and techniques developed in the twentieth century.

508 \textbf{RESEARCH METHODS AND MATERIALS} 1Q A 3. Collection and preparation of materials in geographic research, including field techniques, interviewing, library sources, and the cartographic presentation of data.

600 \textbf{THESIS} a/q V R-15.

\textbf{GEOLOGY}

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

The Bachelor of Arts degree, the Master of Arts (or Master of Science), and the Ph.D. degrees are offered (see Graduate School). The 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 field work. Students are trained in mapping methods and general field investigation under actual working conditions. Such studies are accompanied by theoretical work as well as courses in other basic sciences.

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

\textbf{HIGH SCHOOL PREPARATION}. In addition to the general requirements for University admission, the student needs algebra. It is also recommended that high school preparation include advanced algebra, physics, and chemistry.

\textbf{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, 140, 150, 160-162, 180, 222-223, 235. Also required are Mathematics 113, 116, 136; Chemistry 121-122, 123, 245; Physics 111-112-113 or 221-222-223; English 304; Geography 370; Zoology 104-105 or Mathematics 251-252. A foreign language, 23 credits in one language, or 3 quarters in each of two languages, or a reading knowledge, is required. French, German, Russian or Spanish is recommended.

Departmental requirements can be waived for students who at the end of any complete year have a B average in all college courses previously taken while pursuing a standard geology curriculum. A special geology curriculum may be devised for these students in consultation with their advisers. This will, for example, allow special curricula planned for special areas of interest such as biochemical 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.

\textbf{COMBINATION GEOLOGY AND LAW PROGRAM}. Students in this program complete all of the above requirements except Geology 259, 461; Math 116, 118; Physics 111-112-113 or 221-222-223, Zoology 104-105; English 304; and Geography 370. 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 if 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.

\textbf{SPECIAL REQUIREMENTS FOR THE GRADUATE DEGREES}. Not more than 9 credits of Geology 600 and 699 may be counted toward Master’s degree requirements.

\textbf{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 320 Field Geology.

\textbf{CURRICULUM IN GEOLOGY}

\textbf{Freshman Year}

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W</td>
</tr>
<tr>
<td>Eng 101-102-103</td>
<td>3</td>
</tr>
<tr>
<td>CHE 121-122-123</td>
<td>5</td>
</tr>
<tr>
<td>Geol 110, 120</td>
<td>5</td>
</tr>
<tr>
<td>Geol 130</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;P 100</td>
<td>1</td>
</tr>
<tr>
<td>Group II or III courses</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>16-18</td>
</tr>
</tbody>
</table>

\textbf{Sophomore Year}

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 113, 116, 118</td>
<td>3</td>
</tr>
<tr>
<td>Geol 200, 205, 203</td>
<td>4</td>
</tr>
<tr>
<td>Geol 104-105</td>
<td>5</td>
</tr>
<tr>
<td>Geol 130</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;P 100</td>
<td>1</td>
</tr>
<tr>
<td>Group II or III courses or electives</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 201-202-203</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17-19</td>
</tr>
</tbody>
</table>
INTRODUCTION TO GEOL A 4 (2-4) Prereq 200 or =. Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals, and birds.

GEOMORPHOLOGY 1Q A 4 (3-3) Prereq 200, 220. Topographic features that comprise the landscape; their origin, development, and classification and geologic environments of metallic mineral deposits.

METALLIC MINERAL DEPOSITS 2Q A W 4 (3-2) Prereq 200, 315. Theoretical and practical aspects of nature, origin, classification and geologic environments of non-metallic mineral deposits.

NON-METALLIC MINERAL DEPOSITS 1Q S 4 o/y (3-2) Prereq 203, 315. Theoretical and practical aspects of nature, origin, classification and geologic environments of non-metallic mineral deposits.

INVERTEBRATE PALEONTOLOGY 2Q A W 4 (2-4) Prereq 110, Zool 104-105 or concurrent registration. Fossil remains of invertebrate animals; emphasis on morphology of skeletal parts and classification.

OPTICAL MINERALOGY IQ A 4 (2-6) Prereq 315, Physics 113. Principles of polarization microscope and accessories; theory of optical phenomena observed with microscope; identification of mineral fragments and minerals in thin section.

PETROGRAPHY 2Q W S 4 (2-6) Prereq 315, 420. (425) Optical examination and identification in thin section of igneous minerals and rocks by polarizing microscope; (426) Similarly treats metamorphic and sedimentary rocks. Advanced petrologic considerations included in both quarters.

GEOCHEMISTRY 2Q A W 3 (3-0) Prereq Chem 123, Math 253. (427) Fundamental chemical principles governing abundance distribution, and migration of elements within the earth. (430) Principles of thermodynamics and crystal chemistry as applied to formation and transformation of rocks.

PRINCIPLES OF STRATIGRAPHY 1Q A 3 (2-3) Prereq 130, 231; 410-411 recommended. Interrelationships of environment, tectonic controls, and facies; problems of correlation; isopachs, facies, paleogeologic and paleogeographic maps; field work.

PRINCIPLES OF SEDIMENTATION 1Q A 4 (2-6) Prereq 110, 315. Texture, structure and clastic sedimentary rocks with emphasis on environments of deposition; statistical techniques applied to grain size, shape, roundness; significance of sedimentary structures including cross-stratification, etc.; their relation to deposition. (431) Principles of stratigraphy and sedimentology as applied to development of geologic environments.

PETROLEUM GEOLOGY 1Q S 3 (3-0) o/y Prereq 315. Principles of stratigraphy and structural controls of occurrence; some of the problems associated with development.

INTRODUCTION TO CONCEPTS IN GEOPHYSICS 1Q S 3 (0-3) Prereq Physics 113, Math 118 (203) recommended. Principles of physics controlling geophysical methods; application of geophysical methods to problems. (436) History and principles of geophysical methods and their application to the solution of geologic problems.

GROUND WATER GEOLOGY 1Q S 4 (3-3) Prereq 200, 315, 405; 430 recommended. Geologic and hydrologic conditions controlling occurrence and development of ground water; emphasis on conditions in Montana and vicinity.

MARINE GEOLOGY 1Q W 4 (2-5) Prereq 110, Zool 105. Physical, chemical, biological and geological aspects of the ocean and its floor.

HISTORY OF GEOL A 1Q W 1 (2-0) Prereq 30 credits in Geology. Analysis of the development of some of the fundamental concepts in geology. History of major branches of geology.

VERTEBRATE PALEONTOLOGY 3Q 464-465 W, 466 S (5-4) Prereq Zool 201 or Geol 308 or =. (464) The lower vertebrates. Taxonomy, morphology, paleoecology, and geologic history of fishes, amphibians, and reptiles. (465) Mammals, including primates and humans. (466) History and paleoecology of mammals and birds; emphasis on Rocky Mountain Cenozoic stratigraphy. o/y.

FOR GRADUATES

ADVANCED SEDIMENTATION 1Q W 4 (3-3) Prereq 420, 430, 432. Composition and classification of sedimentary rocks with emphasis on provenance; determination of provenance, transport and tectonic history of grains using petrographic and other techniques.

CLAY MINERALOGY 1Q S 4 (3-3) Prereq Chem 123, Geol 315 and 445. Crystal structure and composition of clay minerals; ion exchange reactions, clay-water systems, chemistry of formation of clay minerals, identification of clay minerals by x-ray powder methods.

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

GEOTECTONICS 1Q S 3 o/y (3-0) Prereq 331. Analysis, synthesis of regional structural features including geosynclines, mountain belts, island arcs, compressional mountain systems, structure of plateaus, and broad warps. Conditions within earth; possible causes of deformation.
HEALTH AND PHYSICAL EDUCATION

deals primarily with muscular activity and recreation to provide the individual with wholesome psycho-motor and organic development, with fitness for daily living, and with resources for use of leisure. The program provides (1) instruction in a wide variety of sports and recreation skills, (2) opportunity for student groups to organize teams and to participate in formal and informal competition in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, touch football, softball and volleyball, and (3) preparation for professional careers in the various fields related to physical education and recreation.

A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in this field. The Master of Arts and the Master of Science degrees are also offered.

Theory courses include structure and function of the human body, basic principles and teaching procedures, history and philosophy of safe and ethical administration of programs. Professional activity courses include training in teaching team games, individual and dual sports, gymnastics and tumbling, aquatics, and forms of the dance. Students interested in physical therapy and orthopedic rehabilitation may fulfill entrance requirements for approved school of physical therapy. Health education includes personal as well as school and community problems and the contributions of various agencies to human health and welfare. Recreation courses offer preparation and practice in group leadership, training in crafts and social activity skills for leaders of youth groups, and background for careers in industrial and community recreation and in recreation therapy. All levels of American Red Cross certification are offered in conjunction with swimming and first aid courses.

Many graduates enter the teaching profession. Some choose to continue graduate studies with specialization in physical therapy or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. Many elect careers in leadership positions in youth-serving organizations, in playground and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION. Two degrees are offered in this Department: Bachelor of Arts, which requires that the foreign language requirement listed earlier in the catalog be satisfied, and Bachelor of Science, which requires no courses in foreign language. Students electing the Bachelor of Science degree will offer the following courses: Home Economics 146, Psychology 230, Speech 111, Microbiology 105, and 8-10 credits selected from two of the following areas: Sociology, Anthropology, General 151-152-153. Requirements for both degrees are identical in all other aspects.

In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed: 54 credits in Health and Physical Education in addition to Health and Physical Education 115-116-117, 119-120; Education 335, 373; Social Welfare 362; Zoology 202 and 4 or 5 credits from Zoology 101 or 104, or Chemistry 101, or Physics 111. Pre-physical therapy students must include Zoology 101 or 104, and 5 credits of a physical science.

The following courses must be completed by all students: Health and Physical Education 180, 189, 238 or 239, 290, 299, 337, 365, 390, 396, 465, and 490.

Women students also take: Health and Physical Education 190, 230, 235, 236, 239, 324-235, 375, and 469.

Men students also take: Health and Physical Education 210, 211-212 or 311-312, 240, 310, 321-322.

CURRICULUM IN HEALTH AND PHYSICAL EDUCATION

For Bachelor of Science Degree

Freshman Year

<table>
<thead>
<tr>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>Cr</td>
<td>Cr</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>Cr</td>
<td>Cr</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>Cr</td>
<td>Cr</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>Cr</td>
<td>Cr</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
115-116-117 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS 3Q A W S 1. e/y Enter any quarter. Required of all majors and minors in H&P.E. open to non-majors. May be used in place of W1 P O R E Q U I R E m e n t s . Women: team sports. (115) Men: volleyball and badminton. Women: tennis (116) Men: individual sports. Women: fundamentals of rhythmic activities. Credits earned will be in addition to the 180 required for graduation.

118-120 PROFESSIONAL ACTIVITIES FOR MAJORS AND MINORS 3 Q A W S 1, 2. P r e r e q u i r e m e n t s . Required of all majors and minors in H&P.E, open to non-majors. May be used in place of W1 P O R E Q U I R E m e n t s . Women: individual sports. Women: fundamentals of rhythmic activities. Credits earned will be in addition to the 180 required for graduation.

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

196 YOUTH PHYSICAL EDUCATION 1Q W 3, 6, 9. PreReq: Major in Physical Education or c/l. History and principles of Physical Education, professional opportunities, relationship with other fields and with education in general. Orientation for pre-service majors and minors.

199 FIRST AID 1Q A W S 2. Su h. 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. Intensive training in special techniques of coaching football and basketball and in athletic training. (Special coaching school.)

210 COACHING OF FOOTBALL 1Q W 3.

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

212 FOOTBALL COACHING FIELD WORK 1Q A 1 PreReq 211. Practical experience.

219 COACHING OF BASEBALL 1Q W 3.

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

222 SOFTBALL AND BASEBALL COACHING FIELD WORK 1Q S 1. PreReq 221. Practical experience.

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

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

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

251 WATER SAFETY AND LIFE SAVING 1Q W 2. PreReq Red Cross Junior Life Saving Certificate. Instructor's course in life saving and water safety. Red Cross Instructor's Certificate awarded upon successful completion of requirements, providing student has reached his 19th birthday.

250 CARE AND PREVENTION OF ATHLETIC INJURIES 1Q W 2, Su e/y. Common athletic injuries, their causes, prevention and care. Practical work under direction of major.

290 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. Theory and practice in coaching individual work in basketball.

311 THEORY OF OPIFICATING BASKETBALL (MEN) 1Q W 1 PreReq 311 or 312. Practical experience.

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

322 COACHING OF TRACK 1Q S 2. Practice.

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

335 METHODS OF TEACHING PHYSICAL EDUCATION 1Q A 3 Su e/y. PreReq 110 through 120. Required of all teaching majors and minors in H&P.E. Materials for junior and senior high school programs. Demonstration and practice in teaching techniques. Lesson planning.

337 THE ELEMENTARY SCHOOL PHYSICAL EDUCATION PROGRAM 1Q S Su 3 PreReq 190 and 335. Theory and practice in selecting and presenting activities for four year olds; characteristics of growth and development related to course content. Credit not allowed for this and 339.

362 RECREATION LEADERSHIP (SOCIAL RECREATION) 1Q W 3 PreReq Sociology 101I. Principles and practice in group leadership, program skills for various age groups and for special groups, and in social handicapped. Credit not allowed for this and Social Welfare 363.

385 ORGANIZATION AND ADMINISTRATION 1Q W 4, Su o/y PreReq 190. Principles and policies for the organization and administration of high school physical education departments. Management of the physical plant.

389 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.

396 INTRODUCTION TO PHYSICAL THERAPY 1Q S 4 PreReq 380 and concurrent registration. Theory and practice of massage. The treatment of defects which come within the field of physical education.

390 CLINICAL TRAINING IN PHYSICAL THERAPY 1Q a/q 1-4 PreReq 368 and c/l. Practical experience in local physical therapy centers.

490 TEACHING OF COLLEGE PHYSICAL EDUCATION ACTIVITIES 1Q W 2 R-4 PreReq 115-119-117, 118-119-120, 335, and c/l. Assigned teaching projects in college classes, under supervision.

FOR UNDERGRADUATES AND GRADUATES

339 TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOLS 1Q A S Su 3 PreReq major in elementary education and Educ 202 or teaching experience. Principles and foundation of elementary school physical education; theory and practice in selecting and teaching activities for children in grades one through eight. Credit not allowed for this and Social Welfare 361.

357 PLAYGROUPS 1Q A 4 PreReq 337. Theory of play. History, construction, equipment, management, problems, methods of conducting, and practical working supervision of playgroups.

368 THE HIGH SCHOOL INTRAMURAL PROGRAM 1Q Su 3. Practical of organizing and administering the intramural sports in the high school.

381 INTRODUCTION TO RECREATION LEADERSHIP 1Q A 3 PreReq Sociology 101I. Sociology of play, recreation and leisure time; community leisure; responsibilities of leadership; in industrial workers, hospital patients, senior citizens, playgrounds; facilities and resources. Credit not allowed for this and Social Welfare 361.

386 CURRICULUM CONSTRUCTION 1Q W 4 PreReq. 337. Classification and analysis of physical education activities; criteria for selecting activities; construction of programs for specific situations.

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

375 PERSONAL HEALTH PROBLEMS (WOMEN) 1Q W 2 o/y. Fundamentals of health with counseling problems frequently encountered by physical educators.

378 PHYSIOLOGY OF EXERCISE 1Q W 2. Su e/y. The physiological effects of different types of exercise on the functions of the human body.

385 KINESIOLOGY 1Q W 5, Su o/y PreReq 380. Advanced study of muscle action and joint mechanics of the body.

386 PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION 1Q W 3, Su o/y. PreReq 385. The functional and common physical defects frequently encountered by the physical educator; follow-up programs possible under medical supervision.

460 SEMINAR a/q V 1-3 R-12. Special problems connected with health, physical education and recreation; reviews of current literature, and topical discussions.

465 TESTING IN PHYSICAL EDUCATION 1Q A 3, Su o/y. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures.

466 SUPERVISION IN PHYSICAL EDUCATION 1Q Su 4 PreReq 355 or 368. Roles and responsibilities of supervisors in effecting effective leadership.
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 political situations.

Courses are offered in European, American, Far Eastern, Canadian, and Latin-American History. Many students combine the fields of History and Political Science.

A 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 bases for the pursuit of their chosen occupations, but also furnishes knowledge and prospective for intelligent leadership in community action.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the award of a major in History. A minimum of 50 credits in History is required, with 30 credits from courses numbered over 300. It is recommended that History 491 or 492 will count in fulfilling the minimum of 30 upper division credits for the B.A. History major, 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 30 credits must be selected from courses numbered over 300, including either History 491 or Political Science 491. Only one of courses History 491 or 492, or Political Science 491 will count in fulfilling the minimum of 30 upper division credits for the B.A.

Either the completion of five quarters of a foreign language or the completion of all credits leading to a Bachelor’s degree in history, 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.

To earn a Bachelor of Arts degree with a major in History and Political Science beginning with the Fall quarter of their freshman year the student must fulfill all the academic requirements of the departmental major and the following academic years the student must fulfill all the university and departmental regulations. The study of Latin is recommended in fulfilling the foreign language requirement. Because of the time involved and the field to be covered, the Department and the School of Law do not propose the major 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 262, 263, leading free almost exactly seven quarters for the completion of requirements and for electives. As a junior the student will select a minimum of 31 hours from the offerings of the

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

FOR GRADUATES

101-102-103 THE DEVELOPMENT OF WESTERN CIVILIZATION 3Q 19 W S 3 Enter a major study through the Medieval period. Greek and Roman civilization, barbarian invasions; Medieval society to 1400. (102) Early Modern Age to 1815. Age of Absolutism; 18th Century salons and revolutions. (103) 1815 to present. Industrial Revolution; Congress of Vienna and Age of Restoration; Growth of nationalism and social evolution; Socialism, Imperialism, First and Second World Wars, the Cold War.

207-208 MEDIEVAL EUROPE 2Q A W 3. Enter either quarter. (207) Political, economic, social, and religious development of Europe from the third century to the eleventh century. (208) A continuation of 207 to the fourteenth century. Some attention will be paid to cultural and intellectual developments.

210 RENAISSANCE AND REFORMATION 1Q S 3. The political, economic, and social development of Europe from 1300 to 1500.

213-216 EUROPE IN THE 19TH CENTURY 2Q A W Su 3. (215) The internal political, economic and social development of the European state from 1815 through the 1970s. (216) The political, economic and social development of the world since 1914.


251-252-253 UNITED STATES HISTORY 3Q A W Su S 4. Enter any quarter. (251) United States History, 1600-1815. Colonial beginnings and progress; the Revolution, Confederation and Constitution; early political development; the War of 1812. (252) United States History, 1815-1915. The sectional problems; Civil War and Reconstruction; the New West; agricultural and industrial development. (253) United States History, 1890-present. Capitalism and constitutional changes; the Progressive Movement; World War I; The Depression and the New Deal; World War II.


FOR UNDERGRADUATES AND GRADUATES

303 HISTORY OF ANCIENT GREECE 1Q A 4 Prereq 101 or =. An introductory survey of the Ancient Near Eastern Empires, and a survey of Greek culture during the period of the Ionian League, the Persian Wars, Alexander the Great, and the Hellenistic Age to the Age of Rome.

305 HISTORY OF ANCIENT ROME 1Q W 4 Prereq 101 or =. Early Roman civilization, the Roman Republic, Hellenistic culture, The Republic, the Principate and the Empire.

306 MEDIEVAL CIVILIZATION 1Q S 3 Prereq 101, 207-208 or =. Institutional, social and cultural progress in the Middle Ages.

311 THE AGE OF ABSOLUTISM 1Q W 3 Prereq 102. The political, economic, and social development of Europe from 1500 until the outbreak of the French Revolution.

314 FRENCH REVOLUTION AND NAPOLEONIC ERA 1Q S Su 4 Prereq 102 or =. Political, economic and social development in France and the international reactions to the revolution.

318 THE EARLY 20TH CENTURY (1900-1933) 1Q S Su 3 Prereq A college course in modern European history. Internal development of Britain and of the continental powers. International rivalry prior to the First World War; The war and its aftermath.

319 CONTEMPORARY EUROPEAN HISTORY 1Q S Su 4 Prereq A college course in modern European history. The internal affairs and the external relationships of the principal European states since 1933.

321-322 CENTRAL EUROPE 2Q W S 4 Prereq A college course in modern European history. (321) The growth and development of the states of Central Europe and the Balkans since early modern times to 1815. (322) The growth and development of the states of Central Europe and the Balkans from 1815 to the present.


330 MODERN FRANCE AND SPAIN 1Q S 4 Preq 102 or 314. The political, economic, social, and cultural development of France and Spain from the beginning of the 19th century to the present. Some attention will be paid to the political trends.

333 ECONOMIC HISTORY OF EUROPE 1Q A Su 4. The economic development of Europe from the early Middle Ages to the present time.

334 MODERN WAR AND WESTERN SOCIETY 1Q S Su 3 Prereq 3 or in history. A history of warfare from the French Revolution. Emphasis is placed on relationships of government and military command, on problems of strategy, and on theories of war.


336 HISTORY OF CANADA 1Q A, Su 3 Prereq 102, 241, or 251. A unified account of the history of Canada to the present time with emphasis on Canadian-American diplomatic and economic relations; the growth of the Canadian West.

345-346 ENGLISH CONSTITUTIONAL HISTORY 2Q A W 3 Prereq 241-242. (345) English constitutional development to the end of the Middle Ages. (346) English constitutional development since the Middle Ages.

348 ECONOMIC HISTORY OF ENGLAND 1Q A Su 4 Prereq 241-242. The economy and development of modern England; the growth of Empire.

353 AMERICAN COLONIAL HISTORY 1Q W 4 Prereq 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.

354 THE AMERICAN REVOLUTION 1Q S 3 Prereq 242 or 251. Causes and development of the American Revolution; the Declaration of Independence; organization of state governments; the federal union, western lands, finance, commerce, the Constitutional Convention.

355 THE AGE OF JEFFERSON 1Q A Su 3 Prereq 251. The early nation period concentrating on the economic development, and significance of the Federalists and Jeffersonians.

356 THE AGE OF JACKSON 1Q W Su 3 Prereq 252. American history, 1815 to 1840, emphasizing the growth, significance and decline of Jacksonian democracy.

357 CIVIL WAR AND RECONSTRUCTION 1Q S Su 3 Prereq 252. American history in the mid-nineteenth century, detailing the causes, events and aftermath of the Civil War.

359 RECENT AMERICAN HISTORY 1Q S 3, Su 3 Prereq two quarters of United States history. The internal affairs and external relationships of the United States in the 20th century.


365 NORTH AMERICAN FRONTIERS 1Q A 3 Prereq 251-252. From the first settlements on the continent to the end of the 19th century. 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.

367-368 HISTORY OF THE NORTHEAST 2Q W S 3. Enter either quarter. Prereq 251-252. (367) The most significant factors in the history of New England and New York during the colonial period; early settlements, gold mining, the development of territorial and state government, economic development, agriculture; the economic, political and social systems of modern times.


372 HISTORIC SITES 1Q S Su V 1-3 R-3 Prereq either 365 or 367 or 388 or 389. The location and evaluation of historic sites in Montana and North Dakota, and study trips under the joint supervision of archaeologists and historians.

374 ECONOMIC HISTORY OF THE UNITED STATES 1Q S 4. Colonial economy: the expansion of the United States; industrial and agricultural development; the growth of the laborer-farmer; the great depression, the Second World War and after.

376 CONSTITUTIONAL HISTORY OF THE UNITED STATES 1Q S 4 Prereq 251-252. The origin and growth of the constitution with emphasis on the role of the Supreme Court in United States history.


380-381 THE FAR EAST 2Q A W 4, 381 Su 3 Enter either quarter. Prereq 3 or in history. (380) Development of the social, economic and political institutions, principally of China and Japan to the 17th century. Emphasis is placed to the present with some stress on international politics in the Far East.

391 PROBLEMS IN HISTORY 1Q a/q V 2-4 R-9 Prereq 25 cr in History. Study or research in fields selected according to the needs and objectives of the individual student.

395 SPECIAL STUDIES IN HISTORY a/q V R-9 Prereq c/l. Offered by different instructors under various titles.

491 EUROPEAN HISTORICAL THOUGHT 1Q A Su 2. Prereq 25 cr in History. The contributions of leading 19th-century European historians to the development of modern historical analysis and interpretation.

492 PROBLEMS IN AMERICAN HISTORIOGRAPHY 1Q S Su 2 Prereq 25 cr in History. Study of the contrasts in historical interpretation by selecting problems ranging from colonial to contemporary periods.

FOR GRADUATES

591 METHODS OF HISTORICAL RESEARCH 1Q A 2. Annotation, bibliography, and the analysis of source materials.

597 SEMINAR IN EUROPEAN HISTORY a/q V R-10 Prereq 30 cr in History including 491. Special problems in European history.

598 SEMINAR IN AMERICAN HISTORY a/q V R-10. Open to graduates who have 30 cr in History including 491. Special problems in American History.

599 THESIS a/q V R-15.

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 several fields of concentration as is indicated in the copy following. Home Economics offers a program of study in the arts and family life as a part of general education for majors and non-majors. Opportunities for graduates are many and varied. Positions may be with schools, hospitals, industrial concerns, manufacturers of food or appliances, utility 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.

Students who qualify may earn the Master of Education degree with a major emphasis in home economics. (See Master of Education degree.)

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 50 credits in Home Economics selected as follows:

Required for all majors: Home Economics 151, 157, 216, 246, 302, 305, 309, 310, and 366.

The following courses are required according to the area of interest selected by the student.

1. GENERAL: Home Economics 151, 157, 258 or 358, 303, 306, 308, 344, 368; Education 260, 205, 305, 465, 407; Special Methods to be taken in either Education or Home Economics 423, 421. These courses plus electives, combined with a teaching minor, will prepare teachers for the certificate to teach Home Economics in secondary schools.


4. AMERICAN DIETETIC ASSOCIATION INTERNSHIP: These requirements are variable. Students should consult their advisers.


6. COMBINED PROGRAMS: Students wishing to combine Home Economics with Journalism, Business, Radio and TV, or other fields should also consult with an adviser in the other area of interest.

SUGGESTED CURRICULUM IN HOME ECONOMICS

Freshman Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>English</th>
<th>Chemistry</th>
<th>Home Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>101-102</td>
<td>101-102</td>
<td>151</td>
</tr>
<tr>
<td>W</td>
<td>103-104</td>
<td>103-104</td>
<td>157</td>
</tr>
<tr>
<td>S</td>
<td>105-106</td>
<td>105-106</td>
<td>205</td>
</tr>
</tbody>
</table>

(1) Students whose area of interest is Foods and Nutrition, Clothing and Textiles, or Dietetic Internship Training should elect Chemistry.
H & PE 100 ________________________________________

m a j o rs. M a n a g e m e n t s t u d ie s a n d d i s c u s s io n p r e s e n te d i n p r o b le m s f r o m t h e e x p e r im e n ta l p o in t o f v ie w. S p e c ia l p r o b le m s a r e a s s ig n e d t i m e , e n e rg y , m o n e y , a n d e q u ip m e n t m a n a g e m e n t.

P r e r e q  302. H is to ric d e v e lo p m e n t a n d c o n te m p o r a r y u s e o f m a te r ia l s o f t h e h o m e .

p r e p a r a tio n ; m e n u p la n n in g f o r in s titu tio n s .

S o c 101 o r 204—E le c tiv e s, la n g u a g e , o r g ro u p  re q . 7 7

s c ie n c e o f h u m a n n u tr i tio n a s it a p p lie s t o c h ild re n .

160, E co n 201 a n d B u sin e s s A d 201.

58—JOURNALISM


I Q A W S 3 (3-0). A general course emphasizing personal development as well as factors which affect family and social relationships. Open to both men and women.

FOODS 1 Q A W S 5 (3-4) The production, selection and preparation of food.

E L E M E N T A R Y N U T R I T I O N 1 Q W S 4 (4-0). Fundamental principles of adequate human nutrition. Non-majors only.


T I F I C M E T H O D S in the c a r e a n d t r e a tm e n t o f fo o d s.

P R I N C I P L E S o f a d e q u a te h u m a n n u tr i tio n . N o n - m a j o r s o n l y .

n o r a to r y w o r k i n t h e n u r s e r y s ch o o l.

141, 157, a n d E d u c 305. T h e f u n d a m e n ta l p r i n —

H U M A N D E V E L O P M E N T A N D F A M I L Y R E L A T IO N S H I P S

1 Q S 3 (3-0). Prereq Psych 110. The adolescent and young adult in home, school and community. Problems of aging.


A D V A N C E D P R O B L E M S I N T E A C H I N G H O M E E C O —

N O T I C E 3 (3-0) Prereq 321. Educ 405. Preparation for homemaking education in the upper grades and in high school.

L A R G E Q U A N T IT Y B U Y I N G 1 Q W 3 (3-0) Prereq 43I.

S E M I N A R I N H O M E E C O N O M I C S a q V 1-3 R -5 Prereq c/l. Group analysis of problems in home economics.

T H E S I S a / q V R -15.

J O U R N A L I S M

is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media, and the ethical issues which arise in the performance of their roles. The course stresses the function of communication in society and the ethical issues arising from it. The course also deals with the legal and social responsibilities, and the opportunities for public service.

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, and other specialty areas. The courses may be taken in any of the departments within the College of Liberal Arts and Sciences.

Graduates obtain positions on newspapers in Montana and in other states, including many metropolitan centers. Some are foreign correspondents. Many are editors and publishers, or hold positions on radio and television stations, with technical magazines, in public relations firms or advertising agencies, and in government agencies. Some are distinguished scholars, authors and teachers.
HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that the high school preparation include study of a foreign language and typing.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. In addition to the general requirements the candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 29 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 106, 270, 290, 360, 361, 372, 380, 385, 491-492-493. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

<table>
<thead>
<tr>
<th>Freshman Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ 106—Introduction to Journalism</td>
</tr>
<tr>
<td>Eng 101-102-103—Freshman Composition</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military Science or Air Sci (Men)</td>
</tr>
<tr>
<td>H&amp;PE 100 (3 quarters)—Health and Physical Education</td>
</tr>
<tr>
<td>Additional courses to meet University requirements</td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ 270—Reporting</td>
</tr>
<tr>
<td>Journ 290—History and Principles of Journalism</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military Science or Air Sci (Men)</td>
</tr>
<tr>
<td>H&amp;PE 100 (3 quarters)—Health and Physical Education</td>
</tr>
<tr>
<td>Additional courses to meet University requirements</td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior and Senior Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ 360—Principles of Advertising</td>
</tr>
<tr>
<td>Journ 361—Advertising Sales</td>
</tr>
<tr>
<td>Journ 371—Advanced Reporting</td>
</tr>
<tr>
<td>Journ 372—Specialized and Reporting</td>
</tr>
<tr>
<td>Journ 380—News Editing</td>
</tr>
<tr>
<td>Journ 381—Advanced News Editing</td>
</tr>
<tr>
<td>Journ 491—492-493—Senior Seminar</td>
</tr>
<tr>
<td>Journ Electives (including sequence requirements)</td>
</tr>
<tr>
<td>Additional Electives</td>
</tr>
<tr>
<td>Total recommended hours in Journalism</td>
</tr>
<tr>
<td>Total recommended hours in General Education</td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>

JOURNALISM CURRICULUM

| NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Radio-Television 348; Journalism 362, 363, 364. |
| ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Journalism 290, 362, 363, 364 and Radio-Television 348. |
| MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 237, 332, 333, 334. |
| RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Radio-Television 242; Journalism 345, 346, 348. |
| COMMUNITY JOURNALISM SEQUENCE: An additional 9 hours required to be chosen from Journalism 250, 351, 352, 364, 495. |

Note: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism. The major in Journalism also offers a curriculum leading to a Bachelor of Arts degree in Radio-Television (see Radio-Television).

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

100 INTRODUCTION TO JOURNALISM 1Q A W S Su 3. Open to non-majors. I. History, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper.

120 TYPOGRAPHY 1Q A W S Su 2 Prereq c/l. Problems of typographical design and application. Elementary work in printing and in the handling of type.


227 ELEMENTARY PHOTOGRAPHY 1Q A W S Su 3 Prereq c/l. Open to non-majors. Photographic equipment, materials and facilities with practice in taking of pictures under varied conditions and processing of films and prints.

270 REPORTING 1Q A W S 2. Open to non-majors. Ground-work in gathering, writing and evaluating news.

290 HISTORY AND PRINCIPLES OF JOURNALISM 1Q S 3. Open to non-majors. American journalism from colonial times against a background of U.S. history with attention to the struggle for freedom of expression.

327 NEWS PHOTOGRAPHY 1Q S 2 Prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

332 MAGAZINE MAKEUP AND EDITING 1Q A 3 Prereq c/l. Open to non-majors. The preparation and practice of editing magazines. Practice includes the use of type and illustrations, and adapting format to content.

333 MAGAZINE ARTICLE WRITING 1Q W S Su 3 Prereq c/l. Open to non-majors. The preparation and writing of articles for magazines of general circulation. Techniques of analyzing and selling to magazine markets.

334 TRADE AND TECHNICAL JOURNALISM 1Q A S 3 Prereq c/l. Open to non-majors. The writing and editing of trade and business journals, technical and specialized publications.

335 PROMOTION AND PUBLIC RELATIONS 1Q A S S Su 3 Prereq 360. Open to non-majors. The techniques and promotion of print and public relations.

345 NEWSCASTING 1Q A 3 Prereq 140, 270. Radio and television as news media. Preparation and delivery of radio and television news broadcasts.

346 RADIO-TELEVISION PUBLIC AFFAIRS 1Q W 3 Prereq 345. Radio and television special events and information programs, commentary, sports, interviews and interpretation. Practice in newscasting.


352 NEWSPAPER MANAGEMENT 1Q A W S 3 Prereq 360. Problems of operation of daily and weekly newspapers.

360 PRINCIPLES OF ADVERTISING 1Q A S 3. Open to non-majors. Theory and techniques with emphasis on the role of advertising as it applies to the producer, consumer, and distributor.

361 ADVERTISING SALES 1Q A W S 2 Prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 1Q W 3 Prereq c/l. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.

363 ADVERTISING LAYOUT AND COPY 1Q S 3 Prereq 360. Open to non-majors. Application of typographical and advertising principles to preparation of layouts and copy.

364 RETAIL STORE ADVERTISING 1Q S 3 Prereq 360. Open to non-majors. Integration of retail store merchandising among advertising media. Technical aspects of advertising schedules for retail stores.

371 ADVANCED REPORTING 1Q A W S 2 Prereq 270. News coverage, reporting and publishing problems.

372 SPECIALIZED REPORTING 1Q A W S 2 Prereq 371. Specialization in fields of depth reporting.

380 NEWS EDITING 1Q A W 2 Prereq 270. Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing.

381 ADVANCED NEWS EDITING 1Q A W S 2 Prereq 380. Editing and makeup problems.

FOR UNDERGRADUATES AND GRADUATES

316 SCHOOL PUBLICATIONS 1Q S e/v Su 3. Prereq c/l. Open to non-majors. For students who plan to teach journalism courses in high schools or act as advisers to school publications.

317 SCHOOL PUBLIC RELATIONS 1Q S u only 3. Prereq B.A. degree or completion of 360. An emphasis on developing better understanding among the school, the press, and the community. For school administrators and teachers.

390 PUBLIC OPINION 1Q A W S 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and methods used in its measurement.

397 LAW OF JOURNALISM 1Q S 3. Legal guarantees and limitations of the right to gather and publish news and to comment on it.

399 ADVANCED JOURNALISM PROBLEMS 1-3Q A W S Su V Prereq consent of the dean. Training and research in advanced journalism problems.

440 CINEMATOGRAPHY 1Q S 3 Prereq 127 or =, and 12 hours in 200-level television courses. Motion picture news photography. Film for television.

470 REPORTING PUBLIC AFFAIRS 1Q W 3. Laboratory work in coverage of political and governmental news at the city, county, state, and federal levels.

491-492-493 SENIOR SEMINAR 3Q A W S 2 Prereq senior standing. A critical survey of journalism, investigative methods of editing, study of several aspects of American society which constitute the background for many news stories, and practice in research methods.

495 EDITORIAL WRITING 1Q S 3. The editorial pages of leading newspapers; practice in research and the writing of editorials.
is the study of the official rules and regulations under which people live in organized American society; of the methods by which such rules are devised and applied; of the chart that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions collected in course "casebooks." Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and in legal writing. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana.

The Supreme Court of Montana admits graduates practice without examination. Most graduates become practicing attorneys. Others enter government service, business, or finance with or without additional studies in these latter fields. Some take advanced or more specialized studies (such as taxation) at eastern institutions; graduates with the required scholarship standing are readily accepted by other law schools specializing in more advanced legal education. They are also to be found in the ranks of leading practitioners in many large cities of the United States.

CALENDAR

FALL SEMESTER, 1963

September 23-24, Monday and Tuesday Orientation of New Law Students
September 24, Tuesday Registration
September 25, Wednesday Classes begin at 9:00 a.m.
November 11, Monday Veterans' Day—No classes
November 27, Wednesday Thanksgiving vacation begins after last class
December 2, Monday Classes resume at 8:00 a.m.
December 21, Saturday Christmas vacation begins after last class
January 6, Monday Classes resume at 8:00 a.m.
January 27-February 4, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1964

February 5, Wednesday Registration
February 6, Thursday Classes begin at 9:00 a.m.
March 21, Saturday Spring vacation begins after last class
March 29, Monday Classes resume at 8:00 a.m.
May 26-June 2, Tuesday through Tuesday Semester Examinations
June 8, Monday Commencement

FALL SEMESTER, 1964

September 21-22, Monday and Tuesday Orientation of New Law Students
September 22, Tuesday Registration
September 25, Wednesday Classes begin at 9:00 a.m.
November 11, Wednesday Thanksgiving—No classes
November 25, Wednesday Thanksgiving vacation begins after last class
November 30, Monday Classes resume at 8:00 a.m.
December 19, Saturday Christmas vacation begins after last class
January 4, 1965, Monday Classes resume at 8:00 a.m.
January 23-30, Monday through Saturday Semester Examinations

SPRING SEMESTER, 1965

February 3, Wednesday Registration
February 5, Thursday Classes begin at 9:00 a.m.
March 20, Saturday Spring vacation begins after last class
March 29, Monday Classes resume at 8:00 a.m.
May 25-June 1, Tuesday through Tuesday Semester Examinations
June 6, 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 on a semester basis, and the year being divided into two semesters of approximately eighteen weeks each, including vacation periods. For detailed information concerning facilities, descriptions of courses, and miscellaneous administrative regulations the applicant should consult the Law School Bulletin.

REQUIREMENTS FOR ADMISSION: The Law faculty passes on all applications for admission to the Law School. Each applicant for the Law School must establish (1) that he is a graduate of an accredited college; (2) that he has completed three years of an approved combination program with a minimum index of 2.0 in all work for which he has registered and received a grade of B- or better; and (3) that he has completed, in an approved college or university, three fourths of the work required for an undergraduate degree. None of the work required for a degree need be more than two years old. Students who have registered, received a grade, and subsequently changed the college in which the work was completed are eligible for admission to the Law School provided they can show the completion of the required courses and grades at the new college.

The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the year preceding the one for which admission is sought. Information concerning the Test and application forms may be obtained from the School of Law or from the Educational Testing Service, P.O. Box 592, Princeton, New Jersey.

A number of combination programs have been formulated by the Law School in cooperation with various departments of the University. These include: Accounting and Law, Business Administration and Law, Economics and Law, Geology and Law, History and Political Science and Law, and Philosophy and Law. Combination programs in other departments, if duly authorized, will be recognized. Students enrolled in approved combination programs receive an undergraduate degree at the end of their first year at the Law School.

For admission to the School of Law, the applicant must submit to the School (a) an official transcript of all work done previously; (b) a verified questionnaire, on a form prescribed by the Law School, dealing with the general character and fitness of the applicant; and (c) a detailed statement of the legal education: (c) a report of his grade on the Law School Admission Test, and (d) a passport size photo.

A fee of $15.00 must be paid at the time of making application. No applications will be accepted unless accompanied by a $15.00 fee. Applications must be filed not later than July 1.

ADMISSION TO ADVANCED STANDING: Applicants for admission to the Law School with advanced standing must satisfy the requirements for admission to the Law School (1) that the work previously undertaken in the school in which the law work previously undertaken has been in an accredited law school; (2) that the average in all work for which the student has registered and received a grade of B- or better is 2.5 or better; (3) that the applicant is ineligible to continue at the school in which he has previously attended; and (4) that the applicant be eligible to continue in this Law School under the policies specified herein. An applicant is not likely to be admitted unless he has a very high scholastic average in the law work previously taken and is exceptionally qualified to pursue the study of law.
BASIS FOR EXCLUSION: (1) Failures: A student who has failed, or is failing, in more than 10 credits at the end of the first or second semester of law study will be automatically dropped from the Law School. (2) Weighted Average: A student otherwise eligible to continue, who has obtained an index of 1.5 or less at the end of his first two semesters of law study in all law courses for which he has registered and received a grade, will be placed on probation. A student on probation who fails to secure an index of 2.0 in law courses not previously taken for which he has registered and received a grade in any semester subsequent to being placed on probation, will be dropped from the Law School. A student who fails to obtain an index of 2.0 at the end of his fourth semester of law study in all law courses for which he has registered and received a grade, or fails to maintain such an index thereafter, will be dropped from the Law School.

The faculty reserves the right to require a student to repeat any course in which he has received a grade lower than C, but no course may be repeated without the approval of the faculty.

REQUIREMENTS FOR GRADUATION: Candidates for the degree of Bachelor of Laws (LL.B.) must: (1) be graduates of an approved college or university; (2) complete six semesters in residence at an approved law school, the last two of which must be at Montana State University; (3) complete ninety semester hours of law with an index of 2.0 in all law courses for which the student has registered and received a grade; and (4) complete the following required courses: all courses taught in the first and second years except Law Review, as well as those included for credit in the third year courses: Courtroom and Office Practice, Criminal Procedure, and Legal Writing.

A candidate for the degree of Bachelor of Laws who has fulfilled the requirements for graduation will not be recommended for the degree if, in the opinion of the majority of the law faculty, he is unqualified in accordance with generally accepted standards for admission to the bar.

A student may not register nor receive credit for more than 16 hours of law in a semester.

FIRST YEAR

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>506</td>
<td>Civil Procedure I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>511-512</td>
<td>Contracts I, II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>515</td>
<td>Criminal Law</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>531-532</td>
<td>Introduction to Law I, II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>533-539</td>
<td>Property I, II</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>540</td>
<td>Remedies</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>543-544</td>
<td>Torts I, II</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

SECOND YEAR

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>552-554</td>
<td>Agency and Business Organizations I, II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>557</td>
<td>Civil Procedure</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>561-566</td>
<td>Commercial Transactions I, II</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>594</td>
<td>Constitutional Law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>589-590</td>
<td>Estate Planning I, II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>573</td>
<td>Evidence</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>572</td>
<td>Law Review</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>586-588</td>
<td>Legal Writing I, II</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>590</td>
<td>Professional Responsibility</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

THIRD YEAR

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>606</td>
<td>Administrative Law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>610</td>
<td>Conflicts</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>615-616</td>
<td>Court Room and Office Practice I, II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>620</td>
<td>Creditors' Rights</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>625</td>
<td>Criminal Procedure</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>631-632</td>
<td>Federal Taxation I, II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>639</td>
<td>Jurisprudence</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>641</td>
<td>Labor Law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>643</td>
<td>Law Review II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>646</td>
<td>Legal Writing III</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>647</td>
<td>Legislation</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>650</td>
<td>Mining Law (Seminar)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>653</td>
<td>Municipal Corporations (Seminar)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>651</td>
<td>Oil and Gas</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>671</td>
<td>Secured Transactions</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>676</td>
<td>Social Legislation (Seminar)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>681</td>
<td>Trade Regulations (Seminar)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>682</td>
<td>Water Law</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

COURSES

561-562 COMMERCIAL TRANSACTIONS I, II 2 Sem A 2, S 3. Continuous. Commercial practices in the marketing of goods and in the issuance and transfer of commercial paper including negotiable instruments, bills of exchange, checks and bank drafts.

561 CONTRACTS I, II 2 Sem A S 3. Continuous. The formation and enforcement of contracts and the elements of mutual assent, consideration, assignments and discharge.

610 CRIMINAL LAW 1 Sem S 4. The choice of laws problems, that is, which of several laws should be applied when issues arise out of breach of contract or a relationship which is affected by the laws of several different states.

564 CONSTITUTIONAL LAW 1 Sem S 4. The place of written constitutions in our legal system and the judicial function of interpreting written constitutions.

511-512 CONTRACTS I, II 2 Sem A S 3. Continuous. The formation, enforcement and termination of contracts and the elements of mutual assent, consideration, assignments and discharge.

615-616 COURT ROOM AND OFFICE PRACTICE I, II 2 Sem A S 1. Continuous. Established patterns in office procedure, in uncovering legal material and in trial techniques.

620 CREDITORS' RIGHTS 1 Sem S 2. The procedures and methods whereby a creditor obtains recovery from a debtor with emphasis upon bankruptcy.

515 CRIMINAL LAW 1 Sem A 3. Crimes with emphasis upon the criminal act, the requirement and character of criminal intent and limitation upon criminal responsibility.

625 CRIMINAL PROCEDURE 1 Sem A 2. Investigation and prosecution of alleged offenders with emphasis upon arrest, bail, indictment, trials and post conviction procedure.

569-570 ESTATE PLANNING I, II 2 Sem A S 3. The will and the trust and of future interests in property as devices in the transfer of property at death or prior to death.

573 EVIDENCE 1 Sem A 4. The production and presentation of evidence in the course of a trial.

631 FEDERAL TAXATION I 1 Sem A 4. The federal income tax relating to individuals, partnerships, and corporations.

632 FEDERAL TAXATION II 1 Sem S 2. The federal estate and gift tax laws.

531-532 INTRODUCTION TO LAW I, II 2 Sem A 1, S 2. Law books and their use and the preparation of legal memoranda and reports with emphasis upon legal writing.

638 JURISPRUDENCE 1 Sem S 2. The nature and purposes of law and the nature of the judicial process.

641 LABOR LAW 1 Sem A 2. The elements of collective bargaining and labor management relations.

572-646 LAW REVIEW I, II 2 Sem S 1, Second year. A 1, Third year. Comprehensive research upon legal matters, in which legal writing is required.

583-584 LEGAL WRITING I, II 2 Sem A S 1. Drafting of legal instruments, moot court briefs and legal memoranda.

646 LEGAL WRITING III 1 Sem S 1. The preparation of a research paper under supervision of a member of the faculty.

597 LEGISLATION 1 Sem A 2. The preparation, passage and interpretation of laws.

650 MINING LAW 1 Sem S 2. Location of mining claims, patent procedure and limitations upon extractions of precious minerals.

653 MUNICIPAL CORPORATIONS 1 Sem A 2. The administration of government upon local governing bodies and their relationships with their state and federal counterparts.

661 OIL AND GAS 1 Sem A 3. The production, conservation and transportation of petroleum.

590 PROFESSIONAL RESPONSIBILITY 1 Sem S 2. The lawyer as counselor, advocate, citizen and public servant with emphasis on the nature and extent of professional responsibility.

535 PROPERTY I 1 Sem A 2. The law of personal property, possession, and the requisites for acquiring title to land.

536 PROPERTY II 1 Sem S 4. The transfer of interests in real property.

540 REMEDIES 1 Sem S 3. The judicial remedies available for injuries to person and property, breach of enforceable agreements, and for transactions induced by misrepresentation or mistake.

671 SECURED TRANSACTIONS 1 Sem A 3. The use of real property security and the nature and foreclosure of mortgages.

576 SOCIAL LEGISLATION 1 Sem S 2. Social security, workmen's compensation, unemployment compensation and wages and hours legislation.

543-544 Torts I, II 2 Sem A S 3. Continuous. Personal wrongs other than breach of contract for which a court of law will award damages.

661 TRADE REGULATIONS 1 Sem A 2. The regulation of private business with emphasis upon monopoly, anti-trust, trade- marks and unfair competition.

688 WATER LAW 1 Sem S 2. The appropriation and use of water and of the relative rights of federal and state governments in the use of this natural resource.
## Liberal Arts

The Liberal Arts Curriculum includes Literature, Philosophy, Art, Foreign Languages and the Social Sciences. The latter includes Anthropology, Economics, History, Political Science, Sociology and Geography.

Four years are required for the degree of Bachelor of Arts. This program permits the student to work in a combination of the above areas rather than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice.

This curriculum is designed for the student who wants a liberal education with emphasis on the humanities and social sciences. It also provides a broad background for students who wish to teach. Those who elect to teach may qualify to do so by taking additional work in education.

Students must have completed, or be eligible for, English 101 in order to major in this program. Upperclassmen transferring into this program should have at least a C average in all credits attempted. The liberal arts curriculum is not designed for the student who is undecided as to his major.

### Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

#### University requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Group I: (Lab sciences and mathematics recommended)</td>
<td>12</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>23 or 30</td>
</tr>
<tr>
<td>Physical Education (16 quarters)</td>
<td>6-6</td>
</tr>
<tr>
<td>Military Science (men)</td>
<td>30-66</td>
</tr>
</tbody>
</table>

**Major Requirements (courses under 300)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Art 231-232-233</td>
<td>9</td>
</tr>
<tr>
<td>2. Humanities (General 151-152-153)</td>
<td>9</td>
</tr>
<tr>
<td>Anthropology, Economics, Geography, Psychology, Sociology, (any two)</td>
<td>15</td>
</tr>
<tr>
<td>4. History or Political Science or both (History 101-102-103 or 231-232-233 recommended)</td>
<td>15</td>
</tr>
<tr>
<td>5. Literature (English 211-212-213 and 231-232-233 recommended)</td>
<td>12</td>
</tr>
<tr>
<td>6. Philosophy (Philosophy 201-202-203 recommended)</td>
<td>10</td>
</tr>
</tbody>
</table>

**Major Requirements (Courses 300 and above)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Anthropology, Economics, Geography, Psychology, Sociology, (any two)</td>
<td>24</td>
</tr>
<tr>
<td>8. History or Political Science or both</td>
<td>24</td>
</tr>
<tr>
<td>9. Literature or Philosophy or both</td>
<td>48</td>
</tr>
<tr>
<td>Electives</td>
<td>16-2</td>
</tr>
</tbody>
</table>

**Total** | **196**

## Library Service

Courses are designed to prepare students for professional work in small and medium sized public and college libraries. Students preparing for school library work should work toward a major in the School of Education with a minor in library service. Students preparing for public or college library work should register for the four-year program leading to the degree of Bachelor of Arts with a major in library service.

This program is so planned that the student is given basic preparation for admission to a graduate library school if he wishes to prepare for work in larger libraries. The course is 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 degree with a major in Library Service:

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-103—Freshman Composition</td>
<td>15</td>
</tr>
<tr>
<td>History 101-102-103—Development of Western Civilization</td>
<td>15</td>
</tr>
<tr>
<td>French or German 101, 102, 105—Elementary French or German</td>
<td>15</td>
</tr>
<tr>
<td>Psychology 110—Introduction to Psychology</td>
<td>5</td>
</tr>
<tr>
<td>HPE 100 (3 quarters)</td>
<td>5</td>
</tr>
<tr>
<td>ROTC 101, 102, 103</td>
<td>2-4</td>
</tr>
</tbody>
</table>

**Total** | **49 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>4</td>
</tr>
<tr>
<td>Foreign semester 213, 215—I ntermediate Foreign Language</td>
<td>8</td>
</tr>
<tr>
<td>History 252, 253—United States History</td>
<td>8</td>
</tr>
<tr>
<td>English 211, 212—Intro Major British Writers</td>
<td>8</td>
</tr>
<tr>
<td>Econ 201-202-203—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>Group I Requirements</td>
<td>10</td>
</tr>
<tr>
<td>HPE 100 (3 quarters)</td>
<td>5</td>
</tr>
<tr>
<td>ROTC 201, 202, 203</td>
<td>4-5</td>
</tr>
</tbody>
</table>

**Total** | **53 to 54**

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 232, 233—Intro to Major American Writers</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 110—Intro to Government</td>
<td>4</td>
</tr>
<tr>
<td>Speech 111—Principles of Speech</td>
<td>5</td>
</tr>
<tr>
<td>Edu 341—Public Library Administration</td>
<td>4</td>
</tr>
<tr>
<td>Edu 344—Cataloging and Classification</td>
<td>4</td>
</tr>
<tr>
<td>Edu 345—Materials Selection and Bibliography</td>
<td>4</td>
</tr>
<tr>
<td>Edu 346—Reference Materials</td>
<td>4</td>
</tr>
<tr>
<td>Edu 347—Audiovisual Communication</td>
<td>3</td>
</tr>
<tr>
<td>Art 231, 232—History of Art</td>
<td>9</td>
</tr>
</tbody>
</table>

**Total** | **51**

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu 348—Survey of Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>Edu 445—Library Work with Children</td>
<td>4</td>
</tr>
<tr>
<td>Edu 444—Library Seminar</td>
<td>5-10</td>
</tr>
<tr>
<td>Edu 445—Library Practice</td>
<td>5</td>
</tr>
<tr>
<td>Edu 496—Seminary (library)</td>
<td>2</td>
</tr>
<tr>
<td>Journ 335—Promotion and Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>Soc 206 or 313—Urban or Rural Sociology</td>
<td>3-4</td>
</tr>
<tr>
<td>Soc 306—Social Science Methods</td>
<td>3</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
<td>17-12</td>
</tr>
</tbody>
</table>

**Total** | **45**

## 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 most 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 which the machine can handle.

The Bachelor of Arts, Master of Arts, Master of Science, and Master of Science in Teaching 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 trigonometry and a second year of algebra.

### 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 or exemption, 118, 201, 202, 203. A foreign language: French, German, or Russian (or a combination of them) is required.

1. Students planning to enter graduate work or industry are required to take Mathematics 206, 310, 311, 312, 313, 314, 319, and six credits in other approved Mathematics courses, including three credits in courses numbered above 300. Students select areas in sciences from Botany, Chemistry, Geology, Microbiology, Physics,
2. Students selecting the teaching option are required to take Mathematics 25, 306 and 312 credits in other approved Mathematics courses numbered above 300.

Masters of Arts or Master of Science in Teaching

See statement under Graduate School.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

190 INTERMEDIATE ALGEBRA 1Q A W S 2. (Credit not allowed toward a degree in Mathematics.)

112 MATHEMATICS FOR BUSINESS STUDENTS 1Q W S 5 Prereq. 100 or exemption by examination. Selected topics from algebra including mathematical induction, arithmetic and geometric progressions, annuities, solutions of systems of linear equations and inequalities, linear programming. (Credit not allowed for both 112 and 116.)

113 TRIGONOMETRY 1Q A W S Su 3 Prereq. 100 or exemption by examination. Trigonometric functions and their graphs, radian measure, Pythagorean identities, addition formulas, law of sines and cosines, inverse functions, solutions of triangles, applications. (Credit not allowed toward degree in Mathematics.)

116 COLLEGE ALGEBRA 1Q A W S Su 5 Prereq. 100 or exemption by examination. Algebraic structure of the real number system, mathematical induction, language of mathematics, inequalities, systems of linear equations, elementary theory of equations. (Credit not allowed for both 116 and 112.)

118 INTRODUCTION TO ANALYTIC GEOMETRY AND CALCULUS 1Q A W S 5 Prereq. 116 and 118 or exemption by examination. (118 may be taken concurrently.) Elementary analytic geometry, function, limit, derivative, differentiation of algebraic functions, applications.

125 STATISTICS 1Q A W S 5 Prereq. 100 or 112 or satisfactory performance in an examination in intermediate algebra.

130 THEORY OF ARITHMETIC 1Q A W S 5 Prereq. 100 or exemption by examination. Mathematical meaning and background of arithmetic. (Credit not allowed toward a degree in Mathematics.)

220 INTUITEIVE GEOMETRY 1Q W S Su 4 Prereq. 100 or exemption by examination. Concepts of elementary geometry figures as sets of points, separation properties, deduction versus induction, measurements, coordinate geometry. (Credit not allowed toward degree in Mathematics.)

250 DIGITAL COMPUTERS AND CODING 1Q A W S 3 (3-4) Prereq. 116. High-speed digital computer, number systems, machine, axioms for computer, and binary arithmetic. Laboratory work on high-speed electronic computer. (Credit not allowed toward degree in Mathematics.)

251 CALCULUS I 1Q A W S 5 Prereq. 118. Applications of the derivative, transcendental functions and their derivatives, integration, limit concept, indeterminate forms.

252 CALCULUS II 1Q A W S 5 Prereq. 251. Integration techniques, further applications of the derivative and differential calculus.

253 CALCULUS III 1Q A W S 5 Prereq. 252. Solid analytic geometry, partial derivatives, multiple integrals, infinite series.

FOR UNDERGRADUATES AND GRADUATES

300 ALGEBRA FOR TEACHERS 1Q W Su 5 Alternate years Prereq. 251 or concurrent registration. The processes of elementary algebra considered from a mature point of view for the teacher of high school algebra.

320-303 STATISTICAL METHODS 2Q W S 3 o/y Prereq. 125. Primarily intended for those who find need for statistical techniques in fields of application. Topics in probability, random variables, principles of estimation, confidence intervals, tests of significance. (303) Analysis of variance, regression, correlation, design of experiments, simplified statistics.

304 GEOMETRY FOR TEACHERS 1Q S 5 Alternate years. Prereq. c/l. 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. (Credit not allowed toward degree in Mathematics.)

310 HISTORY OF MATHEMATICS 1Q A 4 Prereq. 15 credits in Mathematics and c/l.

310-319 ADVANCED CALCULUS 3Q A W S 3 Prereq. 253.


315 MODERN ALGEBRA 1Q Su 5 Prereq. 252 and c/l. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

316 MODERN ALGEBRA 1Q Su 5 Prereq. 315. Continuation of 315. Matrices and linear transformations, projective and affine spaces, fields and field extensions. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

320 SYNTHETIC PROJECTIVE GEOMETRY 1Q given on demand 3 Prereq. 251. Projective transformations and projective invariants, cones, geometric construction of fields, applications to geometry.

322 ANALYTIC PROJECTIVE GEOMETRY 1Q given on demand 3 Prereq. 251. Projective transformations, projective invariants, and conics by means of coordinate systems.

324 ELEMENTARY NUMBER THEORY 1Q W S 5 Prereq. at least 20 credits in Mathematics with a grade of C+ or better.

327-328 FOUNDATIONS OF GEOMETRY 1Q Su 5 Prereq. 252 and c/l. Axiomatic systems for and selected theorems from Euclidean geometry, projective and other non-Euclidean geometries, finite geometries and projective planes. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

342-343 MATHEMATICAL STATISTICS 3Q A W S 3 Prereq. 253 and c/l. (341) Development of necessary mathematical concepts, probability, random variables, and distribution functions. (342 and 343) Random variables, distribution functions, sampling, testing hypotheses.

399 SEMINAR 1Q a/q V R-15. Guidance in special work for advanced students.

400-411-412 INTRODUCTION TO FUNCTIONS OF A COMPLEX VARIABLE 3Q A W S 3 Prereq. 319. Beginning complex variables, analytic functions, contour integrals, complex variable equations, Cauchy’s integral theorem and formulas, conformal mapping, basic concepts of topology.


424-496 ABSTRACT ALGEBRA 3 Q A W S 3 Prereq. 310 and 312. (422) Groups, rings, isomorphisms, homomorphisms, integral domains, fields, ideals. (424) Theory of fields, field extensions, Galois field groups and graduate students. (425) Normal forms and composition series, Galois theory, real fields, fields with valuations.

441-443-444 ADVANCED STATISTICS 3Q A W S 3 Prereq. 343, 310, 311. Multivariate distributions, characteristic function, limit theorems, stochastic processes, design of experiments, further topics to be chosen from advanced statistics.


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, appropriate advanced courses, and at least 20 credits in Mathematics with a grade of C+ or better. Students are not required to have had any specific courses in Mathematics as prerequisites for the masters degree in mathematics.

351-352-353 TOPOLOGY 3Q A W S 3 Prereq. 319. The study of topological spaces, metric spaces, compactness, connectivity, properties invariant under continuous mappings, topological mappings.

351-352-353 MEASURE AND INTEGRATION 3Q A W S 3 Prereq. 319. (351) Introduction to measure and integration, semi-rings, rings, outer measures, measures, integration.

690 GRADUATE SEMINAR 1Q a/q V Prereq. c/l. This course provides guidance in graduate subjects on research work.

699 THESIS a/q V R-15.
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 physics, chemistry and biology, and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this Certificate is desirable, persons receiving the B.S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratories as technicians. Medical Technologists are in demand in hospital laboratories, in physicians' offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the first three years. It is possible then to take three years of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of Botany and Microbiology. Option I consists of four years of academic studies at the University leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3½ years of academic studies at the University, and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY. In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 205, 320, 330, 331, 401, 491, 492, 493, 494, 495, 496, 497, 498, 499; Zoology 205, 305, 310, 311, 312, 314, 315, 316, 317; Physics 111, 112, 113; Chemistry 121, 122, 123, 245, 261, 262; Math 116. A minimum total of 45 credits from Microbiology courses listed above is required.

BASIC MEDICAL TECHNOLOGY CURRICULUM

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zool 104-105—Elementary Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116—College Algebra</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engl 101-102-103—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

| Micro 200—General Microbiology | 5 | 5 | 5 | 5 |
| Chem 261-262—Organic Chemistry | 5 | 5 | 5 | 5 |
| Chem 245—Quantitative Analysis | 5 | 5 | 5 | 5 |
| Zool 201—Comparative Anatomy | 5 | 5 | 5 | 5 |
| Physics 111-112-113—General Physics | 5 | 5 | 5 | 5 |
| Elective | 0 | 0 | 0 |
| Total Credits | 15 | 15 | 15 |

Junior Year

| Micro 302—Medical Microbiology | 5 | 5 | 5 | 5 |
| Micro 310—Immunology and Serology | 5 | 5 | 5 | 5 |
| Micro 402—Hematology | 5 | 5 | 5 | 5 |
| Zool 202—Human Physiology | 5 | 5 | 5 | 5 |
| Electives | 12 | 12 | 12 |
| Total Credits | 17 | 17 | 17 |

Senior Year

| Micro 410—Clinical Diagnosis | 4 | 4 | 4 | 4 |
| Electives | 12 | 12 | 12 | 12 |
| Total Credits | 17 | 17 | 17 |

OPTION II

| Freshman and Sophomore years same as Option I |  |  |  |  |
| Junior Year |  |  |  |  |
| Micro 302—Medical Microbiology | 5 | 5 | 5 | 5 |
| Micro 310—Immunology and Serology | 5 | 5 | 5 | 5 |
| Micro 402—Hematology | 5 | 5 | 5 | 5 |
| Zool 202—Human Physiology | 5 | 5 | 5 | 5 |
| Electives | 12 | 12 | 12 | 12 |
| Total Credits | 17 | 17 | 17 | 17 |

In the senior year, a minimum of 15 elective credits in residence and successful completion of the hospital practice in a hospital approved by the American Society of Clinical Pathologists and the Department of Botany and Microbiology are required. The student will receive the equivalent of not more than 30 credit hours toward his B.S. degree for the successful completion of the hospital practice.

MICROBIOLOGY

is the study of bacteria, molds, yeasts, rickettsia, protozoa and viruses. The field includes General, Medical, Sanitary and Industrial Microbiology, Food and Water Microbiology, Immunology, and Serology.

A Bachelor of Arts degree is given in this curriculum. The first two years are spent primarily 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. Successful completion of the graduate curriculum may lead to the Master of Arts, the Master of Science and to 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 in Microbiology. When a student is deficient in Microbiology, the adviser will determine how many undergraduate courses this student will have to take in order to give him the fundamental background needed for graduate studies in this department. (For general requirements of all graduate students, see Graduate School.)

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 200, 302, 310, 405; Zoology 104-105 or Botany 121-122; Chemistry 121-122-123, 245, 261-262; Physics 111-112-113; Math 118.

SUGGESTED CURRICULUM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121-122-123—College Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 104-105—Elem Zool or Bot 121-122—Gen Bot</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engl 101-102-103—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math 113, 116</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H &amp; PE 100—Physical Education</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 111-112-113—General Physics</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 263-262—Organic Chemistry</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology 290—General Microbiology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H &amp; PE 100—Physical Education</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military or Air Science</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 310—Immunology and Serology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Micro 502—Medical Microbiology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 405—Seminar</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

100 ELEMENTARY MICROBIOLOGY 1Q A S Su 3 (3-0). Morphology, physiology, classification of bacteria, rickettsia and viruses. Importance of microorganisms in food and fermentation industries, agriculture and public health. (Not allowed toward a major in microbiology.)

101 ELEMENTARY MICROBIOLOGY LABORATORY 1Q A S Su 2 (0-4). Prereq 100 or concurrent registration. Microbiological examination of foods, water, soil, and air and experiments with microorganisms of medical importance. (Not allowed toward a major in microbiology.)

105 GENERAL HYGIENE 1Q S 3 (3-0). Personal hygiene and its effects on the individual and the community. Nutrition, sanitation and prevention of diseases.

110 PUBLIC HEALTH 1Q W 2 (2-0). Sanitation problems as they involve health and diseases.

200 GENERAL MICROBIOLOGY 1Q A S Su 2 (3-0-4). Prereq Chem 123 or 190. Bacterial taxonomy, classification, morphology, physiology; effect of environmental factors on bacteria; microbiology of soil, water, milk and foods; and industrial microbiology. (Credit not allowed for both 100 and 200.)

205 MEDIA PREPARATION 1Q W 2 (1-3) Prereq 200. Preparation, sterilization and storage of culture media; differential medium, function of ingredients, and general nutritional requirements of bacteria.

FOR UNDERGRADUATES AND GRADUATES

302 MEDICAL MICROBIOLOGY 1Q W 5 (3-4) Prereq 200. Pathogenic microorganisms including bacteria, fungi, viruses, and rickettsia.

303-304 PHARMACEUTICAL MICROBIOLOGY 2Q A W 5 (3-4) Prereq Chem 263, Phys 113 or 223. (303) Principles and techniques of basic bacteriology. (304) Pathogenic bacteriology, immunology and chemotherapy as they apply to the field of pharmacy.

310 IMMUNOLOGY AND SEROLOGY 1Q S 5 (3-4) Prereq 302. General principles of immunity and extensive laboratory work in serology, animal experimentation, and clinical diagnosis.

320 MICROBIOLOGY OF WATER AND SEWAGE 1Q A. On demand 5 (3-4) e/y Prereq 101 or 200 or 303. Microorganisms found in water and sewage; sewage treatment and disposal, and water purification.

330 FOOD MICROBIOLOGY 1Q W 3 (3-0) Prereq 161 or 200 or 303. Microbiology of foods with emphasis on preparation, preservation and spoilage of foods.

331 FOOD MICROBIOLOGY LABORATORY 1Q W 2 (6-4) Prereq 330 or concurrent registration. Techniques for the investigation of microorganisms in foods.

FOR GRADUATES

500 ADVANCED TOPICS IN MICROBIOLOGY 1Q On demand 2 (2-0). Critical analysis of research papers in certain areas of microbiology and presentation of this material. Occasionally, a graduate student will be asked to present experimental data from his own research.

501 SEMINAR a/q 1 (1-0) R-3.

505 MICROBIOLOGY LITERATURE a/q 1 (1-0) R-9. Reading and reporting of microbiological literature.


520 ALLERGY AND HYPERSENSITIVITY On demand 2. Recent advances in the field.

600 RESEARCH a/q V R-25. Original investigations on a research problem under the guidance of a staff member.

699 THESIS a/q V R-15.

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 the area of interest, and academic promise of development, and in scholarship in general, than it is in the precise content of the program with 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 eight recitals per quarter as prescribed by the faculty.

6. All music majors seeking a B.M. degree are required to participate in Band, Orchestra or a Choral Group each quarter of residence with the regular chorus in the school year. Non-music majors who are wind instrument players are required in majesty majors in their applied field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter; voice majors must register for choir or choral union every quarter. Students registered in any group must participate in that group for the remainder of the academic year. Piano and organ majors must fulfill this requirement by the election of Music 140 or 106-110. Exceptions to this requirement may be made only 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 21.

APPLIED MUSIC FEES

Non-Music Majors

| One half-hour lesson per week | $12.00 |
| Two half-hour lessons per week | $24.00 |
| Three half-hour lessons per week | $36.00 |

Music Majors

| One half-hour lesson per week | $12.00 |
| Two or more half-hour lessons per week | $20.00 |

For majors and non-majors who register for applied music for less than a full quarter or who withdraw before the end of the quarter, a charge of $1.75 per private lesson 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 daily 1.00
Piano practice room, one hour daily 2.00
Additional hour daily 3.00
Organ and practice room, one hour daily 5.00
Additional hour daily 5.00
*Wind and string instruments 4.00

*Rentals for instruments used in orchestra and band must be paid in full for the school year. Other rentals must be paid for entire quarter. No refunds of rentals will be made.

(The above fees are subject to modification by action of the State Board of Education.)

A. CURRICULUM FOR BACHELOR OF MUSIC DEGREE WITH A MAJOR IN MUSIC EDUCATION:

For students who sincerely feel the challenge and vital service opportunity in the teaching profession, and whose high school background includes experience in musical organizations, Montana State University offers three major courses, each leading to the degree of Bachelor of Music with a major in Music Education.

Students desirous of teaching and directing both vocal and instrumental music may enroll for the General Supervisor's Course. Separate major credits in vocal and instrumental majors are available. These courses of study meet the state requirements for certification for public school teaching (see Education).

GENERAL SUPERVISOR MAJOR

FRESHMAN YEAR

| Music 101, 102, 103 (Applied) | 1.1. |
| Music 104 (Organization) | 1.1. |
| Music 111-112-113 (Theory I) | 2.2. |
| Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) | 1.1. |
| Music 114, 115, 116 (Piano in Class) | 1.1. |
| Music 121, 122, 123 (Strings or Winds in Class) | 1.1. |
| Music 135, 136, 137 (Introduction to Music Literature) | 2.2. |
| English 101-102-103 (Freshman Composition) | 3.3. |
| Health & Physical Educ 100 | 1.1. |
| ROTC 101-102-103 (Men) | or 2.0. |

or 0.0.5.

SOPHOMORE YEAR

| Music 201, 202, 203 (Applied) | 1.1. |
| Music 105 (Organization) | 1.1. |
| Music 241, 242, 243 (Theory II) | 2.2. |
| Music 237, 238, 239 (Sight Singing, Keyboard, and Dictation) | 2.2. |
| Music 215, 216, 217 (Piano in Class) | 1.1. |
| Music 117, 118, 119 (Vocal Class) | 1.1. |
| Music 231, 232, 233 (Conducting) | 3.3. |
| Electives (Non-Music) including Psych 110 | 3.3. |
| Health & Physical Educ 100 | 1.1. |
| ROTC 201-202-203 (Men) | or 2.12. |

or 2.26.2.

JUNIOR YEAR

| Music 301, 302, 303 (Applied) | 1.1. |
| Music 106-110 (Organization) | 1.1. |
| Music 244, 245, 246 (School Music) | 3.3. |
| Music 125, 126, 127, or 129 (Strings or Winds in Class) | 1.1. |
| Education 200, 205, 208 | 2.45. |
| Electives (Non-Music) | 0.6.6. |

SENIOR YEAR

| Music 401, 402, 403 (Applied) | 1.1. |
| Music 106-110 (Organization) | 1.1. |
| Music 434, 435, 436 (History of Music) | 3.3. |
| Music 239, 230, 231 (Orchestration) | 2.2. |
| Music Electives (upper division) | 0.3.3. |
| Education 405 (Student Teaching) | 10.0. |
| Electives (Non-Music) | 0.7. |

*Mus Ed majors taking piano as Sec Applied Major must complete Music 320, 321, 322, Piano Methods and Materials.

VOCAL MAJORS

Vocal majors in Music Education follow Curriculum A with the following exceptions: Music 117, 118, 119, 232 and 324 are not required. Music or academic electives may be substituted.

INSTRUMENTAL MAJOR

Instrumental majors in Music Education follow Curriculum A with the following exceptions: Music 117, 118, 119, 232 and 324 are not required. Music or academic electives may be substituted.

B. CURRICULUM FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION:

Students instrumentalist or vocalist may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music (including emphasis on piano pedagogy), Theory or Composition. Enrollment may not be completed until the student has received the recommendation of a major professor or a committee of the music faculty.

MAJOR IN PIANO OR ORGAN

Students interested in piano pedagogy follow Curriculum B with the following exceptions: (1) at least six credits in Music 140 (Piano Ensemble) must be included. (2) A half recital, Music 445, 1 credit, will fulfill the senior recital requirement.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 151-152-153 (Applied)</td>
</tr>
<tr>
<td>Music 106-110 (Organization) or Music 140 (Ensemble)</td>
</tr>
<tr>
<td>Music 111-112-113 (Theory I)</td>
</tr>
<tr>
<td>Music 151, 152, 153 (Sight Singing, Keyboard, and Dictation)</td>
</tr>
<tr>
<td>Music 130, 136, 137 (Introduction to Music Literature)</td>
</tr>
<tr>
<td>English 101-102-103 (Freshman Composition)</td>
</tr>
<tr>
<td>Health &amp; Physical Educ 100</td>
</tr>
<tr>
<td>ROTC 101-102-103 (Men)</td>
</tr>
</tbody>
</table>

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 251-252-253 (Applied)</td>
</tr>
<tr>
<td>Music 106-110 (Organization) or Music 140 (Ensemble)</td>
</tr>
<tr>
<td>Music 241-242-243 (Theory II)</td>
</tr>
<tr>
<td>Music 257, 258, 259 (Sight Singing, Keyboard, and Dictation)</td>
</tr>
<tr>
<td>Music 247, 248, 249 (Keyboard Harmony)</td>
</tr>
<tr>
<td>Psychology 110 and Electives (non-music)</td>
</tr>
<tr>
<td>Health &amp; Physical Educ 100</td>
</tr>
<tr>
<td>ROTC 201-202-203 (Men)</td>
</tr>
</tbody>
</table>

or 2.2.0.2.
MAJOR IN VOICE

FRESHMAN YEAR:

Music 151, 152, 153 (Applied) 4.4,4.
Music 160-110 (Organization) 1.1,1.
Music 111-112 (Theory I) 1.1,1.
Music 114-115-116 (Piano in Class) 2.2,2.
Music 151, 152, 153 (Sight Singing, Keyboard, and Dictation) 1.1.
Music 155, 136, 137 (Introduction to Music Literature) 3.3.
Selective (non-music) 7.7,7.

MAJOR IN ORCHESTRAL INSTRUMENTS

FRESHMAN YEAR:

Music 151, 152, 153 (Applied) 3.3,3.
Music 160-110 (Organization) 1.1,1.
Music 111-112 (Theory I) 1.1,1.
Music 114-115-116 (Piano in Class) 2.2,2.
Music 151, 152, 153 (Sight Singing, Keyboard, and Dictation) 1.1.
Music 155, 136, 137 (Introduction to Music Literature) 3.3.
Selective (non-music) 7.7,7.

SENIOR YEAR:

Music 160-110 1.1,1.
Music 124, 123, 126 (History of Music) 1.1.
Selective (non-music) 7.7,7.

MAJOR IN COMPOSITION OR THEORY

FRESHMAN YEAR:

Music 160-110 (Organization) 1.1,1.
Music 111-112-113 (Theory I) 1.1,1.
Music 151, 152, 153 (Sight Singing, Keyboard, and Dictation) 2.2,2.
Music 155, 136, 137 (Introduction to Music Literature) 3.3.
Selective (non-music) 7.7,7.

SOPHOMORE YEAR:

Music 41, 42, 43 (History of Music) 4.4,4.
Music 160-110 1.1,1.
Music 124, 123, 126 (History of Music) 1.1.
Selective (non-music) 7.7,7.

JUNIOR YEAR:

Music 160-110 1.1,1.
Selective (non-music) 7.7,7.

SPECIAL REQUIREMENTS FOR THE MASTER OF MUSIC DEGREE. Three programs are available which lead to this degree:

A. Major in Applied Music. In addition to the general requirements for admission under the Graduate School, the candidate must meet the following special requirements: A theory placement test, a bachelor's degree in one field of applied music or the demonstrated equivalent of an applied major. An audition or tape recoding will be required of students with a B.M. from other institutions.
that keyboard students may, with faculty approval, offer credit in 140 for all the ensemble requirement.

Required music courses: 12 credits of 501-502-503, 2 credits of 609, 8 to 12 credits selected from 311-312-313, 370-379-381, 359-360-361; 9 to 12 credits from 421, 422, 423, 424; 3 credits in 431. A total of 4 credits in non-music electives (graduate credit) may be offered toward the degree.

Any music courses (graduate credit) may be offered to complete the required 45 credits of graduate work.

B. Major in composition. In addition to the general requirements for admission under the Graduate School, the candidate must meet the following special requirements: A bachelor's degree with a major in theory and composition or the demonstrated equivalent of such a major, faculty approval of original scores submitted, and faculty approval of pianistic ability through audition.

General requirements: 45 quarter credits of graduate work, minimum of 12 credits in composition and 6 credits in applied music, pass an oral examination covering the field of study; 3 credits selected from Band, Orchestra, Chorus (or 146 summer only); and three copies of a professional paper consisting of a musical work of major proportions, written under assignment. A performance of the work shall be supervised by the candidate.

Required music courses: 6 credits of 501-502-503, 6 credits of 609, 12 credits selected from 311-312-313, 370, 379-380-381, 440, 535, 555, 562. A total of 7 graduate credits in non-music electives may be offered toward the degree.

C. Major in Music Education. In addition to the general requirements for admission under the Graduate School, the candidate must take a theory placement test and have an audition in his performance area for applicability of music placement.

General requirements: 45 quarter credits of graduate work, minimum of three credits in applied music, three copies of a professional paper, pass an oral examination covering the fields of study and a professional paper, and three credits in Band, Orchestra, Chorus (or 146, summer only).

At least one year of satisfactory teaching experience prior to the granting of the degree. This requirement does not preclude the enrollment in the graduate program prior to such teaching experience.

Required courses: 3 to 6 credits of 501-502-503; 6 to 10 credits of 609; 6 to 12 credits selected from 311-312-313, 359-360-361, 379-350-361, 471-472-473; 6 credits of 431; 6 to 12 credits of 421, 422, 423, 424; 3 credits of 521; 3 credits of 522; one 3 or 4 credit graduate course in the School of Education.

A total of 6 credits from non-music electives carrying graduate credit may be offered toward the degree.

Any music courses (graduate credit) may be offered to complete the required 45 credits of graduate work.

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 100—Secondary Applied Minor a/q 1-2 Prereq c/l.

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

MUSIC 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 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 music major to which they may apply for credit in music major, i.e., Music Education. A student entering in Music 101 should show evidence of the equivalence of two year's prior study.


FOR UNDERGRADUATES

For explanation see Index under “Symbols”

105 SUMMER SESSION CHORUS 1Q Su V 1-2.

106 UNIVERSITY CHOIR 3Q A W S 1.

107 CHORAL UNION 3Q A W S 1.

108 ORCHESTRA 3Q A W S 1.

110 UNIVERSITY BAND 3Q A W S 1.

Courses 106 through 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 a minimum of 6 credits.

111-112-113 THEORY I 3Q A W S 2 Prereq pass music placement examination. The art and science of music structure (emphasis on 18th and 19th century music), reading and writing of musical symbols, 12- and 16-beat meters, intervals, chords, cadences, melodic writing, modulation, and rhythm.

114-115-116 PIANO IN CLASS 3Q A W S 1. All major and minor scales 2 octaves HS. All major and minor triads in all positions. Aural harmonization of ear-tune. Materials such as Oxford and Burrows Adult Beginners Books. Transposition, memorization, and sight-reading.

117-118-119 VOICE IN CLASS 3Q A W S 1. Breathing, resonance, vowel formants, aural approach to the development of vocal timbre in the lower registers; ability to retain good vocal technique and style; and vocal production. Sight reading.

122-123 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS 2Q W S Su 3 Prereq 111 or = or concurrent registration. (122) A philosophy of teaching music in the elementary schools. “The emphasis placed on learning by doing. Singing, listening, rhythm, instrumental, creative, and integration; twenty-five songs memorized; use of the pitch pipe, autocord and chording on piano; classroom conducting; basic rudiments of music and keyboard study; 124 dealing more specifically with topics presented generally during the first quarter. Other topics included: beginning part singing; dramaticizations; integrated unit with social studies, literature, and use of specific materials; instruments of the orchestra by sight and sound; additional work in music reading; music books for the elementary school library. Not open to music majors.

129 WIND AND PERCUSSION INSTRUMENTS IN CLASS 3Q A W S 1. Group instruction for beginners on violins, viola, cello, and bass. Emphasis on group ensemble and recorded music performance.

130 WIND AND PERCUSSION INSTRUMENTS IN CLASS 3Q A W S 1. Group instruction for beginners on violins, viola, cello, and bass. Emphasis on group ensemble and recorded music performance.

135-136-137 INTRODUCTION TO MUSIC LITERATURE 3Q A W S 3 Prereq 106-107. General course. The place of music in history with emphasis on its role to social change and to the history of other arts. Comparative survey of masterpieces of music from the Renaissance through the Baroque era. Study of recordings: Concert attendance required; (136) development of music of the Classic-Romantic era. Study of recordings; Concert attendance required; (137) masterpieces of music of the 20th century. Study of recordings. Concert attendance required. For music majors only.

146 ENSEMBLE GROUPS 1Q A W S 1. Any small group of two or more players or singers may have a course outlined by the instructor. The group should be maintained for a minimum of one term with music literature; accompanying. Students may register for more than one ensemble group in any one quarter.

150-151-152 COMPOSITION 3Q A W S 2. Prereq c/l. An introduction to the basic art of music composition.

215-216-217 INTERMEDIATE PIANO IN CLASS 3Q A W S 1 Prereq 3 credits in either Piano I, Music 114-115-116, or placement test. All major and minor scales 2 octaves HS. Further development of harmonization, transposition, memorization, and sight-reading. Materials such as Felton Progressing Studies and Bartok Mikrokosmos Books I and II.

231-232-233 CONDUCTING 3Q A W S 2 Prereq 10 credits in music including Music 111-112. (231) Fundamentals of conducting. Prereq for 232 or 233. (232) Choral conducting. (233) Instrumental conducting. Practicum. The student sees how his understanding is developed through individual conducting projects; the class being used as a clinic course and band.


247-248-249 KEYBOARD HARMONY 3Q A W S 1 Prereq 243 or concurrent registration, and placement in Piano or Organ 151. Practical application of theory principles to the keyboard. Exercises in modulation, transposition, and development of extemporary playing.


319 PIANO FOR THE CLASSROOM TEACHER 1Q Su 2. Presenting simple material at a basic level of skill, toward a wider utilization of the piano in classroom and school situations.
### Music and Allied Arts

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>329</td>
<td>Music and the Allied Arts 1Q Su 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>Senior Recital 1Q V 1-2</td>
<td>Prereq 243</td>
<td></td>
</tr>
<tr>
<td>399-400-401</td>
<td>Composition 3Q A W S 2</td>
<td></td>
<td>243 and 251.</td>
</tr>
<tr>
<td>342-343</td>
<td>Instrumental Repair 1Q Su 3</td>
<td></td>
<td>Prereq 243.</td>
</tr>
<tr>
<td>344-345</td>
<td>Psychology of Music 1Q S Su 3</td>
<td></td>
<td>Prereq 243.</td>
</tr>
<tr>
<td>345-346</td>
<td>Workshop in Music Education 1Q Su V 1-3</td>
<td></td>
<td>Prereq 243.</td>
</tr>
<tr>
<td>347-348</td>
<td>Pedagogy of Theory 1Q W Su 3</td>
<td></td>
<td>Prereq 243.</td>
</tr>
<tr>
<td>349-350</td>
<td>Music and the Allied Arts 1Q Su 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>351-352</td>
<td>School Music 1Q A W S Su (351-352)</td>
<td></td>
<td>329-325.</td>
</tr>
</tbody>
</table>

### Pharmacy

**Introduction:** Pharmacy is the science which treats of medicinal substances. It embraces a knowledge of medicines and the art of compounding and dispensing them and also their identification, selection, combination, analysis, standardization, and mode of action.

**Requirements:**
- **Bachelor of Science in Pharmacy:** Five years of study including techniques, procedures and sequences of materials and a comparison of student pharmacist education in schools of pharmacy. Students desiring further study of minor applied fields may elect 1-2 credits.
- **Thesis:** a/ V R-15.

### Applied Mathematics and Physics

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.

### Sociology

- **601-602-603 Applied Techniques** a/q V 1-4
- **699 Thesis** a/q V R-15.

### Music Education

- **511 Music Education in America** 1Q W Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **533 Pedagogy of Theory** 1Q W Su 3
- **562 Seminar** a/q V 1-5
- **569 Thesis** a/q V R-15.

---

**FOR GRADUATES**

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.

---

**FOR GRADUATES**

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.

---

**FOR GRADUATES**

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.

---

**FOR GRADUATES**

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.

---

**FOR GRADUATES**

- **501-502-503 Applied Techniques** a/q V 1-4
- **523 School Music Administration** 1Q A Su 3
- **521 Music Education in America** 1Q W Su 3
- **531 Music Education in America** 1Q W Su 3
- **532 School Music Administration** 1Q A Su 3
- **538 Pedagogy of Theory** 1Q W Su 3
- **546 Seminar** a/q V 1-5
- **560 Composition** a/q V R-12.
A program of study leading to the Master of Science degree in pharmacy is offered in pharmaceutical chemistry, pharmacognosy, and pharmacology is also offered.

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 advanced algebra, trigonometry, chemistry, physics, and in particular, 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 are listed earlier in the catalog.

2. At least two years as prescribed in the pre-pharmacy curriculum (may be transferred from accredited colleges):

First year: Chemistry 121-122-123, English 101-102-103, Health and Phys. Education 100 (3 credits, 1/2 quarter), Mathematics 100 and 113, ROTC 101-102-103, Zoology 101 and electives. (Students satisfactorily passing the mathematics placement examination will be exempted from Mathematics 101 in which case they will substitute a Group II or Group III elective.)

Second year: Botany 130 and 131, Chemistry 261-262-263, Economics 201-202, Health and Physical Education 100 (3 credits, 1/2 quarter), Physics 111-112, ROTC 201-202-203, Zoology 201, and Group II or Group III electives.

Applicants presenting two years of satisfactory college work but with certain deficiencies in the above list may be admitted, but such deficiencies must be removed.

Each applicant for admission to the professional curriculum must have a grade point average of at least 3.00. Students are exempted from taking 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 years in the professional curriculum may not have a grade point deficiency score of more than 10. If he has a greater deficiency, he will not be granted senior standing but will be required to retake such courses as the faculty may direct, in which he has received grades of "D" or "F" until he has reduced his deficiency to 10 or less. 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 both pre-pharmacy instruction 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, a resident of Montana for a period of at least two years, and shall have completed at least three years of college work and a year's standing in an accredited school of pharmacy. However, such an applicant shall be exempted from taking and completed for credit at the time he makes application for admission to the first professional year.

GRADUATE STUDY. Candidates for the degree of Master of Science in pharmacy must complete a graduate study and must complete a program satisfactory to the faculty of the School of Pharmacy.

PHARMACY CURRICULUM

First year: Microbiology 300-304; Business Administration 201; Chemistry 201-202; Pharmacy 296 or Elective, 290 or Elective, 324-325, Zoology 340-341; electives.

Second year: Business Administration 390; Chemistry 384; Microbiology 411; Pharmacy 414-415-410, 441, 452, 461, 462, 463, 475; and electives.

Third year: Pharmacy 503, 504, 505-506, 516, 517-518-519, 546-541, 542, 577; and electives.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

206 ORIENTATION TO PHARMACY 1Q A 2 (3-0). Career opportunities, literature, history and terminology, library orientation.

220 PHARMACEUTICAL CALCULATIONS 1Q W 3 (3-0). Methodology, pharmaceutical arithmetic, pharmaceutical Latin, and the formation of dosage forms, including counting calculations.

324-325 PHARMACOGNOSY 2Q W 4 (3-2). S 4 (3-2) Prereq Bot 130 and Chem 263 or =. The plant and animal products used in pharmacy and medicine, particularly if the student is interested in organic pharmaceuticals.

414-421 ORGANIC MEDICINAL PRODUCTS 3Q A 3 (3-0) Prereq Chem 263. Organic substances used medicinally with emphasis on the correlation of chemical structure with therapeutic activity.

418 ORGANIC MEDICINAL PRODUCTS LABORATORY 1Q W 2 (0-6 to 9) R-4 Prereq 414. Synthesis, identity and purity tests, of organic medicinals.

441 INTRODUCTION TO PHARMACOLOGY 1Q S 3 (3-0) Prereq Zoology 341. Principles of drug administration and the quantitative evaluation of drug activity.

452 DRUG ANALYSIS 1Q A 4 (2-6) Prereq Chem 245. Special and instrumental methods used in the analysis of pharmaceutical preparations.

461 PHARMACEUTICAL CHEMISTRY 1Q A 3 (3-0) Prereq 220 and Chem 263 or =. An introduction to the elementary physical chemical principles as applied to pharmacy and pharmacueticals.

463-465 OPERATIVE PHARMACY 3Q W 5 (3-0) Prereq 220 and Chemistry 384. Fundamentals techniques and the various classes of pharmaceutical preparations.

466 MEDICINAL PLANTS 1Q On demand 2 (0-6) Prereq 325. The collection, identification, drying, garlic, milling of crude drugs.

467 IDENTIFICATION OF MEDICINAL PLANTS 1q a/q On demand 2 (0-6) Prereq 466. The herbarium study of medicinal plants.

468 DRUG MICROSCOPY 1Q On demand 2 (0-6) Prereq junior standing in pharmacy and 3/1. Microscopic and micro-chemical identification of drugs, foods and spices. The detection of adulterants and impurities.

475 TOXICOLOGY 1Q W 3 (2-4). Emergency procedures for the treatment of poisoning, characteristics of the more common poisons, and the recognition and identification of poisons.

503-504 BIOLOGICAL MEDICINAL PRODUCTS 2Q W 3 (3-0) Prereq Microbiology 204. Biologicals, antibiotics, vitamins, hormones, and products derived from microorganisms.

505-506 DISPENSING 2Q A 4 (2-6) Prereq 463. The fundamental principles of prescription compounding by means of a detailed study of the common dosage forms and special forms of medication.

517 PHARMACEUTICAL PRACTICE 1Q W 3 (3-0) Prereq senior standing in pharmacy, State and federal laws pertaining to the practice of pharmacy.

518-519 PHARMACEUTICAL PRACTICE 3Q W 1 (0-2) Prereq senior standing in pharmacy, intended to be taken concurrently with the Montana State University Prescription Pharmacy and to various pharmacies in Missoula in order to acquaint them with current retail practices.

540-541-542 PHARMACOLOGY 3Q A 4 (3-2) Prereq senior standing in pharmacy, and Zoology 341 or =. The pharmacodynamics of drugs and their application to therapeutics.

550 ANIMAL HEALTH PRODUCTS AND PESTICIDES 1Q S 3 (3-0) Prereq 540. Pharmaceuticals used in the treatment of diseases of animals, and pesticidal and pest control chemicals.

577 PHARMACEUTICAL ADMINISTRATION 1Q S 3 (3-0) Prereq senior standing in pharmacy. The management of retail pharmacy with emphasis on the professional problems of the pharmacist.

FOR UNDERGRADUATES AND GRADUATES

570 COSMETICS 1Q On demand 3 (1-6) Prereq 463. The theory and technique of cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 1Q On demand 3 (1-6) Prereq 463. The more involved methods of analysis as applied to pharmaceuticals.

592-593 HOSPITAL PRACTICE 1-2Q On demand 1-3 (6-2/6) Prereq 540. Participation in the hospital practice of the pharmacist.

598 SEMINAR a/q 1 (1-0) R-6 Prereq senior standing in pharmacy.

599 SPECIAL PROBLEMS IN PHARMACY a/q V 2-5 (6-3/6-3) Prereq senior standing in pharmacy. Research studies by conference, library and laboratory research in pharmacy, pharmaceutical chemistry, pharmacognosy, or pharmacology.

FOR GRADUATES

602 ADVANCED PHARMACOGNOSTIC TECHNIQUES 1Q a/q 3 (3-0) Prereq 465 and Bot 334 and 355. Techniques used in investigative pharmacognosy.

606-607-608 CHEMISTRY OF NATURAL PRODUCTS 3Q a/q 3 (2-3-0) Prereq 465 and Bot 335. The chemistry of natural products, including methods of isolation, degradation studies, proof of structure, and synthesis, with emphasis on the pharmaceutical compounds. (607) Steroids, bile oils, terpenes and steroids, including their occurrence, proof of structure, synthesis, activity-stature-activity relationships and chemistry.

609-610-611 ADVANCED ORGANIC MEDICINAL PRODUCTS 3Q A 3 (3-0) Prereq 416. Alkaloids and related compounds, including methods of isolation, degradation studies, proof of structure, synthesis, and synthesis, with emphasis on the pharmaceutical compounds. (609) Alkaloids, their occurrence, proof of structure, synthesis, activity-stature-activity relationships and chemistry.

611 ADVANCED ORGANIC MEDICINAL PRODUCTS LABORATORY 1Q W 2 (0-6 to 9) R-4. Preparation, isolation and purification of organic medicinals by advanced techniques.

619 ADVANCED PHARMACOLOGY 1-3Q a/q V 3-5 (6-9 to 15) Prereq 542 or =. The more involved actions of drugs upon cells and organs.

620 ADVANCED PHARMACY 1-3Q a/q V 3-5 (6-9 to 15) Prereq 566 or =. The more complex problems involved in formulation and preparation of pharmaceuticals.

699 THESIS a/q V R-15.
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 regarded as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge, and what kinds of knowledge? Are values derived from personal feelings or from standards which may be impersonal, verifiable, unchanging? Are there significant relations among phases of experience reflected in science, art, religion, morality and politics?

Courses in philosophy acquaint the students with the views of great philosophers, 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, 200, 202, 203, 204, 206, and 10 credits in courses numbered 400 or above. The requirement of 210 may be waived by permission of the department. Normally students are expected to complete Philosophy 110, 201, 202 and 206 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 45 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, 260, and either 320 or 321, and should take as many as possible of the following courses: Philosophy 330, 350, 354, 368, 380 and 422.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

10 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 3Q 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 S 5. The valid forms of reasoning, the methods of science, and the detection of fallacies.

120 ETHICS 1 Q A S 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 W 3. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations. Credit not allowed for this course and 120.

201 HISTORY OF ANCIENT PHILOSOPHY 1 Q A 5.

202 HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 1 Q W 5. Prereq 201.


210 SYMBOLIC LOGIC 1 Q W 5. Theory and practice in the kind of logic also known as formal or mathematical logic. Applications in the foundations of mathematics and in theory of scientific investigation.

FOR UNDERGRADUATES AND GRADUATES

301-302-303 GREAT PHILOSOPHERS 5Q A W S 1. (Given in the summer for 3 cr or 340). Enter any quarter. (301) Greek, Roman and early Christian thinkers. (302) Late medieval, Renaissance, and some modern thinkers. (303) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

320 MODERN ETHICS 1 Q W 5. Prereq 120. Recent theories on the nature of moral concepts; these will include naturalism, intuitionism, emotivism, and existentialism.

321 SOCIAL ETHICS 1 Q S Su 3 o/y. 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 social order; philosophical justification of different forms of authority.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 1 Q A 5. Prereq 10 credits in Philosophy.

340 AESTHETICS 1Q S 3. Prereq 3 credits in Philosophy. The nature of aesthetic experience, of the standards of art criticism, and of the kinds of knowledge communicated by art. Readings from philosophers, artists and art critics.

341 PHILOSOPHY IN LITERATURE 1Q A W Su 3. Prereq 10 credits in literature or Philosophy or permission of leading ideas in selected masterpieces of literature, both classical and modern.

350 THEORY OF KNOWLEDGE 1Q S 3 e/y. Prereq 10 credits in Philosophy. Foundations of belief and reliable knowledge; the claims of rationalism, empiricism, pragmatism, mysticism, authoritarianism, and skepticism.

351 METAPHYSICS 1Q W 3. Prereq 10 credits in Philosophy. Theories of reality including study of such fundamental concepts as being, form, substance, causation, universal, particular, and process.

352 PHILOSOPHY OF LANGUAGE 1Q S 2 e/y. Prereq 5 credits in Philosophy and c/l. Recent investigations into the structure of ordinary and ideal languages as systems of signs and resulting conclusions for Philosophy.

353 CONTEMPORARY PHILOSOPHIES OF SCIENCE 1Q A 3 e/y. Prereq 110 or =. History and critical study of some contemporary theories concerning the nature and limits of science, including logical empiricism and operationalism.

354 PHILOSOPHY OF RELIGION 1 Q W 3 e/y. Prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 1Q W 3 o/y. Prereq 5 credits in Philosophy and c/l. A study of philosophical themes in some Hindu, Buddhist, and Taoist literature.

356 PLATO 1Q W 3 e/y. Prereq 201; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

357 ARISTOTELE 1Q S 3 e/y. Prereq 201; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

358 DESCARTES, SPINOZA, LEIBNIZ 1Q A 5 e/y. Prereq 203; or 10 credits in Philosophy and c/l. The development of Rationalism.

360 LOCKE, BERKELEY, HUME 1Q W 5 o/y. Prereq 203; or 10 credits in Philosophy and c/l. The development of British Empiricism.

361 KANT 1Q S 5 o/y. Prereq 203; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

362 NINETEENTH CENTURY DIALECTICAL PHILOSOPHY 1Q W 3 e/y. Prereq 203; or 10 credits in Philosophy and c/l. Dialectical Idealism (Hegel) and dialectical materialism (Marx).

363 PHILOSOPHICAL LIBERALISM 1Q A 3 o/y. Prereq 5 credits in Philosophy. Development of the chief concepts of liberalism, such as liberty, civil rights, and social justice.

366 IDEALISM 1Q S 3 e/y. Prereq 10 credits in Philosophy. Recent British and American idealist philosophers.

367 REALISM 1Q W 5 o/y. Prereq 10 credits in Philosophy. Twentieth century realist philosophers.

368 PRAGMATISM 1Q S 3 e/y. Prereq 5 credits in Philosophy.

369 EXISTENTIALISM 1Q W 3. Prereq 10 credits in Philosophy and c/l. Selected readings from the works of both philosophical and literary, of prominent existentialist thinkers.

370 PROBLEMS IN PHILOSOPHY 3Q a/q V R-9. Prereq 15 credits in Philosophy and c/l.

372 SEMINAR: THEORY OF VALUES 1Q S 3. Prereq 15 credits in Philosophy and c/l.

373 SEMINAR: PHILOSOPHICAL PRESUPOSITIONS OF POLITICAL INSTITUTIONS 1Q W 3 e/y. Prereq 322 or Political Science 351.

374 SEMINAR: METAPHYSICS 1Q S 3 o/y. Prereq 15 credits in Philosophy and c/l.

375 SEMINAR: DEFINITION AND TRUTH 1Q W 3 o/y. Prereq 15 credits in Philosophy and c/l.

376 SEMINAR: PHILOSOPHY OF SCIENCE 1Q W 3 o/y. Prereq 353 and c/l.

377 SEMINAR: MYSTICISM AND INTUITIONISM 1Q S 3 e/y. Prereq 15 credits in Philosophy and c/l. Topics announced in schedule of classes.

FOR GRADUATES

500 RESEARCH a/q V R-15. Work on selected problems under direction.

600 THESIS a/q V R-15.
PHYSICAL SCIENCES

are those sciences which concern themselves primarily with the inanimate aspects of man's environment—the fields of Astronomy, Chemistry, Geology, Mathematics, and Physics.

Four years are required for the degree of Bachelor of Arts. During the first two years the student has the opportunity to study in all five fields. In the junior and senior years the student takes advanced work in the area of his choice. Since more advanced mathematics is necessary for adequate understanding of modern physics, students who choose that field must complete calculus.

This program enables the student to gain broad insight into these related areas of the physical sciences as well as to do some intensive work in one or more of them.

Students completing this program are prepared for beginning positions in industry or for work toward more advanced degrees. Those electing to teach may qualify to do so by taking the required courses in education and completing courses to meet requirements in a field taught in high schools in addition to the area chosen for intensive work.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS. In addition to the general requirements for graduation listed earlier in the catalog, fifty-five credits in physics must be earned for the Bachelor of Arts degree with a major in physics. In preparation for advanced courses, a student should take Physics 221-222-223 in the sophomore year. Required courses offered in other departments: Mathematics 116, 119, 118, 251, 252, 253; Chemistry 121-122-123. The foreign language requirement listed earlier in the catalog must be satisfied.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

111-112-113 GENERAL PHYSICS 3Q  A W  S 5 (5-3) Prereq for 111: Math 115. 111 is prereq for 112 and 113, but 112 is not prereq to 113. (111) Mechanics and wave motion. (112) Heat, electricity and magnetism. (113) Sound, light and atomic physics. Credit not allowed for both 111-112-113 and 221-222-223.

121-122 RADIO ELECTRONICS 2Q  A W  S 5 (5-0) Prereq 112. Vacuum tubes, radio circuits, high frequency oscillation, electronic measurements. Credit not allowed toward a physics major.

221-222-223 GENERAL PHYSICS 3Q  A W  S 5 (6-4) Prereq for 221: Math 118. 221 is prereq for 222 and 223, but 222 is not prereq to 223. This course satisfies medical and technical school requirements in general physics. (222) Heat, electricity, and magnetism. (223) Sound, light, and atomic physics.

231 WEATHER 1Q  W  2 Prereq 221-222-223. Elements of meteorological phenomena including observational quantities, air mass relations and application to air transportation.

251-252-253 LABORATORY ARTS 3Q  A W  S 1 (0-3). Open to upper division science majors who have completed 223. Enter any quarter. Elements of glass blowing, machine shop practice, and electronic construction techniques.

271 VECTOR ANALYSIS 1Q  S 3 (3-0) Prereq 222 and Math 252.

FOR UNDERGRADUATES AND GRADUATES

314-315-316 ELECTRICITY 3Q  A W  S 3 (3-0), S 4 (3-3) Prereq 271.


352-353 ATOMIC PHYSICS 2Q  A W  S 3 (3-0) Prereq 223 and Math 252.

354 NUCLEAR PHYSICS 1Q  S 3 (3-0) Prereq 353.

431 SELECTED TOPICS a/q V 1-5 R-10 Prereq c/l and 15 credits in Physics.

471-472 MECHANICS 2Q  A W  S 3 (3-0) Prereq 271 and Math 253.

473 QUANTUM MECHANICS 1Q  S 3 (3-0) Prereq 472.

480 PHYSICS SEMINAR 1Q  S 1 (1-0). A library and discussion course required of Physics majors.

FOR GRADUATES

501 RESEARCH Given subject to demand. V 2-10 R-15 Prereq c/l.

512-513-514 ADVANCED EXPERIMENTAL PHYSICS 3Q  A W  S 2 (0-6). Given subject to demand.

552 RADIATION AND ATOMIC STRUCTURE 1Q  S 5 (5-0) Prereq 353. Given subject to demand.

554-555 QUANTUM MECHANICS 2Q  A W  S 5 (5-0) Prereq 353 and 473.

669 THESIS a/q V R-15.

PHYSICS

is the science that has as its objective the formulation and verification of laws or relationships among the different physical quantities. Some of the most important of these quantities are mass, time, length, force, energy, momentum, electric charge, electric field strength, entropy, wave length. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biology, meteorology and geophysics. In addition the subject of philosophy is profoundly influenced both by the methods and developments of physics.

The Bachelor of Arts and Master of Arts degrees are offered.
POLITICAL SCIENCE

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.

With the approval of the Chairman of the Department, the student may present for examination the following requirements:

1. To assist all students in acquiring a broad liberal education and to equip them with the necessary background for effective discharge of the duties of American citizenship;
2. To provide undergraduate preparation for those students who plan to pursue graduate studies in fields of government and politics, including training both for the foreign service and the domestic public service at the national, state, and local levels;
3. To assist in preparing students for careers in teaching at both the elementary and secondary levels;
4. To provide a sound background for those students who intend to enroll in law or other professional schools;
5. To provide a background for the study of foreign languages.

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 fulfilled by the student to receive the degree with a major in Political Science: A minimum of 45 credits in Political Science and History must be earned by the student over the courses numbered over 200 and including Political Science 491-492.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines. In order to receive a major degree in Political Science, Political Science 301 or 391, and Political Science 392-393 must be included in the combination major. A minimum of 30 credits must be earned in Political Science and History. Twelve hours of the Political Science work must be in upper division courses. All graduating seniors in Political Science will take comprehensive examinations in the fields of Political Science and History.

Upper division work in Political Science is offered in American Political Institutions, Comparative Political Systems, Political Administration, Public Law, and Political Theory. A combination major in Political Science must present credits in at least four of these fields.

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 25 credits must be in the discipline of Political Science. Political Science 200, 201, 202, 203, 301 and 311. At least 12 additional credits will be chosen from upper division economics courses and 12 additional credits from Political Science. Twelve hours of the Political Science work must be in upper division courses. All graduating seniors will take comprehensive examinations in the fields of Political Science and Economics. Either Political Science 491 or Economics 303 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 206, 204, 206, 321, 322, and in Journalism 200 in partial fulfillment of the major requirements 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 and departmental requirements for this major. In addition, the student must successfully complete the requirements for the Bachelor of Laws degree during his junior year. As a senior, he will be expected to register for History 241, 242, 243, 251, 252 and 253, and Political Science 311 and 312. He must also complete 12 upper division hours in Political Science during his senior year for the completion of requirements and for electives. As a junior, the student will select a minimum of 31 hours from the offerings of the Department with Political Science 322, 333, 361 and 362, and 365 and also History 316 and 345 and 346 as required or highly recommended courses. In lieu of or in addition to the above, electives may be chosen from Economics 304, 305, and History 206, Political Science 231, 335, 350, 367, 368, 370 and 371, depending on the student's preparation and objectives.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

101. INTRODUCTION TO GOVERNMENT 1Q S 4. Comparative study of fundamental political institutions of modern governments, including constitutions, political parties, legislatures, executive officials, and courts.

202-203 AMERICAN GOVERNMENT 2Q A W 4. (202) The underlying constitutional principles of the national government; the democratic political processes, including public opinion, interest groups, political parties, and elections; (203) the structure of the national government, Congress, the presidency, and the courts. The functions of the national government, including finance, business, labor, agriculture, conservation, defense and foreign foreign-foreign policy. Selected problems of national government will also receive emphasis.

203 INTERNATIONAL RELATIONS 1Q S 4, Su 3. A general introduction to the nation-state system: factors of national power and policy, forces inducing tension, legal and institutional devices in government in conflict.

241 POLITICAL PARTIES AND ELECTIONS 1Q A A 3 Pre-req 202-203. The organization and work of American political parties; the conduct and control of nominations and elections; parties and political democracy.

FOR UNDERGRADUATES AND GRADUATES

221 PARLIAMENTARY DEMOCRACIES 1Q W S 3 Pre-req 101. Parliamentary governments with emphasis on Great Britain and France.

331 TOTALITARIAN GOVERNMENTS 1Q S Su 3 Pre-req 101. Dictatorships with emphasis on the government of the Soviet Union.

332-333 INTERNATIONAL PUBLIC LAW 2Q A W 3 Pre-req 8 cr in the Department. The law of nations in relation to peace, war and collective security.

341 PRESSURE GROUP POLITICS 1Q W 3 Pre-req 241. The role of pressure groups in democratic society; their interaction with public opinion, political parties, legislatures, executives, administration and the courts.

351-355 THE DEVELOPMENT OF POLITICAL THOUGHT 2Q A 4 Pre-req 101 or 203. (351) Western political thought, its ancient origins to the early modern period. (352) Western political thought, its early modern roots to the twentieth century.

353 AMERICAN POLITICAL THOUGHT 1Q S 4 Pre-req 101 or 203. American political thought, both systematic and popular from colonial origins to the present.

361-362 PUBLIC ADMINISTRATION 2 Q A W 4, Su 3 Pre-req 101 or 203. (361) The study of public administration, political and organization setting of American Administration. The processes of public management, including finance and personnel. (362) Problems and techniques of public administration illustrated by study of campaign materials.

363 PUBLIC PERSONNEL ADMINISTRATION 1Q S Su 3 Pre-req 361. The recruitment, selection, promotion, training, classification, and rating of public employees; organization for personnel management.

365 GOVERNMENT REGULATION OF BUSINESS 1Q S 3 Pre-req 203. The theories of government regulation; regulation in practice by legislation, by commission, and by judicial decision; the government of business.

371-372 THE AMERICAN CONSTITUTIONAL SYSTEM 2Q W S 3 Pre-req 203. The constitution of the United States in the jurisprudence of the Supreme Court.

375 PRINCIPLES OF ADMINISTRATIVE LAW 1Q W 3 Pre-req 203. The processes of public administration; judicial review of administrative action.

381 STATE GOVERNMENT 1Q A 3 Pre-req 202. Structure, functions, and operations of state governments; relation of states to other units of local government; administrative organization and reorganization including constitutional reforms. Special attention to Montana.

383 MUNICIPAL GOVERNMENT 1Q S 3 Pre-req 203. Legal basis of local government; home rule; charter and incorporation, and council-manager plans; municipal services; problems of modern cities and metropolitan areas.


391 PROBLEMS IN POLITICAL SCIENCE 3Q A W S Su V 2-4 R-9 Pre-req 20 cr in the Department. Research in fields selected according to the needs and objectives of the individual student.
395 SPECIAL STUDIES IN POLITICAL SCIENCE 3Q A W S Su V 1-2 R-4 Prereq 203 or 101 or 251, and C/1. Selected aspects of politics, government or international affairs. Offered by different instructors under various titles.

396 AMERICAN POLITICAL PROBLEMS 1Q A 4, Su 3 Prereq 203 or History 231-252. Present day problems such as governmental reorganization, taxation, and budget, states rights, and powers of Congress and the Chief Executive.

397 PRESENT WORLD PROBLEMS 1 Q S Su 3 Prereq 12 cr in the Department. Selected problems in recent and contemporary international affairs.

491 METHODS AND MATERIALS 1Q S Su 3. Open to departmental majors only. Methods of investigation, evaluation and synthesis in Political Science with a survey of the technical literature on the subject.

FOR GRADUATES

395 SEMINAR IN POLITICAL SCIENCE 1Q A W S Su V R-10 Prereq 30 cr in the Department and 491 or History 491. Special problems in political science.

699 THESIS a/q V R-15.

PRE-MEDICAL SCIENCES

are designed for students who wish to prepare for entry into medical, dental, pre-veterinary medicine or nursing schools. Medical schools require three years of such training and in most cases prefer four years. The four-year curriculum offers the degree of Bachelor of Arts with a major in Pre-medical Sciences which is described below. However, pre-medical students may take their degrees in any field so long as they are careful to include the required pre-medical courses. These requisites have been standardized by the medical profession and its governing or licensing boards. Primarily they require basic sciences (Chemistry, Mathematics, Physics, and Zoology), Foreign Language, Literature, Psychology, and Social Studies. Superior scholarship is of equal importance since medical and dental schools have more applicants than they can accept for admission.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs at least those years of high school mathematics. It is also recommended that the high school preparation include one year of a 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 competence, and has a relatively well-balanced personality. Since not all applicants for entrance to medical schools are accepted, the pre-medical student is urged to plan his own University career with that idea in mind.

The pre-medical sciences student is advised to get a Bachelor's degree in a field of his own choice. However, he should make sure that he can satisfy within the time available (1) the University requirements for graduation, (2) the minimum pre-medical science 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 113-116 and Quantitative Analysis; one year of college mathematics; one year of college physics; Zoology through comparative anatomy and embryology. Genetics is recommended; (5) a reading knowledge or 20 credits in French, German or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR IN THE PRE-MEDICAL SCIENCES:

In addition to the minimum course requirements listed immediately above the student must take Psychology 5-10 credits; 15 credits of an approved course of study in one field; and additional electives selected from the non-sciences to complete University credit requirements for graduation.

Students who complete 135 credits of pre-medical work (plus six credits of Physical Education) 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 course 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>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>CTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-105-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics 113, 116, 118</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry 121-122-123</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H&amp;PE and ROTC (see below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore year

| Zoology 104-105, 201 | 5 | 5 | 5 |
| Chemistry 261-262 | 5 | 5 | 5 |
| For Language 101 or elective | 5 | 5 | 5 |
| Psychology 110 | 5 | 5 | 5 |
| Social Science 302 | 5 | 5 | 5 |
| H&PE and ROTC (see below) | | | |

Junior Year

| Chemistry 245 and 270 | 4 | 5 | 5 |
| Physics 111-112-113 | 5 | 5 | 5 |
| For Language 101 or 202, 103 | 5 | 5 | 5 |
| Social Science | 5 | 5 | 5 |
| Elective | 1 | | |

Senior Year

| Foreign Language 213-215 | 4 | 4 | |
| (Zoology 385) | | |
| Humanities | | | |
| Science sequence | | | |
| Elective | | | |
| Social Science | | | |
| | 60 | 60 | 60 |

| H&PE 100 (6 quarters) | 180 | |
| ROTC 101-102-103, 201-202-203 | 6 | 6-9 |
| (Freshman and Sophomore) | | |

186-195

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, 220, 310, 311, 312 and 411, with at least 20 credits in psychology courses numbered above 399; Mathematics 125; and a reading knowledge or five quarters (23 to 25 credits) in one modern language. Other courses recommended for psychology majors include Philosophy 210 and 353; and Zoology 101 or 292.
PSYCHOLOGY—75

RECOMMENDED COURSE SEQUENCE

Freshman Year

A W S

Psychology 110—Introduction to Psychology 5
Mathematics 100—Intermediate Algebra 2
Mathematics 125—Statistics 5
Modern Language 101-102-103 5
English 103-102-103 3
Psychology 220—Psychological Statistics 3
Electives 2
H&E 100—Physical Education 1
ROTC 101-103—Military or Air Science (Men) 1

Sophomore Year

Choice of appropriate Psychology courses 5
Modern Language 212-215 4
Psychology 240—Social Psychology 5
Electives 5
H&E 100—Physical Education 1
ROTC 201-203—Military or Air Science (Men) 1

Junior Year

Psychology 310-311-312—Experimental Psychology 6
Philosophy 210 or Elective 5
Zoology 200—Human Physiology 5
Electives 5

Senior Year

Choice of 400-level Psychology courses 4
Electives 9

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 699, and which must include Psychology 305-306-307, 400, and 600. 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.

MAJOR OF ARTS IN GUIDANCE AND COUNSELING. See statement under Graduate School.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

110 INTRODUCTION TO PSYCHOLOGY 1Q A W S Su 5 (3-0)
Psychological methods and principles, and their application to problems of human adjustment.

120 PSYCHOLOGICAL INVESTIGATION A W S Su V 1-3 R-5
PreReq 110 and c/l. Supervised investigation of psychological problems.

206 COMPARATIVE PSYCHOLOGY 1Q A W S S 3 (3-0) o/y PreReq 110 and Math 100. A comparative study of human and animal behavior, and a survey of the phylectic scale.

210 PSYCHOLOGICAL STATISTICS 1Q A S 5 (4-2) PreReq 110 and Math 100. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 1Q A W S S 5 (3-0) PreReq 110. Behavioral development through adolescence, with emphasis on the research literature.

240 SOCIAL PSYCHOLOGY 1Q A 5 (5-0) PreReq 110. Effects of social environment upon human behavior.

241 PSYCHOLOGY OF BUSINESS 1Q A W 5 (5-0) PreReq 110.

244 PSYCHOLOGY OF LEADERSHIP 1Q A 3 (2-0) PreReq 110. The leadership role examined in terms of behavioral principles.

FOR UNDERGRADUATES AND GRADUATES

310-311-312 EXPERIMENTAL PSYCHOLOGY 3Q A W S S 3 (3-4)
PreReq 10 credits in psychology including 220. Enter any quarter. Concepts, principles, and methods of psychology. Sensation and perception; Learning and Problem Solving; Motivation.

320 CORRELATIONAL ANALYSIS 1Q W 5 (3-4) o/y PreReq 220. Psychological applications of correlational methods.

342 PERSONNEL PSYCHOLOGY 1Q W 3 (3-0) PreReq 110. Selection, classification, and training; worker efficiency and adjustment problems.

343 INDUSTRIAL PSYCHOLOGY 1Q S 3 (3-0) PreReq 110. Applications of psychology in industry.

350 PSYCHOMETRICS 1Q S 3 (3-4) o/y PreReq 220. 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 (offered by extension for 3 credits). (352) Intelligence, aptitude, and ability tests. (353) Objective tests of personality, interests, attitudes, and values.

360 PERSONALITY DYNAMICS 1Q A S Su 5 (5-0) PreReq 110. Principles of motivation, frustration, conflict, and the mechanisms of defense. Major emphasis on psychoanalytic dynamics. (Offered by extension for 3 credits.)

361 ABNORMAL PSYCHOLOGY 1Q A W Su 5 (3-0) PreReq 110. Description and classification of psychopathological reaction patterns, with emphasis on their psychological dynamics.

400 SCIENTIFIC METHOD IN PSYCHOLOGY 1Q W 5 (5-0)
PreReq 310-311-312. The concepts of definition, cause, natural law, theories, induction, deduction and psychological tests.

410 HISTORY OF PSYCHOLOGY 1Q W 3 (3-0) PreReq 310-311-312. The historical development of concepts, methods, and theories in psychology.

411 SYSTEMATIC PSYCHOLOGY 1Q S 3 (3-0) PreReq 310-311-312. Evaluation of the major psychological systems: Structuralism, Functionalism, Behaviorism, Gestalt, Psychoanalysis, etc.

412 PHYSIOLOGICAL PSYCHOLOGY 1Q A 5 (5-0) o/y PreReq 206, 310-311-312; or graduate standing and c/l. The physiological and psychological correlates of behavior. Survey of basic experimental evidence.

414 THOUGHT PROCESS S 5 (3-4) PreReq 10 credits from 310-311-312 and 220. Experimental and theoretical analysis of problem solving, imagination, concept formation, and other complex symbolic behavior.

440 SURVEY RESEARCH 1Q S 5 (3-4) o/y PreReq 220 or =,

441 GROUP DYNAMICS 1Q A 5 (3-4) o/y PreReq 444. Social processes within small and large groups.

442 THEORY AND METHODS IN SOCIAL PSYCHOLOGY 1Q W 5 (3-4) PreReq 220 or =. Effects of social structure upon human interaction. Field test of several hypotheses.

451 INDIVIDUAL DIFFERENCES 1Q A S 3 (5-0) PreReq 110. Nature and extent of individual and group differences.

460 THEORIES OF PERSONALITY 1Q S 3 (5-0) PreReq 310-311-312. Current theories of personality and the experimental evidence on which they are based.

480 PROBLEMS IN PSYCHOLOGY 1Q a/q V R-9 in combined undergraduate and graduate work. PreReq 15 credits in psychology and c/l.

491 TOPICAL SEMINAR 1Q a/q V R-6 PreReq 15 credits in psychology and c/l. Topics of current interest with critical examination of the literature.

FOR GRADUATES

501 THEORY CONSTRUCTION IN PSYCHOLOGY 1Q Su V R-8 PreReq 20 credits in Psych and c/l. Seminar approach to selected topics related to construction of rigorous theories in psychology.

506-501-507 PROFESSIONAL PROBLEMS IN PSYCHOLOGY 1Q A W S S 3 (4-0) Open only to graduate students. Bibliographic problems and the literature search; forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.

511 ADVANCED EXPERIMENTAL METHODS 1Q a/q 5 (3-4) PreReq 310-311-312 or =. Complex designs and techniques in psychological experimentation.

512 THEORIES OF LEARNING 1Q A Su 4 (4-0)

513 CRITICAL REVIEW OF CURRENT LEARNING THEORIES WITH ATTENTION TO TRANSMISSION OF FUNDAMENTAL CONCEPTS.

521 ADVANCED PSYCHOLOGICAL STATISTICS 1Q A 5 (5-0)
PreReq 220 or =. Application of statistical procedures to the design of experiments; assumptions underlying techniques of sampling and measures of association and significance.

530 ADVANCED CHILD AND ADOLESCENT PSYCHOLOGY 1Q S a/q V Su 4 (4-0) PreReq 230 or Edu 230 and teaching experience. Theories and research on motivation, personality, emotions, attitudes, social learning and adjustment in children from birth through adolescence.

550-551-552 INDIVIDUAL APITUDE TESTING 3Q A W S 1
(1-4) PreReq 352 and c/l. Enter any quarter. Administration, scoring, and interpretation of standard tests, with supervised practice. (550) Stanford-Binet Scale, (551) Wechsler Adult Intelligence Scale, (552) Other tests at the childhood and preschool levels.

561 ADVANCED PSYCHOPATHOLOGY 1Q A 5 (5-0) PreReq 361. Psychodynamics and psychotherapy of the major functional and organic disorders; research literature.

571-572 RORSCHACH TECHNIQUES 2Q A W (2-2) 1-2 (1-2)
PreReq 361 or 561. Administration, scoring and interpretation.
576-577 THEMATIC TEST ANALYSIS 1Q W 2 (3-0) 2 (1-2) Prereq 361 or 561. Administration and interpretation of thematic tests, with emphasis on the TAT.

586 PRINCIPLES OF PSYCHOTHERAPY 1Q W 5 (5-5) Prereq 591. Major theoretical and technical approaches to psychotherapy.

671 CLINICAL PRACTICUM a/q V 1-3 R-9 Prereq either 550, 551, 552, 571, 576, or 586. Supervised practice of diagnostic and therapeutic techniques in a clinical setting.

689 CLINICAL INTERNSHIP a/q 3 (0-6) R-9 Prereq acceptable proficiency in clinical techniques. Clinical internship offered by the psychology staff of a hospital, clinic, or other approved agency.

699 THESIS a/q V R-15.

RADIO AND TELEVISION

Courses are designed to prepare students for occupations in the broadcast media, for effective use of radio and television in connection with occupations in other fields, or for greater appreciation of the media as audience members. Graduates in radio-television have many vocational opportunities as announcers, performers, writers, newsmen, program directors, managers, and executives of radio and television stations, or as radio-television specialists in advertising agencies, and other businesses.

Students work toward either a Bachelor of Arts degree in Journalism with specialization in radio and television, or a Bachelor of Arts degree in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. In addition to required courses in radio and television, special requirements must be met in curricula of related fields. Most of the radio-television courses are offered by the School of Journalism, but some departments in the College of Arts and Sciences also have offerings in the program. Production of programs for broadcast from the University's studios is included in the course of study. Modern equipment of professional quality in new studios and an adherence to high standards of performance prepare students to make significant contributions and successful careers in the broadcasting profession.

Note: Students wishing to major primarily in radio or television journalism should take the radio-television sequence in Journalism.

The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree in Radio-Television:

University Requirements

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>9</td>
</tr>
<tr>
<td>Physics (6 E-credits)</td>
<td>6</td>
</tr>
<tr>
<td>ROTC (men) Mil or Air Science</td>
<td>6-9</td>
</tr>
<tr>
<td>Group I</td>
<td>12</td>
</tr>
<tr>
<td>Group II</td>
<td>25</td>
</tr>
<tr>
<td>Group III</td>
<td>25</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>5-25</td>
</tr>
<tr>
<td>English 201</td>
<td>3</td>
</tr>
<tr>
<td>Speech 115</td>
<td></td>
</tr>
<tr>
<td>Drama 121, 131</td>
<td>4</td>
</tr>
<tr>
<td>Journalism 270, 297</td>
<td>6</td>
</tr>
</tbody>
</table>

32 hours from the following courses:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journalism 345, 346, 440</td>
<td></td>
</tr>
<tr>
<td>Radio-Television 140, 240</td>
<td></td>
</tr>
<tr>
<td>245, 246, 441-442-443, 454</td>
<td></td>
</tr>
<tr>
<td>Speech 341</td>
<td></td>
</tr>
<tr>
<td>Drama 342</td>
<td>32</td>
</tr>
<tr>
<td>Free Electives</td>
<td>36-27</td>
</tr>
<tr>
<td></td>
<td>186</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

119 INTRODUCTORY STUDY OF RELIGION 1Q A W 2. Some major religions of the world, and some basic religious problems a student must face. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.

240 STUDIO OPERATIONS 1Q A 1 (1-2) Open to non-majors. Operation of broadcasting and recording equipment. Production of programs.

242 RADIO-TELEVISION CONTINUITY 1Q S 3 Prereq 140 and Engl 201. The techniques of writing for radio and television. Writing programs for broadcasting.

345 NEWSCASTING (see Journalism).

346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 1Q W 3 Prereq 140. Planning and execution of advertising campaigns. Station management and sales principles.

FOR UNDERGRADUATES AND GRADUATES

440 CINEMATOGRAPHY (see Journalism).

441-442-443 RADIO-TELEVISION PRODUCTION AND DIRECTION 1Q W 3 in radio-television courses. Advanced course in producing and directing radio and television programs. (441) emphasizes radio, (442) and (443) emphasize television.

444 RADIO-TELEVISION SEMINAR 1Q S Prereq or corequisite 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.

RELIGION

Courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Religion, up to 15 credits in 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"

119 INTRODUCTORY STUDY OF RELIGION 1Q A W 2. Some major religions of the world, and some basic religious problems a student must face. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.

240 STUDIO OPERATIONS 1Q A 1 (1-2) Open to non-majors. Operation of broadcasting and recording equipment. Production of programs.

242 RADIO-TELEVISION CONTINUITY 1Q S 3 Prereq 140 and Engl 201. The techniques of writing for radio and television. Writing programs for broadcasting.

345 NEWSCASTING (see Journalism).

346 RADIO-TELEVISION PUBLIC AFFAIRS (see Journalism).

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 1Q W 3 Prereq 140. Planning and execution of advertising campaigns. Station management and sales principles.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

119 INTRODUCTORY STUDY OF RELIGION 1Q A W 2. Some major religions of the world, and some basic religious problems a student must face. Open to non-majors. History, organization, economics, social and legal responsibilities, and basic electronic theory of radio and television as media of mass communication.
RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both Departments offer 6 quarters of ROTC training to satisfy University requirements. All undergraduate male students other than veterans are required to take two years of Air Science or Military Science during their freshman and sophomore years. Students interested in careers in the Air Force or Army should consult the Professor of Air Science or the Professor of Military Science.

AIR SCIENCE

BASIC COURSE: AIR AGE CITIZENSHIP EDUCATION

The academic requirements of the basic courses autumn and winter quarters of the freshman year and spring quarter of the sophomore year will be met through enrollment in any group requirement with the exceptions of Art, Drama, or Music courses.

101-102-103 FOUNDATIONS OF AEROSPACE POWER 3Q A W 0, S 2
(101-102) Basic Military Training, including exercises in drill ceremonies, and customs, with emphasis on teamwork and discipline. (102) Professional opportunities. Introduction to fundamentals of aerospace power systems, weapons, missiles. Characteristics of manned aircraft, propulsion systems. Nuclear energy and effects of nuclear weapons. (201) Target intelligence, electronic warfare, defensive operations, tactical commands, antennas, and contemporary military thought.

201-202-203 FUNDAMENTALS OF AEROSPACE WEAPON SYSTEMS 3Q A W 8 0, S 2
(201-202) Professional opportunities. Introduction to the various components and their role as a part of the national defense team. Leadership, drill and command, basic and progressive instruction in leadership through practical exercises in drill ceremonies, military customs and courtesies and is emphasis on teamwork and individual proficiency. (203) Leadership, drill and command with emphasis on the development of discipline and individual leadership.

110 AIR FORCE BAND 1Q S 0. Taught by the School of Music, which must approve all admissions. May be substituted for the basic military training phase of Air Science 102 and 202, except for those sophomores who have been selected for the Advanced Course. Band formations and marching military ceremonies.

ADVANCED COURSE: AIR FORCE OFFICER DEVELOPMENT

Admission to the Advanced Course is an application of the student and selection by the Professor of Air Science and the President of the University. Once begun, successful completion of the six quarters is recommended for all bachelor's degrees. Certain phases of Air Force Officer Development are taught alternate years and the two classes are combined for this instruction.

301-302-303 AIR FORCE OFFICER DEVELOPMENT 3Q A W 5, S 3
Subject matter will be announced to advanced students by the Air Science Department.

304 SUMMER TRAINING UNIT No credit. Four weeks at an Air Force Base after completion of Air Science 301-302-303. Organization and function of an Air Force Base, air crew and aircraft indoctrination, officer orientation, military fundamentals, physical training, and individual weapons.

401-402-403 AIR FORCE OFFICER LEADERSHIP AND MANAGEMENT 3Q A W 2, S 1
(concurrent enrollment in Geog 331-332 and Pol Sci 231 required). Subject matter will be announced to advanced students by the Air Science Department.

MILITARY SCIENCE

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs good grades. It is also recommended that the 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>English 101-102-103</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education 100 (6 quarters)</td>
<td>6</td>
</tr>
<tr>
<td>Military Science 101-102-103 and 201-202-203</td>
<td>9</td>
</tr>
<tr>
<td>Elective</td>
<td>2-5 26-29</td>
</tr>
</tbody>
</table>

(In his freshman and sophomore year, the student must select one of the academic electives listed below)

Major Requirements

<table>
<thead>
<tr>
<th>Group requirements satisfied hereupon</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 118, 119, 121, or equivalent</td>
<td>15</td>
</tr>
<tr>
<td>Physics 111-112-113 or 221-222-223</td>
<td>15</td>
</tr>
<tr>
<td>History 102, 103, and 334</td>
<td>15</td>
</tr>
<tr>
<td>Physical Science 101, 202, 263, 231</td>
<td>15</td>
</tr>
<tr>
<td>Geography 231-232</td>
<td>6</td>
</tr>
<tr>
<td>English 201, 202, and 203</td>
<td>9</td>
</tr>
<tr>
<td>Foreign Language (French, German, Spanish or Russian 101-102-103, 215, and 215 or equivalent)</td>
<td>23</td>
</tr>
<tr>
<td>Psychology 131</td>
<td>15</td>
</tr>
<tr>
<td>Military Science 301-302-303, 401-402-403, and 313</td>
<td>116</td>
</tr>
</tbody>
</table>

Elective

(50% must be in upper division courses. A second major in one of the areas listed above is recommended)

116 ELECTIVE. Before the requirement of six quarters of Military Science may be considered completed, one of the following courses must be completed at any time during the freshman or sophomore years:

- Continuation of leadership, drill and command.

301-302-303 ADVANCED INDIVIDUAL TECHNIQUES 3Q A W 2, S 1
(301) A military history; a survey of American Army History from the origins of the original American Army to the present with emphasis on the factors which lead to organizational, tactical, logistical, operational, strategic, social and similar patterns found in our present-day Army. Leadership, drill and command with emphasis on duties and responsibilities of the junior leaders. (302) Continuation of American Military History, Historical Map and Atlas, and Geographic Reading to include application of basic principles, emphasizing terrain appreciation and tactical and strategic consideration. (303) Continuation of small unit tactics and introduction to Army Communication Systems, Orientation of Summer Camp Activities. 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 of study, complete all requirements, and is relieved by competent authority, and further that he will accept a commission if tendered. Advanced cadre cadets are paid a subsistence allowance of $90 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 3
(301) Leadership and Instructional principles, including characteristics, qualities, requirements, problem solving and theoretical and practical exercises in leading military units. (302) Continuation of small unit unit sprites and structure and functions of the branches of the Army. Leadership, Drill and Command. (303) 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 week of July. Prerequisite: military science. Practice in military exercises with emphasis on the development of discipline and qualities of leadership.

301-402-403 MILITARY MANAGEMENT 3Q A W 3 S
(301) Command, Operations, to higher staff organizations and procedure at Division level, coordination of
the Arms and Services, functions and techniques of intelligence, training and operations, staff sections and the planning and conduct of tactical operations. Leadership, Drill and Command; practical exercise of leadership functions as an officer in command positions during periods of drill and ceremonies. (462) Military Administration and Logistics, including personnel and supply management and procedures, troop movements by foot and motor, motor pool management; military justice and courts-martial procedure with practical work in mock court. Continuation of Leadership, Drill and Command. (463) 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.

The courses in secretarial science provide training in typing, shorthand, filing, the use of office machines, and secretarial practice as preparation for general office work. Opportunity is provided to provide a broad foundation: Anthropology, Sociology, 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.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN SECRETARIAL-HOME ARTS.

University Requirements

| English 101-102-103 | 9 |
| Physical Education 100 (6 quarters) | 6 |

Group Requirements

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>146 or 246</td>
<td>147</td>
<td>148</td>
</tr>
<tr>
<td>210</td>
<td>218</td>
<td>219</td>
</tr>
<tr>
<td>302</td>
<td>303</td>
<td>302</td>
</tr>
<tr>
<td>305</td>
<td>306</td>
<td>307</td>
</tr>
<tr>
<td>308</td>
<td>308</td>
<td>309</td>
</tr>
<tr>
<td>366 or 367 or 368 or Soc 402</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Home Economics courses with credit toward major with 186 total credits not to exceed 39 cr.

Business Administration 182 (Placement test required)

| 183 (Placement test required) | 2 |
| 184, 185, 186 (1 year in H.S., no cr. in 184; 2 yrs. in H.S., no cr. in 184 or 185) | 15 |
| 187 | 1 |
| 190 | 1 |
| 191 | 1 |
| 192 | 1 |
| 193 | 1 |
| 194 | 1 |
| 201 | 1 |
| 314 | 1 |
| 301 | 1 |
| 302 | 1 |
| 303 | 1 |
| 304 | 1 |

Business Administration courses with credit toward major with 186 total credits not to exceed 39 cr.

Special requirements outside major.

| Foreign Language (3 quarters or placement test) | 12 |
| Economics 201 | 3 |
| Psychology 110 | 3 |
| History 101, 102, 103 (2 quarters) | 10 |
| Political Science 101 | 4 |
| Free Electives | 35-37 |

FOR UNDERGRADUATES


183 INTRODUCTION TO RECREATION LEADERSHIP 1Q A 3 Prereq Sociology 101. Sociology of play, recreation and leisure time: recreation for industrial workers, hospital patients, senior citizens, school play; credit not allowed for this and H&PE 362.

183 RECREATION LEADERSHIP (SOCIAL RECREATION) 1Q W 3 Prereq Sociology 101. Principles and practice in group leadership, courses in group leadership, social welfare, and the principles recognized as basic in their use.

183 GROUP METHODS IN TEACHING 1Q Su only 3. Prereq 10 credits in the Social Sciences. The use of group methods in the teaching of content and skill subjects and the principles recognized as basic in their use.

FOR UNDERGRADUATES AND GRADUATES


183 GROUP METHODS IN MODERN SOCIETY 1Q S 4 Prereq 181. Purposes, principles and methods involved in group process. The role of group experience in the community. The role of the group member, leadership, achieving group effectiveness. Group dynamics.

184 PUBLIC WELFARE 1Q A 4 Prereq 181. Development, organization, functions and methods of governmental programs designed to protect individuals and families and against the loss of income due to such hazards as unemployment, illness, disability, old age and death.

181 CASE STUDIES 1Q S 4 Prereq 12 credits in Social Welfare and 181. The analysis of case records drawn from a variety of social work settings.

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 case-workers, 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:

Economics 201-202-203; History 102-103 or 252-253; Political Science 202-203; Psychology 110; Sociology 101 and 102; and Social Welfare 181.

During the second year, one course numbered 300 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 theoretical and practical courses 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 a limited number of courses which present Social Welfare content and method. Group methods are freely used.

For explanation see Index under "Symbols."
SOCIOLOGY

is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It is concerned with contemporary civilization.

The Bachelor of Arts degree may be earned either in Sociology or a combination of Sociology and Anthropology. The Master of Arts degree is also offered (see Graduate School).

Graduates may engage in teaching, research, or government service. There are many opportunities for scholarships or fellowships in graduate work. Sociology is also a preparatory background for those who, after other studies, plan to engage in many of the familiar professions.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in departmental courses are required for the Bachelor of Arts degree with a major in Sociology. A foreign language is required as listed earlier in the catalog.

At least 33 of the 50 major credits must be in sociology courses, including Sociology 101, 205, 303 and 310. Anthropology 102 or 103 and Social Welfare 181 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 economics, the following courses in addition to general departmental requirements should be completed: Sociology 364, and at least 12 additional credits of upper division sociology: Economics 201-202 or 203, 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.

204 COURTSHIP AND MARRIAGE 1q a/q 2. A general consideration of factors in courtship and marriage.

205 ELEMENTARY SOCIAL STATISTICS 1q a/q 3. Simple statistics and graphic techniques commonly used in the social sciences.

206 URBAN SOCIOLOGY 1q S 4 Prereq 101. The rise and development of cities; social organization of the city; problems of urban communities.

FOR UNDERGRADUATES AND GRADUATES

302 SOCIAL STRATIFICATION 1q S Su 3 e/y Prereq 101. The class system in contemporary society in terms of social class theory, class behavior, and current research in social stratification in American society.

303 SOCIAL SCIENCE METHODS 1q A 5 Prereq 10 credits in Social Sciences. The methodology, techniques and instruments of measurement used in the social sciences.

304 POPULATION 1q W 4, Su 3 Prereq 101. A quantitative and qualitative analysis of world population; vital statistics and population change, migration, and immigration.

306 CRIMINOLOGY 1q S 5 Prereq 101 or 102. The causes, prevention, detection, and correction of crimes.

307 SOCIAL CONTROL 1q W 3 e/y Prereq 101. Institutional and non-institutional processes and methods by which persons and groups are controlled.

309 INDUSTRIAL SOCIOLOGY 1q S 4 Su 3 Prereq 101 or Psych 110. Work plants such as factories, offices, and stores; work group processes and applied problems; industrial relationships in the community.

310 DEVELOPMENT OF SOCIAL THOUGHT 1q A 4 Prereq 101 or 102. Social thought from earliest times to the establishment of sociology.

313 RURAL SOCIOLOGY 1q W 4, Su 3. Prereq 101. Organization and social relationships of rural life; the rural community; problems of rural life. Special emphasis on Montana and the Northwest.

401 FOUNDATIONS OF MODERN SOCIOLOGY 1q W 4 Prereq 101. Selected sociological problems arising from the theories of Durkheim, Weber, and contemporary writers.

402 THE FAMILY 1q W 5 Prereq 101. Comparative, historical and analytic study of the family.

403 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq c/i.

405 SOCIOLOGY OF WORK 1q A Prereq 101. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

406 FIELD OBSERVATION 1q S 3 Prereq 101 and 206 or 303. Interviewing procedures and social science research; guided experiences in interviewing and actual research programs.

407-408 SEMINAR 3q A W S V 2-5. Prereq 10 credits in sociology. Enter any quarter.


411 ADVANCED GENERAL SOCIOLOGY 1q S 4 Prereq 101, 10 upper division credits in sociology. Review and analysis of major sociological theory and research.

499 FIELD WORK PRACTICUM (See Social Welfare.)

502 ADVANCED METHODS 1q A 5 Prereq 303 or _. Required of all graduate students in sociology.

FOR GRADUATES

501 GRADUATE RESEARCH a/q V R-10.

699 THESIS a/q V R-15.

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.

The curriculum in Speech is designed to provide cultural background and technical training in oral communication which will contribute to student competence in social situations, in a chosen profession, and 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, 118, 214, 261, 350,
f r e q u e n c y  o f a p p e a ra n c e .

3 P r e r e q 5 c r e d its  in  S p e e c h . T h e  m e th o d s  a n d  te c h n iq u e s  o f
t e m p o r a r y  p u b lic  a d d re s s .

118 PARLIAMENTARY PROCEDURE IQ S 2. The principles and practice of parliamentary procedures in the con-
duct of fraternal, professional and community meetings.

118 VOICE AND DICTION IQ A W S 3. Application of prin-
tices to the improvement of voice and diction.

119 PHONETICS IQ A 3. The speech mechanism in relation
to the production of auditory symbols. Introduction to the use of
phonetic symbols.

123 PUBLIC SPEAKING IQ A W S Su 3. Prereq 111. A
beginning course in public speaking, offering additional theory and
practicum to what is offered in 111.

214 DISCUSSION TECHNIQUES IQ A 3. Study and practice
in the techniques in making inquiries into and solving problems
by the means of group thinking.

241 RADIO-TELEVISION SPEECH IQ W 3. Prereq 118 and
Journalism 111. Study and practice in the styles and techniques of
oral presentation for radio and television under broadcast conditions.

261 INTRODUCTION TO ORAL INTERPRETATION IQ A 3
Prereq 118. Study and practice of the techniques in the oral present-
ation of manuscript materials.

262 ORAL INTERPRETATION OF LITERATURE IQ W 3. Pre-
req 261 or =. Critical analysis of literature for oral presentation and
the enhancement of literature through oral and auditory experience.

265-296-297 DEBATE 3Q A W S 2. Prereq 112. (296) The tech-
niques, values and style of debate. (296) Intercollegiate debat-
ing. (267) Famous historical debates.

315 PUBLIC PERFORMANCE IQ 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 IQ A W S
3 Prereq 5 credits in Speech. The methods and techniques of
speaking by leaders in business, labor, education, and the pro-
essions.

317 SPEECH IN TEACHING AND LEARNING IQ A 3 Pre-
req 5 cr in Speech. The speech competence of the teacher, the use of
speech as a teaching device, and the speech techniques by which the teacher
works with the speech of his students.

318 APPLIED PHONETICS IQ S 3 Prereq 119 or =. The nar-
row transcription into phonetic symbols of dialects, deviations from,
and variations within, standard American speech, their causes and
frequency of appearance.

321 THE TEACHING OF SPEECH IQ 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.

322 THE MODERN FORENSICS PROGRAM 1Q Su only 3 Pre-
req 10 credits in Speech. The coaching and direction of debate,
oration, declamation, extemporaneous speaking, and other speech
contest activities in high schools and colleges.

343 ADVANCED PUBLIC SPEAKING IQ S 3 Prereq 10 credits
in Speech. Theories of speech composition, models of con-
temporary public address.

344 SURVEY OF RHETORIC IQ A 3 Prereq 10 credits in
Speech. Ancient, medieval, and modern rhetoric. The contributions
of Socrates, Plato, Aristotle, Aquillian, Longinus, St. August-
tine, Ward, Campbell, Blair, Whately, and John Quincy Adams to
modern rhetoric.

345 HISTORY OF PUBLIC ADDRESS IQ W 3. Prereq 10 credits
in Speech. The biographies and speeches of representative speakers,
the issues with which they were identified, and their influence on
the history of their period. The ancient Greek and Roman, British,
and American public speakers of prominence.

352 ORAL COMMUNICATION IQ A 3 Prereq c/l. The process of
oral communication in terms of relevant theory and evidence
from the social sciences. Particular attention is given to conditions
that facilitate and inhibit effective communication.
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 Montana 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 following special requirements must be 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 106, 306, 308, 309, 312, 346, 349; Botany 309; Chemistry 125, 146; Geology 124. It is recommended that the student plan to attend a Biological Station for one summer.

Students electing the Terrestrial option should elect additional courses from the following: Zoology 309, 310, 316, 326; Forestry 210; Geology 101; Microbiology 206.

CURRICULA IN WILDLIFE TECHNOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 121, 122, 123—General Botany, Local Flora</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry 101, 102, 106—General, Survey Organic</td>
<td>3</td>
</tr>
<tr>
<td>English 101, 102, 106—Freshman Composition</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 109—Intermediate Algebra</td>
<td>3</td>
</tr>
<tr>
<td>(if required by placement)</td>
<td>0-2</td>
</tr>
<tr>
<td>Mathematics 113—Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements</td>
<td>17-18</td>
</tr>
<tr>
<td>H&amp;PE 101—Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 101, 102, 103—Military or Air Science</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>0</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 Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Phys 111, and 112 or 113—General Physics</td>
<td>4</td>
</tr>
<tr>
<td>Group Requirements (5 or 10 credits winter or spring)</td>
<td>0-5</td>
</tr>
<tr>
<td>H&amp;PE 101—Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 201-202-205—Military or Air Science</td>
<td>0</td>
</tr>
<tr>
<td>or</td>
<td>18</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

231 VOICE SCIENCE 1Q W Su 3 Prereq Speech 119. Basic scientific concepts and principles fundamental to the understanding of voice and speech phenomena.

FOR UNDERGRADUATES AND GRADUATES

For explanation see Index under “Symbols”

330 INTRODUCTION TO SPEECH PATHOLOGY 1Q A S Su 3. The causes and general principles of treatability of speech disorders, and speech correction as an educational and clinical field.


335 SPEECH CLINIC PRACTICUM 3Q A W S Su 2 R 6 Pre­ req or corequisite 331. Six clock hours per quarter of supervised clinical practice in the Speech and Hearing Clinic.

335-336 SPEECH PATHOLOGY 2Q W S Su 3 Prereq 331. (335) Theories, research and remedial practices relating to functional disorders of articulation, voice, and language. (336) Research and remedial practices relating to stuttering as learned behavior. The nature, etiologies, and remedial practices for common organic pathologies of speech.

340 INTRODUCTION TO AUDIOLOGY 1Q S Su 4 Prereq 330. The basic psychophysical dimensions of the auditory mechanism and a survey of the fundamentals and principles related to the measurement of hearing loss.


433 ADVANCED CLINICAL PRACTICUM 1Q A W S Su V 1-3 R 6. Prereq Speech therapy used in public school programs with emphasis on the elementary level.

435 METHODS IN PUBLIC SCHOOL SPEECH AND HEARING THERAPY 1Q A Su 2 Prereq 333, 335, 338, 342. Methods in speech and hearing therapy used in public school programs with emphasis on the elementary level.

436 PRACTICUM IN PUBLIC SCHOOL SPEECH AND HEARING THERAPY 1Q A W S Su V 5-4. Prereq Edu 301, corequisite 435. Establishing, integrating, and conducting a speech and hearing program under supervision in a cooperating public school. Thirty clock hours of clinical practice for each credit.

490 PROBLEMS a/q V R 6 Prereq c/l.

FOR GRADUATES

531 STUTTERING 1Q S Su 3 Prereq 336 or =. Various theories of stuttering behavior, supporting research, and implications for remedial practices.

532-533 ORGANIC DISORDERS OF SPEECH 2Q W S Su 3 Prereq 336 or =. (532) Theories, research and remedial practices relating to the various organic pathologies of speech with specific emphasis on cleft palate, laryngectomy and miscellaneous organic pathologies of voice. (533) Theories, research, and remedial techniques in the areas of cerebral palsy and aphasia.

540 MEASUREMENT OF HEARING LOSS 1Q A Su 3 Prereq 340 or =. The techniques employed in evaluation of hearing loss and their differential responses to audiological examination.

549 CLINICAL AUDIOLOGY: REHABILITATION 1Q W S Su 3 Prereq 342 or =. Theory and research pertaining to the various methods of speech and language rehabilitation of hard of hearing adults and children.

590 ADVANCED PROBLEMS a/q V R 9 Prereq c/l.

597 RESEARCH METHODS 1Q A Su 3 Prereq Math 125 or =. Principles and techniques of quantification, research design, and analysis of data in speech research.

599 SEMINAR 1Q a/q V R 9 Prereq c/l.

600 RESEARCH a/q V R 10 Prereq 18 credits in Speech Pathology and Audiology.

699 THESIS a/q V R 12.
For 360, 470—General Range Management

For 360, 470—General Range Management, Advanced Wildlife Management

For 309, 308—Mammalogy, Ornithology

For 360, 308—Mammalogy, Ecology of Wildlife


For 309, 308—Mammalogy, Ecology of Wildlife Populations, Ornithology

For 360—Plant Ecology

For 309 or 308—Mammalogy, Ornithology

For 307—Aquatic Biology

For 225, 365—Plant Physiology, General Systematic Botany

For 225, 365—Plant Physiology, General Systematic Botany

For 303, 301, 306; any one course from Zool 106, 308, 309, 310, 321, 328, 361, 365, 366, 461; any one course from Microbiology or from Botany or one course from Zool 360, 305, 333, 340, 341.

Senior examinations are given only to candidates for honors.

M A S T E R  O F A R T S  O R  M A S T E R  O F  S C I E N C E  I N  T E A C H I N G.

For explanation see Index under “Symbols”


101 GENERAL ZOLOGY 1Q A W S 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 ZOLOGY 2Q A W S 5 (3-4). A survey of the invertebrates and the prochordates, anatomy, physiology, phylogeny and various zoological principles.

106 FIELD ZOOLOGY 1Q S 3 (2-5) Su at Biological Station Prereq 101 or 104, 105. Collection, identification and preservation of animals. Field work.

201 COMPARATIVE VERTEBRATE ANATOMY 1Q S 5 (3-4) Prereq 101 or 104 or one laboratory course in Zool. The comparative anatomy, morphology, and phylogeny of the vertebrates.

236 HUMAN PHYSIOLOGY 1Q S 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

For explanation see Index under “Symbols”


101 GENERAL ZOLOGY 1Q A W S 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 ZOLOGY 2Q A W S 5 (3-4). A survey of the invertebrates and the prochordates, anatomy, physiology, phylogeny and various zoological principles.

106 FIELD ZOOLOGY 1Q S 3 (2-5) Su at Biological Station Prereq 101 or 104, 105. Collection, identification and preservation of animals. Field work.

201 COMPARATIVE VERTEBRATE ANATOMY 1Q S 5 (3-4) Prereq 101 or 104 or one laboratory course in Zool. The comparative anatomy, morphology, and phylogeny of the vertebrates.

236 HUMAN PHYSIOLOGY 1Q S 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 W S 5 (3-4) alternate year Prereq 311-312. The early stages of development of the invertebrates and vertebrates, including cleavage, 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 organogenesis, with emphasis on birds (chick) and mammals (pig).

303 PARASITOLOGY 1Q W 5 (3-4) Prereq 104-105. Morphology, physiology, systematics, and life histories of representative animal parasites and techniques of their diagnosis, treatment, and control.

305 HISTOLOGY AND MICROTECHNIQUE 1Q W 5 (3-4) Prereq 201, 101, or 105 and c/i. Basic tissues are studied and a limited amount of work is done in organography. Microtechnique with emphasis on the paraffin method.

306 HERPETOLOGY 1Q W 3 (2-2) o/y Prereq 201. The taxonomy, distribution, and life histories of amphibians and reptiles.
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.