Less than a century removed from its frontier beginnings, Montana State University is still surrounded by the scientific wonders that were found in pioneer days. Great forests, clear mountain lakes and alpine heights are close at hand.

Photo by Ernst Peterson
Liberal Arts building, doubled in size by recently completed construction, now houses the School of Education, Social Sciences, the Humanities, Placement Bureau and the Guidance and Counseling Center. Other recent structural additions to the MSU campus include a Law building and Health Sciences building. A new dormitory for women is to be completed by the fall of 1962.
Each spring, the University is host to thousands of high school students who come here for the annual Interscholastic meet—founded in 1904. Events include contests in drama, public speaking, debate and other forensic fields as well as track and field meets...
Members of the MSU Cooperative Wildlife Research Unit tranquilize and trap a grizzly bear for study. Weight is noted, dental impressions and foot casts made, and the bear is given a complete physical checkup. Then ear-tagged and color coded, the bear is released. The unit conducts research on many species of Montana wildlife.

Photo by Frank Craighead, courtesy National Geographic Magazine
THE UNIVERSITY OF MONTANA

Russell Bartell, Executive Secretary

The University of Montana is constituted under the provisions of Chapter 92 of the Laws of the Thirty-First Legislative Assembly, approved March 14, 1913 (effective July 1, 1913).

The general control and supervision of the University are vested in the State Board of Education, 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, Supt. of Public Instruction Ex-Officio
EARL L. HALL, 1863 Ex-Officio
GEORGE N. LUND, 1864 Reserve
MRS. F. H. PETRO, 1965 Montana
BOYNTON G. PAIGE, 1966 Missoula
MRS. HARRY BYRNE, 1967 Helena
G. D. MULLENDORE, 1968 Glendive
GORDON L. DOERING, 1969 Butte
JOHN E. O'NEILL, 1970

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

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

The University Press
H. K. Newburn, President

MONTANA STATE COLLEGE, BOZEMAN
Established February 18, 1893, and consisting of:
- The Division of Agriculture
- The Division of Education
- The Division of Fine Arts
- The Division of Forestry
- The School of Business Administration
- The School of Education
- The School of Fine Arts
- The Summer Session
- The Graduate School

Roland R. Renne, President

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

E. G. Koch, President

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

L. O. Brockmann, President

CONDENSED CALENDAR

The University of Montana

Winter Quarter, 1962 through Summer, 1964

MONTANA STATE UNIVERSITY
Missoula
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 23, 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

MONTANA STATE COLLEGE
Bozeman
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 23, 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

MONTANA SCHOOL OF MINES
Butte
Second Semester opens May 2, 1962
Summer Field Work opens June 11, 1962
First Semester opens September 24, 1962
Second Semester opens February 4, 1963
Summer Field Work opens June 10, 1963
First Semester opens September 23, 1963
Second Semester opens February 3, 1964
Summer Field Work opens June 8, 1964

WESTERN MONTANA COLLEGE OF EDUCATION
Dillon
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 7, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 23, 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

EASTERN MONTANA COLLEGE OF EDUCATION
Billings
Winter Quarter opens January 3, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 2, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 10, 1963
Autumn Quarter opens September 23, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 31, 1964
Summer Quarter opens June 15, 1964

NORTHERN MONTANA COLLEGE
Havre
Winter Quarter opens January 2, 1962
Spring Quarter opens March 26, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 2, 1963
Spring Quarter opens April 1, 1963
Summer Quarter opens June 10, 1963
Autumn Quarter opens September 23, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 30, 1964
Summer Quarter opens June 17, 1964
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, founding date and location ......................... 10
Accreditation ..................................................................................... 10
Support and Endowment .................................................................. 10
Control and Administration ............................................................... 10
Campus and Facilities ...................................................................... 10
Requirements for Admission .............................................................. 11
Registration and General Regulations ............................................... 12
Degrees and Majors ......................................................................... 13
Grading System ............................................................................... 13
Requirements for Graduation ............................................................ 13
Summer Session ............................................................................. 15
The Graduate School ....................................................................... 15
Financial Obligations ...................................................................... 19
Student Services ............................................................................ 20
Standards of Student Conduct ........................................................... 21
Absences from Class ...................................................................... 22
Student Contracts and Obligations ..................................................... 22
Activities ......................................................................................... 22
Organizations .................................................................................. 23
Organization of Instruction ............................................................... 24
Course Numbering System ............................................................... 24
Explanation of Symbols .................................................................. 24
Details of Curricula ......................................................................... 25
Index ............................................................................................... 80

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 1962 - 1963

1962

AUTUMN QUARTER

September 24-29, Monday through Saturday Orientation
September 27-29, Thursday and Friday Week and Registration
November 11, Sunday Veterans Day, a holiday
November 21-23, Wednesday through Sunday Thanksgiving holiday
December 17-21, Monday through Friday Examinations
December 21, 5:20 p.m. Autumn Quarter ends Christmas recess begins

1963

WINTER QUARTER

January 7, Monday Registration
January 8 Tuesday Instruction begins
February 17, Sunday Charter Day
March 22, 5:20 p.m. Winter Quarter ends
March 23, 5:20 p.m. Spring recess begins

SPRING QUARTER

April 1, Monday Registration
April 3, Tuesday Instruction begins
May 17-18, Friday and Saturday Interscholastic Meet
June 10, Monday Memorial Day, a holiday
June 10-14, Monday through Friday Examinations
June 14, 5:20 p.m. Spring Quarter ends

SUMMER SESSION

June 17, Monday (10 weeks and first term) Registration
June 18, Tuesday Instruction begins
July 4, Thursday Independence Day, a holiday
July 22, Monday Second term begins
August 23, Friday Session ends

AUTUMN QUARTER

September 23-28, Monday through Saturday Orientation
September 26-27, Thursday and Friday Registration
September 30, Monday Instruction begins
November 11, Monday Veterans Day, a holiday
November 22, Thursday Thanksgiving Day, a holiday
December 16-20, Monday through Friday Examinations
December 20, 5:20 p.m. Autumn Quarter ends Christmas recess begins

1963

FALL SEMESTER, 1962

September 24-25, Monday and Tuesday Registration and Orientation of New Law Students (Including transfer students from other schools)
September 25, Tuesday Registration of Upperclass Law Students
September 26, Wednesday Classes begin at 8:00 a.m.
November 21-23, Wednesday through Sunday Thanksgiving holiday
December 22, Saturday Christmas vacation begins after last class
January 7, 1963, Monday Classes resume at 8:00 a.m.
January 27-February 1, Monday through Saturday Pre-registration
January 28-Feb. 2, Monday through Saturday Semester examinations

SPRING SEMESTER, 1963

February 7, Thursday Registration for Spring Semester
February 7, Thursday Classes begin at 8:00 a.m.
March 31, Saturday Spring vacation begins after last class
April 30, Thursday Classes resume at 8:00 a.m.
May 20-June 4, Wednesday through Tuesday Semester examinations
June 10, Monday Commencement

FALL SEMESTER, 1963

September 23-24, Monday and Tuesday Orientation of new law students
September 24, Tuesday Classes begin at 8:00 a.m.
September 25, Wednesday Classes begin at 8:00 a.m.
November 21, Thursday Thanksgiving Day, a holiday
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 for Spring Semester
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 26-June 9, Tuesday through Tuesday Semester examinations
June 8, Monday Commencement
## LOCAL EXECUTIVE BOARD

Theodore Jacobs, Missoula  
Mrs. Thomas E. Mulhoney, Missoula  
Alex M. Stephansoff, 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. Pantier, LL.B., Montana State University, Financial Vice President  
Troy F. Crownes, 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  
Linus J. Carlston, 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  
Luther A. Richtman, Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Dean of the School of Fine Arts  
Robert E. Sullivan, LL.B., University of Notre Dame, Dean of the School of Law  
Robert L. Van Horne, Ph.D., State University of Iowa, Dean of the School of Pharmacy  
Ross A. Williams, M.F., Yale University, Dean of the School of Forestry  
Andrew C. Crosswell, 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 Campbell, M.S., University of Denver, Librarian

## THE FACULTY

### COLLEGE OF ARTS AND SCIENCES

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

**Botany, Microbiology and Public Health**  

- Dietz, Robert F., Ph.D., State University of Iowa, Professor and Chairman  
- Bielby, Mark J., M.S., University of Wyoming, Instructor  
- Chessin, Meyer, Ph.D., University of California, Associate Professor  
- Eklund, Carl M., M.D., University of Minnesota, Lecturer in Virology (Courtesy)  
- Faust, Richard A., Ph.D., Purdue University, Assistant Professor  
- Gerhardt, James W., Ph.D., Ohio State University, Associate Professor, Biology (also Education) (on leave Winter and Spring Quarters)  
- Gordon, Clarence C., Ph.D., Washington State University, Assistant Professor  
- Habreck, James R., Ph.D., University of Wisconsin, Assistant Professor  
- Harley, Leroy H., Ph.D., University of Michigan, Professor; Curator of the Herbarium; Assistant Director, Biological Station  
- Hoyer, 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)  
- Nakamura, Mitsuru J., Ph.D., Boston University, Associate Professor  
- Raemisch, Richard A., Ph.D., Brown University, Lecturer in Biochemistry (Courtesy)  
- Rehberg, Sherman J., Jr., Ph.D., Washington State University, Assistant Professor  
- Salvin, Samuel B., Ph.D., Harvard University, Lecturer (Courtesy)  

**Economics**  

- Walling, Robert F., Ph.D., University of Minnesota, Professor and Chairman  
- Helmers, George E., 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  
- Enger, Thomas P., B.A., Montana State University, Graduate Assistant  
- Fry, Paul R., B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)

**Chemistry**  

- Stewart, John M., Ph.D., University of Illinois, Professor and Chairman  
- Baetzman, William G., Ph.D., Yale University, Professor Emeritus  
- Guries, R. Meserve, Ph.D., Michigan State University, Assistant Professor (resigned December 31, 1961)  
- Howard, Joseph W., Ph.D., University of Illinois, Professor Emeritus  
- Juday, 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  
- Von Meter, Wayne P., Ph.D., University of Washington, Assistant Professor  
- Yates, Earl M., Ph.D., Washington State University, Associate Professor (in charge of the storeroom)  
- Lardy, Mathias M., M.S., Oregon State College, Graduate Assistant  
- Ramage, Eugene B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)  

**English**  

- Gilbert, Vesper M., Ph.D., Cornell University, Professor and Chairman  
- Allen, James D., Ph.D., University of Washington, Instructor  
- Bennett, James R., Ph.D., Stanford University, Assistant Professor  
- Betsky, Seymour, Ph.D., Harvard University, Professor  
- Bier, Jesse, Ph.D., Princeton University, Associate Professor  
- Bone, Agnes V., Ph.D., University of Minnesota, Associate Professor  
- Brown, Walter L., Ph.D., University of California, Professor  
- Carpenter, Nan C., Ph.D., Yale University, Professor  
- Charles, Robert A., Ph.D., Pennsylvania State University, Assistant Professor
CLAPP, MARY B. (M.S.), M.A., University of North Dakota, Associate Professor Emeritus

CLINE, MEREDITH D., Jr., Ph.D., University of Michigan, Associate Professor (on leave 1961-62)

COLEMAN, RUPEY A., Ph.D., Boston University, Professor Emeritus

DUNNAGH, JUDITH, Ph.D., University of Wisconsin, Assistant Professor

FEDLER, LESLIE A., Ph.D., University of Wisconsin, Professor (on leave 1961-62)

FREEMAN, EDMUND L., M.A., Northwestern University, Professor (retired December 31, 1961)

GUTHIRE, JACK S., M.A., University of Washington, Instructor

HARRIS, PHYLLIS L. (M.S.), M.A., Montana State University, Instructor

KOCH, WALTER N., Ph.D., Yale University, Associate Professor

McCLOY, DONALD B., M.A., Montana State University, Instructor

MEREYAM, HAROLD G., Ph.D., Columbia University, Professor Emeritus

MOORE, JOHN E., M.A., University of Michigan, Professor

RICHARD, JEROME, M.A., San Francisco State College, Instructor

SCHWARZ, JOHN M., M.A., Montana State University, Instructor

SHARMA, VED P., M.A., Punjab University (India), Instructor

VINOCUR, JACOB, Ph.D., University of Wisconsin, Assistant Professor

ALLEN, PRISCILLA D., B.A., University of California, Santa Barbara, Graduate Assistant

BURRE, WILLIAM M., B.A., Montana State University, Graduate Assistant

LANGLOW, KRISTIE, B.A., Whitman College, Graduate Assistant

SPARROW, BOONE, B.A., Montana State University, Graduate Assistant

FOREIGN LANGUAGES

BURGESS, ROBERT M., Ph.D., University of California at Los Angeles, Professor and Chairman (on leave Autumn Quarter)

BERCHEL, PAUL A., M.A., Oberlin College, Professor Emeritus

BRESKY, DUSHAN, J.D., Charles University (Prague), Assistant Professor

BRETT, KENNETH C., M.A., State University of Iowa, Instructor

BROCK, ROBERT R., M.A., University of Washington, Instructor

DAKLE, THOMAS J., M.A., Louisiana State University, Instructor

DICK, EINER S., Ph.D., University of Munster (Germany), Instructor

EPBEN, MARQUIS, H. (M.S.), M.A., Montana State University, Associate Professor

HOFFMAN, RUDOLPH O., M.A., University of Wisconsin, Professor Emeritus

LACERSDORF, GERTRUD (M.S.), Ph.D., Goettingen University (Germany), Assistant Professor

LAPINEN, PETER P., Ph.D., University of California, Associate Professor

NORDENMACHER, PATRICIA J. (M.S.), M.A., Northwestern University, Instructor

ORTSI, DOMENICO, Ph.D., University of California, Assistant Professor

POWELL, WARD H., Ph.D., University of Colorado, Associate Professor

SHEPARD, DOUGLAS C., Ph.D., University of Wisconsin, Associate Professor

SMPZUK, THEODORE H., Ph.D., University of Wisconsin, Professor (Acting Chairman, Autumn Quarter)

SORENSEN, THORA, Ph.D., Mexico National University, Professor

WEIR, FELIX D., B.A., Jamestown College, Visiting Instructor (Spring Quarter)

BOHN, DOROTHY R., B.A., College of Great Falls, Visiting Instructor (Autumn Quarter); Graduate Assistant (Winter Quarter)

FLIGHTNER, JAMES A., B.S., Montana State College, Graduate Assistant

LEARY, E. DENISE, B.A., Montana State University, Graduate Assistant

MARSHALL, SUSANNE (M.S.), B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)

NYS, MIKA V. (M.S.), B.A., Montana State University, Assistant (Winter and Spring Quarters)

GEOGRAPHY

SHAFOYDS, VINCENT K., Ph.D., Ohio State University, Associate Professor and Chairman

BRY, CHESTER B., Ph.D., University of California, Assistant Professor

HANSEN, ALEX E., M.S., University of Wisconsin, Instructor

GEOLOGY

HOMKAAA, FRED S., Ph.D., University of Michigan, Professor and Chairman

FIELDS, ROBERT W., Ph.D., University of California, Associate Professor

HOWEY, JOHN, JR., Ph.D., Washington University (St. Louis), Associate Professor

SILVERMAN, ARNOLD J., M.A., Columbia University, Assistant Professor

WEINHEBBER, JOHN P., Ph.D., University of Illinois, Associate Professor

BORDEN, MORTON, Ph.D., Columbia University, Associate Professor

CARTER, PAUL A., Ph.D., Columbia University, Associate Professor

SOLOMON, ROBERT W., Ph.D., Stanford University, Professor; Dean College of Arts and Sciences; Director of the Summer Session

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

BROWN, ELLA C., M.A., Montana State University, Instructor

CHINSEY, EDWARD B., B.A., Montana State University, Assistant Professor

COX, FOREST B., B.A., University of Kansas, Assistant Professor; Head Basketball Coach

CROSS, GEORGE W., M.S., Indiana University, Assistant Professor

DARLING, GEORGE P., B.A., Montana State University, Professor

DAVIDSON, HUGH, B.S., University of Colorado, Instructor; Assistant Football Coach

HERZL, CHARLES F., M.A., Columbia University, Professor

JENNINGS, RAY, M.S., University of Colorado, Assistant Professor; Head Football Coach

LORENZ, MATTHIAS, M.S., University of Washington, Assistant Professor

OSWALD, ROBERT M., M.S., University of Washington, Assistant Professor

RHENHART, NASEBY, B.A., Montana State University, Instructor; Trainer

SCHREIBER, WILLIAM E., B.A., University of Wisconsin, Professor Emeritus

SCHWENK, MILTON E., B.A., Washington State University, Instructor; Assistant Football Coach

SELBY, KAY F., B.S., Washington State University, Instructor

STODDART, AGNES L., Ed.D., Stanford University, Professor

SWANSON, HARLAN L., M.S., University of Oregon, Instructor

WILSON, VINCENT M., B.A., New York University, Associate Professor

BALLENSCHMID, ROBERT D., B.S., Concordia College, Graduate Assistant

COLLETTE, LEWIS H., B.S., Montana State University, Graduate Assistant

JOHNS, DELROY M., B.S., Montana State University, Graduate Assistant

MATT, JOHN, B.S., Montana State University, Graduate Assistant

SMITH, RONALD G., B.S., Montana State University, Graduate Assistant

HISTORY

WHEN, MELVIN C., Ph.D., State University of Iowa, Professor and Chairman

BENNETT, EDWARD E., Ph.D., University of Wisconsin, Professor Emeritus

BORDEN, MORTON, Ph.D., Columbia University, Associate Professor

CARTER, PAUL A., Ph.D., Columbia University, Associate Professor

COOKSON, ROBERT W., Ph.D., Stanford University, Professor; Dean College of Arts and Sciences; Director of the Summer Session
Sappenfield, Bert R., Ph.D., New York University, Professor
Baker, Blaine L., B.A., Montana State University, Graduate Assistant
Cohn, Daniel A., B.A., Montana State University, Graduate Assistant
Hemphill, Baldwin R., B.A., Western Washington College of Education, Graduate Assistant
Kemp, Eleanor E., B.A., Ashland College, Graduate Assistant
Koski, Charles E., B.A., Montana State University, Graduate Assistant
Paul, William J., Graduate Assistant
Reis, Joanne D., B.S., University of Wisconsin, Assistant
Smith, Richard K., Graduate Assistant

Reserve Officers Training Corps

Air Science

Murray, Charles L., Colonel, USAF, B.S., Oklahoma State University, Professor and Chairman
Emmett, Merle W., Captain, USAF, B.S., Montana School of Mines, Assistant Professor
Gannett, Willard L., Captain, USAF, M.S., Springfield College, Assistant Professor
Scott, Richard E. J., Major, USAF, B.S., University of Omaha, Associate Professor
Baldwin, John (A/IC), Assistant
Lersack, Raymond (T/Sgt.), Assistant
Smith, Earl F. (T/Sgt.), Assistant
Walser, Edward (S/Sgt.), Assistant

Military Science (Army)

Mouche, M. F., Lieutenant Colonel, U.S. Army, B.S., U.S. Military Academy, Professor and Chairman
Fox, Donald C., Major, U. S. Army, B.S., University of Omaha, Associate Professor
Harris, Harold D., Captain, U.S. Army, B.A., University of Wyoming, Assistant Professor
Fredrick, Alfred L., Captain, U.S. Army, B.S., Wagner College, Assistant Professor
Small, George W., Captain, U. S. Army, B.A., The Citadel, South Carolina, Assistant Professor
Fredrick, Leo T. (Sgt.), Assistant
Greenway, Jack W. (M/Sgt.), Assistant

Sociology, Anthropology, and Social Welfare

Brower, W. Gordon, Ph.D., University of North Carolina, Professor and Chairman
Dwyer, Robert J., Ph.D., University of Missouri, Assistant Professor
Evans, Ibis 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
Hendricks, Albert C., M.Ed., University of Alaska, Instructor
Maloun, Carlisle L., Ph.D., Columbia University, Associate Professor
Tashner, Harold, Ph.D., University of Illinois, Professor
Taylor, Dee C., Ph.D., University of Michigan, Associate Professor
Author, George W., B.S., Montana State College, Graduate Assistant
Guay, Myrna J. (Mps), B.A., Montana State University, Graduate Assistant
James, Douglas J., B.A., Montana State University, Graduate Assistant
Kishara, Max, B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)
Mitchell, Sandra L., B.S., South Dakota State College, Graduate Assistant
Zuerk, Edwin F., B.A., Yankton College, Assistant

Speech

McGinnis, Ralph Y., Ph.D., University of Denver, Professor and Chairman
Borth, Richard M., Ph.D., State University of Iowa, Associate Professor, Speech Pathology and Audiology
Bussey, Forrest L., Ph.D., State University of Iowa, Associate Professor

Hansen, Bert M.A., University of Washington, Professor
Owen, James M.A., University of Denver, Instructor (on leave Autumn Quarter)
Parke, Charles D., Ph.D., State University of Iowa, Associate Professor of Speech Pathology and Audiology; Director, Speech and Hearing Clinic
Simon, Josephine, M.A., University of Wisconsin, Visiting Lecturer (Winter Quarter)
Witt, Daniel M., M.A., University of Denver, Instructor
Baekman, John R., M.A., Montana State University, Assistant (Winter and Spring Quarters)
Dierichs, Mary M., B.A., Holy Names College, Assistant, Speech Pathology and Audiology (Winter and Spring Quarters)
Ewing, Charlotte (Mps), B.S., Montana State College, Graduate Assistant (Winter and Spring Quarters)
Hecht, Scott J., B.A., Panhandle A & M College, Assistant
Jennings, Russell B., Western Montana College of Education, Graduate Assistant
Knowlton, William, Graduate Assistant
O'Dell, Donald R., B.A., Carroll College, Graduate Assistant (Autumn Quarter)
Peterson, Duane D., B.S., Eastern Montana College of Education, Graduate Assistant

Zoology

Weir, Philip L., Ph.D., University of Wisconsin, Professor and Chairman
Bartels, George W., Ph.D., University of Chicago, Guest Investigator (Courtesy)
Browman, Louis G., Ph.D., University of Chicago, Professor
Brinson, Royal B., Ph.D., University of Michigan, Professor
Castle, Gordon B., Ph.D., University of California, Professor; Director, Biological Station (on leave Autumn Quarter)
Craighard, John J., Ph.D., University of Michigan, Professor (also Forestry); Leader, Montana Cooperative Wildlife Research Unit
Graue, Lynne B., Ph.D., The Ohio State University, Assistant Professor
Hoffmann, Robert, Ph.D., University of California, Associate Professor
Pflieger, E. W., Ph.D., University of California, Assistant Professor
Phillips, Cornelius B., Ph.D., University of Minnesota; Sc.D. (hon.), University of Nebraska, Lecturer (Spring Quarter)
Sengel, Clyde M., Ph.D., Utah State University, Assistant Professor
Weir, George F., Ph.D., University of California at Los Angeles, Professor
Crofts, Thomas S., M.A., Montana State University, Graduate Assistant
Eaton, Alden W., B.A., University of New Hampshire, Graduate Assistant (Winter and Spring Quarters)
Guay, Julian W., B.A., Montana State University, Graduate Assistant
Roney, Ernest E., B.A., Bowdoin College, Graduate Assistant
Yarnall, John L., B.S., Montana State University, Graduate Assistant

School of Business Administration

Blooms, Paul B., D.B.A., Indiana University, Dean and Professor; Director, Bureau of Business and Economic Research
Barth, Glenn R., M.B.A., Harvard University, Assistant Professor
Connors, Robert, M.B.A., Ohio State University, Instructor (Winter and Spring Quarters)
Doming, Jack R., B.A., Montana State University, C.P.A. (Mont.), Instructor (part time)
Emery, Donald J., Ph.D., Columbia University, C.P.A., (Mont.), Professor
Etron, Gene L., Ph.D., University of Wisconsin, Associate Professor
Felix, William L., Jr., B.S., Montana State University, Instructor (part time)
Gronnich, Joseph F., B.S., Montana State University, Instructor
Haring, Robert C., M.B.A., Indiana University, Assistant Professor
Helbing, Albert T., Ph.D., Johns Hopkins University, Professor
Kempner, Jack J., Ph.D., Ohio State University, C.P.A. (Mont.), Professor
OFFICIAL DIRECTORY—7

Drama

BROWN, FIRMAN H., JR., M.A., Montana State University, Assistant Professor and Chairman

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

JAMES, RICHARD H., M.A., Northwestern University, Instructor

CUSHING, GEORGE J., B.A., University of California, Santa Barbara, Graduate Assistant

Music

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

ANDREIE, EUGENE, M.A., University of Washington, Professor

DOTY, GERALD H., M.Mus., Northwestern University, Associate Professor

EVERSOLL, JAMES A., M.Mus., College-Conservatory of Music of Cincinnati, Assistant Professor

HENDRICK, HERALD H., M.Mus., Eastman School of Music, Instructor

HEWENS, Myles J., M.Mus., College-Conservatory of Music of Cincinnati, Instructor

HUMMEL, J. GEORGE, M.A., Columbia University, Associate Professor

JOHNSTON, DONALD O., Ph.D., Eastman School of Music, Assistant Professor (part time)

LESTER, JOHN L., B.Mus., Southwestern University, Professor

LEWIS, GEORGE D., M.Mus., Montana State University, Assistant Professor

MANNING, WILLIAM M., M.Mus., Drake University, Instructor

MUSUMLAN, JOSEPH A., M.Mus., Northwestern University, Assistant Professor (on leave 1961-62)

PEERY, LAURENCE B., M.Mus., Syracuse University, Instructor

RAMSHILL, ERINICE B. (Mrs.), Associate Professor Emeritus

REYNOLDS, FLORENCE, M.Mus., Eastman School of Music, Associate Professor

RICHARDS, WILLIAM H., M.Mus., University of Southern California, Assistant Professor (on leave 1961-62)

RICHARDSON, LUTHER A., Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Professor; Dean, School of Fine Arts

RUPPEL, ROBERT M.M., Montana State University, Instructor

SMITH, KENYARD, M.A., Colorado State College, Instructor

WICKER, EUGENE, B.Mus., Yale University, Professor

WENDT, RUDOLPH, M.Mus., Eastman School of Music, Professor

BUZAN, EVERLY, B.A., Adams State College, Graduate Assistant

CULNESS, R. CECIL, B.M., Montana State University, Graduate Assistant

COYNELL, FOREST E., B.M., University of Wyoming, Graduate Assistant

PRETZCH, GALEN, B.A., Adams State College, Graduate Assistant

SCHOOL OF FORESTRY

WILLIAMS, ROSS A., M.F., Yale University, Dean and Professor; Director of Montana Forest and Conservation Experiment Station

BOLE, ANDREW W., D.P.A., Harvard University, Professor

COTTER, JAMES H., B.S.F., Montana State University, Special Lecturer and Research Assistant

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

FAUGER, JAMES L., M.F., University of Washington, Assistant Professor

GESCHACH, FREDERICK L., M.F., Montana State University, Assistant Professor

HOST, JOHN R., M.F., University of Washington, Assistant Professor

HOWELL, O. B., M.S., Michigan State University, Assistant Professor (resigned March 16, 1962)

KREER, JOHN P., Ph.D., Yale University, Professor

LEWIS, GORDON D., Ph.D., Michigan State University, Assistant Professor

MORGAN, LAWRENCE C., M.F., Oregon State College, Assistant Professor (on leave Autumn and Winter Quarters)

MORRIS, MELVIN S., M.S., Colorado State University, Professor

SCHOOL OF FINE ARTS

RICHMAN, LUTHER A., Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Dean

Art

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

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

AUTO, A. ROY, M.F.A., Washington State University, Assistant Professor

DREW, JAMES E., M.A., Oberlin College, Associate Professor

LEARY, JAMES A., M.S., Michigan State University, Assistant Professor

ROBIN, RAND K., B.A., Montana State University, Graduate Assistant

THE SCHOOL OF FINE ARTS

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

Blimberg, Nathan B., Ph.D., Oxford University, Dean and Professor
Bur, O. J., M.S.J., Northwestern University, Professor (on leave Winter Quarter) (Deceased March 7, 1962)
Coombs, Andrew C., M.A., University of Minnesota, Professor; Dean of Students
Dugan, Edward B., M.A., University of Missouri, Professor
Johnson, Dorothy M., B.A., Montana State University, Assistant Professor (part time)
Jorgenson, Erling S., Ph.D., University of Wisconsin, Associate Professor; Director, Radio and Television Studios
Powers, Dorothy R. (Mrs.), B.A., Montana State University, Dean Stone Visiting Lecturer (Winter Quarter)
Peice, Warren C., M.A., University of Wisconsin, Dean Stone Visiting Lecturer (Spring Quarter)
Yu, Frederick Ten-Chi, Ph.D., State University of Iowa, Associate Professor
Markele, Beirston B., B.A., Montana State University, Graduate Assistant (Autumn and Winter Quarters)
Towe, Ruth J. (Mrs.), B.A., Montana State University, Graduate Assistant

SCHOOL OF LAW

Sullivan, Robert E., LL.B., University of Notre Dame, Dean and Professor
Agata, Burton C., LL.M., New York University, Assistant Professor
Barney, Richard V., LL.B., University of Utah, Assistant Professor
B SCRIPT, Edwin W., LL.M., Harvard University, Professor
Cromwell, Gardner, S.J.D., University of Michigan, Associate Professor
Houghton, Rodney M., M.A., (L.S.) University of Denver; LL.B., University of San Francisco, Assistant Professor; Law Librarian
Kimball, Edward L., LL.M., University of Pennsylvania, Associate Professor (on leave 1961-62)
Leaphart, Charles W., S.J.D., Harvard University, Dean Emeritus; Professor Emeritus
Lown, Sherman V., LL.M., Harvard University, Assistant Professor (part time)
Mason, David R., S.J.D., Harvard University, Dixon 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, Associate Professor (on leave 1961-62)
Toelle, J. Howard, LL.M., Harvard University, Professor Emeritus
Anderson, Robert G., B.A., Montana State University, Assistant (Spring Semester)
Fredericks, Conrad B., B.S., Montana State College, Assistant (Spring Semester)

SCHOOL OF PHARMACY

Van Horn, Robert L., Ph.D., State University of Iowa, Dean and Professor
Bryan, Gordon H., Ph.D., University of Washington, Professor
Mollett, Charles E. F., M.S., University of Kansas, Professor Emeritus
Pettersson, Frank A., Ph.D., University of Washington, Assistant Professor
Roscoe, Charles W., Ph.D., University of Washington, Assistant Professor
Suchy, John F., Ph.D., University of Colorado, Professor Emeritus
Wales, John L., Ph.D., University of Colorado, Associate Professor
Roscoe, Harriette D. (Mrs.), B.S., University of Washington, Assistant Professor

AFFILIATED SCHOOL OF RELIGION

Tatsumiya, Yoshimi, Th.D., Boston University, Assistant Professor and Director

SERVICES

Library

Campbell, Kathleen, M.S., University of Denver, Librarian (Professor)
Brewer, Mabel M. (Mrs.), B.A., Montana State University, Reference Assistant (Instructor)
DeLand, Mary F. (Mrs.), B.S. in L.S., University of Washington, Catalog Librarian (Assistant Professor)
Midgett, Adele M. (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)
Speck, 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

Biological Station

Castle, Gordon B., Ph.D., University of California, Director; Professor of Zoology
Harvey, Lesly H., Ph.D., University of California, Director; Professor of Botany
Staff of Botany and Zoology Departments

Forest and Conservation Experiment Station

Williams, Ross A., M.F., Yale 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
Fairman, Larry L., B.S., University of Missouri, Research Fellow
Gibson, William K., B.S., Montana State University, Research Fellow
Moonhouse, James A., B.S.F., Montana State University, Research Fellow (Winter and Spring Quarters)

Wildlife Research Unit

Craighead, John J., Ph.D., University of Michigan, Leader; Professor, Forestry and Zoology
Cooney, Robert F., B.S.F., Montana State University, Unit staff member; Research Associate, Forest and Conservation Experiment Station (Courtesy)
Hoffman, Robert S., Ph.D., University of California, Unit staff member; Assistant Professor, Zoology
Penkelly, W. Leslie, Ph.D., Utah State University, Head, Conservation Education Extension (Assistant Professor)
Sengen, 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
Woodward, 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 Division and Public Service

Crowes, Troy F., M.A., State University of Iowa, Director; Assistant to the President (Assistant Professor)

Publications and News Service

Ryan, Jack, B.A., Montana State University, Director; Distribution Manager, University Press
Montana State University

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

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

ACCREDITATION

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

SUPPORT AND ENDOWMENT

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

CONTROL AND ADMINISTRATION

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

By statute the State's combined system of higher education is called "The University of Montana." 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.

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-two brick and masonry buildings, as well as numerous other structures for storage and other purposes.

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

THE LIBRARY houses approximately 330,000 volumes in the library building and all other libraries, receives over 1,000 periodical titles, and has a collection of more than 36,000 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 investigations 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 business, to disseminate information of general interest on the economic and social aspects of the state; and to engage in studies in the areas of economic and other social sciences which show promise of making contributions to knowledge, or to the development of methods of analysis, regardless of whether such studies are directly related to the state.

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

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

The Forest and Conservation Experiment Station, School of Forestry, Montana State University, operates under Acts of Congress (Section IV, Clarke-McNary Act, June 7th, 1924 as amended, 16-U.S.C.-567), and Chapter 141, Laws of Montana of 1897. The Dean of the School of Forestry was designated as director. The Act specifies that the purpose of the Station is:

"To study the growth and the utilization of timber . . .

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

"To cooperate with the other departments of the University of Montana, the state forester and the state board of land commissioners, the state fish and game commission, the state livestock commission . . . the United States gov-
The printing of educational, research, and informational materials of Montana State University, such gifts of land or other donations 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 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 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 Management, 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, botanical, geological, historical, and zoological collections. The historical and part of the Indian collections are on display in the Fine Arts Building, while the other collections are housed with the departments most intimately concerned.

The Historical and Indian displays are open to the public from 3:00 to 8:00 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 as one 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 professional curricula. High school courses should be chosen in cooperation with private, state and federal agencies.

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 should take the following 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. Non-residents are admitted on the basis of probability of success in their chosen field of studies.

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 before his credit is granted, the registration fee of the quarter (semester) for which application was made (see STUDENT FEES), but it is not refundable if the student fails to register for the term indicated for entrance. This fee will be refunded if admission is refused.

ADMISSION BY EXAMINATION. A person who is 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 awarded the student for any course in which he is credited to by high school 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 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 College 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 field of specialization may be admitted on condition that the deficiency is made up within a year.

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 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 admitted as special students upon passing general aptitude and English placement tests and the submission of satisfactory evidence that they are prepared to pursue successfully the courses they desire to take. Special students may acquire student status and may take courses in addition to their own major in such fields of study as are offered by the University. Special students 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 University (or Undergraduate) 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 the University administration 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.

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

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

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

CHANGES IN PROGRAM OF STUDIES. To drop or add courses, change from credit to listener or vice versa, the student must secure a Drop-Add form from the Registrar's Office and return it to that office after getting 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" remains on record until the student returns to the University and after the third quarter of the third year 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 cancelled and the credit and the last grade received are recorded, even if the second grade is lower. Loss of credit due to repeating a course is the responsibility of the student.

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

VETERAN REGISTRATION. Veterans’ subsistence payments from the Veterans’ Administration are based on the number of hours of work for which the student is registered. A minimum of 14 credit hours is required for full payment under the Korean G. I. Bill.

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

Bachelor of Science, with majors in:
- Mathematics
- Microbiology and Public Health
- Philosophy
- Physical Sciences
- Physics
- Political Science
- Political Science—Economics
- Political Science & History
- Pre-Medical Sciences
- Psychology
- Radio & Television
- Secretarial-Home Arts
- Social Welfare
- Sociology
- Sociology & Economics
- Spanish
- Speech
- Speech Pathology and Audiology
- Zoology

Bachelor of Science, with majors in:
- Health & Physical Education
- Home Economics
- Military Science
  - Bachelor of Science in Medical Technology
  - Bachelor of Science in Secretarial - Home Arts
  - Bachelor of Science in Wildlife Technology

SCHOOL OF FINE ARTS
Bachelor of Arts, with majors in:
- Art
- Drama
- Music

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

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

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

A—Work of the best grade; B—work better than average; C—average work; D—work below average, but barely passing; F—failure; P—pass without defining grade. The grade I—incomplete is given if all the work in a course has not been completed and there is sufficient reason for this. An I will be changed to an F if the work is not completed during the student’s next quarter of residence.

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

Grade points are computed as follows: 4 grade points for each credit of A; 3 grade points for each credit of B; 2 grade points for each credit of C; 1 grade point for each credit of D. In a subject in which an “incomplete” grade has been received, grade points are counted only after this incomplete has been removed.

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

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

CREDITS REQUIRED FOR A DEGREE. 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 150 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 Science in Pharmacy 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 five 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 degree 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...
SPECIALIZATION. A student must select a major field of study before entering the junior year at the University. The dean 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 fail to demonstrate an acceptable college standard must take English 601 without credit before enrolling in English 101. Students who receive "A" in English 102 may substitute English 201 for 103.

GROUP REQUIREMENTS. All candidates for the bachelor's degree must present for graduation at least twelve credits from each of the groups I, II, and III following. Credits must be included from at least two sub-groups listed for groups I, II, and III, except that General 141-142-143 INTRODUCTION TO BIOLOGICAL SCIENCES will satisfy group I.

Group I. Astronomy (Gen 100), Botany, Chemistry, General 141-132-133 or General 131 and 10 credits from other sub-groups, or 131-132 and 5 credits from other sub-groups, Geology, Mathematics, Microbiology and Public Health, Physics, Zoology.

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

Group III. Art (231-232-233 only), English (literature courses only), Foreign Languages (218-215, and other literature courses only), part or all of general 151-152-153, Music (134 only), Philosophy, Psychology, Religion.

In the School of Forestry, Group II requirement may be partially satisfied by 5 credits in Forestry 421, and Group III is partially satisfied by 5 credits in Speech.

Elementary teachers may fulfill Group I requirements with General 125 PHYSICAL SCIENCE FOR TEACHERS, General 126 BIOLOGICAL SCIENCE FOR TEACHERS, and Mathematics 130 THEORY OF ARITHMETIC.

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

RESIDENCE REQUIREMENTS. Students who transfer credits earned elsewhere and seek a degree from Montana State University must, in addition to meeting other requirements of the University, earn not less than 45 credits, and devote not less than three quarters to resident study at the University; and 38 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count towards residence requirements, but correspondence credits do not.

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

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

SENIOR EXAMINATIONS FOR HONORS. A student who wishes to be graduated with honors or high honors must meet the following requirements: (1) for honors, in the beginning of his last quarter he must have an index of at least 3.1 for all credits registered for in his entire record as well as in the major field; (2) for high honors, at the beginning of his last quarter he must have an index of at least 3.5 for all credits registered for in his entire record as well as in the major field. A student who transfers credits earned elsewhere to this university must meet the scholastic index indicated on grades earned at Montana State University as well as on his entire record; (3) the student must take an examination, oral or written or both, as determined by the major department or school; (4) he must pass the examination with a grade of "A" or "B"; (5) after these qualifications have been met, the candidate for honors must then receive the recommendations of his major department and of the faculty of Montana State University.

SUMMER SESSION

The Summer Session of ten weeks is divided into two five-week terms. Students may attend either five-week term or the full ten-week session. The 1963 Summer Session will open June 17 and close August 23; the first five-week term, June 17 to July 19; the second five-week term, July 22 to August 23.

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

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

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

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

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

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

Full information regarding the Summer Session may be obtained from the Summer Session office, Liberal Arts 101.

THE GRADUATE SCHOOL

The following advanced degrees are conferred by the University:

- Master of Arts in: Art, Education, Drama, Guidance and Counseling, Journalism, Teaching (Majors in Biological Sciences and Mathematics).
- Master of Science in: Business Administration, Forest Conservation, Forestry, Pharmacy, Teaching (Majors in Biological Sciences and Mathematics), Wildlife Management, Wildlife Technology.
- Master of Education
- Master of Forestry
- Master of Music—Major in Applied Music, Composition, Music Education
- Doctor of Philosophy—Chemistry, Geology, Microbiology, Zoology
- Doctor of Education

GENERAL REGULATIONS

Requirements relating to graduate work and the award of graduate degrees are administered in the Graduate School. Actions pertaining to admission to graduate standing and to candidacy for graduate degrees are subject to review and approval of the Dean of the Graduate School. Special requirements for particular programs are listed in the curriculum statements of the schools and departments.

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

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

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

Full graduate standing will be granted to students working toward an advanced degree whose applications present clear evidence 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 substan-
tial 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 de-
partment or school and approval by the Dean of the Gradu-
ate School.

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

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

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

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

GRADUATE RECORD EXAMINATION. The Depart-
ments of Chemistry, Foreign Languages, Geography, His-
tory, Mathematics, Microbiology and Public Health, Philos-
ophy, and Speech require the Graduate Record Examination
to be taken by certain students as a condition of admission
not later than the first quarter of graduate residence. The
following schools and departments require all entering
graduate students to take the Graduate Record Examination
not later than the first quarter of graduate residence:
Botany, Business Administration, Economics, Education,
English, Geology, Health and Physical Education, Journalism,
Music, Physics, Political Science, Psychology, 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 quar-
ter 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 ex-
amined. The registrant's copy of the examination will be
obtained from this Business Office record. The registrant
must present his receipt stub for admission to the examina-
tion, 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 re-
quirements but grades in all courses taken for graduate credit
will be included in grade-point computations. A
maximum of eight credits of work with grades less than "B"
may be repeated with approval by the Graduate Council.

COURSE LOAD. Fifteen credits of graduate work in
a quarter constitutes the usual graduate registration. The
maximum credit load which may be applied toward a 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. With approval by the
school dean, department chairman and the Academic Vice-
President, regular full-time employees of the University may
register for programs of not more than five credits in a
quarter.

REGISTRATION. At the time of registration for each
quarter the student's program must be submitted to the
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
twelve credits in approved extension courses.

Correspondence courses will not be accepted for gradu-
ate credit.

THE MASTER'S DEGREES

The following requirements certain to all Master's
degrees unless specific exceptions or additional require-
ments are indicated in the curriculum statements of par-
ticular schools or departments.

The candidate for a Master's degree must present evi-
dence of intensive study and investigation in his field of
special interest. At least 45 credits of graduate work must
be presented, and at least 30 of these credits, including
credit for the thesis or professional paper, must be in the
student's major department or school. With consent of the
graduate adviser and of the Dean of the Graduate School,
as much as 15 credits of graduate work may be offered in
credit 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 de-
gree the student must complete not less than five graduate
credits of work in any given quarter. Students transferring
from Montana State College who have completed one quar-
ter 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 approved for graduate credit by the
Graduate Council. One-third of the residence require-
m ents 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 rec-
ord 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 quar-
ter 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 ad-
mission to candidacy.

TRANSFER OF CREDIT. A student may transfer up to
12 graduate course credits toward fulfillment of require-
ments for the Master's degree if such transfer is recom-
mended by the student's major department or school chair-
manship. 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 rec-
ord 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 quar-
ter 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 ad-
mission to candidacy.

EXAMINATIONS. Each candidate for a Master's de-
gree 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.

THESIS. A maximum of 15 credits in Course 699,
Thesis, may be applied towards the Master's degree unless a
lesser limit is specified by the major department or school.

By the end of the fifth week of the quarter in which the
Master's degree may be conferred the candidate must submit to the Dean of the Graduate School an unbound
committee draft of the thesis or professional paper as ap-

proved by the thesis director. If approved by the Dean, this committee draft will then be submitted to the candidate to the examining committee for possible revision prior to final submission and acceptance.

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

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

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

THE MASTER OF ARTS AND MASTER OF SCIENCE DEGREES

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

SPECIAL PROGRAMS

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

THE MASTER OF ARTS IN GUIDANCE AND COUNSELING. In addition to the general requirements for admission to the Graduate School, the following special requirements must be met: Psych 250, Educ 450 and 452, or equivalent, and one course in Psychology, Sociology, or 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 351-353-355 and 350, or 361; Sociology 402 and 405; Educ 454, 455, 552 (4 cr.), 594 (Group Guidance 2 cr.), and 597; Speech Pathology and Audiology 330. Final written and oral comprehensive examinations are required, but a thesis is not required.

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

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

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

Specific requirements for the degree include three options:

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

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

C. Sixty credits including 35 graduate credits in the major field, 10 graduate credits in allied fields, and final oral and written comprehensive examinations. Candidates teaching a subject 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 has spent at least one full 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 forms for application for Doctoral candidacy. Upon successful completion of the comprehensive examinations, and on recommendation of the department and approval of the Dean of the Graduate School, the student will be advanced to candidacy.

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

DISSERTATION. The candidate must submit a dissertation which demonstrates competence in independent re-
search. The dissertation must be an original contribution to knowledge; it must be presented in acceptable literary form and 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.

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 contains 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. The student must complete fifty credits in continuous residence and 30 of the last 45 credits must be taken in residence at Montana State University.

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

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

COURSE REQUIREMENTS, DISTRIBUTION, AND QUALITY OF WORK. The candidate will submit a minimum of 150 quarter credits of graduate work, including School of Education 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 upon recommendation of the School of Education and approval of the Dean of the Graduate School, the student will be advanced to candidacy.

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

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

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

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

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

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

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

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES. 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 $29.75 to $90.00 a month depending on the size and type of apartment.
Board and room rates will probably hold for the year. However, in the event of material increases in costs, rates may be increased accordingly.

Montana Residents

<table>
<thead>
<tr>
<th></th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$111.00</td>
<td>$101.00</td>
<td>$101.00</td>
<td>$313.00</td>
</tr>
<tr>
<td>Res. Halls Board</td>
<td>165.00</td>
<td>144.00</td>
<td>146.00</td>
<td>455.00</td>
</tr>
<tr>
<td>Room (Double)</td>
<td>65.00</td>
<td>65.00</td>
<td>65.00</td>
<td>195.00</td>
</tr>
<tr>
<td>Res. Halls Club Fee</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Room Deposit</td>
<td>10.00</td>
<td></td>
<td></td>
<td>(Refundable) 10.00</td>
</tr>
<tr>
<td>Bks., Supplies (Est.)</td>
<td>40.00</td>
<td>20.00</td>
<td>20.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Total for Mont. Res.</td>
<td>$393.00</td>
<td>332.00</td>
<td>334.00</td>
<td>$1,059.00</td>
</tr>
</tbody>
</table>

Students not residents of Montana, Add: 92.50 92.50 92.50 277.50

Total for Non-res. $485.50 $424.50 $426.50 $1,336.50

NON-RESIDENT STUDENTS are those who have not resided in Montana for at least 12 months immediately prior to entering Montana State University and whose parents are not residents of the state. Non residents may not gain residence while in attendance at any institution of learning. For more information, write to the Registrar.

STUDENT FEES. The following is a detailed schedule of quarterly fees authorized for the college year 1962-63 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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>$10.00</td>
<td>(Many Honor Scholarships entitle the holder to a waiver of the Registration and Incidental fees)</td>
</tr>
</tbody>
</table>

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>4.00</td>
</tr>
<tr>
<td>Student M.S.U. Building</td>
<td>15.00</td>
</tr>
<tr>
<td>Student Union Building</td>
<td>4.00</td>
</tr>
<tr>
<td>Student Activity</td>
<td>17.00</td>
</tr>
<tr>
<td>For support of activities sponsored by the Associated Students of Montana State University. (Optional to students who have a B.A. or B.S. degree and to students registered for less than seven credits.)</td>
<td></td>
</tr>
</tbody>
</table>

Health Service

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Required of all students enrolled for class work.)</td>
<td>10.00</td>
</tr>
</tbody>
</table>

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(This deposit, less charges, is refundable after graduation or when schooling is discontinued. Additional amounts will be billed if the balance becomes low)</td>
<td>10.00</td>
</tr>
</tbody>
</table>

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 $2.50; Student M.S.U. Building fee $7.50; Student Union Building $2.00; Health Service $10.00; Student Activity $17.00 (optional). Non-residents pay (in addition to other fees stated here) $11.00 per credit, plus $11.25 additional M.S.U. student 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 deferral. 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 deferral. Failure to meet payments as agreed, without an authorized extension of the deferral, will result in a penalty of $1.00 per day to a maximum of $5.00.

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.

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
THE COUNSELING CENTER has a general function of giving guidance and assistance to students in the following areas: 1) selection of appropriate area of major study; 2) assessment of abilities and the most efficient, effective application of those abilities to allow for maximum learning in college; 3) diagnosis of difficulties leading to less than maximum performance 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 in part 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.

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

All new students, before enrollment, must have submitted a complete Western Montana 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 10-day hospitalization at $15 per day, and $100 additional cost.

Obstetrical care and non-emergency surgery are not covered. Accidents and illnesses arising from activities contrary to University regulations or due to the 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 separate and independent of other organizations in search of University-trained personnel. 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 six residence halls, three housing areas for married students, a women's cooperative house, two women's cooperative apartments, nine fraternity superintendents in finding positions for which they have become qualified by training, ability, and experience.

The Placement Service also aids teachers, principals, and superintendents in finding positions for which they have become qualified by training, ability, and experience.

STUDENT HOUSING includes six residence halls, three housing areas for married students, a women's cooperative house, two women's cooperative apartments, nine fraternity superintendents in finding positions for which they have become qualified by training, ability, and experience.

STUDENT HOUSING includes six residence halls, three housing areas for married students, a women's cooperative house, two women's cooperative apartments, nine fraternity superintendents in finding positions for which they have become qualified by training, ability, and experience.

RESTATEMENT 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 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, be guilty of immoral acts or indecency, be considerate 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 its students to conform to the 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 classes of undergraduate students:

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

B. Those who have between 40 and 135 credits of University work or its equivalent and cannot show an index of 2.0 (C average) on all credits for which they have registered.
C. Minors, who are otherwise qualified, who do not present written permission of their parents 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 which may fall for cancellation of the offender's enrollment.

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

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

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

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

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

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

VI. STUDENT MARRIAGES. Any marriage, either party of which is a student of the University, must be publicly announced. For this purpose notice of 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 blanks whether married or single.

VII. FALISIFICATION 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 or Associate Dean of Students. Such action can be recommended by student councils, committees, or boards upon which oversight 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 doctors at the infirmary may receive excuses directly from the Health Service for the time they have been so confined or detained by the doctors. The Health Service is not authorized to give excuses except in instances where the student has actually used its services. All other excuses must come from the Dean of Students office.

DUE TO EXTRA-CURRICULAR ACTIVITIES. When a student's absence from classes is due to his participation in extra-curricular activities, i.e. athletics, debate, drama, etc., the time of his absence must be reported in advance to the Dean of Students by those in charge of the activity. In all cases students must 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 one week in advance of a proposed field trip the instructor in charge should send a memorandum in duplicate to the Dean of Students stating the proposed arrangements for and date of the trip as well as the list of the students who will be participating. The Dean of Students will submit the memorandum to the President's office for final approval. When this is given the staff member in charge will receive from the Dean of Students office leave 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. Any 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 other 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, student clubs and fraternities and sororities, athletic teams and clubs, religious organizations, professional and honorary organizations, 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. Mov­able seats, stages, floors, and other equipment make it usable as an auditorium, gym, field house, etc. There is seating for over 6,000 for basketball, 4,000 for shows or concerts. Two large lobbies serve for displays and smaller meetings. It is used for convocations, commencement exercises, cultural events, alumni reunion, horse shows, military drill and formations, dances, basketball games, and indoor athletic practice or exhibitions.

ATHLETICS. Athletics, including intercollegiate and intramural 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 con-
formity 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. 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 Company is a national military organization for advanced Army ROTC students devoted to increasing interest in military activities, establishing standards of leadership and devotion to duty, and the development of those qualities essential to the efficient officers of the Armed Services.

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

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

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

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

GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

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

SCHOOL OF EDUCATION

- Administration and Supervision
- Elementary Education
- Guidance and Counseling
- Secondary Education
- Liberal Arts
- Education
- Liberal Arts
- Education

THE SCHOOL OF FINE ARTS

- Art
- Drama
- Music
- 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)

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

The 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.
- 1Q, 2Q, or 3Q — Follow course title, indicate length of the course in quarters.
- A, W, S, Su — Quarters in which course given: Autumn, Winter, Spring, Summer, respectively.
- 5 — Number following quarters in which course given is the number of credits per quarter.
- V or V 1-3 — Variable credit course. Variation may be shown by numbers following V.
- R or R-8 — Course may be taken more than once for credit; total credit allowed shown by number following the R.
- (3-4) — Hours of lecture and laboratory each week of the quarter; lecture is first figure, laboratory the second.
- (0-3/cr.) — Laboratory course in which the student does 3 hours of laboratory per week for each credit.
- a/q — Course may be offered any quarter.
- e/y — Course offered even numbered years only.
- o/y — Course offered odd numbered years only.
- = — Equal, or equivalent course.
- c/i — Consent of instructor required.

Prereq — Prerequisite, or what must be taken before taking this course. Unless otherwise stated, numbers appearing after “Prereq” are courses within the particular school or department. Instructors must file with the Registrar a “Waiver of Prerequisite” form for any student allowed in a course without meeting the requirement as stated.
ANTHROPOLOGY is a field in social science concerned with the behavior of people in groups, particularly societies and cultures, and the institutional arrangements under which people live. It deals with the pre-literate or primitive societies.

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

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

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 20 of the 50 major credits must be in anthropology courses; Sociology 101, 205, and 303 and Social Welfare 181 must be completed. Remaining courses for the major may be selected from any courses in the department. Religion 304, Geography 355 and Speech 318 may be counted toward a major in Anthropology.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

152 ELEMENTARY ANTHROPOLOGY 1Q A W S Su 5. Man and his cultures. Culture growth and change.

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 or =. The social structure of non-literate peoples: family, kinship structures, kin and local groups and associations, social classes, and political organizations.

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 the Near East.

352 ARCHAEOLOGY OF MONTANA 1Q S 3 e/y Prereq 152 or 153 or =, and c/l. The origins and distribution of aboriginal cultures in Montana and surrounding 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 V 3-9 R-18 Prereq 152 or 153 or =. A field course in Montana Archaeology.

354 OLD WORLD ARCHAEOLOGY 1Q S 4 Su 2 e/y Prereq 153 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.

360 INDIANS OF THE SOUTHWESTERN UNITED STATES 1Q S 3 o/y Prereq 152 or 153 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 =. The Indian tribes of Montana.

366 NORTHWEST ETHNOLOGY Any quarter in which field parties are organized V 3-9 R-18 Prereq 152 or 153 or =. A field course. Indian tribes of Montana and related areas.

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

372 CULTURE AND THEORY 1Q A 3 o/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 10 credits in Anthropology. Enter any quarter. Selected problems in Anthropology.

480 LINGUISTIC METHODS 1Q S 3 e/y Prereq 153 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.

569 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. Practical experience is the basis and point of departure for effective, significant expression. A broad general educational background outside of the art field enlarges the scope of personal experience and awareness of one's environment, making possible a greater variety of art productivity.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ART. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in Art: 65 or more credits including Art 123 (6 cr), 125-126, 231-232*233, 234-235, 307 is taken instead of 450. (For teaching major or minor 307 is taken instead of 400.) 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 of the Graduate School, candidates must complete 45 credits of graduate work distributed as follows: A minimum of 10 credits in art history and theory (Art 371, 372, 373, 360); a minimum of 15 credits in the area of concentration (Art 360, 340 for painting majors; 330 and 355 for ceramics majors; 335 and 340 for sculpture majors; 333 and 340 for design majors); five to 10 credits on a terminal project and/or thesis (Art 699); minimum of 10 credits in art electives outside major area. The credits may be taken as non-art electives. The graduate record examination is required, and each candidate must present a one-man exhibition. A foreign language is required.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

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

125-126 COLOR AND DESIGN 2Q A W S 3, Su 2 or 4. Creative design and use of color, theories, methods and problems.
BIOLOGICAL SCIENCES deal with living things. The specific sciences are Bacteriology, Botany, and Zoology. Students take courses in each field.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BIOLOGICAL SCIENCES. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be satisfied: Bachelor of Arts degree with a major in Biological Sciences: 45 or more credits in Biological Science including Botany 121-122 (General Botany), 123 (Local Flora), Botany 225 (Plant Physiology), Zoology 104-105 (Elementary Zoology), Zoology 106 (Field Zoology), Zoology 201 (Comparative Vertebrate Zoology), Zoology 202 (Human Physiology), Microbiology 100 (General Microbiology), General 300 (Conservation of Natural and Human Resources).

The following courses in allied sciences must be completed: Chemistry 101, 102, 109 or 112-113, 112-113 (students who plan to do advanced work should take the Chemistry 121-122, 123, 2 quarters (recommended in order to fulfill the requirements for a teaching minor in the physical sciences) of Physics 111-112-113 or 211-222-223.

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

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

Employment opportunities for both men and women trained in botany are available in numerous fields. Graduates in botany may find employment 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. Those students who might do graduate work other than in botany are encouraged to go into graduate work. The better positions in the field require a master's or doctor's degree. For most teaching positions in colleges and universities the doctorate is essential.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN BOTANY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Botany: 45 or more credits in Botany, including Botany 121-122, 1-2 quarters and 2-3 credits from the following: 320, 329, 349, 359, 369, 376; and the remaining credits from two of the three following groups: (1) 325, 327, 339, 357; (2) 341, 343, 350, 370, 376, (3) 350, 355, 365, 366, 464, 465.

Also required are Zoology 104, 105, Microbiology 200 and Chemistry 101-102, 160 or 121-122-123. Recommended electives: Geography 390, 391, 392; Zoology 101-112-123-133; Zoology 106; Meth 302-303 or Psychology 220. The foreign language requirement listed earlier in the catalog must be satisfied; French or German preferred.
Courses 123, 250, 341, 355, 365, 366, 370 and 375 may require field trips extending some miles from the campus. Students are required to pay their pro rata share of transportation and insurance costs for such trips.

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

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

121-122 GENERAL BOTANY 2Q A W S S 3 (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 kingdoms.

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

139-131 PHARMACEUTICAL BOTANY 2Q W S 3 (2-3). Anatomy and physiology of plants with particular emphasis upon origin and structure of organs and tissues, growth and related phenomena. Outlines of plant classification with particular reference to drug-producing plants.

225 PLANT PHYSIOLOGY 1Q A W S 3 (3-4) Prereq 122 and Chemistry 101-102, 150 or 163. The various processes of plants under controlled conditions in the laboratory and greenhouse.

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

259 PROBLEMS IN PLANT PHYSIOLOGY 1Q a/q V 2-6 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.

259 PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 335 or 341 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.

259 PROBLEMS IN MORPHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 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.

259 PROBLEMS IN TAXONOMY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 225, or 355 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.

259 PROBLEMS IN MYCOLOGY AND PHYTOPATHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 370 and c/i. Individual or group work consisting of research problems, special readings, discussions, dealing with aspects of mycology and plant pathology not taken up in regular courses.

FOR UNDERGRADUATES AND GRADUATES

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

259 PLANT VIRUSES 1Q e/y S 3 (1-4) Prereq 122 or Microbiology 200, Chem 121; 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.

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

283 PLANT ANATOMY 1Q A 5 (3-5) or. The origin of organs and tissues and the anatomy of the vascular plants.

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

383 MORPHOLOGY OF THE THALLOPHYTES 1Q A e/y S 5 (3-6) Prereq 123, 122, 123, or c/. The morphology and life histories of the algae and fungi.

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

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

383 PRINCIPLES OF PLANT ECOLOGY 1Q S 5 (3-4) Prereq 123, 225, or c/. Plants and plant communities in relation to their physical and biotic environment.

383 FRESH WATER ALGAE 1Q Su 3 (0-7) Given only at the Biological Station. Prereq 121, 122, 123, or c/. Identification, classification, distribution, life histories and ecological relationships of the algae of the Northern Rocky Mountains.

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

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

435 AGROSTOLOGY 1Q W 5 (0-8) Given in summer at Biological Station for 3 credits. Prereq 121, 122, 123, or c. Principles and practices of plant nutrition and plant breeding; genetics of crop plants and plant diseases; pesticide and fertilizer economics; plant and soil relationships.

436 AQUATIC FLOWERING PLANTS 1Q Su 3 (0-7) Given only at the Biological Station. Prereq 265. Identification, classification and ecological relationships of grasses, sedges, and rushes.

4365 MYCOLOGY 1Q A 5 (3-4) Prereq 123. The classification and relationships of the fungi, with training in their collection, preservation, and culture.

438 GENETICS 1Q A 5 (3-4) Prereq Zool 201 or Bot 225. The mechanics of heredity, involving consideration of mendelian inheritance, linkage systems, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function. Credit not allowed for this course and Zool 368.

439 EVOLUTION 1Q A 3 (3-0) o/y Prereq 121, 122, 123, or 365 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 368.

443 CYTOTOXANOMY 1Q S 5 (3-5) Prereq 337, 355, 363, and 385. Modern concepts in taxonomy with emphasis upon cytological techniques used in chromosomal studies related to problems of taxonomy.

456 PHYTOGEOGRAPHY 1Q A 4 (4-0) Prereq 355, 365, 366, 368, and Geol 101-102 or 110. Vegetation types of the world and their history in North America.

490 SEMINAR IN BIOLOGY 1Q Su 1 (0-3). Special problems in biology. Offered at the Biological Station.

491 SEMINAR IN BOTANY a/q 1 (2-0) R-3. Recent literature in plant science; field trips.

FOR GRADUATES

502 HISTORY AND DEVELOPMENT OF BIOLOGICAL CONCEPTS 1Q S 3 (3-0) Prereq 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/i.

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

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

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

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

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

579 ADVANCED MYSMOLOGY AND PATHLOGY a/q V 2-6 (0-3/cr) Prereq c/i.

606 ADVANCED BOTANICAL PROBLEMS a/q V 6 (3-0) Prereq c/i. Special problems on a research problem under the guidance of a staff member.

609 THESIS a/q V R-15

COURSES OFFERED AT THE BIOLOGICAL STATION:

BUSINESS ADMINISTRATION

**The School of Business Administration** at 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 general university and pre-business administration requirements and prerequisite course work for courses to be taken subsequently in the School of Business Administration.
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 or a specialty in an area as: accounting, finance, marketing, production and personnel management, secretarial work and business teacher training. Alumni of the School of Business Administration are to be found in professional, executive or managerial positions in many types of business activity. The fields of specialization indicate the many types of jobs which graduates may secure which are involved in the production and distribution of goods, the administration of the financial affairs of business activity, and the rendering of 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 course work toward meeting general education requirements and prerequisite course work for courses to be taken subsequently in the School of Business Administration.

The general university and pre-business administration requirements include:

- Health and Physical Education 101-102-103, 101A-102A-103A; English 101-102-103; Mathematics 112; and Economics 201-202-203; ROTC (men); English 101-102-103: requirements from Group I including Mathematics 112: requirements from Group II including Economics 201-202-203; requirements from Group III: School of Business Administration 100 or have a typing proficiency of 25 words per minute on a test and satisfactory standing in Bachelors of Science in Business Administration: Business Administration 201-202, and 250.

### ADMISSION AND GRADE POINT REQUIREMENTS

Admission to the School of Business Administration requires satisfactory standing and a minimum of a "C" average on all credits earned. 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 the requirements for the major in Business Administration specified in the curricula. A minimum of 42 credits must be earned in Business Administration.
- Complete the course work required in the selected area of concentration as indicated by the appropriate curricula of the areas of concentration.

The student majoring in accounting will elect the accounting curriculum designed for industrial accounting or the public accounting profession.

Those students desiring to enter the industrial accounting field must meet the following requirements of the School of Business Administration:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 306-307</td>
<td>Intermediate Accounting</td>
<td>8</td>
</tr>
<tr>
<td>Bus. Ad. 401</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 402</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 405</td>
<td>Accounting Systems</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 406</td>
<td>Managerial Accounting</td>
<td>4</td>
</tr>
</tbody>
</table>

Those students preparing for the public accounting profession are required to take the following courses in addition to the basic requirements of the School of Business Administration:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 206-207</td>
<td>Intermediate Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Ad. 401</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 402</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 405</td>
<td>Accounting Systems</td>
<td>4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 205</td>
<td>Governmental Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 405</td>
<td>Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 406</td>
<td>Accounting Systems</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 407</td>
<td>C.P.A. Review</td>
<td>5</td>
</tr>
<tr>
<td>Bus. Ad. 250</td>
<td>Business Law</td>
<td>3</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 Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Ad. 183</td>
<td>Advanced Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 184-185</td>
<td>Stereotyping</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 192</td>
<td>Office Machines Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 193</td>
<td>Beginning Secretarial Practice</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Ad. 194-195</td>
<td>Business Language</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Ad. 203-204</td>
<td>Gregg Shorthand Theory</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Ad. 250</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>

*Business Education students are not required to take Speech 111, Math 112, Bus. Ad. 320, 325, 446, or 466 and may substitute 383 for 340.

### FINANCE

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

Requirements for a concentration in Finance are:

**BUS. AD. 308—Administrative Accounting** 4
**Bus. Ad. 400—Intermediate Accounting** 4
**Bus. Ad. 421—Business Cycles and Business Forecasting** 4

**GENERAL BUSINESS**

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

**Option A. General Business Administration**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus. Ad. 408—Administrative Accounting</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 421—Business Cycles and Business Forecasting</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 441—Personnel Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 444—Regulation of Industry</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

**MANAGEMENT**

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

**Option A. Industrial Organization and Management**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus. Ad. 303-304—Cost Accounting</strong></td>
<td>cr.</td>
</tr>
<tr>
<td><strong>Bus. Ad. 441—Personnel Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 442—Personnel Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 444—Regulation of Industry</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

**Option B. Personnel Management and Human Relations**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus. Ad. 441-442—Personnel Management</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Bus. Ad. 444—Regulation of Industry</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Psych. 343—Industrial Psychology</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Econ. 321-322—Labor Economics</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

**MARKETING**

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

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus. Ad. 203—Advertising Principles</strong></td>
<td>cr.</td>
</tr>
<tr>
<td><strong>Bus. Ad. 401—Marketing Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 402—Marketing Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 421—Business Cycles and Business Forecasting</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 441—Personnel Management</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bus. Ad. 444—Regulation of Industry</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

**SECRETARIAL SCIENCE**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus. Ad. 120—Advanced Typewriting</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 184—Advanced Stenography</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 187—188—Advanced Stenography</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 190—191—Advanced Shorthand Transcription</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 192—Office Machines Practice</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 193—Beginning Secretarial Practice</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 194—Records Management</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Bus. Ad. 302—Advanced Secretarial Practice</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>English 304—Letter and Report Writing</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

*Secretarial Science students are not required to take Speech 111, Math 112, Bus. Ad. 353, 355, 446, or 468 and may substitute 353 for 346.

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; and, during his junior year in the School of Business Administration, must complete Business Administration 320, 322, 394, 360, plus 23 additional credits as electives within the School of Business Administration 320, 322, 394, 360, plus 23 additional credits as electives within the School of Business Administration 320, 322, 394, 360. The student must earn at least 141 credits outside the School of Law.

Upon completion of the foregoing program with at least a 2.0 index of grade points earned. In courses undertaken, the student may be admitted to the School of Law. If so admitted, the student will receive the degree of Bachelor of Science in Business Administration, 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; and, during his junior year in the School of Business Administration, must complete Business Administration 320, 322, 394, 360, plus 23 additional credits as electives within the School of Business Administration 320, 322, 394, 360. The student must earn at least 141 credits outside the School of Business Administration.

陬特殊 Requirements for the Master of Science in Business Administration

In addition to the general requirements for the Master of Science Graduates of the School of Law who wish to pursue additional study in business must include Econ 201-202-203; Bus Ad 201-202, 250, 320, 349, and 360 or equivalent courses. Students may enter the graduate program of the School of Business Administration with no restriction in time, but they must be offered in addition to the required forty-five credits.

A maximum of nine credits may be allowed for the required thesis. A minimum of 20 credits, and a maximum of 30 credits including credits for thesis, are to be completed in one of the following areas of concentration: accounting, business education, finance, management, or marketing. A minimum of 30 credits must be completed in work outside the School of Business Administration.

Accounting

For Undergraduates

For explanation see Index under "Symbols"

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

For Undergraduates and Graduates

Bus. Ad. 303, 306, 307, 401, 408 and 409 are available for graduate credit at 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 and the 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.

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


401-402 INCOME TAX 2Q 401 A W 3, 402 S 3 Prereq 203. The accounting aspects of the federal income tax law. (401) the tax statutes as applied to individuals with problems that emphasize the filing of individual returns; (402) corporate and partnership returns, and the special 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 purpose of auditing; encompassing generally accepted auditing standards and procedures, the audit program, and analysis of internal controls, procedures for verifying the reliability of the balance sheet and operating accounts; preparation of audit working papers, reports, and submission of the auditor's opinion.

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

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

407 C.P.A. REVIEW 1Q S 5 Prereq 304, 404, 410. Primarily for students preparing to take the examinations for the certification of Public Accountant; includes examination of questions of principles and problems in practice, theory, and auditing given by the American Institute of Certifying Public Accountants.

408 ADMINISTRATIVE ACCOUNTING 1Q A W S Su 4 Prereq 202. Open only to non-accounting majors. To give students majoring in finance, marketing, management, or general business an understanding of the significance of accounting data without involving them in the development of that data in mechanical techniques. Interpretation of financial statements, internal control and its significance, budgeting, costing of products manufactured and sold, and accounting reports to administrators.

Credit not allowed for this course and 306-307.

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 the organization of the controller's department. The development of accounting thought since 1600 and the social significance.

503 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 1Q W 3 Prereq 410 and approval of the graduate committee. Modern accounting theory and 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. Theories 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

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

359 C.P.A. LAW REVIEW 1Q S 3 Prereq 357-358. Primarily for accounting majors intending to take the CPA examinations, but open to all students except those taking the combined 3-year program in Business Administration and Law. Review of contracts; negotiable instruments with a view of other law subjects up to the time of the CPA examinations. Course examinations will usually be taken from former examinations given by the American Institute of Certified Public Accountants.

FINANCE

FOR UNDERGRADUATES

320 PERSONAL INVESTMENTS 1Q 2 Su. Savings accounts, purchasing a home, purchasing insurance, securities, investment trusts. The basic facts with which a layman should be acquainted. Not open to Business Administration majors. Available as cognate graduate credit for Education degrees.

FOR UNDERGRADUATES AND GRADUATES

330 FINANCIAL INSTITUTIONS 1Q A W S 4 Prereq Econ 203. The commercial and central banking system; the role of intermediate financial institutions.

321 BUSINESS FINANCE 1Q A W S 4, Su 3 Prereq 320. Forms of business organization; financial aspects of promotion and organization; sources of financing and the administration of income; failure and reorganization.

322 COMMERCIAL BANKING 1Q W 4 Prereq 320. Liquidity, loan and investment policy, credit analysis, loan administration, interbank borrowing, bank operating costs, bank earnings, and relations with customers, government, and the public.

323 REAL ESTATE 1Q A 4, Su 3 Prereq 320. Understanding real estate value; the market; real estate law and the mechanics of buying and selling; property management and landlord-tenant relationships; mortgage risk analysis; planning and zoning for city growth; taxation; the role of government in financing.

324 PRINCIPLES OF INSURANCE 1Q A W S 4, Su 3 Prereq Econ 203. Basic risk analysis: introduction to fire, casualty, health and life coverages; business and personal insurance needs; company organization and management problems; life insurance companies, individual and group insurance laws; claims procedure; government regulation.

331 LIFE AND HEALTH INSURANCE 1Q A W S 3 Prereq 320. Analysis of individual and group contracts; human life values and insurance needs; estate planning and the impact of taxation; business continuation agreements and insurance; pensions and annuities for business and individual retirement programs.

332 PROPERTY AND CASUALTY INSURANCE 1Q S 3 Prereq 320. Confronted with a large number of insurance problems facing specific types of business and personal risks; multiple-line policies; legal interpretation; insurance fraud; practical case problems in liability and direct loss situations.

341 ECONOMIC ASPECTS OF BANKING 1Q 3 Prereq 322. Liquidity, loan and investment policy, credit analysis, loan administration, interbank borrowing, bank operating costs, bank earnings, and relations with customers, government, and the public.

342 INVESTMENTS 1Q S 4 Prereq 320. Investment principles and their application in formulating investment policies for individuals and institutions. Analytical techniques used in determining the value of securities.

421-422 BUSINESS CYCLES AND BUSINESS FORECASTING 2Q (421) A 4 Su 3 (422) W 2 Su 3 Prereq 320. 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 auxiliary agencies, private and governmental, in the urban and rural mortgage banking fields.

424 MONEY MARKETS AND FISCAL POLICY 1Q S 4 Prereq 423. The supply and demand for funds in the short-term and long-term market; influence of the money supply, bank reserves, institutional portfolio policies, treasury cash balances and refunding operations, and the changing needs and instruments of corporation 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 W S (521) W 4 Prereq 422. The influence of central banking operations on conditions in the money market and on the general level of business activity.

531 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 in current literature will be used extensively.

532 SECURITY ANALYSIS 1Q S 3 Prereq 321. Principles and techniques. Preparation for security analysis work within financial organizations (life insurance companies, trust institutions, investment companies, investment banking firms, security dealers and brokers, etc.).

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

699 THESIS a/q V R-9.

MANAGEMENT

FOR UNDERGRADUATES


344 AMERICAN INDUSTRIES 1Q S 4 Su 3 Prereq 340, 350. Economic problems and technological processes of selected manufacturing and communication industries. Location factors, company structures, mergers and competition and national policy relating to oligopoly.

FOR UNDERGRADUATES AND GRADUATES

346 ADMINISTRATION AND BUSINESS POLICIES 1Q A W S 4, Su 3 Prereq 341, 342. The modern corporation; its structure; the controllership function; public policy and management practice.

441-442 PERSONNEL MANAGEMENT 2Q 441 A W 4, Su 3, 442 S Prereq 340 and Psych 110. (441) Personnel function in the industrial organization; selection, employee 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, Su 3 Prereq 340, 341, 342. Economic concentration and maintaining competition. Changing relationships between government and industry emphasizing regulatory legislation, administrative agencies, national policies and social control.

446 ADMINISTRATION AND BUSINESS POLICIES 1Q A W S 4 Prereq 340, 345, 346. Top-management oriented to develop an understanding of the problems of the various levels of the organization. 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 techniques and management practices.

542 SEMINAR IN MANAGEMENT POLICIES AND PERSONNEL RELATIONS 1Q W 3. Managerial policy problems; the human relations and personnel approach.

549 GENERAL ADMINISTRATIVE MANAGEMENT PROBLEMS 1Q A W S 3. The human relations techniques of personnel management; 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

368. SALESMANSHIP IQ 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 PRINCIPLES IQ A W S Su 4 Prereq Econ 203. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, government regulation.

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

362. RETAILING PRINCIPLES IQ A W 5 Prereq 360. Types of retail stores, location, buying, pricing, display, store selling, advertising, and cost control.

363. ADVERTISING PRINCIPLES IQ A S 4, Su 3 Prereq 360. The principles and techniques of advertising examined from the viewpoint of the businessman.

364. MARKETING MANAGEMENT IQ W 4 Prereq 360 and 366. Management of the sales force; planning, coordination, and control of the marketing program.

365. FOREIGN TRADE IQ S 4 Prereq 360. (Prereq waived for seniors majoring in Political Science.) Theories, principles and methods of international trade.

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

464. ADVANCED RETAILING IQ S 4 Prereq 362. Management problems of large and small retailers. Emphasis on individual student projects and research.

465. CREDIT AND CREDIT ADMINISTRATION IQ W 3 Prereq 230 or Econ 301. The general nature and functions of credit, credit instruments, the credit executive, operation of the credit department, sources of credit information, acceptance of credit risk, establishment of credit limits and collections.

466. MARKET SURVEY RESEARCH IQ A S 3 Prereq 250, 360. The design and conduct of sample surveys of consumer behavior, intentions, habits, attitudes, and motivation.


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

FOR GRADUATES

590. MARKETING THEORY IQ A 3. A critical analysis and synthesis of marketing literature and marketing from the viewpoint of other disciplines.

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

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

699. THESIS IQ a/q V R-9.

SECRETARIAL AND BUSINESS EDUCATION

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

FOR UNDERGRADUATES

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

183. ADVANCED TYPEWRITING IQ A W S 2 Prereq 182 or placement. Application of basic skills to production jobs.

184-185-186. STENOGRAPHY IQ 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 IQ A W S 5 Prereq 187 or placement; 188 and 190 or placement; 189 and 191 or placement. Review, special typist practices, Civil Service and State Merit tests. Concurrent enrollment in 190-191.

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

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

193. BEGINNING SECRETARIAL PRACTICE IQ A W S 2 Prereq 182. Drafting, dictating, and typing skills.


FOR UNDERGRADUATES AND GRADUATES

380. METHODS OF TEACHING SHORTHAND, TYPEWRITING, AND TRANSCRIPTION IQ A W 2 Prereq 183, 186 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

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

382. ADVANCED SECRETARIAL PRACTICE IQ S. Alternate years. Prereq 183. 187, 189, 190, 192, 193, 194, 195, 196, or c/l. Practical application to typical secretarial activities. Required for secretarial majors.


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

FOR GRADUATES

590. IMPROVEMENT OF INSTRUCTION IN OFFICE MACHINES PRACTICE IQ A W S 2 Prereq 183 or business teaching experience, and c/l. Lecture, methods, and rotation-plan techniques in teaching newest office machines.

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

582. PROBLEMS IN TEACHING BOOKKEEPING IQ S 2 Prereq 201 or bookkeeping teaching experience and c/l. Developing a course of study using the latest methods and materials.

583. PROBLEMS IN TEACHING GREGG SHORTHAND IQ S 3 Prereq 186 or shorthand teaching experience and c/l. Developing a course of study using the latest methods and materials.

584. PROBLEMS IN TEACHING TYPEWRITING IQ S 3 Prereq 186 or typewriting teaching experience and c/l. Developing a course of study using the latest methods and materials.

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

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

699. THESIS IQ a/q V R-9.

STATISTICS

FOR UNDERGRADUATES

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

FOR UNDERGRADUATES AND GRADUATES

353. SAMPLING AND STATISTICAL CONTROL IQ W 3 Prereq 250 or Math 123. Applications of sampling to business, statistical control of product quality, industrial processes, and inventories.

355. TIME SERIES ANALYSIS IQ 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.

459. BUSINESS STATISTICS SEMINAR a/q V R-4. Prereq 6 credits of statistics in 300 courses and c/l. Projects or topics selected in consultation with instructor.

BUSINESS ADMINISTRATION—31
## CHEMISTRY

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

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

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

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

### HIGH SCHOOL PREPARATION.

In addition to the general requirements for admission to the University, the student needs algebra, geometry, and trigonometry. It is also recommended that the high school preparation include advanced Algebra, Chemistry and French or German.

### 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, 261-262-263, 344, 351, 371-372-373, 375-376-377, 431-432-433, and 5 credits selected from Chemistry 345, 346, 347, 348, 353, 355, 366, 463, 464, 465, 474, 475, 476, 481, 482, 490. Eight credits in upper division courses in allied fields may be substituted for the optional credits in Chemistry with the approval of the department. At the time of graduation a major in Chemistry must have acquired a reading knowledge of German or French or German.

### CHEMISTRY CURRICULUM

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr.</td>
<td>Cr.</td>
<td>Cr.</td>
<td></td>
</tr>
<tr>
<td>Chem. 121-122-123</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math 116-117-118</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Eng. 101-102-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mill. Science or Air Science 101-102-103</td>
<td>2-0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Psych.</td>
<td>2-3</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>14-19</th>
<th>14-17</th>
<th>14-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chef. 261-262-263</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 231-233</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German 101-102-103</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 245</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mill. Science or Air Science 201-202-203</td>
<td>2</td>
<td>1 (3)</td>
<td>2 (0)</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>15-18</th>
<th>15-18</th>
<th>15-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 291-292-293</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German 213 or 215</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 392</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chem. 344</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>2-5</td>
<td>2-5</td>
<td>10-12</td>
</tr>
<tr>
<td>Electives</td>
<td>14-17</td>
<td>14-17</td>
<td>15-17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>14-17</th>
<th>15-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 371-372-373</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 374</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective or Chem. 481-483</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elective or Chem. 481-483</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Adv. Chem. courses</td>
<td>5-8</td>
<td>0-6</td>
</tr>
<tr>
<td>Electives</td>
<td>14-17</td>
<td>15-18</td>
</tr>
</tbody>
</table>

---

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

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

160 SURVEY OF ORGANIC CHEMISTRY 1Q S Su 5 (5-4). Normally to follow Chemistry 101-102 as the 3rd quarter of chemistry for students in non-science majors desiring a one year general course only. Chemistry 160 is also open for credit to students who have completed Chemistry 122 or 123 or an equivalent two quarters of a full one year course in general or college chemistry.

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 and organic 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.

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

261-262-263 ORGANIC CHEMISTRY 3Q A W S 5 (4-4) Prereq 102 or 122.

FOR UNDERGRADUATES AND GRADUATES

344 ADVANCED QUANTITATIVE ANALYSIS 1Q A 3 (2-6) Prereq 265. The methods of quantitative analysis of mixtures and complex materials.

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

346 INSTRUMENTAL ANALYSIS a/q V 2-5 R-5 (2-3 or 10) Prereq 245. Modern instrumental methods of analysis.

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

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

353 INORGANIC CHEMISTRY 1Q W 3 (3-0) Prereq 245 and 263. The principles of systematic inorganic chemistry.

353 INORGANIC CHEMISTRY 1Q S 3 (3-0) Prereq 255. Chemistry of the representative elements.

355 INORGANIC CHEMISTRY LABORATORY 1Q W 2 (0-6) Prereq 123, 263, and c/l. The techniques in preparation of inorganic compounds.

366 ORGANIC QUALITATIVE ANALYSIS 1Q S Su V 3-5 (2-4 to 8) Prereq 265. Systematic methods of identification of pure organic compounds and mixtures; general class reactions of organic chemistry.

370 SURVEY OF PHYSICAL CHEMISTRY 1Q S 5 (5-4) Prereq 103 or 123, 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 (3-4) Prereq Math 222. The more important methods, results and problems of theoretical chemistry.

375-376-377 PHYSICAL CHEMISTRY LABORATORY 3Q A W S 3 (1-0-4) Prereq 245, and 371-372-373 or concurrent enrollment.

384 PHYSIOLOGICAL CHEMISTRY 1Q S 3 (3-0) or 5 (5-4) Prereq 160 or 262. Chemistry and metabolism of proteins, lipids and carbohydrates; respiration; collodis.

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

455-464 THEORETICAL ORGANIC CHEMISTRY 2Q a/q 3 (4-0) Prereq 263.

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

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

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

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

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

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

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

630 SEMINAR a/q 1 R-6.

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

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

661-662-663 ADVANCED ORGANIC CHEMISTRY 3Q A W S 3 (3-0) Prereq 263.

664, 665, 666 PHYSICAL ORGANIC CHEMISTRY 1Q a/q 3 (4-0) Prereq 373 and 464. Kinetics of organic reactions.

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

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

677 PHYSICAL CHEMISTRY SEMINAR 1Q a/q 2 (2-0) R-6 Prereq 376.

690 RESEARCH a/q V.

699 THESIS a/q V R-15.

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

Montana State University graduates in theater and drama are presently teaching in high school theater; teaching in college and university theater, enrolled in graduate school, and working in community theater, radio, the motion picture, television, and the professional theater.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN DRAMA. In addition to the general requirements listed earlier, the following special requirements must be completed for the Bachelor of Arts degree, in major in Drama: Drama 112, 121, 151, 223, 307-308-309, 251, 253 (4 cr. each), 401-402-403 (4 cr. each), plus a minimum of 9 additional credits in the drama department, 3 of which may be English.

The following courses outside the drama department are required:
Speech 118, 261, English 341, 343, 344 or 346.
Speech 241, radio-television speech, may be counted as part of drama requirement.

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

Senior comprehensive examinations are required for all graduating students.

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

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN DRAMA. In addition to the general requirements of the Graduate School, candidates must have taken drama 322, 343, 251, and 341, for admission to a graduate program.

The following courses, if not previously taken at the undergraduate level must be included: English 307-308-309, 344, and 345.

The 45 credits of required graduate work must include a minimum of 6 credits in technical theater courses, 15 credits in 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 dissertation. Such a project will include design and execution of all aspects of the production to be performed in the University Theater. Completed designs and plans for the project must be presented in the form of a thesis.

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

FOR UNDERGRADUATES

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 of the theater are emphasized.

121 ELEMENTARY ACTING 1Q W S 2 (2-2). Principles of pantomime and characterization with attention to expressive bodily action. Techniques of voice in action 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.

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

261-262-263 DRAMATIC LITERATURE 3Q A W S 2. Enter any quarter of various periods and plays from quarter to quarter, including Greek and Roman, British Renaissance, French Classic, The Restoration, 19th Century, Modern European, Modern American.

FOR UNDERGRADUATES AND GRADUATES


306 THE WRITING OF DRAMA 1Q A W S 2 R-6. Prereq Engl 106, or 107, or 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 of the community theater 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, production, organization.

332 ADVANCED STAGECRAFT 1Q S 3 Prereq 121. Principles and practice in scene painting, properties, and elements of lighting and costume. Students will work on major productions.

341 STAGE COSTUMING 1Q S 2 Prereq 121. 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 121. Principles and practice in stage lighting. Theatrical lighting equipment and instruction for television. 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, and movement in character creation.

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

354 CREATIVE DRAMATICS FOR CHILDREN 1Q W Su V 2-4. Preparatory work for children in the dramatic form: improvisational and other playmaking techniques; the dramatic method in teaching non-theater subjects, demonstrations and exercise with laboratory groups of children from the community.

374 THEATER FOR CHILDREN 1Q Su only 2 or 4. Prereq teaching experience in the arts of the theater 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.

381 ART HISTORY OF THE THEATER 1Q A 2 Visual arts of the theater as an important aspect of the aesthetic theories developed in selected periods of history.

394 WORKSHOP IN THEATER 1Q Su V 2-10 Prereq Previous work in theater or drama courses and consent of chairman. Study and experience in the arts of the theater, objectives and techniques of all the arts of the theater. Study of the needs, preparation, and desires of the students: costume, make-up, lighting, stagecraft, backstage organization, stage design, acting, directing, rehearsal and performance, business, and house organization and management.

401-402-403 THEATER PROJECTS 3Q a/q V 2-4 Prereq 10 credits in drama courses or in English 307-308-309, 341-342-343, and demonstrated ability in theater and drama; to others with c/l on basis of much work in drama and the theater. Independent work in directing, costume design, direction, playwriting, study of drama.

422 ADVANCED DIRECTION 1Q S 3 Prereq 121, 131 and 223. Techniques of rehearsing and directing long plays. Principles of producing farce, fantasy, comedy, melodrama, tragedy.

431 STAGE DESIGN 1Q W 3 Prereq 112, 131. The principles
ECONOMICS is that branch of the social sciences which deals with man's efforts to satisfy his wants by utilizing the scarce means provided by nature. The department considers its teaching goals to be three-fold:

1. To present to students the basic theoretical tools of economic analysis, relevant facts and institutional material, which will assist them as civic leaders.
2. To introduce students majoring in economics to the various special fields of study within economics. This training along with extensive work in the other liberal arts and sciences, is intended to instill broad 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, 50 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. Unless circumstances peculiar to the student's best interest indicate otherwise, the student should take the sophomore or junior year, Economics 201-202-203; Mathematics 125; Political Science 202-203; and two quarters of History 201-202-203; Anthropology 128 or Sociology 101 in the junior or senior year.

The following may be counted as part of the 50 credits required for a major in Economics: History 333 and 374, Political Science 302-303, Mathematics 302-303, Business Administration 306, 401. 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, 201, 311, and at least 12 additional credits in upper division courses; Political Science 101, 203-203 and 15 additional credits in upper division courses; Economics 301, 101, 204-205-206, 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 listed earlier in the catalog, a minimum of 50 credits in economics must be earned in three years. First year of law will complete requirements for the Bachelor of Arts degree with a major in economics. Students should take as many as possible of the following courses: History 345, 346, 360; Political Science 375; Business Administration 201-202; Speech 112. Latin is recommended for meeting the foreign language requirements.

FOR GRADUATES

Students desiring to take graduate work in economics must be admitted to the Graduate School, have the equivalent of undergraduate work in economics (30 credits) to carry graduate level courses. To obtain a Master's degree the student must earn credits in each of the following: Economics 495, 410, 450, and 699.

501 GRADUATE RESEARCH a/q V 2-5 R-15.

ECONOMICS & LAW COMBINATION. In addition to the general requirements for graduation listed earlier in the catalog, a minimum of 50 credits in Economics must be completed for the Bachelor of Arts degree with a major in economics. Students may study in Economics 321-322; Labor Economics, 321-322; Development of Economic Theory, 311-312; Intermediate Economic Analysis, 321-322; Principles of Economics 345; Advanced Problems 401; 501; 502-503; Principles of Economics 495; 496, 699; Thesis 699; and 12 credits in Economics. A comprehensive examination is required of seniors with a major in the Economics-Political Science concentration.
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 number of graduates who must be educated. This creates a growing need for teachers at all levels—elementary, secondary, and college—and requires that over half of the college graduates each year train for the profession of teaching.

Developing teaching competence involves securing a liberal education with special study in the fields in which the student is to teach, and study and practice in the area of teaching. In addition, the teacher must develop appreciation of people as individuals and as members of society because systematic instruction 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 the become recommendation eligible for recommendation by Montana State University for state certification to teach. Patterns of courses to be completed are planned in terms of the particular fields in which the student expects to teach.

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

After they have been granted a bachelor's degree and have been certified to teach, persons in Education may take advantage of the work at the graduate level which will prepare them for specialized positions such as school administrator, supervisor, counselor, curriculum coordinator, and research director; or may be used to build up their background in the fields which they teach. Montana State University offers graduate work leading to the master's and doctor's degrees.

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

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

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

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

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

Undergraduates considering careers in guidance and counseling or planning a teaching career in the high school level, should, in addition to meeting the requirements for a teaching certificate, plan to take 342. The purpose of 342 is to develop teaching courses. At least 30 hours of such work are strongly recommended, including Psychology 210-211-212 and 220.

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

Other departments and schools which offer courses acceptable for Education credit include Art, Business Administration, English, Foreign Languages, Health 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 are applying for admission to the University. Those preparing for elementary or secondary teaching must maintain a "C" or 2.0 average in all courses undertaken in (1) Education, and (2) all other courses.

Introduction to Psychology, although not counting toward the Education requirements, is prerequisite to all courses in Education and should be taken in the freshman or sophomore year. Students preparing to teach in the elementary grades should take Introduction to Psychology in the freshman year 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 university year. This should be between the sophomore and junior years and should have been preceded by completion of Education 205, Educational Psychology, by those preparing for secondary school teaching, or Education 202, The Elementary School Child, by elementary education majors. Usually, the two weeks will be spent 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 STUDENT TEACHING (Secondary School). During the spring quarter of the student's junior year, formal application for student teaching, which is usually made in the senior year, must be on forms obtained from the Director of Student Teaching. To be eligible for this assignment the student must (1) have satisfactorily completed the sophomore year, (2) have had two years of teaching experience, (3) have completed two-thirds of the major work in the teaching subject (and minor if any), with a minimum grade-point average of "C" or 2.0 or better in all courses undertaken in the teaching major (and minor if any). The student should plan to devote a full quarter to student teaching during which quarter he registers for Education 405.

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

PREPARATION FOR TEACHING IN THE SECONDARY GRADES. Candidates must earn a minimum of 40 credits in Education, including the following required courses totaling 30 credits: Education 200, 209, 306, 342, 405 (10 credits), 407, 450 and 453 or their equivalents, and elective courses totaling 10 credits from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 40 or more credits in a teaching major and 30 or more credits in teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in secondary education:

**Freshman Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. 131-128-129—Introduction to Biology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Gen. 151-152-153—Introduction to the Humanities</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engr. 101-102-103—Freshman Physical Education</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-18</td>
<td>16</td>
<td>16-18</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. 101-102-103—Freshman Composition</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Gen. 131-128-129—Introduction to Biology</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Gen. 151-152-153—Introduction to the Humanities</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engr. 101-102-103—Freshman Physical Education</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-19</td>
<td>15-19</td>
<td>15-18</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ. 200—Orientation to Education</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-7</td>
<td>15-17</td>
<td>15-17</td>
</tr>
</tbody>
</table>
PUBLIC INSTRUCTION. All such recommendations must be approved by the Dean of the School of Education showing that the holder has completed a four-year course of elementary school education.

PREPARATION FOR TEACHING IN THE ELEMENTARY GRADES. Candidates must earn a minimum of 40 credits in Education including the following required courses totaling 27 credits: Education 200, 201, 202, 303, 318, 346, 404 (minimum of 10 credits), 467; and elective courses totaling 3 or more credits selected from other courses in Education.

In addition, the student will complete work in the following areas: English, 15 credits; History and Political Science, 20 credits; Geography, 5 credits; Science, 13 credits; Mathematics, 5 credits; Health and Physical Education, 9 credits; Psychology, 10 credits; Art, 6 credits; and General 125, 126, and Mathematics 130.

For elementary teachers, Group I requirements may be satisfied by General 125, 126, and Mathematics 130.

It is recommended that elementary teachers take the following Health and Physical Education courses as part of their required work in P-Teaching 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 311, Early Childhood Education, before registering for student teaching.

Suggested curriculum in elementary education:

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu 406—Student Teaching; Secondary</td>
<td>10</td>
</tr>
<tr>
<td>(or 2 quarters, 5 credits each, may be arranged with director)</td>
<td>10</td>
</tr>
<tr>
<td>Edu 407—Curriculum Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Edu 450—Guidance in the Elem and Sec School</td>
<td>4</td>
</tr>
<tr>
<td>Edu 482—Educational Measurement</td>
<td>4</td>
</tr>
<tr>
<td>Elective Courses in Education</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Major or Minor Sequence, or Electives</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>16-18</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu 409—Orientation to Education</td>
<td>2</td>
</tr>
<tr>
<td>Edu 202—The Elementary School Child</td>
<td>5</td>
</tr>
<tr>
<td>Eng 231-232-233—Intro to Major American Writers</td>
<td>3</td>
</tr>
<tr>
<td>Geog 101—Elements of Geography</td>
<td>3</td>
</tr>
<tr>
<td>Music 123—Music. Educ. in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>Speech 111—Principles of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Psy 230—Child and Adolescent Psychology</td>
<td>3</td>
</tr>
<tr>
<td>HPE 101-102-103—Freshman Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16-18</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 303-304—Elementary School Art</td>
<td>3</td>
</tr>
<tr>
<td>Edu 201-202—The Child and the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>Edu 316—Supervision and Teaching of Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>Genl 306—Conservation of Natural and Human Re- sources</td>
<td>3</td>
</tr>
<tr>
<td>Edu 346—Children’s Literature</td>
<td>4</td>
</tr>
<tr>
<td>Hist 261-253-253—United States History</td>
<td>4</td>
</tr>
<tr>
<td>HPE 300—Sports and Educ. in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>P.Sci. 161—Intro to Gov’t. or P.Sci. 202—Am. Gov’t.</td>
<td>4</td>
</tr>
<tr>
<td>Elective course in Education</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edu 404—Student Teaching; Elementary (a/q)</td>
<td>10-15</td>
</tr>
<tr>
<td>Edu 407—Curriculum Foundations (a/q)</td>
<td>3</td>
</tr>
<tr>
<td>HPE 373—School Health Problems</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>13-18</td>
</tr>
</tbody>
</table>

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

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

1. A bachelor’s degree from Montana State University or other approved institution of higher education.
2. Twenty-four or more quarter credits in Education designated by the Dean of the School of Education (see Preparation for Secondary Teaching below).
3. A teaching major (45 or more credits) and a teaching minor with course work in high school subjects;
4. 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 cognate work, including credit in Methods of Educational Research (Education 505 or equivalent), and not less than 15 credits of course work offered must have been completed following the two years teaching experience. A candidate for this degree must complete a minimum of 15 credits of graduate work based upon a minimum of three courses. The total number of credits in Education courses taken as undergraduate and graduate credit shall not be less than 45.
   B. Master of Education Without Professional Paper. Candidates who choose not to do the professional paper will be required to offer a total of 44 graduate credits, including Methods of Educational Research (Education 505 or equivalent) and not less than 15 credits of course work. They will take examinations covering the field of education—such examinations to be arranged by the Dean of the School of Education.

**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 12 credits of course work offered must have been completed following the two years teaching experience. A candidate for the Master of Education degree must complete a minimum of 15 credits of graduate work in Education. The total number of credits in Education courses taken as undergraduate and graduate credit shall not be less than 45.

**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 12 credits of course work offered must have been completed following the two years teaching experience. A candidate for the Master of Education degree must complete a minimum of 15 credits of graduate work in Education. The total number of credits in Education courses taken as undergraduate and graduate credit shall not be less than 45.
MASTER OF ARTS IN GUIDANCE AND COUNSELING, and MASTER OF ARTS IN TEACHING. See statement under Graduate School.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

200 ORIENTATION TO EDUCATION 1Q A W S Su 3 Prereq Psy 110. Teaching as a profession. The American public school and its purposes.

205 EDUCATIONAL PSYCHOLOGY 1Q A W S Su 4 Prereq 200 and Psy 110. The growth and developmental characteristics of adolescents. Psychological foundations of learning in the junior and senior high schools.

202 THE ELEMENTARY SCHOOL CHILD 1Q A W S 5, Su 3 Prereq 206 and Psy 110. Principles of growth and development and the psychology of learning as applied to the elementary school. A minimum of 2 hours per week will be spent in observation of children in the school environment.

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

301-305-308 THE CHILD AND THE CURRICULUM. 3Q 301 A 5, 302 and 303 W S 3, Su 301-302-303, Prereq 202. (301) The language background of reading, reading readiness, psychology of the reading process, reading skills, and related diagnostic and remedial procedures. Materials and teaching procedures in oral and written communications, spelling and handwriting. (302) The place and function of arithmetic in the total educational program, including the use of basic concepts and appreciations in human relationships and community living; evaluating, organizing, and using related materials.

303 SECONDARY SCHOOL TEACHING PROCEDURES 1Q A W S Prereq 200 and 305. Methods of planning, presentation, classroom teaching, supervision, observation, and related activity involving student participation.

341 ADMINISTRATION OF THE SMALL PUBLIC AND COLLEGE LIBRARY 1Q A 4 Prereq c/i. Objectives of library service, the library’s place in governmental organization, library extension work.

404 STUDENT TEACHING: ELEMENTARY a/q V R-18 Prereq Edu 208, 209, 301, 306, 318, 340, Sophomore Observation Experience, and consent of Director of Student Teaching. Classroom teaching. Student teaching is a full day’s work for a complete quarter and, in addition, some placement and participation is included. The main emphasis is upon responsible student teaching. It includes as regular duties and responsibilities of a teacher as can be included.

405 STUDENT TEACHING: SECONDARY a/q V R-10 Prereq Edu 200, 205, 305, Sophomore Observation Experience, and consent of Director of Student Teaching. Classroom teaching. Student teaching is a full day’s work for a period of six weeks, and is normally preceded in the professional quarter by Edu 205. Secondary School Teaching Procedures. 5 hours for second observation and participation are included. The main emphasis is upon responsible student teaching. It includes as regular duties and responsibilities of a teacher as can be included.

407 CURRICULUM FOUNDATIONS 1 Q A W S 3 Prereq 404 or 405 or concurrent registration. Implications of basic social, philosophical, and psychological concepts and relationships in the organization in the secondary and elementary school; historical background of curriculum planning.

445 LIBRARY PRACTICE 1Q A W S Su 5 Prereq 200 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under a trained professional librarian. Weekly meeting with Director of Library Service.

FOR UNDERGRADUATES AND GRADUATES

311 SUPERVISION AND TEACHING OF THE LANGUAGE ARTS 1Q W Su 3 Prereq teaching experience and c/l. Analysis of current methods in the teaching of language arts in the elementary school. Not a laboratory.

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

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

317 SUPERVISION AND TEACHING OF ARITHMETIC 1Q Su 3 Prereq teaching experience. Arithmetic trends, instructional practices, research, and supervisory techniques relevant to a modern elementary school arithmetic program.

318 SUPERVISION AND TEACHING OF SCIENCE IN THE ELEMENTARY SCHOOL 1Q Su 3 Prereq Gen 125, 126 and Edu 202. Curriculum planning, development and use of instructional materials, teaching procedures.

320 TEACHING OF CONSERVATION 1Q Su 3 Prereq Gen 300 and 12 credits in Supervision of a trained conservation program and materials. Integral part of summer Conservation Education Workshop.

327 PROBLEMS IN CONSERVATION EDUCATION 1Q Su 3 Prereq 320. May be taken for 3 credits if preceded by Edu 326 or for 6 credits if preceded by Edu 326 and Gen 300. Designing, selection, and evaluation of materials for the teaching of conservation.

331 EARLY CHILDHOOD EDUCATION 1Q S Su 3 Prereq 12 credits in Elementary Education or teaching experience and c/l. Theory and techniques of teaching in the kindergarten and primary grades. Consideration of: a) individual and group activities; b) special problems of children; c) supervision and administration.

334 REMEDIAL READING 1Q S Su 3 Prereq a basic course in teaching of reading or teaching experience, and c/l. Diagnosis and treatment of reading difficulties at elementary, junior high, and college levels. Methods and materials for specialists, classroom teachers, and administrators who wish to initiate remedial programs.

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

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

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

345 CATALOGING AND CLASSIFICATION 1Q W 4, Su 3 Prereq 341 or 343. Principles of classification and cataloging for small libraries.

346 LIBRARY REFERENCE MATERIALS 1Q S 4, Su 3 Prereq 341. Principles of classification and cataloging for small libraries; reference methods, citation, and bibliographic form.

347 AUDIO-VISUAL AIDS 1Q A W Su 2. Classroom utilization of motion pictures, filmstrips, slide shows, and other visual aids with an emphasis on the development of an individualized program.

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

370 THE TEACHER AND SCHOOL ORGANIZATION 1Q S Su 3 Prereq 12 credits in Education and c/l. Educational organization, management, and financing of American public education with special emphasis on personnel problems, community relations, and organizational structure of schools.

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

376 SAFETY EDUCATION AND DRIVER TRAINING 1Q S Su 3 Prereq c/i. Supervised experience in teaching driving and theoretical aspects of driver education and driver training. To prepare teachers for the teaching of safety education and driver education in high schools and community colleges in cooperation with the American Automobile Association and the Montana Highway Patrol.

376 ADVANCED SAFETY EDUCATION AND DRIVER TRAINING 1Q Su 2 Prereq a basic course in driver training or experience in safety education. A companion with those who have had experience in this field. General safety education. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.

378 METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS. 1Q W Su 3 Prereq 12 credits in Secondary Education. Problems involved in the teaching of social studies in junior and senior high schools; curriculum planning, development and presentation of units of instruction, selection and use of materials.

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

380 THE BRIGHT AND GIFTED PUPILS 1Q W Su 3 Prereq 12 credits in Education. Extraneous factors, traits, identification, curriculum, teaching methods, and research.

381 REMEDIAL READING LABORATORY 1Q Su 5 or 10 weeks in library school. Prereq c/l. Supervised practice in diagnosis and remedial instruction, 1 hour per day work with selected elementary, secondary, or college student.

382 THE JUNIOR HIGH SCHOOL 1Q S 4, Su 3 Prereq 12 credits in Education. Objectives, organization, class scheduling, curriculum, extracurricular activities.

384 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 1Q S Su 2 Prereq 12 credits in Library Science. Methods of evaluating and improving school library services to teachers and students. May be taken for 3 credits if taken concurrently with Music 363.

386 LIBRARY WORK WITH CHILDREN 1Q S 4, Su 3 Prereq 331 or 343 and a course in children’s literature. Work with children in schools and public libraries, including story telling and organization of the children’s department in the public library.

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

444 LIBRARY SEMINAR 1Q a/a V 1-5 R-10 Prereq 20 or more hours in Library Service and consent of the Director of Library Service. Independent study and research. Group analysis and discussion of individual topics.

450 GUIDANCE IN THE ELEMENTARY AND SECONDARY SCHOOL 4Q A W S Su 3-5 Prereq 301-302-303 or 300, 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 data; analysis 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, classification, filing system, evaluation, selection, and use of occupational information.

455 TECHNIQUES OF COUNSELING 1Q W 4 Su 3 Prereq 450, 452 and c/i. Evaluation of guidance instruments and techniques, analysis of data; counseling and interview procedures; sources of referral.

461-462 HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W Su S. Historical and philosophical backgrounds of the secondary school. Historical trends in the separate subjects, and organizing for curriculum development.

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

500 ADVANCED EDUCATIONAL PSYCHOLOGY 1Q W Su 3. General principles of motivation, reinforcement, teaching for permanence and transfer. Current research in field.

502 PRACTICE IN GUIDANCE 1Q S Su V 2-4 Prereq 450 or = and c/i. Supervised practice in testing and counseling, and observation in neighboring schools. Seminar discussions weekly.

505 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.

510 COMPARATIVE EDUCATION 1Q S Su 2. A comparison of the education systems of the United States, Japan, the Soviet, the United States, Italy, and the United States.

514 PHILOSOPHY OF EDUCATION 1Q A Su 3 Leading philosophical points of view in Education; concepts of the individual, society, and education is necessary for the role of education.

523 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W Su 3 Prereq 360 or 561 or = and c/i. The background of education in its broadest sense as found in the religion, the economic system, the family, the state, 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. Roll of the principal and areas of competency.

575 SCHOOL SUPERVISION 1Q S Su 3. Prereq teaching experience. Roles and responsibilities of assigned leaders for improving instruction and promoting in-service growth of personnel.

576 EDUCATIONAL TESTING 1Q W 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 1Q Su V 2-4 Prereq 570 or = and c/i. Procedures in determining building needs, site selection, planning the building, financing, and supervision of construction.

579 PERSONNEL ADMINISTRATION 1Q Su 3 Prereq 570 and c/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 20 credits of graduate work. The type of teaching applicable to the college level.

590 INDEPENDENT STUDY a/q V 1-10 Prereq consent of adviser and instructor. Selected topics under the guidance of a staff member.

594 SEMINAR a/q V 1-10 Prereq c/i. Group analysis of problems in specific areas of education.

595 METHODS OF EDUCATIONAL RESEARCH 1Q A S Su 4. Basic principles: 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 552. Prerequisite registration therein and c/i.

599 RESEARCH a/q V 1-15 Prereq c/i.

699 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 307 Methods of Teaching Secondary Art

B Ad 380 Methods of Teaching Shorthand, Typewriting, and Transcription

B Ad 381 Methods of Teaching Bookkeeping and Basic Business

B Ad 384 Gregg Shorthand Theory for Teachers

B Ad 482 Problems in Teaching Bookkeeping

B Ad 483 Problems in Teaching Gregg Shorthand

B Ad 684 Problems in Teaching Typewriting

B Ad 685 Unit Courses in Business Education

Engl 461 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

H Ec 421 Advanced Problems in Teaching Home Economics

Jour 316 School Publications

Math 300 Algebra for Teachers

Math 304 Geometry for Teachers

Mus 323-324-325 School Music

Rel 350 Principles of Religious Education (for Education majors only)

COURSE REQUIREMENT

IN TEACHING MAJOR AND MINOR FIELDS

Students who wish to qualify for the Secondary State Teaching Certificate must, according to the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete a minimum of 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Art 123—Drawing

Art 127 or 128—Crafts

Art 135—Sculpture

Art 140—Painting

Art 231—History or Art

Art 151—Life Drawing

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

H Ec 421 Advanced Problems in Teaching Home Economics

Jour 316 School Publications

Math 300 Algebra for Teachers

Math 304 Geometry for Teachers

Mus 323-324-325 School Music

Rel 350 Principles of Religious Education (for Education majors only)

 COURSE REQUIREMENT

IN TEACHING MAJOR AND MINOR FIELDS

Students who wish to qualify for the Secondary State Teaching Certificate must, according to the regulations of the State Department of Public Instruction which were in effect when this catalog was printed, complete a minimum of 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

Major teaching requirements are not necessarily the same as major departmental requirements for graduation. The student might qualify for the state certificate in a subject field by earning 45 credits in a major teaching field and a minimum of 30 credits in a minor teaching field. In case the patterns of teaching majors and minors are changed by the State Department of Public Instruction subsequent to the issuance of this catalog, the University reserves the right to modify accordingly the requirements listed below.

ART

Teaching Major

Teaching Minor

(45 credits)

(30 credits)

Required Courses:

Art 123—Drawing

Art 127 or 128—Crafts

Art 135—Sculpture

Art 151—Life Drawing

Art 307—Methods of Teaching Secondary Art

Electives:

Art 127 or 128—Crafts

Art 129—Ceramics

Art 133—Printing Arts

Art 138—Watercolor

Art 151—Life Drawing
### Business Administration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Ad 183</td>
<td>Advanced Typewriting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 184-185-186</td>
<td>Stenography</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>B Ad 192</td>
<td>Office Machines Practice</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 193</td>
<td>Secretarial Practice</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 194</td>
<td>Records Management</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 201-202-204</td>
<td>Elementary Accounting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B Ad 301</td>
<td>Methods of Teaching shorthand, typewriting, and transcription</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 301</td>
<td>Methods of Teaching Bookkeeping and basic business</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B Ad 384</td>
<td>Gregg Shorthand Theory for Teachers</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Electives:
- 7 credits from the following:
  - B A 330—Financial Institutions
  - B Ad 326—Principles of Insurance
  - B Ad 337-338—Business Law
  - B Ad 363—Marketing Principles
  - B Ad 383—Office Machines Practice
  - Econ 201-202-203—Principles of Economics

### Economics and Sociology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 153</td>
<td>Social Anthropology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>or 155—Elementary Anthropology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ 201-202-203</td>
<td>Principles of Economics</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Econ 301-302-304</td>
<td>Intermediate Econ</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Spch 111</td>
<td>Principles of Speech</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Spch 118</td>
<td>Voice and Diction</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Spch 201</td>
<td>Beginning Oral Interpretation</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Drama (Minor Only)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dram 121</td>
<td>Elementary Acting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dram 131</td>
<td>Elementary Stagecraft</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dram 211</td>
<td>Elementary Direction</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective Drama</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Spch 111</td>
<td>Principles of Speech</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Spch 118</td>
<td>Voice and Diction</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Spch 201</td>
<td>Beginning Oral Interpretation</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Elective in Speech

### English

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 201</td>
<td>Advanced Composition</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Engl 211-213</td>
<td>Intro to Major British Writing</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engl 222-233</td>
<td>Intro to Major American Writing</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Spch 111 or 261—Principles or Oral Interpretation</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Spch 342 or 343—Shakespeare and Contemporaries</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Engl 371—The English Language</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Spch 381—Literature for the High School Teacher</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Engl 481—Methods of Teaching English</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>29-27</td>
<td>29-27</td>
<td></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 Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-102-103—Elementary</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>F. L. 213—Intermediate</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>F. L. 215—Advanced</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>F. L. 217—Review Grammar and Composition</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F. L. 331—Conversation</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F. L. 301-302-303—Survey of Literature</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>F. L. 391—Methods Teaching English (may be taken for Educ. credit)</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Courses numbered above 300

### Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. L. 101-102-103—Elementary</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>F. L. 213—Intermediate</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>F. L. 215—Advanced</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>F. L. 217—Review Grammar and Composition</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F. L. 301-302-303—Survey of Literature</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F. L. 391—Methods Teaching English (may be taken for Educ. credit)</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Electives:
- Classic Languages (Latin)
- 15 credits from:
  - Geog 101—Elements of Geography
  - Geog 111-2—Economic Geography
  - Geog 201—Map Interpretation
  - Geog 300—Geog of North America
  - Geog 351—Political Geography
  - Geog 388—Human Geography
  - Geog 360—Climatology
  - Geog 370—Land forms

### Health and Physical Education for Men

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;PE 100</td>
<td>Intro to Physical Education</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 101</td>
<td>First Aid</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 210-211-212</td>
<td>Coaching—Football—</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 211-212-213</td>
<td>Officializing—</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 240—Care &amp; Prev. of Athletic Injury</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 326—Dance Methods &amp; Materials</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 325—Methods of Teaching Phys. Ed.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 331—Elem. School Phys. Ed. Prog.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 336—Organization &amp; Administration</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 373—School Health Problems</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 375—Applied Anatomy</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 376—Testing in Phys. Ed.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 460—Teaching of College Phys. Ed.</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Activities:
- Other courses in the department
- 3 credits each

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

### Health and Physical Education for Women

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H&amp;PE 100</td>
<td>Intro to Physical Education</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 101</td>
<td>First Aid</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 191—292-293</td>
<td>Coaching—Football—</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>H&amp;PE 211-212-213</td>
<td>Officializing—</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;PE 240—Care &amp; Prev. of Athletic Injury</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 326—Dance Methods &amp; Materials</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 325—Methods of Teaching Phys. Ed.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 331—Elem. School Phys. Ed. Prog.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 336—Organization &amp; Administration</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 373—School Health Problems</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 375—Applied Anatomy</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 376—Testing in Phys. Ed.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 460—Teaching of College Phys. Ed.</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Activities:
- Other courses in the department
- 2 credits each

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

### History and Political Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 101-102—103—Dev. of West Civ</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Hist. 211-212-213—Hist.</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Pol. S. 212—213—American Government</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Pol. S. 311—International Relations</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### Electives:
- Must include 9 credits of upper division courses.
HOME ECONOMICS

Teaching Major  
Teaching Minor

(55 credits)  
(35 credits)

Required Courses:

- H Ec 102—Personal Management  
- H Ec 103—Home Management  
- H Ec 153—Clothing Construction  
- H Ec 210—Household Equipment  
- H Ec 241—Ideal Management  
- H Ec 246 or 346—Nutrition  
- H Ec 252—Clothing for the Family  
- H Ec 305—Home Planning  
- H Ec 303—Interior Design and Furnishings  
- H Ec 305—Problems of the Consumer  
- H Ec 310—Home Living Center  
- H Ec 311—Home Management  
- H Ec 321—Methods of Teaching Home Ec.
  (May be taken as Educ. Credit)
- H Ec 344—Food Conservation  
- H Ec 335—Tailoring  
- H Ec 335—Clothing Design  
- H Ec 330—Adv. Textiles  
- H Ec 366—Human Development  

JOURNALISM (Minor Only)

(30 credits)

Required Courses:

- Journ. 199—Introduction to Journalism
- Journ. 149—Introduction to Radio and Television
- Journ. 196—Current Affairs
- Journ. 223—Elements of Photography
- Journ. 270—Reporting
- Journ. 285—History and Principles of Journalism
- Journ. 311—School Publications
- Journ. 350—Principles of Advertising
- Journ. 371—Advanced Reporting
- Journ. 380—News Editing
- Journ. 495—Editorial Writing

LIBRARY SERVICE (Minor Only)

(30 credits)

Required Courses:

- Educ 342—Org. & Adm. of the School Library
- Educ 343—Circulation
- Educ 344—Cataloging and Classification
- Educ 345—Bibliography and Book Selection
- Educ 346—Library Reference Materials
- Educ 347—Audio-Visual Aids
- Educ 348—Children's Literature
- Educ 441—Evaluation of School Library Service & Materials
- Educ 443—Library Work with Children
- Educ 544—Library Seminar 1-16
- Educ 445—Library Practice 3
- Engl 331—Literature for the High School Teacher 3

MATHEMATICS

Teaching Major  
Teaching Minor

(55 credits)  
(35 credits)

Required Courses:

- Math 116—College Algebra 5
- Math 118—Introduction to Analytic Geometry and Calculus 5
- Math 251—Sophomore Math I 5
- Math 252—Sophomore Math II 5
- Math 300—Algebra for Teachers 5
- Math 304—Geometry for Teachers 5

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

MUSIC

*Teaching Major  
Teaching Minor

(60 credits)  
(30 credits)

Required Courses:

- Music 111, 112, 115—Theory I 6
- Music 131-132-133—Sight Singing, Keyboard and Dictation 3
- Music 227-228-229—Sight Singing, Keyboard and Dictation 3
- Music 241, 242, 243—Theorium II 6
- Music 335, 365, 375—Intro to Music Lit. 4
- Music 231, 232 or 335—Conducting 3
- Music 323, 324, 335—School Music 5
- Music 100—Secondary Applied Minor 6
- Music 101-103—Secondary Applied Major 12

Additional courses:

- 9 credits from 6 credits from
  the following the following
  Music 114, 115, 116—Piano in class 3
  Music 117, 118, 119—Voice in class 3
  Music 120, 121, 122—Strings in class 5
  Music 126—3—Quarters—Winds in class 3

*All majors and minors must demonstrate piano ability equivalent of 3 quarters of piano study.

Vocal majors and minors may substitute other music courses with approval of the Dean of the College of Fine Arts.

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.

SCIENCE

Teaching Major  
Teaching Minor

(49 credits)  
(31 credits)

Required Courses:

- Microb 200—General Microbiology 5
- Bot 121-122—General Botany 10
- Bot 123—Local Flora 3
- Bot 225 or 341—Plant Phys. or Morph. of Thall. 5
- Gen 300—Conservation of Natural and Human Resources 3
- Zool 104—Elementary Zoology 5
- Zool 106—Elementary Zoology 5
- Zool 106—Field Zoology 5
- Zool 201—Comp Vertebrate Anatomy 5
- Zool 205—Human Biology 5

Students who offer the teaching major in biological science must have taken 13 credits of chemistry.

CHEMISTRY

Teaching Major  
Teaching Minor

(45 credits)  
(32 credits)

Chem 121—3—College Chemistry 15
Chem 241—Quantitative Analysis 4
Chem 261—2—Organic Chemistry 10

Electives 261 only

Chem 322—Inorganic Chemistry 3
Chem 370—Survey of Physical Chemistry 5
Chem 371—Physical Chemistry 3
Chem 384—Physiochemical Processing 3
Chem 461—Elementary Biochemistry 4

Elective Chemistry courses number over 300 .

General Science*  
(Broad Fields Major Only)

(75 credits)

Teaching Major  
Teaching Minor

(49 credits)  
(31 credits)

Hist 101—Introduction to Geology 10
Chem 101—2—General Chemistry 3
Chem 120—Aerial Photos and Geol. Maps 4
Chem 130—Field Methods 3
Chem 200—General Paleontology 4
Chem 311-2—3—Mineralogy and Petrology 15
Zool 106—General Zoology 5
Zool 106—Field Zoology 5
Zool 202—Human Paleontology 5
Geol 111—Descriptive Astronomy 5
Micro 100—Elementary Microbiology 5

Electives 5

*Does not qualify for teaching chemistry or physics.

GEOLOGY

Teaching Major  
Teaching Minor

(33 credits)  
(10 credits)

Geol 101—2—Introduction to Geology 10
Geol 120—Aerial Photos and Geol. Maps 4
Geol 130—Field Methods 3
Geol 200—General Paleontology 4

Electives 4

PHYSICAL SCIENCE

Teaching Major  
Teaching Minor

(72-77 credits)  
(21 credits)

Phys 221—2—3—General Physics 15
Phys 322—3—Light 4
Phys 322—3—Atomic Physics 6
Chem 121—2—3—College Chemistry 15

Electives 4

PHYSICS

Teaching Major  
Teaching Minor

(45 credits)  
(21 credits)

Phys 221—3—General Physics 15
Phys 314—Electricity 3
Phys 315—Electricity 7
Phys 271—Vector Analysis 4
Phys 322—3—Light 4
Phys 322—3—Atomic Physics 6
Phys 354—Nuclear Physics 3
Phys 471—Mechanics 3
Phys 480—Electromagnetism

*If not taken in high school

Soc 101—Introductory Sociology 5
Hist 101—2—3—Development of Western Civilization 15
Econ 201—2—3—Principles of Economics 9
Hist 101—2—3—History of the United States 12
Hist 202—3—American Government 8
Geog 333—2—Political Geography 4
Geog 335—American Geography 4

*Electives: Limited to upper division courses in social sciences including one upper division course in Sociology 5
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, teach in foreign countries, write in magazine 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 a minimum of 50 but not more than 60 credits in the department.

The required courses in English are listed in the three schedules. This schedule is aimed at helping the student toward individual emphasis on that part of English which he feels to be most important to his future career.

SCHEDULE A: LITERATURE

I. All prospective English majors are expected to take, in their freshman year, the Introduction to Humanities (General 181-182), 5 credits of which will be counted toward the English major.

II. All students are expected to take, in addition, English 201: English 242 or 243 and two quarters in one sequence and one in the other from English 211-212-213, and 231-232-233.

III. Students who are hoping to go on to do graduate work 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.

SCHEDULE B: CREATIVE WRITING

Students whose major interest is in writing of fiction and poetry should supplement the core courses with the following minimum. This schedule is aimed at helping the student toward individual expression by giving him guided practice in writing, a working knowleage of modern techniques, and a foundation in critical self-appraisal.

REQUIREMENTS. In addition to the basic departmental requirements:

SOPHOMORE YEAR

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

JUNIOR AND SENIOR YEARS

English 201-202-203, 205; 2 credits from 310-311-312, 341-342-343, 491-492-493; 401-402-403; 498. The 5 credits allowed beyond the 55 credits above may be taken from the courses in English Literature numbered above 300.

SCHEDULE C: TEACHING

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


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

Related Fields: Drama 201 (strongly recommended), 101, 121, 231, 245, 251; Journalism 125, 270, 315, 380; Speech 111, 112, 214, 261, 321.

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

HONORS. Special comprehensive examinations must be taken and a paper submitted by all students working for honors in English. An incoming senior, by the beginning of his last quarter, must have an index of 3.1 for all credits registered for in his entire record as well as in his major field to become a candidate for honors.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ENGLISH. In addition to the general requirements of the Graduate School, candidates are required to take nine credits of 500-501-502 and two credits of 600, unless they offer 498 or as. The candidate will present a thesis for which 6 to 9 credits may be allowed.

COMPOSITION, LANGUAGE AND LITERATURE

FOR UNDERGRADUATES

For explanation see Index under "Symbols".

001 PREPARATORY COMPOSITION 1Q A W 0. For freshmen who fail to establish an acceptable college performance in the preparatory course.

100-102-103 FRESHMAN COMPOSITION 3Q A W S Su 3. Students who receive a grade of "A" in 102 may substitute 201 for 103.

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

HONORS. Special comprehensive examinations must be taken and a paper submitted by all students working for honors in English. An incoming senior, by the beginning of his last quarter, must have an index of 3.1 for all credits registered for in his entire record as well as in his major field to become a candidate for honors.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ENGLISH. In addition to the general requirements of the Graduate School, candidates are required to take nine credits of 500-501-502 and two credits of 600, unless they offer 498 or as. The candidate will present a thesis for which 6 to 9 credits may be allowed.

COMPOSITION, LANGUAGE AND LITERATURE

FOR UNDERGRADUATES

For explanation see Index under "Symbols".

001 PREPARATORY COMPOSITION 1Q A W 0. For freshmen who fail to establish an acceptable college performance in the preparatory course.

100-102-103 FRESHMAN COMPOSITION 3Q A W S Su 3. Students who receive a grade of "A" in 102 may substitute 201 for 103.

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

HONORS. Special comprehensive examinations must be taken and a paper submitted by all students working for honors in English. An incoming senior, by the beginning of his last quarter, must have an index of 3.1 for all credits registered for in his entire record as well as in his major field to become a candidate for honors.

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN ENGLISH. In addition to the general requirements of the Graduate School, candidates are required to take nine credits of 500-501-502 and two credits of 600, unless they offer 498 or as. The candidate will present a thesis for which 6 to 9 credits may be allowed.
FOR UNDERGRADUATES AND GRADUATES

305 TECHNIQUES OF THE MODERN NOVEL 1Q A 3. The intentions and methods of such innovators as Conrad and Faulkner. Author and audience examination of advances in the creative writing schedule, but also to aid the reading awareness of advanced students in current literature. PreReq: a year of reading


341-342-343 SHAKESPEARE AND CONTEMPORARIES 3Q A W S Su 3. Enter either quarter. Prereq 1 cr of literature. The critical literature from Aristotle to contemporary critics and the reading of representative plays from Aeschylus to the modern dramatists. (344) Tragedy; (345) Comedy.

360 INTRODUCTION TO LINGUISTICS (See General Courses.)


386-387-388 BRITISH LITERATURE: RENAISSANCE TO 1660 3Q A W Su 3. Enter any quarter. Prereq 12 cr of literature.


392-393-394 BRITISH LITERATURE: NINETEENTH CENTURY TO 1870 3Q A W S 3. Enter any quarter. Prereq 12 cr of literature.

395-396-397 BRITISH LITERATURE: RECENT 3Q A W S 3. Enter any quarter. Prereq 12 cr of literature. Major figures in prose and verse from 1870 to the present.

NOTE: 3 courses from the above British Literature sequence will be offered each year.

401-402-403 ADVANCED CREATIVE WRITING 3Q A W S 2, Su 1. A major year quarter. Prereq 12 credits in literature. Major writer, American or British, will be given special attention each quarter. Mission will be given one quarter e/y.

423-424-425 POETRY 3Q A W S 3. Offered 2Q each year. Prereq 9 cr of literature. A chronological survey, with emphasis on close reading of representative works by major British and American Authors.

431 METHODS OF TEACHING ENGLISH 1Q S 4, Su 3. Objectives, materials and organization of the curriculum from grades 1 through 12. Introduction of expected students to the teaching and correcting student themes. Does not count in curricula of English and Social Studies.

481 SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 1Q S 3 Prereq: Eng 356 or Eng 360. Projects. For English majors in the creative problems in teaching reading and writing, in teaching English as a foreign language, and in phonemics, morphemics, and stylistics.

495 INDEPENDENT STUDIES 3Q A W S 2-8, Su 2-4. Work in several fields of literature. For English literature and graduate students, particularly seniors who are seeking honors.

FOR GRADUATES


506 WORKSHOP 1Q Su only V R-10 Prereq 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, educational, and 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 humanistic and scientific inquiry. Knowledge of a foreign language is also the logical basis for 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 both 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 103; those with two units, course 115; those with three units, course 214; and those with four units, course 300 or over.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. Not more than 90 credits in all foreign languages may be counted toward the Bachelor of Arts degree. The total number of credits for a major in a foreign language at the student's high school preparation. Specific requirements are set forth below in connection with each language.

FRENCH

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

1. French 101 to 107 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, 211, 215, 311, 314, 318, 335.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
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 IQ A Su 5.
102 ELEMENTARY LATIN IQ W 5 Prereq 101 or =.
103 ELEMENTARY LATIN IQ S 5 Prereq 102 or =.
213 INTERMEDIATE LATIN IQ A 4 Prereq 103 or =.
215 ADVANCED LATIN IQ W 4 Prereq 213 or =.
217 LATIN READINGS IQ S 3 Prereq 215 or =. Works of outstanding Latin writers.

FOR GRADUATES

699 THESIS a/q V R-15.

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 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, 216, 311, 314, 321, 322.

FOR UNDERGRADUATES

101 ELEMENTARY GERMAN IQ A W Su 5.
102 ELEMENTARY GERMAN IQ W S Su 5 Prereq 101 or =.
103 ELEMENTARY GERMAN IQ A A S Su 5 Prereq 102 or =.
111-112-113 GERMAN FOR ELEMENTARY TEACHERS IQ a/q 2 Prereq c/l. Grammar, conversation, and methods of teaching German in the elementary school.

FOR GRADUATES

215 ADVANCED GERMAN IQ W S Su 4 Prereq 213 or =.
217 GERMAN GRAMMAR REVIEW AND COMPOSITION IQ S 3 Prereq 215 or =.

FOR UNDERGRADUATES

300 GERMAN CONVERSATION IQ a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF GERMAN LITERATURE 3Q A W S 2 Prereq 217.
317 18TH CENTURY GERMAN LITERATURE IQ A 3 o/y Prereq 217.
321 19TH CENTURY GERMAN LITERATURE IQ A 3 e/y Prereq 217.
491 SEMINAR IQ a/q V 2-3 R-15 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

GREEK

No major is given in Greek.

101 ELEMENTARY GREEK IQ W Su 5.
102 ELEMENTARY GREEK IQ S 5 Prereq 101.
103 ELEMENTARY GREEK IQ A Su 3 Prereq 102.
213 INTERMEDIATE GREEK IQ W 3 Prereq 103.
215 ADVANCED GREEK IQ S 3 Prereq 213.

ITALIAN

No major is given in Italian.

101 ELEMENTARY ITALIAN IQ A 5.
102 ELEMENTARY ITALIAN IQ W 5 Prereq 101 or =.
103 ELEMENTARY ITALIAN IQ S 5 Prereq 102.
213 INTERMEDIATE ITALIAN IQ A 4 Prereq 103.
215 ADVANCED ITALIAN IQ W 4 Prereq 213.
217 ITALIAN REVIEW GRAMMAR AND COMPOSITION IQ 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 IQ A Su 5.
102 ELEMENTARY LATIN IQ W 5 Prereq 101 or =.
103 ELEMENTARY LATIN IQ S 5 Prereq 102 or =.
213 INTERMEDIATE LATIN IQ A S 4 Prereq 103 or =.
215 ADVANCED LATIN IQ W 4 Prereq 213 or =.
217 LATIN READINGS IQ S 3 Prereq 215 or =. Works of outstanding Latin writers.

FOR UNDERGRADUATES AND GRADUATES

491 SEMINAR IQ a/q V 2-3 R-30 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

ROMAN LITURGY AND PHILOLOGY

275 INTRODUCTION TO COMPARATIVE PHILOLOGY IQ S 3 o/y Prereq Foreign Language 217. The development of the Romance languages from Latin to their present-day forms.

RUSSIAN

No major is given in Russian.

101 ELEMENTARY RUSSIAN IQ A 5.
102 ELEMENTARY RUSSIAN IQ W 5 Prereq 101 or =.
103 ELEMENTARY RUSSIAN IQ S 5 Prereq 102 or =.
213 INTERMEDIATE RUSSIAN IQ A 4 Prereq 103 or =.
215 ADVANCED RUSSIAN IQ W 4 Prereq 213 or =.
217 RUSSIAN REVIEW GRAMMAR AND COMPOSITION IQ 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, 225, 226, 231, 232.

FOR UNDERGRADUATES

101 ELEMENTARY SPANISH IQ A W Su 5.
102 ELEMENTARY SPANISH IQ W S Su 5 Prereq 101 or =.
103 ELEMENTARY SPANISH IQ A S Su 5 Prereq 102 or =.
301-302-303 SURVEY OF SPANISH LITERATURE 3Q A W S 2 Prereq 217.

FOR GRADUATES

699 THESIS a/q V R-15.

FOREIGN LANGUAGES—43
FORESTRY

is the scientific management of timber resources for continuous production, including the processing of wood products, and embraces as well the related fields of range, wildlife, watershed, and soil management.

The four-year and five-year curriculums lead to the degree of Bachelor of Science in Forestry. The degrees of Master of Science in Forestry, Master of Science in Forest Conservation, Master of Forestry, and Master of Science in Wildlife Management are also offered (see Graduate School). Within the general forestry curriculum the student may specialize at the undergraduate level in Forest, Range or Wildlife Management, or in Wood Utilization. A four-year curriculum is offered in Forest Engineering. Laboratory and field work are distinguishing characteristics of forestry training, affording opportunities for putting into practice the theoretical knowledge emphasized in the classroom. A summer camp is not required. In lieu of this, however, all students who select Forest Management, Forest Engineering, Forest Recreation, Range Management, Wildlife Management or Watershed Management as their area of specialization may spend their sophomore spring quarter in camp on the Lubrecht Forest. Those selecting Forest Management or Forest Engineering will also be expected to spend their senior spring quarter on a field trip in the western states and at the Neils Forest Camp. Those selecting Range Management will spend their senior spring quarter on extended field trips through the western states.

Graduates find positions in state and federal government service for work in public forests or in conservation or wildlife organizations. Others are employed by private logging, lumber, and forest products industries. Those who pursue graduate studies in forestry may secure positions in research, as teachers in universities and colleges, or as consultants in special phases of forestry.

The School of Forestry is accredited by the Society of American Foresters. The courses and curricula described below prepare the student for United States Civil Service positions and professional positions with individual states, some of which offer civil service examinations.

HIGH SCHOOL PREPARATION

In addition to the general requirements for admission to the University, the student needs a minimum of 1½ years of algebra and one year of geometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN FORESTRY

A minimum of 192 credits of work, not including credits obtained by required work in Military Science and Physical Education.

To continue as majors in the School of Forestry during the second, third and fourth years, students must have and maintain a grade point average of 2.0 on all credits for which awarded and for which a final grade is received.

Each student is required to spend not less than two summers of three months each, in successful employment, gaining field experience through some type of approved work pertinent to his curriculum.

A senior student in the School of Forestry who has earned a total of at least 192 undergraduate credits, but still lacks as many as 16 in his major field may be allowed to begin graduate work. All requirements for such enrollment must be submitted in writing and be approved by the major adviser and the Dean of the Graduate School prior to registration for such work. See Graduate School.

FIELD COURSE EXPENSE DEPOSITS. All students enrolled in Forestry courses will be charged a laboratory fee of $15.00 per quarter.

All seniors and sophomores must be prepared to spend all or part of the spring quarter off campus and should be prepared to make additional deposits to meet actual field expense.

CURRICULA LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN FORESTRY

FOREST MANAGEMENT

(All group requirements are not included)

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

First Year

Second Year

Third Year

Fourth Year

FOREST ENGINEERING

Second Year

Third Year

Fourth Year

Fifth Year

WOOD UTILIZATION

Second Year

Third Year
RANGE MANAGEMENT
Second Year
Autumn: For 50, 210, 252, 290; Phys 111; H&PE 201; ROTC 201.
Winter: For 250, 230, 251; Bot 225; Psych 110; H&PE 202; ROTC 202.
Spring: For 200, 230, 253; Bot 250; ROTC 203.

Third Year
Autumn: For 300, 310, 330, 360. Winter: For 352, 370; Bot 366; Econ 201; H&PE 203. Spring: For 311, 361; Bot 376; Econ 202; Electives.

Fourth Year

WILDLIFE MANAGEMENT
Second Year
Autumn: For 50, 210, 252, 290; Physics 111; H&PE 201; ROTC 201.
Winter: For 250, 230, 251; Bot 225; Zool 101; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 250; ROTC 203.

Third Year
Autumn: For 401; For 300, 310, 330, 360. Winter: Econ 202; For 352, 370; Bot 366. Spring: Bot 370, For 311, 361, 399; H&PE 203; Zool 201.

Fourth Year

CURRICULA LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN FOREST CONSERVATION
FOREST CONSERVATION
(All group requirements are not included)
CONSERVATION at a sustainable level involves the management of natural resources. The term management as used here pertains more specifically to the “wise use” of our renewable natural resources and involves the development of the multiple and coordinated use of several resources existing on the same, adjacent or associated areas. Forests and forestry play an important part in the solution of many conservation problems, however, the foresters training is from necessity specialized to meet the demands of the profession and the accusation of 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 leading to the B.S. degree in Conservation Science in Forest Conservation. The Master of Science in Forest Conservation is also offered.

This training prepares the graduate for employment with Federal and State Conservation agencies that usually require the applicant to qualify under a civil service examination. Some positions are available with private companies. High School preparation and special requirements for the degree in Forest Conservation are the same as for Forestry.

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

First Year
A W S
Bot 131-122—Forest Botany
Bot 152—Local Flora
Chem 101-2—General Chemistry
Chem 109—Survey of Organic Chemistry
Eng 101-2-3—Freshman Composition
For 190-1-2—Survey of Forestry
Math 113, 116—Trigonometry and College Algebra
Math 113-116—Trigonometry and College Algebra
Speech 111—Principles of Speech
H&PE 101-2—Physical Education
ROTC 191-2-3—Military of Air Science

Second Year
Autumn: For 50, 210, 252, 290; Zool 104; H&PE 201; ROTC 201.
Winter: For 250, 230, 251; Bot 225; Zool 201; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 250; ROTC 203.

Third Year
Autumn: For 300, 310, 330; Geo 110. Winter: For 300, 310, 330, 360; Econ 201; Phys 112. Spring: For 311; H&PE 201; Phys 113; Econ 202; Electives.

Fourth Year
Autumn: For 400, 421, 451; Geo 200. Winter: For 400, 421, 451; Geo 200. Spring: For 464, 461; Geo 203.

WILDLIFE CONSERVATION
Second Year
Autumn: For 50, 210, 252, 290; Physics 111; H&PE 201; ROTC 201.
Winter: For 250, 230, 251; For 225; Econ 202; For 250, Psych 110; H&PE 202; ROTC 202. Spring: Bot 355; Page 110; Zool 201; H&PE 203; ROTC 203.

Third Year
Autumn: For 300, 310, 360; Geo 110. Winter: For 300, 310, 330, 400; Econ 201; Geo 200. Spring: For 308, 461, 463, 465; Electives.

WATERSHED MANAGEMENT
Second Year
Autumn: For 50, 210, 252, 290; Geo 110; H&PE 201; ROTC 201.
Winter: Bot 225; For 250, 267, 268; Psy 110; H&PE 202; ROTC 202. Spring: Bot 250; For 200, 250, 253; ROTC 203.

Third Year
Autumn: For 300, 310, 360; Geo 110. Winter: For 300, 310, 330, 400; Pol Sci 362; Electives. Spring: For 308, 461, 465; Electives.

FOUR 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 (2-8) Prereq sophomores standing, Bot 121 and For 250-251. Protection of the forest against elements other than fire and disease; insects, wild life, man, grazing, and use. Problems in the field and laboratory. (251) Preparation for 250-253 surveys, land survey methods, including site determination, tree form, volume tables, timber cruising, log scaling, forest mapping and growth determination.

250 MAPPING 1Q W 2 (2-4) Prereq Math 113 or 116. Soils of forest and range land; morphological, physical, and chemical properties; soil erosion control.

250 ELEMENTS OF FOREST PROTECTION 1Q S 3 (3-0) Prereq sophomores standing. Bot 114 and For 250-251. Protection of the forest against elements other than fire and disease; insects, wildlife, man, grazing, and use. (251) Preparation for 250-253 surveys, land survey methods, including site determination, tree form, volume tables, timber cruising, log scaling, forest mapping and growth determination.

251 PLANE TABLE SURVEYING 1Q S 5 (2-6) Prereq Math 113 or 116. Care and use of plane table telescopic alidade and rod. Introduction to differential leveling transit, stadia, and timber stand measurements, and use of theodolite, staff compass, Abney level, Engineer’s level, transit, plane table, and telescopic alidade. Adjustment of horizontal and vertical controls. Topographic map construction. Primarily for anthropology and geology majors, not for forestry and wildlife majors.

252-253 SURVEYING 2Q A 4 (6-8), S 5 (2-8) Prereq Math 113 or 116 with a grade of C or better and For 50 prior to or concurrently with For 252. (252) Use of plane table, staff compass, Abney level, Engineer’s level, transit, plane table, and telescopic alidade. Adjustment of horizontal and vertical controls. (253) Instrument adjustment. Establishment of a triangulation, horizontal and vertical control, and plane table surveys, public land survey methods. (253) Instrument adjustment. (255) Instrument adjustment. Establishment of a triangulation, horizontal and vertical control, and plane table surveys, public land survey methods, and maps obtained by various combinations of instruments. Solar observations. Introduction to earthworks.


290-291 DENDROLOGY 2Q A W 3 (2-3) Prereq sophomores standing in the School of Forestry and c/l. The taxonomic relations and distribution of the principal forest and ornamental trees of the United States and Canada. Identification, uses, range, and silvical characteristics.
FOREST FOR UNDERGRADUATES AND GRADUATES

300-301 FOREST MENSURATION 2Q A W 4 (3-3) (300) The application of statistical methods to forest mensuration; (301) Pre- requisites. Principles, methods, and applications of statistical data and techniques, and methods of field analysis and their computations.

200 FARM FORESTRY 1Q S 3 (2-4) Prereq junior standing in the School of Forestry. The application of the principles of forest conservation, management, silviculture and soils to small woodland holdings.

310 SILVICS 1Q A 4 (4-0) Prereq Bot 225 and 250. The foundations of silviculture upon an ecological basis. The effects of cli- mate, topography, biotic, and genetic factors, and their develop- ment of trees and stands. The influence of the forest upon the site. Principles underlying the regeneration, care, and protection of forest stands.

311 SILVICULTURAL METHODS 1Q A S 5 (4-4) Prereq 310. The production of forest crops; reproduction methods, intermediate cutting, site and cultural treatments.

312 SEEDING AND PLANTING 1Q S 3 (2-4) Prereq 311. Artificial reproduction of the forest; collection, extraction, storage, and testing of forest tree seed; direct seeding; nursery practice; forest tree planting.


321 FOREST FIRE PLANS 1Q W 3 (3-0) Prereq junior standing in the School of Forestry and 230. Area pre-suppression fire plans, hazard mapping, planning on small and large project fires, fuel type mapping, and fire prevention techniques.

340 WOOD TECHNOLOGY 1Q W 4 (3-3) Prereq 261. Wood identification and anatomy: Introducing the relationships of the physical, mechanical, and chemical properties to specific uses.

341 CHEMICALLY DERIVED WOOD PRODUCTS 1Q S 3 (3-0) Prereq Chem 261 or = and For 340. Generalized chemistry of wood. Survey of chemical processes and products including Naval Stores, pulp, paper and modified woods.

342 WOOD GLUING AND PHYSICAL PROPERTIES 1Q S 3 (3-0) Prereq 260 and 250 and 252-253, and c/i. (350) Simple curve definitions, their theory and use; (351) selected topics of surveying not covered in For 252-253.

350-351 ADVANCED SURVEYING 2Q W S 2 (0-4) Prereq 250, 252-253, and c/i. (350) Simple curve definitions, their theory and use;

352 AERIAL PHOTOGRAPHEOMETRY 1Q W 3 (1-4) Prereq 253 or =. The elements of photogrammetry and their applications with an emphasis on the measurement of forest variables. Application of photogrammetric methods to planimetric and topographic mapping. Introduction to the principles of photo interpretation.

353 TIMBER MECHANICS 1Q W 3 (0-8) Prereq Physics 111. Graphic and analytic statics applied to simple structures; simple beams and arches; stress and design in wood structures.

354 AERIAL PHOTO INTERPRETATION 1Q S 3 (0-6) Prereq 352 and c/i. Co-ordinated work between laboratory and field. Map compilation over type mapping, mensurational techniques, and topics of individual interest.

360 GENERAL RANGE MANAGEMENT 1Q A 5 (4-0) Prereq c/i. An introduction to the field of range management, class of stock, grazing season, grazing capacity, control and distribution of livestock on range. Range improvements; forest and range inter-relationships.

361 RANGE FORAGE PLANTS 1Q S 4 (9-0) Prereq 260, Bot 366 and c/i. Economic range forage plants; forage value to different kinds of range animals; management problems in their use.

370 GENERAL WILDLIFE MANAGEMENT 1Q W 4 (4-0) Prereq c/i. The principles of population dynamics and their application to the management of wildlife as a land resource.

390 THE RENEWABLE RESOURCES AND THEIR CONSER- VATION 1Q W 4 (4-0) Prereq Bot 250. The relationships of resource conservation programs and projects. The need for management to maintain our natural resources, and manage their development and use to meet the needs of our ex- panding economy. Conservation practices and facilities and the agencies involved in their application. (Not open for doctoral credit)

385 FOREST RECREATION 1Q S 4 (2-6) Prereq 293. Physical development of objectives and planning for the recreational use of forests and other wild lands. Class and field.

386 RECREATIONAL UNITS 1Q W 3 (1-4) Prereq c/i. Theory and design of service and sanitary utilities for recreational areas. Lab, laboratory and field.

388 RECREATIONAL STRUCTURES 1Q W 2 (1-3) Prereq c/i. Elementary design, fabrication and use of recreational structures, including lagoons, fishponds, swimming pools, parks, golf courses, hunting, swimming, camping facilities. Laboratory and field.

400-401 FOREST MANAGEMENT 2Q W 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 301. Emphasis on field work necessary in applying forest management, timber cruising, determination of growth, and timber marking.

410 REGIONAL SILVICULTURE 1Q S 2 (0-Field) Prereq 310 and 311. Application of silvicultural methods to the principal commercial forest species, types, and regions of the United States.

411 FOREST SOIL CLASSIFICATION AND MAPPING 1Q W 4 (3-0) Prereq Bot 225 and 250. The classification and mapping 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 210 and 211. Bot 225 and 226. Regional, 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 310. Economic problems and principles involved in the use of the forest resource and in the distribution of forest products.

422 LAND USE POLICY 1Q A 4 (4-0) Prereq c/i. The de- velopment of forestry and public land policies, especially in the United States. Policy objectives, programs, and groups.

423 FOREST ADMINISTRATION 1Q S 3 (3-0). Principles and problems of organizing and directing personnel in executing private and public forest policies.

440 MECHANICALLY DERIVED WOOD PRODUCTS 1Q A 3 (3-0) Prereq junior standing in the School of Forestry. History, status, development, objectives and planning in the recreational use of forest resources. Laboratory and field.

450 HYDRAULICS 1Q W 2 (2-0) Prereq c/i. Elementary study of the physical properties of water.

451 MECHANICAL PROPERTIES OF WOOD 1Q A 3 (2-2) Prereq 294. Mechanics of structures referred to strength of wood; elemen- tary graphic statics; timber testing.

452 LOGGING 1Q A 3 (2-4) Prereq 351, 311. Equipment and methods of logging in the United States; calculation of logging costs; the effect of logging on other forest values; fundamentals of a log- ging plan. Field trips.

453 LOGGING-ENGINEERING 1Q A 5 (4-4) Prereq 252-253, 311. Credit not allowed for this course and For 452. A survey of logging engineering and management. Design and planning of road planning and location for forest development. Service course for junior standing in the School of Forestry.

454-455-456 FOREST ENGINEERING 3Q W 4 A 3 (4-4) S 6 Prereq 352-253, 350-351. 454 and 455 are for engineering majors only. (454) Collection of field data for a logging plan. Location of major logging roads (Field work). (455) Earthwork calculations, mass diagrams, estimates of road and logging costs necessary to complete the logging plan. Prereq For 453 or 455. Application of forest engineering, methods and techniques, time and cost studies. (Field work).

457 TIMBER DESIGN 1Q W 4 (4-6) Prereq 353 and mathem- atics 251. The elements of timber design; simple and complex structures; design of simple beams for deflection; joint analysis using timber connectors; post and beam construction; and laminated wooden arches.

460 RANGE TECHNIQUES 1Q A 4 (2-6) Prereq 389 and c/i. Range surveys, condition, and trend analysis, utilization analysis, damage appraisal. Field trips.

461 RANGE LIVESTOCK NUTRITION 1Q W 5 (3-0) Prereq 380 and c/i. The nutritional characteristics of range forage plants. The nutritional requirements of livestock and big game animals.

462 RANGE LIVESTOCK PRODUCTION 1Q S 2 (2-0) Prereq 380 and c/i. Selection, production, and management of range livestock.

463 RANGE ECONOMICS 1Q S 3 (3-0) Prereq 389, Econ 201 and c/i. Range regions from an economic standpoint. Range value systems, livestock and crops, importance of forage, economics of range improvements, ranch organization and appraisal.

464 RANGE ADMINISTRATION 1Q S 2 (2-0) Prereq 360 and c/i. Legislation and policies developed in the acquisition of federal, state and private range properties. Administration, organization and methods for regulation and management of range and state parks.

465 REGIONAL RANGE MANAGEMENT 1Q S 6 Prereq 460, 461, 462 and c/i. Regional range management problems and situa- tions. Work done on senior spring trip.
of the principles of population dynamics, ecology and behavior of birds and mammals to wildlife conservation and administration.

471 WILDLIFE HABITAT MANAGEMENT 1Q S 5 (4-field weekends) Prereq 470 and coreq. For 473. Principles and techniques involved in wildlife habitat manipulation, the effects of land and forest management practices on wildlife populations, the integration of overall land and wildlife management and the assessment of management success.

472 BIG GAME MANAGEMENT 1Q W 3 (2-4) Prereq 360, 379 and c/i. The biology of big game mammals and its application to problems of conservation and administration.

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

490-491 RESOURCE MANAGEMENT AND CONSERVATION PLANNING 3Q W 4 (3-4) Prereq Econ 201-202-203, For 310, 360, 482 and c/i. (480) Methods of analyzing and planning the multiple user management of resources. The principles underlying planned economy, social, and political problems involved in integrating resource source development. Possible alternative uses of resources as a basis for resource planning. (481) Emphasis on field work in working out problems of integrated resource management and developing conservation plans for selected forest types. Includes several land uses under multiple public and private ownerships.

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

494 WATERSHED MANAGEMENT 1Q W 5 (5-9) Prereq junior or senior standing and c/i. The controlling factors necessary for the intelligent application of principles of watershed management. The movement and measurement of water, snow surveys and the analysis of cycles of range, forests and wildlife management to watersheds and their relationships to the control of soil erosion and water conservation.

495 FOREST METEOROLOGY 1Q W 4 (4-4) Prereq Physics 111, junior standing. The basic meteorological factors that influence fire behavior, the measurement of weather elements, and the preparation and use of weather forecasts.

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

FOR GRADUATES

500 ADVANCED FOREST MANAGEMENT 1Q A 3 Prereq 401. Analysis of forest management problems by regions and forest types.

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

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

509c FOREST FIRE BEHAVIOR 1Q A 3 (3-9) Prereq 330 and 490. The forest fire as a three dimensional problem involving fuels, weather, and topography and the influence of these on the behavior of wild fire. Emphasis is placed on high intensity fires and erratic fire behavior.

502 WOOD RESIDUE UTILIZATION 1Q a/q 4 (3-8) Prereq 341, 440, 441, 451. Techniques for volumetric survey. Classification and product uses for various species with detailed emphasis on the type most pertinent to interests of student concerned.

503c WOOD RECONSTRUCTED BOARDS 1Q W 3 (1-8) Prereq 342, 440, 441, 451. Different types of boards with properties and uses of each. Raw materials, additives, production variables and product testing. Laboratory practice in making and testing sample boards.

505 Advanced Range Management 1Q a/q 3 Prereq 360 and 490. Analysis of range management problems by regions and forage types.

505c Advanced Forest Recreation 1Q A 5 (3-8) Prereq 385. Forest recreational land inventory, analysis and design, methods and planning. The factors involved in irregular sites, roadside planning. Theory, policy and problems in recreational land management. Individual research.

501-502 RESEARCH METHODS 2Q A W 3. Enter any quarter. Prereq at least two credits in research methods of forest measurement and c/i. (501) The nature of scientific research, planning research projects, organization and presentation of research results. (502) Application of statistical methods to the design of forestry research, techniques of analysis of research data.

508 SEMINAR 2Q A W 1. Presentation by students and staff of papers in their field of specialization. 600 RESEARCH a/q V. Independent research. The type of problem will be identified for forestry majors as follows: Management, Silviculture, Soils, Economics, Fire Control, Utilization, Engineering, Range Conservation, Wildlife Management, Conservation and Protection or General.

699 THESIS a/q V R-15.

GENERAL COURSES—47

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 undergraduate student is eligible 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 Graduate Requirements). But there has been found advisable to provide certain degree-curricula which overlap two or more of the curricula described in other pages of this catalog, 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. For this reason, it has also been advisable to provide particular courses which overlap two or more fields; these 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.)

100c INTRODUCTION TO THE READING OF LITERATURE 3Q A W S 2 Enter any quarter. Training in the skill of reading literature, including the reading of, and conditions producing, popular and inferior forms of literature. (106) Poetry. (Not applicable to Group III requirements.)

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

125c BIOLOGICAL SCIENCE FOR TEACHERS 1Q A Su 5. Open only to majors in Elementary Education. A survey of the plant and animal kingdoms with special reference to the laws governing living things.

131-132-133 INTRODUCTION TO BIOLOGICAL SCIENCE 3Q A W 5. The essential structure and function of living organisms. Principles of heredity. Morphology, physiology, classification and possible evaluation of the living processes in order to comprehend their relationship with the physiology within the principal animal phyla, with emphasis upon man and the theory and mechanisms of evolution; evidences from all fields of biology; modern 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, Microbiology and Public Health and Zoology.

151-152-153 INTRODUCTION TO THE HUMANITIES 3Q A W 3. Enter any quarter. Those who have completed 8 or more college credits in literature may not receive credit in this course. A general survey of the field of Humanities. Acquaintance with literature through the centuries from the Greeks to Americans, with the primary aims of understanding and appreciation. Given by the departments of English and Foreign Languages.

151c STUDIES IN HUMANITIES 1Q a/q 3 R-9 Prereq Gen 151-152-153 Advanced studies in Humanities. Given by different instructors under various titles.

FOR UNDERGRADUATES AND GRADUATES

200 CONSERVATION OF NATURAL AND HUMAN RESOURCES IN MONTANA 1Q W Su 3 Prereq c/i. A critical survey of climate, physiography, mineral resources, soil and water, as related to plant and animal production and human welfare, and the development and principles underlying improved management of the natural resources of the 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.

203c INTRODUCTION TO LINGUISTICS 1Q A Su 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 and Forestry. Legal problems, policy and administrative problems.

GENERAL LITERATURE

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

161 CLASSICAL MYTHOLOGY. (See Foreign Languages.)

203 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

GEOGRAPHY is concerned with the description and analysis of the earth's surface. Geographers describe the location and distribution of physical and human elements as well as the associations between these various elements. A crucial part of geography is the achievement of an understanding of the processes involved in the reasons for, and the significance of distributions of physical and human phenomena. Geography therefore, entails the study of such physical elements as terrain, climate, natural vegetation, soils and water as well as the human elements which include population, settlements, cultural levels, economic activities and political groupings.

Geography provides the basis for a better understanding of the world in which we live and of the events which take place around us. Employment opportunities for those trained in geography exist in government, business and industry, and in the teaching profession at all levels.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOGRAPHY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree: a major in Geography: A minimum of 50 credits in Geography including 101, or = . Geography from early Greek and Roman times to the present. Geography of the whole continent. Geography of a major continent. Geography of a major oceanic region. Geography of the world. Geography of the world in which we live. Geography 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.

SUGGESTED CURRICULUM IN GEOGRAPHY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 3</td>
<td>Elements of Greek and Roman times</td>
<td>3</td>
</tr>
<tr>
<td>A 4</td>
<td>Elements of Greek and Roman times</td>
<td>4</td>
</tr>
<tr>
<td>A 5</td>
<td>Elements of Greek and Roman times</td>
<td>5</td>
</tr>
<tr>
<td>A 6</td>
<td>Elements of Greek and Roman times</td>
<td>6</td>
</tr>
<tr>
<td>A 7</td>
<td>Elements of Greek and Roman times</td>
<td>7</td>
</tr>
<tr>
<td>A 8</td>
<td>Elements of Greek and Roman times</td>
<td>8</td>
</tr>
<tr>
<td>A 9</td>
<td>Elements of Greek and Roman times</td>
<td>9</td>
</tr>
<tr>
<td>A 10</td>
<td>Elements of Greek and Roman times</td>
<td>10</td>
</tr>
<tr>
<td>A 11</td>
<td>Elements of Greek and Roman times</td>
<td>11</td>
</tr>
<tr>
<td>A 12</td>
<td>Elements of Greek and Roman times</td>
<td>12</td>
</tr>
<tr>
<td>A 13</td>
<td>Elements of Greek and Roman times</td>
<td>13</td>
</tr>
<tr>
<td>A 14</td>
<td>Elements of Greek and Roman times</td>
<td>14</td>
</tr>
<tr>
<td>A 15</td>
<td>Elements of Greek and Roman times</td>
<td>15</td>
</tr>
<tr>
<td>A 16</td>
<td>Elements of Greek and Roman times</td>
<td>16</td>
</tr>
</tbody>
</table>

FOR GRADUATES

FOR GRADUATES

101 ELEMENTS OF GEOGRAPHY 1Q A W S Su 5. Field, content, and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, landforms and population distribution.

111-112-113 ECONOMIC GEOGRAPHY 3Q A W S 2. An introduction to the significance, structure, and distribution of manufacturing industries; (111) the industries producing food and raw materials; (112) the major industries with an emphasis on trade and transportation. A review of economic regions.

201 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 CARTOGRAPHY 1Q A 3. The interpretation, construction, and uses of important map projections. Cartographic techniques utilized in the presentation of data.

FOR UNDERGRADUATES AND GRADUATES

300 GEOGRAPHY OF NORTH AMERICA 1Q W Su 3 Prereq 101 or = . The distribution and analysis of geographic features. Contemporary problems and developments.

310 GEOGRAPHY OF LATIN AMERICA 1Q A 3 e/y Prereq 101 or = . The physical environment and economic development.

311-312-313 POLITICAL GEOGRAPHY 2Q A 3. (311) Political geography of the world. (312) Political geography of the world. (313) Political geography of the world.

315 GEOGRAPHY OF THE FAR EAST 1Q S 3 Prereq 101 or = . The lands and peoples of monsoon Asia interpreted as the basis of economic activities with special reference to population problems.

325 GEOGRAPHY OF THE U.S.S.R. 1Q S 3 Prereq 101 or = . The geographic regions which are the basis for Soviet agriculture and industry.

320 GEOGRAPHY OF THE PACIFIC NORTHWEST 1Q S 3 Prereq 101 or = . The relation of the physical environment to changes and human activities in the Pacific Northwest.


335 HUMAN GEOGRAPHY 1Q A 3. Human societies in their environmental setting. A comparative approach to men, space and resources.

345 URBAN GEOGRAPHY 1Q W 3 Prereq 101 or = . The growth, morphology and functions of towns and cities. Examination of the contemporary urban scene.

350 CLIMATOLOGY 1Q W 5 Prereq 101 or = . Elements and controls of weather and climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 1Q S 3 Prereq 101 or = . Topographic elements of the earth's surface with emphasis on processes of morphologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 1Q W 3 Prereq 101, Geology 110, or = . Landform development in the desert environment.

395 THE HISTORY OF GEOGRAPHY 1Q W Prereq 12 credits in Geography or = . Geography from early Greek and Roman times to the close of the sixteenth century.

410 PROBLEMS IN GEOGRAPHY 1Q a/q V 1-2 R-6 Prereq 12 credits in Geography.

450 SEMINAR IN GEOGRAPHY 1Q a/q V R-6 Prereq 16 credits in Geography including 101, or = .

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 1Q S 3. The analysis of political concepts, approaches, and techniques developed in the twentieth century.

550 RESEARCH METHODS AND MATERIALS 1Q A 3. Collection and preparation of materials in geographic research, including field techniques, interviewing, library sources, and the cartographic presentation of data.

699 THESIS a/q V R-15.
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). 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 encouraged to investigate under actual working conditions. Such studies are accompanied by theoretical work as well as courses in other basic sciences.

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY. In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 125, 130, 140, 150, 160, 170, 175, 180, 3 of 350, 355, 356, 461. Also required are Mathematics 116, 117, 118; Chemistry 121-125-126-127; Physics 111-112-113 or 221-222-223; English 304; Geography 370; Zoology 104-105 or Mathematics 251-252. A foreign language, 25 credits in one language, or 3 quarters each in 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 can be devised for those students in consultation with their advisers. This will, for example, allow special curricula planned for special areas of interest as geophysics or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.

COMBINATION GEOLOGY AND LAW PROGRAM. Students in this program complete all of the above requirements except Geology 350, 461; Math 117, 118; Physics 111-112-113 or 221-222-223; Zoology 104-106; English 304, and Mathematics 370. The quarter equivalents of Latin are recommended as part of the foreign language requirement.

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

SPECIAL REQUIREMENTS FOR THE GRADUATE DEGREES. No more than 3 quarter credits of Geology and 699 may be counted toward Master's degree requirements.

FIELD TRIP EXPENSES. Students enrolled in courses which include field trips share equally the cost of transportation and insurance. Students should consult the University Business Office for a statement of expenses connected with Geology 220 Field Geology.

<table>
<thead>
<tr>
<th>CURRICULUM IN GEOLOGY</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</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem 121-122-123</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Geol 110, 120</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 101-102-103</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>18-18</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Sophomore Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 116, 117, 118</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 200, 202, 203</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 104-105</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Geol 130</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem 245</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 201-202-203</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group II or III courses</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>18-18</td>
<td>17-19</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 111-112-113 or 221-222-223</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Geol 111-112-113</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ForL 101-102-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol 320-331</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geol 320 8 cr (summer session)</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cr</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography 370</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol 325</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Eng 304</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ForL 213, 215</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

Analysis of Requirements

<table>
<thead>
<tr>
<th>Description</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. University requirements (Eng 9 cr; Group II 12 cr; 3 of which are satisfaction)</td>
<td>45</td>
</tr>
<tr>
<td>2. Geology course requirements</td>
<td>54</td>
</tr>
<tr>
<td>3. Other departmental requirements (Math 15-25 cr; Chem 19 cr; Physics 15 cr; Zool 0-10 cr; Eng 3 cr; Geog 3 cr)</td>
<td>69</td>
</tr>
<tr>
<td>4. Military Science</td>
<td>6</td>
</tr>
<tr>
<td>5. General principles of Physical Education</td>
<td>6</td>
</tr>
<tr>
<td>6. Electives</td>
<td>10-7</td>
</tr>
<tr>
<td>Total 106</td>
<td></td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102 INTRODUCTION TO GEOLOGY 2Q A W S Su 101, W S 102: 5 (3-4). (101) Minerals, rocks, and structure of earth's crust; the dynamic processes, volcanism, diastrophism, and gradation which shape the earth's landscape; (102) the origin of the earth and its development through geologic time; changes of land and sea and their relation to the evolution of life. Not open to geology majors.

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

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

130 FIELD METHODS 1Q S 3 (1-3) PreReq 110, 120. Field techniques including plane table mapping, use of Brunton compass, altimeter, Jacob staff, measurement and description of stratigraphic sections and geologic mapping on aerial photos and topographic base map. Some all day field trips on Saturday.

200 GENERAL PALEONTOLOGY 1Q A 4 (3-2) PreReq 110, 120. General principles of paleontology, evolution, and history of plants and animals.

202-203 HISTORICAL GEOLOGY 2Q W S 4 (3-2) PreReq 110, 200. (202) The origin of the earth. Precambrian and Paleozoic history; (203) Mesozoic and Cenozoic history. Stratigraphic methods and principles, and North American stratigraphic successions are considered. Laboratories include map, fossil, library, and field expeditions.

311-312 MINERALOGY 2Q A W 4 (2-4) PreReq Chem 121 and Math 116. Elements of crystallography; origin, classification and determination of common minerals by physical and chemical properties, special emphasis on ore and rock forming minerals.

315 PETROLOGY 1Q S 4 (2-4) PreReq 312. Common rocks, their mineral composition and structural characteristics, classification, identification in the field, origin and structural features.

320 FIELD GEOLOGY 1Q Su 8 (5) days per week for 6 weeks in the field) PreReq 120, 200, 315. Given by Indiana University Geology Department staff at their field station near Whitehall, Michigan. Primarily detailed geologic mapping. Registration must be completed by April 1.

325 PROBLEMS 1Q a/q 1-5 PreReq 30 cr in Geology or c/l. Supervised investigation in any phase of geologic study in which the student has sufficient background to contribute original thought.

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

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

FOR UNDERGRADUATES AND GRADUATES

300 GEOLOGY OF MONTANA 1Q Su 3 (3-2) PreReq c/l. Primarily for natural science teachers. General earth science with emphasis on Montana. Most laboratory work out-of-doors. Not allowed toward a geology degree.

305 MONTANA MINERAL RESOURCES 1Q Su only 3 (2-3) PreReq c/l. Primarily for teachers of natural science. Selected oil fields and metallic and non-metallic mineral deposits in Montana and vicinity with some field trips. Not allowed toward a geology degree.
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, 118-119-120; Education 238, 372; Social Welfare 362; Zoology 206 and 4 or 8 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 196, 199, 225 or 228, 239, 250, 357, 358, 360, 386, 465, and 490.

Women students also take: Health and Physical Education 196, 231, 232, 301, 302, 324-325, 375, and 460.

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

FOR UNDERGRADUATES
For explanation see Index under “Symbols”

101-102-103, 201-202-203 FRESHMAN AND SOPHOMORE PHYSICAL EDUCATION 6q A W S Su 1. Instruction in the beginning skills and when feasible, in intermediate and advanced techniques for Team Sports, Individual and Dual Sports, Combatives, Swimming, Dance, and Adapted Activities. A student may not repeat a class in beginning skills of any sport in which he has received a passing grade. 6 credits in these courses may be applied to meet the graduation requirement, and only 1 credit per quarter may be used to meet this requirement. Enter any quarter.


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

198 INTRODUCTION TO PHYSICAL EDUCATION 1Q W 4, Su o/y Prereq major or minor 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 prospective majors and minors.

199 FIRST AID 1Q A W S 2, Su o/y. Recognition and treatment of common injuries. Red Cross certification may be secured upon completion of this course.

208 ADVANCED COACHING TECHNIQUES 1Q Su only 1 week. Intensive training in special techniques of coaching football and basketball in athletic training. (Special coaching school.)

210 COACHING OF FOOTBALL 1Q W 3.

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

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

220 COACHING OF BASEBALL 1Q W 3.

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

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

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

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

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

229 WATER SAFETY AND LIFE SAVING, 1Q W S 2, Prereq Red Cross Senior Life Saving Certificate. Instructor's course in life saving and water safety. Red Cross Instructor's Certificate awarded upon successful completion of requirements, providing student has reached his 19th birthday.


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 336. Methods and materials.

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


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

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

322 COACHING OF TRACK 1Q S 2. Practice.

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

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

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

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

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

363 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1Q S 3 Prereq Sociology 101. Principles and practice in group leadership of outside activities; skills and understanding essential for organized camping. Credit not allowed for this and Social Welfare 363.

365 ORGANIZATION AND ADMINISTRATION 1Q W 4, Su o/y Prereq 196. Principles and policies for the organization and administration of high school physical education departments. Management of the physical plant.

FOR UNDERGRADUATES AND GRADUATES

332 INSTRUCTOR'S FIRST AID 1Q S 2, Su o/y Prereq Advanced Red Cross Certificate in First Aid. Techniques and practice in selecting and presenting activities for different age levels; characterization of growth and development related to course content. Credit not allowed for this and 336.

339 TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOLS 1Q A S Su 3 Prereq major in elementary education and 320 or 322 or teaching experience. Principles and foundations 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.

358 THE HIGH SCHOOL INTRAMURAL PROGRAM 1Q Su 3. Problems of organizing and administering the intramural sports in the high school.

361 INTRODUCTION TO RECREATION LEADERSHIP 1Q A 3 Prereq Sociology 101. Principles and practice in play, recreation, and leisure time; community approach to recreation; recreation for industrial workers; hospital patients; senior citizens; playgrounds; facilities and resources. Credit not allowed for this and Social Welfare 361.

366 CURRICULUM CONSTRUCTION 1Q W 4 Prereq 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&PE 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 healthful living; health counseling problems frequently encountered by physical educators.

378 PHYSIOLOGY OF EXERCISE 1Q W 2, Su o/y. The physiological effects of the different types of exercise on the functions of the human body. Classification of muscles, and the action of muscles in relation to physical education and activities of daily life.

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 S 5, Su o/y Prereq 380. Prevention and detection of common physical defects frequently encountered by the physical educator. Includes and follow-up program of remedial physical education.

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

390 CLINICAL TRAINING IN PHYSICAL THERAPY 1Q s/q V 1-4 R-4 Prereq 386 and c/l. Practical experience in local physical therapy centers. 480 SEMINAR 1Q A W S Su V 1-3 R-3. 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 e/y. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures.

466 SUPERVISION IN PHYSICAL EDUCATION 1Q Su 4 Prereq 365 or =. Roles and responsibilities of supervisors in exerting effective leadership.

490 TEACHING OF COLLEGE PHYSICAL EDUCATION ACTIVITIES 1Q A W S 3 R-4 Prereq 115-116-117, 118-119-120, 335, and c/l. Assigning teaching projects in college classes under supervision.

FOR GRADUATES

501 RESEARCH a q 2 R-4. Scientific methods in Health, Physical Education and Recreation. Practice in employing research techniques in planning and developing individual projects.

503 ADVANCED TESTS AND MEASUREMENTS 1Q W 4, Su o/y Prereq 465 or =. Specific tests for evaluation of organic, neuromuscular, psychological, physical, and social responses in construction and application of tests, and interpretation of results.

699 THESIS a q V R-15.

HISTORY as taught at Montana State University is a study of man's past activities with the hope that lessons may be learned which will be applicable in solving problems of the present era. For the student who is in search of a broad basis of education rather than training for some particular occupation, this department offers a program of instruction calculated to provide knowledge and understanding of the background and the possibilities of pre­sent national and world situations.

Courses are offered in European, American, Far Eastern, Canadian, and Latin-American History. Many students combine the fields of History and Political Science.

The department offers the Master of Arts degree in History involving the completion of an acceptable thesis based on original research. Admission to graduate work requires an acceptable academic record as well as the equivalent of an undergraduate major in History.

Occupationally this department helps to prepare men and women for either the domestic or the foreign service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and businessmen with bases for the pursuit of their chosen occupations, but also furnishes knowledge and perspective for intelligent leadership in community action.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HISTORY. In addition to the general requirements for graduation listed earlier in the catalog the following special requirements must be completed for the Bachelor of Arts degree with a major in History. A minimum of 45 credits in History is required, with 20 credits being earned in History courses numbered 300 or above, including History 491 or 492. Only 2 credits in 491 or 492 will count in fulfilling the minimum of 20 upper division credits for the B.A. History majors must elect a minimum of 15 credits in American and 15 credits in European History.

A student may offer a combined major in History and Political Science with 69 credits, of which at least 20 credits must be in History and 20 credits in Political Science. A minimum of 20 credits must be selected from courses numbered over 300 excluding 391, 491, or 492. Only one of these courses History 491 or 492, or Political Science 491 will count in fulfilling the minimum of 20 upper division credits for the B.A.

Either the completion of five quarters of a foreign language or the demonstration of a satisfactory reading knowledge of historical, legal or political science materials in such a language is required. With the consent of the Chairman of the Department the student may fulfill the Language requirement by completing three quarters each in two languages.

In the final year in the Department, each major must pass a Senior Comprehensive Examination.

With permission of the Chairman of the Department, majors may offer credit earned in Economics 385, 394-395, 331, 353 and in Journalism 390 in partial fulfillment of the major requisites for a degree.

To earn a Bachelor of Arts degree with a major in History and Political Science a Bachelor of Laws degree in six academic years the student must fulfill all the customary University and departmental requirements. 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 cannot propose a 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...
333 ECONOMIC HISTORY OF EUROPE 1 Q A Su 4. The economic development of Europe from the early Middle Ages to the present time.

334 MODERN WAR AND WESTERN SOCIETY 1 Q 3 Prereq: 333. Prereq also History 348 and 362, and for History 345 a recommendation of the student. Emphasis is placed on relationships of government and military command, on problems of strategy, and on theories of war.


339 HISTORY OF CANADA 1 Q A 4, Su S 2 Prereq 102, 241, or 251. A unified account of the history of Canada to the present time with emphasis on the political, economic and social development of modern England; the growth of Empire.

353 AMERICAN COLONIAL HISTORY 1 Q W 4 Prereq: 242 or 251. Discovery and settlement; development of colonial society; government in the colonies and England; Anglo-French rivalry in America; the British colonial system and colonial administration.

354 THE AMERICAN REVOLUTION 1 Q S 3 Prereq 242 or 251. Causes and development of the American Revolution. The Declaration of Independence; organization of the Continental Congress; the American Revolution; western lands; finance, commerce; the Constitutional convention.

355 THE AGE OF JEFFERSON 1 Q A Su 3 Prereq 251. The early national period concentrating on the ideas, development, and significance of the Federalists and Jeffersonians.

356 THE AGE OF JACKSON 1 Q W Su 3 Prereq 252. American history, 1815 to 1840, emphasizing the growth, significance and decline of Jacksonian democracy.

366-367 SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES 3 Q W or 3 Q S 3. (366) The transformation of American culture in the light of some leading social, religious, literary, and philosophical ideals; (367) continuation of 366; (368) continuation of 366.

368 NORTH AMERICAN FRONTIERS 1 Q A 3 Prereq 251-252. From the first settlements on the continent to the end of the 19th century.


372 HISTORIC SITES 1 Q S V 1-3 R-3 Prereq either 365 or 368 or 369. The location and evaluation of historic sites in Montana and the Northwest. Field trips under the joint supervision of archaeologists and historians.

373 ECONOMIC HISTORY OF THE UNITED STATES 1 Q S 4. Colonial economic growth and development of the United States; industrial and agricultural developments; the heyday of laissez-faire; the great depression, the Second World War and after.

374 CONSTITUTIONAL HISTORY OF THE UNITED STATES 1 Q W 4 Prereq 251-252-253. (375) A study of the constitutions which emerged from the turn of the 18th century to the present with emphasis on the role of the Supreme Court in United States history.


380-381 THE FAR EAST 2 Q A W 4. Enter either quarter. Prereq 5 cr. in history. (380) Development of the social, economic and cultural life of China, the Indochinese States, and Japan. (381) Continuation of 380 to the present with some emphasis on international politics in the Far East.

382 PROBLEMS IN HISTORY 1 Q a/Q 2-4 R-9 In Hist. 381. Prereq 25 or 251. Study of a single problem of history selected according to the needs and objectives of the individual student.

383 SPECIAL STUDIES IN HISTORY a/q V R-4 Prereq c/l. Offered by different instructors under various titles.

491 EUROPEAN HISTORICAL THOUGHT 1 Q A 3 Prereq 25 cr. in History. The contributions of leading 19th-20th century European historians to the development of modern historical analysis and interpretation.
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 education for personal 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.

For admission to graduate study in Home Economics a student should have a Bachelor's degree in Home Economics or in a related field and should present evidence of proficiency in academic work.

Both a Master of Science and a Master of Arts are offered, depending largely upon the undergraduate preparation and the field of specialization in Home Economics.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HOME ECONOMICS. A minimum of 60 credits in Home Economics selected as follows:

- Required for all majors: Home Economics 102, 141, 157, 210, 242, 346, 302, 393, 310, 311 and 366.

The following courses are required according to the area of interest selected by the student.

1. GENERAL: Home Economics 236 or 258, 398 and 367.
2. TEACHING: Home Economics 258 or 303, 308, 344, 369; Education 200, 205, 440, 457; Special Methods to be taken in either Education or Home Economics 321, 323. 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>Product</th>
<th>H E 210—Household Equipment</th>
<th>H E 242—Meal Management</th>
<th>H E 258—Clothing for the Family</th>
<th>Elective 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Cr</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Product</th>
<th>H E 210—Household Equipment</th>
<th>H E 242—Meal Management</th>
<th>H E 258—Clothing for the Family</th>
<th>Elective 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Cr</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

(1) The foreign language requirement listed earlier in the catalog must be satisfied for a B.A. degree with a major in Home Economics but is not required for a B.S. in Home Economics.

(2) Majors in Foods and Nutrition and Dietetic Internship training should elect Microbiology 200, Chemistry 160, Econ 201 and Business Ad 201.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

102 PERSONAL MANAGEMENT 1Q A W S 3 (3-0). Personal problems in the management of time, energy, and money.
105 HOME CRAFTS 3Q a/q 1 (0-2). Selected homemaking skills. Offered by various instructors under different titles.
141 FOODS 1Q A W S 5 (3-4). The production, selection and preparation of food.
146 ELEMENTARY NUTRITION 1Q W S 5 (4-4). Fundamental principles of adequate human nutrition. Non-majors only.
158 TEXTILE SELECTION 1Q A W S 3 (4-4). Fabrics for family clothing and home furnishings. Analysis of fibers, yarns, weaves and finishes.
157 CLOTHING CONSTRUCTION, SELECTION AND CARE 1Q A W S 3 (2-2). Fabrics for family clothing and home furnishings. Analysis of patterns and fitting problems, and consideration of economic, psychological and sociological factors in selection of clothing.
210 HOUSEHOLD EQUIPMENT 1Q A S 3 (2-3). Materials specifications, selection, care and use of equipment. Home mechanics.
242 MEAL MANAGEMENT 1Q W S 3 (2-4) Prereq 102, 141. Principles of menu making and food purchasing.
258 WEAVING 1Q S 2 (1-3) Prereq Art 125. Weaving on various types of looms.
344 FOOD CONSERVATION 1Q W 2 (1-2) Prereq 141. Scientific methods in the care and treatment of foods.
471 LARGE QUANTITY COOKERY 1Q A S 3 (3-3) Prereq 141, 210. Application of principles of cookery to large quantity food preparation; menu planning for institutions.
503 HOME PLANNING 1Q W S 3 (3-2) Prereq 210 and Art 125. Practical problems in planning a home.
503 INTERIOR DESIGN AND FURNISHINGS 1Q W S 5 (4-2) Prereq 392. Historic development and contemporary use of materials and furnishings in interior design, emphasizing discriminate use of space, color, design selection. Individual furnishing projects.
508 PROBLEMS OF THE CONSUMER 1Q A 3 (3-0) Prereq 242. Analysis of problems confronting the consumer.
510 HOME LIVING CENTER 1Q A W S 4 Prereq 102, 346. Residence in the home living center. Management of the home.
503 HOME MANAGEMENT 1Q A W S 2, 3 (2-0) Prereq 102. Open to non-majors. Management studies and discussion presented in problems of the home living center.
512 METHODS OF TEACHING HOME ECONOMICS 1Q W S 3 (3-0) Prereq 102, 141, 157, and Educ 305. The fundamental principles of organization, unit planning, and method of presentation of subject matter. (Home Econ majors should take this course as Educ 321.)
352 EXPERIMENTAL FOODS 1Q S 3 (1-4) Prereq 141. Foods from the experimental point of view. Special problems are assigned for individual investigation.
354 NUTRITION 1Q A 4 (3-0) Prereq 242 and Chem 160. Dietetics given in the light of the chemistry and physiology of digestion.
358 CHILD NUTRITION 1Q W S 3 (3-0) Prereq 346. The science of human nutrition as it applies to children.
355 HISTORY OF CLOTHING AND TEXTILES 1Q A S 3 (3-0). Historic costumes and textiles and their influences on modern dress and fabrics.
JOURNALISM is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media; methods by which events and ideas are transmitted, and their effects on readers and listeners. It includes instruction in the techniques for professional careers in newspaper work, radio and television, magazines and books, advertising and photography, public relations and promotion, free lance writing, and related fields. Approximately one-fourth of the total credits required for graduation will provide a background in the liberal arts, with emphasis on history, government, economics, philosophy, literature, foreign languages, psychology, and sociology.

The degree of Master of Arts in Journalism also is offered (see Graduate School). Undergraduates specialize in a field which may be news-editorial, radio-television, community newspapers, advertising, or magazines. They receive training in reporting, copy editing, advertising, and the history and law of journalism. Depending on their future specialty, they may also take courses in photography, typography, radio-television, magazine and feature writing and editing, public relations, editorial writing, and the international press. Instruction in many courses stresses ethics, legal and social responsibilities, and the opportunities for commercial success and public service.

Graduates obtain positions on newspapers in Montana and in other states, including many metropolitan centers. Some are foreign correspondents. Many are editors and publishers, or hold positions on radio and television stations, with technical magazines, in public relations firms or advertising agencies and government agencies. Some are distinguished scholars, authors and teachers.

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN JOURNALISM. In addition to the general requirements the candidate for the degree of Bachelor of Arts in Journalism must complete the recommended core curriculum of 29 hours, plus the requirements of his sequence, plus upper class electives to make a total minimum of 45 hours in Journalism. The core curriculum in Journalism, required of all majors, shall consist of Journalism 100, 270, 290, 360, 361, 362, 367, 371, 377, 380, 381, 491-493. A foreign language is required (see FOREIGN LANGUAGE REQUIREMENT in general section of catalog).

CURRICULUM IN JOURNALISM

Freshman Year

Journ 100—Introduction to Journalism 3
Eng 101-102-103—Freshman Composition 9
ROTC 101-102-103—Military Science or Air Sci (Men) 2-4
HAPE 101-102-103—Health and Physical Education 3
Additional courses to meet University requirements 31-36
Total recommended hours in Journalism 98-109

Sophomore Year

Journ 270—Reporting 3
Journ 280—History and Principles of Journalism 3
ROTC 201-202-203—Military Science or Air Sci (Men) 4-5
HAPE 201-202-203—Health and Physical Education 3
Additional courses to meet University requirements 38-42
Total recommended hours in Journalism 98-106

Junior and Senior Years

Journ 360—Principles of Advertising 3
Journ 362—Advertising Salesmanship 3
Journ 371—Advanced Reporting 3
Journ 372—Specialized Reporting 3
Journ 381—Advanced News Editing 3
Journ 390—Research and Reporting 3
Journ Electives (Including sequence requirements) 15-35
Additional Electives 35
Total recommended hours in Journalism 100-110

JOURNALISM CURRICULUM

NEWS-EDITORIAL SEQUENCE: Additional 9 hours required to be chosen from Journalism 267, 360, 470, 495.

ADVERTISING SEQUENCE: An additional 9 hours required to be chosen from Journalism 348, 368, 369.

MAGAZINE SEQUENCE: An additional 9 hours required to be chosen from Journalism 277, 320, 329, 334.

RADIO-TELEVISION SEQUENCE: An additional 9 hours required to be chosen from Journalism 245, 345, 346, 348.

COMMUNITY JOURNALISM SEQUENCE: An additional 9 hours required to be chosen from Journalism 350, 351, 352, 364, 495.

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

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

100 INTRODUCTION TO JOURNALISM 1Q A W S Su 3. Open to non-majors. History, organization, techniques and responsibilities of the media of mass communication, with emphasis on the newspaper.

127 TYPOGRAPHY 1Q A W S Su 2 Prereq c/i. Problems of typographical design and application. Elementary work in printing and in the handling of type.

140 INTRODUCTION TO RADIO AND TELEVISION 1Q W S 3. Open to non-majors. History, organization, economics, social and legal aspects of radio and television as mass media of communication.


210 ELEMENTARY PHOTOGRAPHY 1Q A W S 3 Prereq c/i. Open to non-majors. Photographic equipment, materials, and facilities with practice in taking of pictures under varied conditions and processing of film and prints.

240 STUDIO OPERATIONS 1Q A 1 (1-2) Open to non-majors. Operations of broadcasting and recording equipment. Production of programs.

270 REPORTING 1Q A W S 3. Open to non-majors. Ground-work in gathering, writing and evaluating news.

270 REPORTING 1Q A W S 3. Open to non-majors. Ground-work in gathering, writing and evaluating news.
299 HISTORY AND PRINCIPLES OF JOURNALISM 1Q S 3. Open to non-majors. American Journalism from colonial times against a background of U. S. history with attention to the struggle for freedom of expression.

277 NEWS PHOTOGRAPHY 1Q S 3 Prereq 227. Photographic reporting with emphasis on picture possibilities, significance, interest, and impact. Practice with news cameras.

322 MAGAZINE MAKEUP AND EDITING 1Q A 3 Prereq c/l. Open to non-majors. Theory and practice of editing magazines. Practice includes the use of type and illustrations, and adapting format to content.

331 MAGAZINE ARTICLE WRITING 1Q W 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.

324 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.

325 PROMOTION AND PUBLIC RELATIONS 1Q A W S Su 3 Prereq c/l. Open to non-majors. The techniques and theories of promotion and public relations.

345 NEWSCASTING 1Q A 3 Prereq 140, 270. Radio and television as news media. Preparation and delivery of radio and television news broadcasts.

346 RADIO-TELEVISION PUBLIC AFFAIRS 1Q W 3 Prereq 345. Radio and television special events and information programs, commentaries, sports, interviews and interpretation. Practice in newscasting.

348 RADIO-TELEVISION ADVERTISING AND MANAGEMENT 1Q W 3 Prereq 146. Planning and broadcasting of advertising campaigns. Station management and sales principles.


352 NEWSPAPER MANAGEMENT 1Q A W S 3 Prereq 360. Problems of operation of daily and weekly newspapers.

359 PRINCIPLES OF ADVERTISING 1Q A 3. Open to non-majors. Theory and techniques with emphasis on the role of advertising as it applies to the producer, consumer, and distributor.

361 ADVERTISING SALES 1Q A W S 2 Prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper staff work.

362 ADVERTISING MEDIA 1Q W 3 Prereq c/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.

394 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 3 Prereq 270. Instruction and practice in revision of copy, headline writing, use of references and principles of local and wire news editing.

381 ADVANCED NEWS EDITING 1Q A W S 2 Prereq 360. Editing and makeup problems.

FOR UNDERGRADUATES AND GRADUATES

316 SCHOOL PUBLICATIONS 1Q S e/y 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 Su only 3 Prereq B.A. degree or teaching experience. The principles of developing better understanding among the school, the press, and the community. For school administrators and teachers.

390 PUBLIC OPINION 1Q A W S 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and 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 radio-television courses. Motion picture new photography. Film for television.

441-442-443 RADIO-TELEVISION PRODUCTION AND DIRECTION 3Q A W S 3 Prereq 12 hours in radio-television courses. Advanced course in producing and directing radio and television programs. (441) emphasizes radio, (442) and (443) emphasize television.

470 REPORTING PUBLIC AFFAIRS 1Q W 3. Laboratory work in coverage of political and governmental news at the city, county, state, and federal levels.

491-492-493 SENIOR SEMINAR 3Q A W S 2 Prereq senior standing in journalism. Investigative methods of editing, study of several aspects of American society which constitute the background for many news stories, and practice in research methods.

494 RADIO-TELEVISION SEMINAR 1Q S 3 Prereq or co-requisite 441. Radio and television and their effect on society with emphasis on responsibilities of the broadcasting industry.

495 EDITORIAL WRITING 1Q S 3. The editorial pages of leading newspapers; practice in research and the writing of editorials.

496 MASS MEDIA IN MODERN SOCIETY 1Q W 3 Prereq c/l. Inter-relationships between media of mass communication and diverse facets of modern society.

497 INTERNATIONAL COMMUNICATIONS 1Q S 3 Prereq c/l. Media of communication in other countries, with emphasis on newspapers.

FOR GRADUATES

508 THEORIES OF COMMUNICATION 1Q A 3 Prereq consent of the dean. Structure, processes and effects of communication.

599 METHODS OF JOURNALISM RESEARCH 1Q A W S 3 Prereq consent of the dean. Problems and techniques in study and analysis of communications.

601 RESEARCH IN JOURNALISM 1-3Q A W S Su V Prereq consent of the dean.

699 THESIS a/ V R-18.

LAW is the study of the official rules and regulations under which people live in organized American society; of the methods by which such rules are devised and applied; of the part that lawyers, judges, and public officials play in the application of such rules; and of the specialized techniques, practices, and procedures involved.

Law studies primarily involve preparation and class recitations and lectures on the basis of illustrative court opinions collected in course “casebooks.” Special attention is also given to practice court work, in which the students are required to prepare and try cases as well as argue appeals. There is also training in the use of law books and in legal writing. The curriculum is designed to afford preparation for practice anywhere in the United States, but attention is also given to the law of Montana.

The Supreme Court of Montana admits graduates to practice without examination. Most graduates become practicing attorneys. Others enter government service, business, or finance with or without additional studies in these latter fields. Some take advanced or more specialized studies (such as taxation) at eastern institutions; graduates with the requisite scholarship standing are readily 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 1962

September 24-25, Monday and Tuesday Registration and Orientation of New Law Students (including transfer students from other schools)

September 26, Tuesday Registration of Upperclass Law Students

September 28, Wednesday Pre-registration classes begin at 8:00 a.m. November 21-22, Wed. 2:00 p.m. through Sunday Thanksgiving Day

December 22, Saturday Christmas vacation begins after last class January 7, 1963, Monday Classes resume at 8:00 a.m.

January 18-19, Wednesday through Thursday Pre-registration classes begin at 8:00 a.m.

January 29-Feb. 2, Monday through Saturday Semester examinations

SPRING SEMESTER, 1963

February 6, Wednesday Registration for Spring Quarter February 7, Thursday Classes begin at 8:00 a.m.

March 23, Saturday Spring vacation begins after last class April 1, Monday Classes resume at 8:00 a.m.

May 29-June 4, Wednesday through Tuesday Semester Examinations June 10, Monday Commencement
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. Any student who has completed two semesters of law study but thereafter fails two courses in any semester or who has failed a total of more than ten semester credits during the period of law study, will be automatically dropped from the Law School. (2) Weighted Average: A student otherwise eligible for continuation, 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. The faculty reserves the right to require a student placed on probation to repeat any course in which he received a deficient grade. A student on probation who fails to secure an index of 2.0 in law courses not previously taken for which he had registered and received a grade in any semester subsequent to being placed on probation, will be dropped from the Law School. Required courses in which the student has received a grade of D or required courses in which the student has failed, may not be repeated, provided that the total credits in the course being repeated do not exceed one-half of the total credits for which he is registered. 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.

REQUIREMENTS FOR GRADUATION: Candidates for the degree of Bachelor of Laws (LLB) 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) have completed law courses in an approved combination program or (b) complete the following required courses: all courses taught in the first and second years except Law Review I as specified in the program of instruction below, together with Criminal Practice, Criminal Procedure, Federal Taxation 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 unless he has a very high scholastic average, and all courses otherwise qualified in accordance with generally accepted standards for admission to law school.

A student may not register nor receive credit for more than 16 hours of law in a semester.

FIRST YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Procedure I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Contracts II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Criminal Law</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Intro To Law</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Property I, II</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Remedies</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Property I, II</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Torts</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Law Review II</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>* Required courses.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECOND YEAR

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Law</td>
<td>2</td>
</tr>
<tr>
<td>Contracts I</td>
<td>2</td>
</tr>
<tr>
<td>* Court Room and Office Practice I</td>
<td>1</td>
</tr>
<tr>
<td>Creditors' Rights</td>
<td>2</td>
</tr>
<tr>
<td>* Criminal Procedure</td>
<td>2</td>
</tr>
<tr>
<td>* Federal Taxation I, II</td>
<td>2</td>
</tr>
<tr>
<td>Jurisprudence</td>
<td>2</td>
</tr>
<tr>
<td>Labor Law</td>
<td>2</td>
</tr>
<tr>
<td>Law Review II</td>
<td>2</td>
</tr>
<tr>
<td>* Legal Writing III</td>
<td>2</td>
</tr>
<tr>
<td>Legislation</td>
<td>2</td>
</tr>
<tr>
<td>Mining Law (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Municipal Corporations (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Oil and Gas</td>
<td>2</td>
</tr>
<tr>
<td>Secured Transactions</td>
<td>2</td>
</tr>
<tr>
<td>Social Legislation (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Taxation (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Water Law</td>
<td>2</td>
</tr>
<tr>
<td>* Required courses.</td>
<td></td>
</tr>
</tbody>
</table>

THIRD YEAR

|----------|----------|

COURSES

<table>
<thead>
<tr>
<th>ADMINISTRATIVE LAW 1</th>
<th>Sem A 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp Procedure I</td>
<td>1</td>
</tr>
<tr>
<td>Law Review</td>
<td>1</td>
</tr>
<tr>
<td>Civil Procedure</td>
<td>1</td>
</tr>
<tr>
<td>Bills and Resolutions</td>
<td>1</td>
</tr>
<tr>
<td>Atkinson &amp; Chadbourn, Cases and Materials on Civil Procedure</td>
<td>1</td>
</tr>
<tr>
<td>Mason, Montana Cases and Materials on Courts and Types of Jurisdiction (Iib)</td>
<td>1</td>
</tr>
<tr>
<td>Mason, Montana Cases and Materials on Civil Procedure</td>
<td>1</td>
</tr>
<tr>
<td>Atkinson &amp; Chadbourn, Cases and Materials on Civil Procedure</td>
<td>1</td>
</tr>
</tbody>
</table>

COMMERCIAL TRANSACTIONS I & II | 2 | Sem A 2, S 3 |

CONTINUOUS. Frey, Sutherland, Commercial Transactions.


COURT ROOM AND OFFICE PRACTICE I & II 2 Sem A S 1, Continuous. Montana Code of Civil Procedure, selected cases and practical exercises.


ESTATE PLANNING I & II 2 Sem A S 3. Materials to be announced.


FEDERAL TAXATION II 1 Sem S 2. Internal Revenue Code.


JURISPRUDENCE 1 Sem S 2. Cohen and Cohen, Readings in Jurisprudence.


LAW REVIEW I & II 2 Sem S 1, Second year. A 1, Third year. No Text.

LEGAL WRITING I, II & III 3 Sem A S 1 Second Year. S 1 Third year. No text.


MINING LAW 1 Sem S 2. Costigan, Cases on Mining Law.

MUNICIPAL CORPORATIONS 1 Sem A 2. Forchum, Local Government Law.

OIL AND GAS 1 Sem A 3. Sullivan, Handbook of Oil and Gas Law; Cases and Materials on Oil and Gas (mimeographed).

PROFESSIONAL RESPONSIBILITY 1 Sem S 2. Mimographed materials of instructor.


REMEDIES 1 Sem S 3. Wright, Cases on Remedies.


SOCIAL LEGISLATION 1 Sem S 2. Riesefeld and Maxwell, Modern Social Legislation.


TRADE REGULATIONS 1 Sem A 2. Handler, Cases on Trade and Regulation.

WATER LAW 1 Sem S 2. Mimographed materials of instructor.

LIBERAL ARTS include Literature, Philosophy, Art, Foreign Languages, and the Social Sciences. The latter include Anthropology, Economics, History, Political Science and Sociology. Four years are required for the degree of Bachelor of Arts. This program permits the student to work in these areas either than in a particular one of them and affords a varied selection from which to choose. During his last two years the student does more advanced work in two areas of his choice. This curriculum is designed for the student who wants a broad, or "liberal," education with a minimum of specialized professional work. It also provides a broad educational background for students who decide to prepare for teaching. Those who elect to teach, may qualify to do so by taking additional work in education as well as in their chosen field.

Following are the special requirements for the Bachelor of Arts degree with a major in Liberal Arts:

University Requirements

<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>15</td>
</tr>
<tr>
<td>Foreign Language (5 quarters)</td>
<td>22</td>
</tr>
<tr>
<td>Physical Education</td>
<td>9</td>
</tr>
<tr>
<td>Military Science (men)</td>
<td>6-9</td>
</tr>
<tr>
<td>Major Requirements (Courses under 300)</td>
<td>10-7</td>
</tr>
<tr>
<td>1. Art 231-232-233</td>
<td>9</td>
</tr>
<tr>
<td>2. Economics, Psychology, Sociology, Anthropology</td>
<td>20</td>
</tr>
<tr>
<td>3. History and Political Science, (History 101-102-103 recommended)</td>
<td>20</td>
</tr>
<tr>
<td>4. Humanities</td>
<td>9</td>
</tr>
<tr>
<td>5. Literature (English 211-212-213 and 231-232-233 recommended)</td>
<td>20</td>
</tr>
<tr>
<td>6. Philosophy</td>
<td>15</td>
</tr>
<tr>
<td>Major Requirements (Courses 300 and above)</td>
<td>93</td>
</tr>
<tr>
<td>In two of the three fields the student elects upper division courses equal to the number of credits indicated for those fields:</td>
<td></td>
</tr>
<tr>
<td>1. Economics, Psychology, Sociology, Anthropology</td>
<td>12</td>
</tr>
<tr>
<td>2. History and Political Science</td>
<td>12</td>
</tr>
<tr>
<td>3. Literature or Philosophy</td>
<td>24</td>
</tr>
<tr>
<td>Free Electives</td>
<td>10-7</td>
</tr>
<tr>
<td></td>
<td>196</td>
</tr>
</tbody>
</table>

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.

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 earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts with a major in Library Service:

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 101-102-103—Freshman Composition</td>
<td>9</td>
</tr>
<tr>
<td>History 101-102-103</td>
<td>15</td>
</tr>
<tr>
<td>French or German 101, 102, 103—Elementary French or German</td>
<td>15</td>
</tr>
<tr>
<td>Psych 110—Introduction to Psychology</td>
<td>9</td>
</tr>
<tr>
<td>Health &amp; PE 101, 102, 103</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 101, 102, 103</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>49-51</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 134—Introduction to Concert Music</td>
<td>2</td>
</tr>
<tr>
<td>French or German 212, 215—Intermediate and Advanced</td>
<td>8</td>
</tr>
<tr>
<td>History 252, 253—United States History</td>
<td>8</td>
</tr>
<tr>
<td>Eng 211-212-213—Intro to Major British Writers</td>
<td>9</td>
</tr>
<tr>
<td>Econ 201-202-210—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>Group I Requirements</td>
<td>10</td>
</tr>
<tr>
<td>Health &amp; PE 201, 202, 203</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 201, 202, 203</td>
<td>4-5</td>
</tr>
<tr>
<td>Total</td>
<td>53 to 54</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 233, 233—Intro to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Political Science 101—Intro to Government</td>
<td>6</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—Bibliography and Book Selection</td>
<td>4</td>
</tr>
<tr>
<td>Edu 346—Reference Materials</td>
<td>4</td>
</tr>
<tr>
<td>Edu 347—Audio-Visual Aids</td>
<td>3</td>
</tr>
<tr>
<td>Art 231, 232, 233—History of Art</td>
<td>9</td>
</tr>
<tr>
<td>Group I Requirements</td>
<td>3</td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
</tr>
</tbody>
</table>
MATHEMATICS—59

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.

Modern high speed computing devices, instead of replacing mathematicians, have increased their usefulness. A high degree of mathematical skill is required to put a problem into a form in which the machine can handle it.

The Bachelor of Arts, Master of Arts and Master of Science degrees are offered (see Graduate School).

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, the student needs algebra and geometry. For the inauguration of high school preparation for college entrance, trigonometry is included in 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 in Mathematics: Math 116 or exemption, 111, 112, 113, 114, 115, and nine credits in other approved Mathematics courses, including three courses in grades numbered above 300. Students select areas in science from Botany, Chemistry, Geology, Physics, Psychology, Public Health, Physics, or Zoology, and must present 13 credits in one science and 18 credits in the other selected science. The student may substitute French, German, Russian or another course for one of these sciences, provided that the language substituted is not one offered to satisfy the language requirement listed earlier in the catalog. An alternative to the requirement of the two sciences or the one science and a language is for the student to present a second major in one of the schools within the University.

1. Students planning to enter graduate work or industry are required to take Mathematics 300, 310, 311, 312, 314, 413, and nine credits in other approved Mathematics courses, including three courses in grades numbered above 300. Students select areas in science from Botany, Chemistry, Geology, Physics, Psychology, Public Health, Physics, or Zoology, and must present 13 credits in one science and 18 credits in the other selected science. The student may substitute French, German, Russian or another course for one of these sciences, provided that the language substituted is not one offered to satisfy the language requirement listed earlier in the catalog. An alternative to the requirement of the two sciences or the one science and a language is for the student to present a second major in one of the schools within the University.

2. Students selecting the teaching option are required to take Mathematics 125, 300, 304, and 3 credits in other approved Mathematics courses numbered above 300.

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

FOR UNDERGRADUATES

100 INTERMEDIATE ALGEBRA 1Q A W S 2 Prereq satisfactory performance in an examination in elementary algebra. (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 inclusions, linear programming. (Credit not allowed for both 112 and 116.)

113 TRIGONOMETRY 1Q A W 3 Prereq 100 or exemption by examination. Trigonometric functions and their graphs, radian measure, Pythagorean identities, addition formulas, laws of sines and cosines, inverse trigonometric functions and their graphs, applications. (Credit not allowed toward degree in Mathematics.)

116 COLLEGE ALGEBRA 1Q A W 5 Prereq 100 or exemption by examination. Algebraic structure of the real number system, mathematical induction, binomial theorem, 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 S 5 Prereq 116 and 113 or exemptions by examination. (Credit not allowed toward degree in Mathematics.) Elementary analytic geometry, function, limit, derivative, differentiation of algebraic functions, applications.

251 CALCULUS I 1Q A W S 5 Prereq 118 or 153. Applications of the derivative; transcendental functions and their derivatives; integration.

252 CALCULUS II 1Q W S 5 Prereq 251. Integration techniques; further applications of the derivative and the integral; mathematical induction.

253 CALCULUS III 1Q S 5 Prereq 252. Solid analytic geometry; partial derivatives; multiple integrals; infinite series.

FOR UNDERGRADUATES AND GRADUATES

300 ALGEBRA FOR TEACHERS 1Q W S 5 Alternate years Prereq 222 or 251 or concurrent registration. The processes of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra.

302-303 STATISTICAL METHODS 2Q A W 3 c/i Prereq 125. Primarily intended for those who find need for statistical techniques in fields of application; (302) Descriptive statistics, principles of estimation, confidence intervals, tests of significance. (303) Analysis of variance, regression, correlation, design of experiments, simplified statistics.

304 GEOMETRY FOR TEACHERS 1Q W S 5 Alternate years Prereq 224 or c/i. The subject matter of high school geometry compared with that of other geometries.

305 TOPICS IN MATHEMATICS Su V Prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to help high school teachers improve their background in mathematics. Content varied to meet the needs of the student. Not allowed toward a major in Mathematics.

306 HISTORY OF MATHEMATICS 1Q S 4 Prereq 15 credits in Mathematics and c/i.

308-310 ADVANCED CALCULUS 2Q A W 3 Prereq 254 or 252. (308) Sequences of real numbers, continuity functions; partial derivatives. (310) Riemann Integrals; series of functions; power series; line integrals.


313 ORDINARY DIFFERENTIAL EQUATIONS 1Q S 3 Prereq 253. Elementary solutions of differential equations; introduction to series solutions; Bessel, Legendre equations; introductions to Sturm-Liouville systems; Picard's Method.

314 LINEAR GROUPS 1Q S 3 Prereq 312.

315 MODERN ALGEBRA 1Q S 5 Prereq 15 credits of mathematics and c/i. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

316 MODERN ALGEBRA 1Q S 5 Prereq 315 or = and c/i. Continuation of 315. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

317 PRINCIPLES OF ANALYSIS 1Q S 5 Prereq 15 credits of mathematics and c/i. The concepts of limit, continuity, differentiation, and integration. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

318 PRINCIPLES OF ANALYSIS 1Q S 5 Prereq 317 or = and c/i. Continuation of 317. Differentiation and integration. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

320 SYNTHETIC PROJECTIVE GEOMETRY 1Q on demand 3 Prereq 251. Projective transformations and projective invariants; conics; geometric construction of fields; applications to metric geometry.

322 ANALYTIC PROJECTIVE GEOMETRY 1Q on demand 3 Prereq 311. Projective transformations, projective invariants, and conics by means of coordinate systems.

324 ELEMENTARY NUMBER THEORY 1Q on demand 3 Prereq at least 20 cr in Math with a grade of C+ or better.

327-328 FOUNDATIONS OF GEOMETRY 2Q Su 4 Prereq 252 and c/i. Axiomatic systems for and selected theorems from Euclidean geometry, projective and other non-Euclidean geometries, finite geometries, introduction to topology. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.) (Credit not allowed for both 304 and 327.)
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, Microbiology and Public Health. Option I consists of four years of academic studies at the University leading to a B.S. degree in Medical Technology. These students then fulfill the 12 months of hospital practice requested by the Board of Registry. Under Option II the student receives a B.S. in Medical Technology after approximately 3 ½ 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 200, 302, 310; Physics 111, 112, 113; Zoology 104, 105, 201, 202; Chemistry 121, 122, 123, 245, 361, 363; Math 116. A minimum total of 45 credits from Microbiology courses listed above and from the following courses is required: Microbiology 305, 320, 330, 331, 401, 402, 403, 404, 405, 406, 408, 419, 430, 431, 432; Zoology 303, 340, 341, 342; Chemistry 346, 347, 370, 384, 481, 482; or any other course approved by the adviser and the Chairman of the Department of Botany, Microbiology and Public Health.

BASIC MEDICAL TECHNOLOGY CURRICULUM

FOR GRADUATES

Before beginning work on an M.A. a student should have an undergraduate major in mathematics with a B average in upper division courses in mathematics. As preparation for graduate work he should have Math 309, 310, 311, 312. These courses are not required for the M.A. or M.S. in teaching.

600 GRADUATE SEMINAR 1 Q a/q V Prereq c/i. This course provides guidance in graduate subjects or research work.

699 THESIS a/q V R-15.

MEDICAL TECHNOLOGY

is a combined study of chemistry, physics, physiology and microbiology for the medical technologist who seeks a degree 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 sciences and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this Certification is desirable, persons receiving the B.S. in Medical Technology...
Microbiology & Public Health—61

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, Microbiology and Public Health are required. The student will receive credit in the amount of not more than 30 credit hours towards his B.S. degree for the successful completion of the hospital practice.

Microbiology and Public Health

Microbiology is the study of bacteria, molds, yeasts, rickettsias, 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 mainly in developing a sound foundation in Mathematics, Physics, Chemistry, Biology and Social Sciences. The last two years are spent for the most part, in taking courses in Microbiology and related subjects. Senior students who have shown interest and ability during their undergraduate work are encouraged to continue their studies toward an advanced degree. Successful completion of the general curriculum must lead to the Bachelor of Arts, the Master of Science and to the Doctor of Philosophy degree. 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 study 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; Mathematics 116.

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

A minimum of 45 credits in the major field is required to receive the baccalaureate degree. This requirement may be satisfied by a successful completion of Microbiology courses listed above and any of the following courses: Microbiology 110, 305, 320, 331, 401, 492, 494, 496, 499, 490, 410, 412, 430, 432, Zoology 304, 306; Botany 322, 323, 329, 375; Chemistry 263, 384, 481, 482, or any other course approved by the adviser and chairman of the Department of Botany, Microbiology and Public Health.

Basic Program

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</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—Emel Zool or Bot 121-122—Gen Bot</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Eng1 101-102-103—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math 116</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEP 101-102-103—Physical Education</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</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 261-262—Organic Chemistry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 245-246—Quantitative Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiology 200—General Microbiology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEP 201-205-203—Physical Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROTC 201-205-203—Military or Air Science</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro 316—Immunology and Serology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Micro 325—Medical Microbiology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>W</th>
<th>S</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) Prereq 100 or concurrent registration. Principles and techniques of basic bacteriology; immunology and chemotherapy as they apply to the field of Pharmacy.

101 ELEMENTARY MICROBIOLOGY LABORATORY 1Q A S Su 2 (4-0) Prereq 100 or concurrent registration. Microbiological examination of foods, water and sewage; sewage treatment and disposal, and water purification.

102 MEDICAL MICROBIOLOGY 1Q A 5 (3-4) Prereq 200. Pathogenic microorganisms including bacteria, fungi, viruses, and rickettsias.

303-304 PHARMACEUTICAL MICROBIOLOGY 2Q A W 5 (3-4) Prereq Chem 263, Phys 113 or 223. Principles and techniques of basic bacteriology, the field of Investigative Microbiology, toxicology, and chemotherapy as they apply to the field of Pharmacy.

305 MEDIA PREPARATION 1Q a/q 2 (1-3) Prereq 200. Preparation, sterilization and storage of culture media; differential methods, function of ingredients, and general nutritional requirements of bacteria.

310 IMMUNOLOGY AND SEROLOGY 1Q W 5 (3-4) Prereq 302. Basic immunology and clinical aspects of immunity and related infections.

320 MICROBIOLOGY OF WATER AND SEWAGE 1Q W On demand 5 (3-4) o/y Prereq 200. Microorganisms found in water and sewage; sewage treatment and disposal, and water purification.

330 FOOD MICROBIOLOGY 1Q W 3 (3-0) e/y. Microbiology of foods with emphasis on preservation, processing and spoilage of foods.

331 FOOD MICROBIOLOGY LABORATORY 1Q W 2 (4-0) e/y. Prereq 330 or concurrent registration. Techniques for the investigation of microorganisms in foods.

340 MICROBIOLOGY FOR TEACHERS 1Q Su 5 (3-4). Introduction to Microbiology to high school science teachers. Not open to Microbiology majors.

401 ADVANCED IMMUNOLOGY 1Q On demand 3 (3-0) Prereq 310. Advanced theories of immunity and recent immunological techniques.

402 HEMATOLOGY 1Q A 4 (2-4) e/y. Blood elements and blood chemistry in health and disease as applied to hospital laboratories.

403 MICROBIAL PHYSIOLOGY 1Q S 5 (3-4) Prereq c/l. Physiology of bacteria and related microorganisms, the metabolism of microorganisms, enzymes of bacteria.

404 MICROBIAL GENETICS 1Q S 2 (2-0) e/y Prereq senior standing in one of the biological sciences and c/l. Mutation, adaption and genetic recombination in bacteria and other microorganisms.

405 SEMINAR a/q 1 (1-0) R-6. Recent literature in Microbiology and related subjects.

406 MICROBIAL CYTOLOGY 1Q W V 3-5 (3-4) o/y Prereq c/l. Anatomy of microorganisms.

410 CLINICAL DIAGNOSIS 1Q A 4 (2-4) o/y Prereq 302. Clinical diagnostic methods used for the analysis of blood, spinal fluid, urine, feces and gastric juice with emphasis on the practical methods used in hospital laboratories.

411 EPIDEMIOLOGY 1Q W 3 (3-0) Prereq c/l. Distribution and frequency of disease and factors affecting its spread and control.

420 VIROLOGY 1Q S 3 (3-0) o/y. Bacteriophage, plant and animal viruses.

430 SPECIAL PROBLEMS IN MICROBIOLOGY 1q a/q 1-5 R-25 Prereq c/l. Independent research.

For Graduates

500 ADVANCED TOPICS IN MICROBIOLOGY 1Q On demand 2 (2-0). Critical analysis of research papers in a certain area of microbiology and presentation of this material. Occasionally, a graduate student will be asked to present experimental data from his own research.
MUSIC

The School of Music offers to students who have demonstrated talent in music, the opportunity to continue further study of music either for a profession or an avocation, and to acquire at the same time a broad general education. Complete sequences of courses are given to prepare a student for (A) a career as teacher or supervisor of music in the public schools, or for (B) a career directed toward composition, private teaching, and concert work, or for (C) thorough training in music within the structure of a broad liberal arts curriculum.

The School of Music is a member of the National Association of Schools of Music.

The following degrees in music are offered by the School of Music:

Bachelor of Music
- with a major in Music Education
- with a major in Applied Music
- with a major in Theory or Composition

Bachelor of Arts
- with a major in Music

Master of Music
- with a major in Music Education
- with a major in Applied Music
- with a major in Composition

REQUIREMENTS FOR ADMISSION. In general, admission as a freshman in the School of Music is by certificate from the high school from which the student graduates. The faculty of the School of Music is more concerned with evidence of talent, conspicuous achievement in music, promise of development, and in scholarship in general, than it is in the precise content of the program which the prospective music student has followed prior to admission. 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 UNDERGRADUATE DEGREES IN MUSIC. In addition to the general requirements 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 34 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 of the regular school year. Students who are wind instrument majors in their applied field must register for band (or orchestra, if designated) every quarter, string majors must register for orchestra every quarter; voice majors must register for choir every quarter. 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 140-140. Exceptions to this requirement may be made only by action of the music faculty.

7. All candidates for the Bachelor of Music degree must satisfactorily demonstrate completion of 6 credits in Piano 100 or completion of Piano in Class 217.

APPLIED MUSIC FEES

Non-Music Majors
- One half-hour lesson per week...
- Additional lesson per week...

Music Majors
- One half-hour lesson per week...
- Two or more lessons per week...

RENTALS, PER QUARTER

Practice room without piano, one hour daily...
- Additional lesson per week...

Piano and practice room, one hour daily...
- Additional lesson per week...

Organ and practice room, one hour daily...
- Additional lesson per week...

-Wind and string instruments...
-Rental fees for instruments used in orchestra and band...

Other rentals must be paid for in full for the school year.

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 preparation in instrumental music, 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 courses for 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) 1.1.1.
Music 106-110 (Organization) 1.1.1.
Music 111-112-113 (Theory I) 1.1.1.
Music 113, 114, 115, (Piano in Class) 1.1.1.
Music 125, 126, 127 (Strings or Winds in Class) 1.1.1.
Music 135, 136, 137 (Introduction to Music Literature) 1.1.1.
Health & Physical Educ. 101-102-103 0.1.1.
R.O.T.C. 101-102-103 0.1.1.

Sophomore Year

Music 201, 202, 203 (Applied) 1.1.1.
Music 106-110 (Organization) 1.1.1.
Music 241, 242, 243 (Organization) 1.1.1.
Music 237, 238, 239 (Sight Singing, Keyboard, and Dictation) 1.1.1.
Music 230, 231, 232, 233 (Conducting) 0.1.1.
Electives (Non-Music) including Psych 110 0.1.1.
Health & Physical Educ. 201-202-203 0.1.1.
R.O.T.C. 201-202-203 (Men) 0.1.1.
JUNIOR YEAR

Music 201, 202, 203 (Applied) 1.1.1.
Music 106-110 (Organization) 1.1.1.
Music 234, 235, 236 (School Music) 1.1.1.
Music 125, 126, 127, or 129 (Strings or Winds in Class) 1.1.1.
Electives 203, 204, 205 0.1.1.
Electives (Non-Music) 0.1.1.

SENIOR YEAR

Music 401, 402, 403 (Applied) 1.1.1.
Music 106-110 (Organization) 1.1.1.
Music 234, 235, 236 (School Music) 1.1.1.
Music 320, 321, 322 (Orchestration) 1.1.1.
Music Electives (upper division) 1.1.1.
Education 405 (Student Teaching) 1.1.1.
Music Electives (6) 0.1.1.

VOCAL MAJORS

Vocal majors in Music Education follow curriculum A with the following exceptions: Three credits only in Music 125, 126, 127 and 129. Music 223, 225, 229, 230 and 331 are not required, but Vocal majors must substitute 4 additional credits in upper division music electives. An academic teaching minor is recommended.
B. CURRICULA FOR BACHELOR OF MUSIC DEGREE WITH MAJORS IN APPLIED MUSIC, IN THEORY OR COMPOSITION

The serious instrumentalist or vocalist may enroll for training leading to the degree of Bachelor of Music with a major in Applied Music (including emphasis on piano pedagogy), Theory or Composition. Enrollment may not be completed until the student has received the recommendation of a major professor or a committee of the music faculty.

MAJOR IN PIANO OR ORGAN

Students interested in piano pedagogy follow Curriculum B with the following exceptions: (1) at least six credits in Music 140 (Piano Ensemble) must be included, (2) a half recital, Music 445, 1 credit, will fulfill the senior recital requirement.

FRESHMAN YEAR:

- Music 111-112-113 (Theory I) - 4.4.4.
- Music 106-110 (Organization) or Music 140 (Ensemble) - 2.2.2.
- Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
- Music 135, 136, 137 (Introduction to Music Literature) - 3.3.3.
- English 101-102-103 (Freshman Composition) - 2.2.2.
- Health & Physical Educ. - 1.1.1.
- Electives (non-music) - 0.0.2.

JUNIOR YEAR:

- Music 351, 352, 353 (Applied) - 4.4.4.
- Music 106-110 or 140 - 1.1.1.
- Music 241-242-243 (Theory II) - 2.2.2.
- Music 231, 232, 233 (Conducting) - 3.3.3.
- Music electives (upper division) - 4.4.4.
- Electives (non-music) - 1.2.

SENIOR YEAR:

- Music 459, 460, 461 (Composition) - 3.3.3.
- Music 459, 460, 461 (Composition) - 2.2.2.
- Electives (non-music) - 1.7.

MAJOR IN VOICE

FRESHMAN YEAR:

- Music 151, 152, 153 (Applied) - 3.3.3.
- Music 106-110 (Organization) - 1.1.1.
- Music 111-112-113 (Theory I) - 1.1.1.
- Music 114-115-116 (Piano in Class) - 1.1.1.
- Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
- Music 135, 136, 137 (Introduction to Music Literature) - 2.2.2.
- English 101-102-103 (Freshman Composition) - 3.3.3.
- Health & Physical Educ. - 1.2.
- Electives (non-music) - 7.7.

JUNIOR YEAR:

- Music 351-352-353 (Applied) - 2.2.2.
- Music 106-110 (Organization) - 1.1.1.
- Music 241-242-243 (Theory II) - 2.2.2.
- Music 231, 232, 233 (Conducting) - 3.3.3.
- Music electives (upper division) - 4.4.4.
- Electives (non-music) - 1.2.

SENIOR YEAR:

- Music 459, 460, 461 (Composition) - 3.3.3.
- Music 459, 460, 461 (Composition) - 2.2.2.
- Electives (non-music) - 1.7.

ADDITIONAL REQUIREMENTS: Students taking voice or instrumental in the Music 101-403 Series must take Music 100—Piano until a jury examination has been passed.

Theory Majors are required to complete Music 159, 160, 161 and Music 259, 260, 261.

Composition Majors: A faculty jury examination of representative work in composition must be passed at close of sophomore year. Seniors will present a recital of original music (or equivalent) in solo voice or instrument, and vocal and instrumental groups including at least one composition for large ensemble.

C. CURRICULUM FOR BACHELOR OF ARTS DEGREE WITH A MAJOR IN MUSIC

Students with a pre-college background in applied music may elect Curriculum C, a course designed to develop musicianship, gain scholarly insight into the art of music, and to develop substantial background in the Arts and Sciences. This degree does not qualify a student for public school teaching in Montana but does provide groundwork for further pursuance of musical performance and scholarship, and the possibility of teaching careers in colleges or in private institutions.

Minimum credit requirements for this degree are: Music - 57 cr., Arts and Sciences - 93 cr., General (other than music and Phy. Ed.) - 90 cr. Students with a pre-college background may apply 11 cr. or 111-116 credits. Maximum credits not transferable toward this degree: Applied Music - 12 cr., Ensemble Music - 6 cr.

FRESHMAN YEAR:

Music 101, 102, 103 (Applied) - 3.3.3.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 114-115-116 (Introduction to Music Literature) - 2.2.2.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.

JUNIOR YEAR:

Music 351-352-353 (Applied) - 4.4.4.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
General 151-152-153 (Humanities) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.

SOPHOMORE YEAR:

Music 251, 252, 253 (Applied) - 4.4.4.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
General 151-152-153 (Humanities) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.

SOPHOMORE YEAR:

Music 251, 252, 253 (Applied) - 4.4.4.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
General 151-152-153 (Humanities) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.

SOPHOMORE YEAR:

Music 251, 252, 253 (Applied) - 4.4.4.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
General 151-152-153 (Humanities) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.

SOPHOMORE YEAR:

Music 251, 252, 253 (Applied) - 4.4.4.
Music 106-110 (Organization) - 1.1.1.
Music 111-112-113 (Theory I) - 1.1.1.
Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation) - 1.1.1.
Music 135, 136, 137 (Intro to Music Literature) - 2.2.2.
English 101-102-103 (Freshman Composition) - 3.3.3.
General 151-152-153 (Humanities) - 3.3.3.
Health & Physical Educ. - 1.1.1.
R.O.T.C. 101-102-103 (Men) - 2.0.2.
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 evidence that he may be qualified for this application as a tool rather than as a medium for performance. 8. Total credits in 121-122 and 125-126 applied are 12 credits.

MUSIC 101, 102, 103 (First year)—201, 202, 203 (Second year)—301, 302, 303 (Third year)—401, 402, 403 (Fourth year)

Secondary Applied Major a/q V 1-2 Prereq audition and c/l. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum B must show evidence of the equivalence of two year's prior study.

MUSIC 151—152—153, 251—252—253, 351—352—353, and 451—452—453

Applied Major a/q V 2-4 Prereq audition and c/l. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. Students majoring in Applied Music (Curriculum B) must show talent for solo performance and evidence of the equivalences of four years' prior study. A senior recital must be given before graduation.

FOR UNDERGRADUATES

For explanation see Index under “Symbols”

105 SUMMER SESSION CHORUS 1q Su V 1-2.

106 UNIVERSITY CHOIR 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 thru 110 are major musical organizations. 3q A W S 1 Prereq c/l. Majors must take a minimum of 12 credits; non-majors may take 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 the center of 2, 3, 5, 7 of scales, keys, intervals, chords, cadences, melodic writing, modulation, and rhythm.)

114-115-116 PIANO IN CLASS 3q A W S 1. All major and minor scales 2 octaves HS. All major and minor triads in all posttonal Harmonization of timbres with I V V7 chords. Materials such as Oxford and Burrows Adult Beginners books. Transposition, memorization, and sight-reading.


122-123 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS

SQ W Su 3 Prereq 114 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, five sight songs with improvisation; the nature of the choral approach; classroom conducting; basic rudiments of music and keyboard fundamentals. (123) Conducting of 123, dealing more specifically with topics presented generally during the first quarter. Other topics included: beginning part singing; rhythmizations; integrated units with social studies; literature; use and use of phonograph; instruments of the orchestra by sight and sound; additional vocal work; piano applied to piano books for the elementary school library. Not open to music majors.

125-126-127 STRING INSTRUMENTS IN CLASS 3q A W S 1.

Group instruction for beginning students on violin, viola, cello, and bass with literature; an orchestra. Students may register for more than one ensemble group in any one quarter.

223 MUSIC OF THE ROMANTIC PERIOD 1Q S 3 Prereq 137 and 243. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

243 ADVANCED CONDUCTING 1Q A W S 3 R-6 Prereq 232 (Choral majors), 233 (others), and c/l. A continuation of 231-232-233. Class and/or individual study of the art of conducting with emphasis on applied perusal work.

450-460-461 COMPOSITION 3Q A W S 2 Prereq 361. A continuation of composition with writing in the larger forms.

541 ADVANCED ORCHESTRATION 3Q A W S 2 Prereq 331. (471) Styles in orchestral techniques from 1750 to present; (472-473) Scoring for concert band and symphonic orchestra with emphasis upon larger forms and use of original ideas in tone color.

FOR GRADUATES

501-502-503 APPLIED TECHNICS a/q V 1-4 Individual instruction in voice, piano, organ, string or wind instruments. Students desiring further study of minor applied fields may elect 1-2 credits.

521 MUSIC EDUCATION IN AMERICA 1Q W S 3. The history and philosophy of music education in America and their relation to general educational thought.

523 SCHOOL MUSIC ADMINISTRATION 1Q A S 3. School systems, plans for organizing and administering the music program in the elementary, junior and senior high school. For students whose primary purpose in advanced study is preparation for administrative or supervisory work in music education.

558 PEDAGOGY OF THEORY 1Q W S 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of standard harmony texts. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

561 SEMINAR a/q V 1-3 R-15. Investigation of research in fields of individual interest.

569 COMPOSITION a/q V R-12.

601-606-609 APPLIED TECHNICS a/q V 1-4. Individual instruction in voice, piano, organ, string or wind instruments. Students desiring further study of minor applied fields may elect 1-3 credits.

699 THESIS a/q V R-15.

PHARMACY is the science which treats of medicinal substances. It embraces a knowledge of medicines and the art of compounding and dispensing them and also their identification, selection, combination, analysis, standardization, and mode of action.

Five years are required for the degree of Bachelor of Science in Pharmacy. The degree of Master of Science in Pharmacy is also offered. Since pharmacists are licensed by the states, the undergraduate curriculum is geared to such requirements. During their first two years at the University students study physical and biological sciences and take courses in the social sciences and English. Pharmacy proper involves studies of the various types of pharmaceutical products and dosage forms—their preparation, compounded and compounding on physicians’ prescriptions. Pharmaceutical chemistry is the application of the principles of chemistry to substances used in pharmacy and medicine with emphasis on preparation, identification, preparation, analysis, and standards. The study of drugs obtained from plant, animal, and microbiological sources. Pharmacology treats of the effects and mode of action of drugs on living organisms. Pharmaceutical administration is concerned with the important business phases of retail pharmacy such as marketing and management.

Most graduates enter retail pharmacy in rural, neighborhood, or "downtown" stores. Others conduct hospital pharmacies, a particularly attractive field for women. In addition to the formal education program, the candidate for licensure as a registered pharmacist must complete one year
of "practical experience" or internship in pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy. Additional opportunities exist as representatives for pharmaceutical manufacturers, in government service, in manufacturing pharmacy, and in pharmaceutical journalism. Those with advanced degrees are in demand in research positions and in pharmaceutical education.

The School of Pharmacy was established in 1907 at Montana State College and was transferred to the State University campus in 1912.

The School of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.

A 3-year professional program based on two years of general college work and leading to the degree of Bachelor of Science in Pharmacy is offered. The first two years are devoted to the preparation program and may be taken in any recognized college or university. The professional curriculum of the School of Pharmacy covers three years and must be completed before the candidate will be qualified for this examination. The applicant shall be a citizen of the United States, of good moral character, at least twenty-one years of age, and shall be a graduate of an accredited school of pharmacy. However, such an applicant shall not receive a license to practice pharmacy with emphasis on the professional problems of the pharmacy. State and federal laws pertaining to the control of addictive and hallucinogenic drugs require that an applicant for a license in pharmacy have a minimum of "practical experience" or internship in pharmacy under the direction of a registered pharmacist and must pass an examination given by the State Board of Pharmacy.

GRADUATE STUDY. Candidates for the degree of Master of Science in Pharmacy must comply with the regulations governing graduate study and must complete a program satisfactory to the faculty of the School of Pharmacy.

PHARMACY CURRICULUM
First year: Microbiology 203-204; Business Administration 201; Chemistry 245; Pharmacy 206 or Elective, 220 or Elective, 324-325, Zoology 240-241; electives.

Second year: Business Administration 329; Chemistry 284; Microbiology 411; Pharmacy 414-415, 416, 451, 461, 462, 463, 476; and electives.

Third year: Pharmacy 503, 504, 505-506, 516, 517-518-519, 540-541-542, 577; and electives.

FOR UNDERGRADUATES
For explanation see Index under "Symbols"

206 ORIENTATION TO PHARMACY 1Q A 3 (3-0). Career opportunities, literature, history and terminology, library orientation.

250 PHARMACOLOGICAL CALCULATIONS 1Q W 3 (3-0). Metrology, professional arithmetic, pharmaceutical Latin, and the form of the prescription including prescription calculations.

324-325 PHARMACOLOGY 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.

414-415 416 ORGANIC MEDICINAL PRODUCTS 3Q A W S 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 (0-9 to 9) R-4 Prereq 414. Synthesis, identity and purity tests, of organic medicinals.

441 INTRODUCTION TO PHARMACOLOGY 1Q S 3 (3-0) Prereq 201. An introduction to the physiological roles of the various chemicals used medicinally.

450 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 pharmaceuticals.

462-463 OPERATIVE PHARMACY 2Q W S 5 (3-4) Prereq 220 and 461. Fundamentals of the techniques and the various classes of pharmaceutical preparations.

466 MEDICINAL PLANTS 1Q On demand 2 (0-6) Prereq 325. The collection, identification, drying, gabling, milling of crude drugs.

467 IDENTIFICATION OF MEDICINAL PLANTS 1Q a/q On demand 3 (0-9) Prereq 466. The herbarium study of medicinal plants.

468 DRUG MICROSCOPY 1Q On demand 2 (0-6) Prereq 466. Junior standing in pharmacy and c/l. Microscopic and micro-chemical examination 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 S 3 (3-0) Prereq Microbiology 244. Biochemical, antibiotic, vitamins, hormones, and other medicinal products of biological origin.

505-506 DISPENSING 2Q A W 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.

516 PHARMACEUTICAL LAW 1Q A 3 (3-0) Prereq senior standing in pharmacy. State and federal laws pertaining to the practice of pharmacy.

517-518-519 PHARMACEUTICAL PRACTICE 3Q A W S 1 (0-2) Prereq senior standing in pharmacy. Students are assigned to the Montana State University Pharmacy Clinic and to various pharmacies in Missoula in order to acquaint them with current retail practices.

540-541-542 PHARMACOLOGY 3Q A W S 4 (3-3) Prereq senior standing in pharmacy, and Zoology 321 or =. The pharmacodynamics of drugs and its 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. Fertilizers and pest control.

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 pharmacy.

FOR UNDERGRADUATES AND GRADUATES
570 COSMETICS 1Q On demand 3 (2-4) Prereq 463. The theory and technic of cosmetic formulation.

588 ADVANCED DRUG ANALYSIS 1Q On demand 3 (1-6) Prereq 463. The more involved methods of analysis as applied to pharmaceuticals.
HOSPITAL PRACTICE 1-3Q On demand 1-3 (0-2/cr) Prereq 505. Participation in the routine of a hospital pharmacy.

SEMINAR a/q 1 (1-0) R-6 Prereq senior standing in pharmacy.

SPECIAL PROBLEMS IN PHARMACY a/q V 2-5 (0-3/cr) R-10 Prereq senior standing in pharmacy. Research studies by conference, laboratory and research laboratory in pharmacy, pharmaceutical chemistry, pharmacognosy, or pharmacology.

FOR GRADUATES

ADVANCED PHARMACOGNOSTICAL TECHNICS 1Q a/q 3 (3-6) Prereq 466 and Bot 234 and 335. Techniques used in investigatory pharmacognosy.

CHEMISTRY OF NATURAL PRODUCTS 3Q a/q 3 (2-5) Prereq 416, Chem 464. Enter any quarter. (605) Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis, with emphasis on the pharmaceutical compounds. (606) Volatile oils, terpenes, and sterols, including their occurrence, methods of isolation and chemical identification. (607) Glycosides and related compounds, including methods of isolation, proof of structure, synthesis and chemistry.

ADVANCED MEDICINAL PRODUCTS 3Q A W S 3 (3-0) Prereq 416, Chem 464. Given alternate years. The organic medicinals with emphasis on proof of structure, synthesis, structure-activity relationships and chemistry.

ADVANCED MEDICINAL PRODUCTS LABORATORY 1Q a/q 2 (0-6 to 9) R-6. Preparation, isolation and purification of organic medicinals by advanced techniques.

ADVANCED PHARMACOLOGY 1-3Q a/q V 3-5 (9-9 to 15) Prereq 506 or =. The more involved actions of drugs upon cells and organs.

ADVANCED PHARMACY 1-3Q a/q V 3-5 (0-9 to 15) Prereq 506 or =. The more complex problems involved in formulation and preparation of pharmaceuticals.

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 understood as a quantity of material objects, as a framework of mental experiences, or as an open field for action? By what methods can man attain knowledge, and what kind of knowledge? Are values derived from personal feelings or from standards which may be impersonal, verifiable, unchanging? Are there significant relations among phases of experience reflected in science, art, religion, morality and politics?

Courses in philosophy acquaint the students with the views of great philosophical thinkers, past and present. Discussion and written work are largely concerned with evaluating the reasoning by which each thinker develops his point of view.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in this catalog, the following requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits, including Philosophy 110, 201, 202, 203, and three or more credits in courses numbered 400 or above. Normally students are expected to complete Philosophy 110, 201, 202 and 203 by the end of their Sophomore year. The foreign language requirement listed earlier in the catalog must be satisfied.

PHILOSOPHY-LAW COMBINATION PROGRAM. In addition to the general requirements for graduation listed earlier in the catalog, a minimum of 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, 203, 204, 205, and 206, and either 320 or 321, and should take as many as possible of the following courses: Philosophy 330, 360, 364, 368, 369 and 422.

FOR UNDERGRADUATES

For explanation see Index under "Symbols".

100 INTRODUCTION TO PHILOSOPHY 1Q A W S Su 5. The main problems of metaphysics, theory of knowledge, and moral philosophy; the manner in which great philosophers reach their conclusions.

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 120.

110 LOGIC 1Q A S 5. The valid forms of reasoning, the methods of science, and the detection of fallacies.

120 ETHICS 1Q A S 5. 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.

121-122 ETHICS 2Q A W S. The nature of moral values, standards of moral judgment, moral problems in personal life and in social relations. Credit not allowed for this course and 120.

150 FUNDAMENTALS OF METAPHYSICS AND THEORY OF KNOWLEDGE 1Q A 5 Questions and concepts involved in theories of being and the possibilities of knowing reality.

190 HISTORY OF ANCIENT PHILOSOPHY 1Q A 5.

200 HISTORY OF MEDIEVAL AND RENAISSANCE PHILOSOPHY 1Q W 5 Prereq 201.

203 HISTORY OF MODERN PHILOSOPHY 1Q S 5 Prereq 202.

210 SYMBOLIC LOGIC 1Q W S. 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 3Q A W S 1. (Given in the summer for 3 cr as 304). Enter any quarter. (301) Greek, Roman, and early Christian (Tigard, Platonian, Stoic and, and some modern thinkers. (302) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

320 MODERN ETHICS 1Q W Prereq 120. Recent theories on the nature of moral concepts; these will include naturalism, intuitionism, emotivism, and existentialism.

321 SOCIAL ETHICS 1Q S Su 3 o/y Prereq 120. Implications of different social systems with respect to rights and responsibilities.

322 PHILOSOPHY OF LAW 1Q A 3 Prereq 5 credits in Philosophy. Various concepts of law in their relation to individual freedom and to social order; philosophical justification of different forms of authority.

330 PHILOSOPHY IN THE TWENTIETH CENTURY 1Q A 5 Prereq 10 credits in Philosophy.

340 AESTHETICS 1Q S 3. 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 S 3 Prereq 10 credits in literature or Philosophy or =. Philosophical evaluation of leading ideas in selected masterpieces of literature, both classical and modern.

350 THEORY OF KNOWLEDGE 1Q S 3 e/y Prereq 150 or 10 credits in Philosophy. Foundations of belief and reliable knowledge; the forms of rationalism, empiricism, pragmatism, mysticism, authoritarianism and skepticism.

351 METAPHYSICS 1Q W 5 Prereq 150 or 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/i. 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 operationism.

354 PHILOSOPHY OF RELIGION 1Q W 3 e/y Prereq 5 credits in Philosophy. Philosophical interpretation of religious experience, belief and practice.

355 ORIENTAL THOUGHT 1Q W 3 e/y Prereq 5 credits in Philosophy and c/i. A study of philosophical themes in some Hindu, Buddhist, and Taoist literature.

360 PLATO 1Q W 3 e/y Prereq 201; or 10 credits in Philosophy and c/i. Reading and interpretation of selected works.

361 ARISTOTLE 1Q S 3 e/y Prereq 201; or 10 credits in Philosophy and c/i. Reading and interpretation of selected works.

362 DESCARTES, SPINOZA, LEIBNIZ 1Q A 5 e/y Prereq 203; or 10 credits in Philosophy and c/i. The development of Continental Rationalism.

366 LOCKE, BERKELEY, HUME 1Q W 5 e/y Prereq 203; or 10 credits in Philosophy and c/i. Reading and interpretation of selected works.

368 NINETEENTH CENTURY DIALECTICAL PHILOSOPHY 1Q W 3 e/y Prereq 203; or 10 credits in Philosophy and c/i. Dialectical Idealism (Hegel) and dialectical materialism (Marx).
PHYSICAL SCIENCES, PHYSICS

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. Preparation for advanced work should take Physics 221-222-223 in the sophomore year. Required courses offered in either department include Mathematics 111-112-113 or 221-222-223. At least 25 credits must be selected from each of the two fields Botany and Zoology unless a student completes 30 credits in Botany and 5 credits in Zoology.

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, length, force, energy, momentum, electric charge, electric field strength, entropy, wave length, pressure, and temperature. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biophysics, meteorology and geophysics. In addition the subject of physics is profoundly influenced both by the methods and development of physics.

The Bachelor of Arts and Master of Arts degrees are offered.

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

FOR GRADUATES

For explanation see Index under "Symbols"

111-112-113 GENERAL PHYSICS 3Q A W S 5 (5-3) Prereq for 111: Math 113 or 117. 112 is a prereq for 112 and 113, but 113 is not a prereq to 112. 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 3Q A W S 5 (5-3) 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 (3-4) Prereq for 222: Math 118. 221 is a prereq for 222 and 223, but 222 is not a prereq to 223. This course satisfies medical and technical school requirement in general physics. (221) Mechanics and wave motion; (222) heat, electricity, and magnetism. (223) Sound, light and atomic physics.

231 WEATHER 1Q W 2 Prereq 221-222-223. Elements of meteorological phenomena including observational quantities, air mass relations and application to air transportation.

251-252-253 LABORATORY ARTS 3Q A W S 1 (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 GRADUATES AND GRADUATES

314-315-316 ELECTRICITY 3Q A W S 3 (3-0), S 4 (3-3) Prereq 271.
POLITICAL SCIENCE

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, in Political Science and Economics, or in Political Science and History. A Master of Arts degree in Political Science is also offered.

Courses offered in the Political Science department are designed to aid students in attaining the following objectives:

1. to assist all students in securing a broad liberal education and to equip them with the foundations for effective discharge of the duties of American citizenship;
2. to provide undergraduate preparation for those students who propose to continue the study of Political Science at the graduate level with the ultimate goal college teaching and research;
3. to offer a broad program of training for those students who plan careers in government or politics, including training both for the foreign service and the domestic public service at the national, state, and local levels;
4. to assist in preparing students for careers in teaching at both the elementary and secondary levels;
5. to provide a sound background for those students who intend to enroll in law or other professional schools.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN POLITICAL SCIENCE. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Political Science: A minimum of 45 credits in Political Science is required, with 20 credits from courses numbered over 300 and including Political Science 491.

A student may offer a combination major in Political Science and History with a minimum of 60 credits selected from the two disciplines of which at least 20 credits must be in Political Science and 20 credits in History. A minimum of 20 credits must be selected from courses numbered over 300 and including Political Science 491 or History 491. Only one of the latter three will be counted in fulfilling the minimum of 20 upper division credits.

All students majoring in Political Science will complete the integrated introductory sequence 101, 202-203 before taking other courses in Political Science.

Upper division work in Political Science is offered in American Political Institutions, Comparative Government, International Affairs, Public Administration, Public Law, and Political Theory. Each major in Political Science must present credits in at least four of these fields.

A student may offer a combination major in Political Science and Economics with a minimum of 60 credits selected from the two disciplines; at least 27 credits must be in each discipline. Requirements are as follows: Political Science and Economics 251, 203, 201, 205, 203, 301 and 311. At least 12 additional credits will be chosen from at least two of the four upper division categories. Economics 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 offered. Either Political Science 491 or Economics 301 will be required.

Either the completion of five quarters of a foreign language or the demonstration of at least two years' reading knowledge of historical, legal or political science materials in such a language is required. In the completion of the major requirements in 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 in Economics 305, 306, 305, 331, 332, and in Journalism 390 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. The study of Latin is recommended in fulfilling the foreign language requirement. The student must complete 60 credits selected from requirements for graduation as is possible during his freshman year. As a sophomore he will be expected to register for History 241, 242, 243, 251, 252 and 253, and Political Science 305, 306 leaving over 300 including either Political Science 491 or History 370 per quarter for the completion of requirements and for electives. As a junior, the student will select a minimum of 45 hours from the offerings of the Department with Political Science 333, 333, 361 and 361 and also History 376 and 376 as required or recommended courses. In lieu of or in addition to the above, electives may be chosen from Economics 370, 390, and History 390. Political Science 331, 353, 356, 357, 358, 388, 389, 390, 391, and History 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 Su 4. Comparative study of fundamental political institutions of modern governments, including constitutional, political parties, legislatures, executives, and courts.

202-203 AMERICAN GOVERNMENT 2Q A W 4. The underlying constitutional principles of the national government. The democratic political processes, including public opinion, interest groups, political parties; (202) the governmental agencies and the political organization of the national government, congress, the presidency, and the courts. The functions of the national government, including finance, business, labor, agriculture, conservation, welfare, national defense, and foreign policy. Selected problems of national government will also be considered.

231 INTERNATIONAL RELATIONS 1Q S 4, Su 3. A general introduction to the international system: factors of national power and policy, forces inducing tension, legal and institutional devices for adjustment of conflict, the role of the national government, congress, the presidency, and the courts. The functions of the national government, including finance, business, labor, agriculture, conservation, welfare, national defense, and foreign policy. Selected problems of national government will also be considered.

311 INTERNATIONAL ORGANIZATIONS 1Q S 4, Su 3. The machinery of international cooperation with particular reference to the United Nations.

332-333 INTERNATIONAL PUBLIC LAW 2Q A W 8. The law of nations in its relation to peace, war and collective security.

341 PRESSURE GROUP POLITICS 1Q W 3 Prereq 241. The role of interest groups in a democracy; their interaction with public opinion, political parties, legislatures, executives, administration and the courts.

351-352 THE DEVELOPMENT OF POLITICAL THOUGHT 2Q A W 4 Prereq 101 or 203. (351) Western Political thought from ancient origins to the early modern period; (352) Western political thought from its early modern roots to the twentieth century.

353 AMERICAN POLITICAL THOUGHT 1Q S 4 Prereq 101 or 203. American political thought, both systematic and popular from colonial origins to the present.
PUBLIC ADMINISTRATION 2Q A W 4, Su 3 Prereq 101 or 203. (381) The legal, political, and organization setting of America's administration. The processes of government, including finance and personnel; (382) Problems and techniques of public administration illustrated through the study of case materials.

PUBLIC PERSONNEL ADMINISTRATION 1Q S 3 Prereq 383. The theories of government, and public management, in practice by legislation, by commission, and by judicial decision; the government in business.

GOVERNMENT REGULATION OF BUSINESS 1Q S 3 Prereq 385. The theories of government, and public management, in practice by legislation, by commission, and by judicial decision; the government in business.

THE AMERICAN CONSTITUTIONAL SYSTEM 1Q W S 3 Prereq 387. The constitution of the United States in the jurisdiction of the Supreme Court.

PRINCIPLES OF ADMINISTRATIVE LAW 1Q W 3 Prereq 387 or 381. Administrative law in the United States with reference to other countries. Administrative authorities, the scope and limitations of their powers, remedies, judicial control of administrative action.

STATE GOVERNMENT 1Q A 3 Prereq. 203. Structure, functions, and operations of state governments; relations to other units of local government; administrative organization and reorganization including constitutional reforms. Special attention to Montana.

MUNICIPAL GOVERNMENT 1Q S 3 Prereq 203. Legal bases of municipal government; home rule; mayor-council, commission, manager plans; municipal services; problems of modern cities and metropolitan areas.

PROBLEMS OF MONTANA GOVERNMENT 3Q A W S 4, Su 2 4 R-8 Prereq 12 cr in the Department including 203; 391 recommended, and consent of pre-medical sciences adviser. Enter any quarter. (388) Problems in state government, legislative. (386) Problems in local government. Research and field study, visits to governmental agencies, discussion with public officials.

PROBLEMS IN POLITICAL SCIENCE 3Q A W S Su V 2-4 R-0 Prereq 20 cr in the Department. Research in fields selected according to the needs and objectives of the individual student.

SPECIAL STUDIES IN POLITICAL SCIENCE 3Q A W S Su V 1-2 R-4 Prereq 203 or 101 or 201, and c/l. Selected aspects of politics, government, or international affairs. Offered by different instructors under various titles.

AMERICAN POLITICAL PROBLEMS 1Q A 4, Su 3 Prereq 203 or History 251-252. Present day problems such as governmental reorganization, taxation, and budget; states rights, and powers of Congress and the Chief Executive.

PRESENT WORLD PROBLEMS 1Q S Su 3 Prereq 12 cr in the Department. Selected problems in recent and contemporary international affairs.

METHODS AND MATERIALS 1Q S Su 3. Open to department majors only. Methods of investigation, evaluation and literature in the subject.

FOR GRADUATES

SEMINAR IN POLITICAL SCIENCE 1Q A W S Bu V R-10 Prereq 20 cr in the Department and 491 or History 491. Special problems in political science.

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 the 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 requirements 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 four years of high school mathematics. Chemistry 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 competency, and has a relatively well-balanced personality. Since not all applicants for entrance to medical schools are accepted, the pre-medical student is urged to plan his own University career with that idea in mind.

The pre-medical sciences student is advised to get a Bachelor's degree in a field of his own choice. However, he should make sure that he can satisfy within the time available (1) the University requirements for graduation, (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., Mus. Sci., Group and other University requirements listed earlier in the catalog; Chemistry through Organic Chemistry and Quantitative Analysis; one year of college mathematics; one year of college physics; Zoology through comparative anatomy and embryology. (Genetics is recommended); A reading knowledge or 25 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 to complete University credit requirements for graduation.

Students who complete 125 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 premedical 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>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-107-109</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Mathematics 116, 117, 118</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Chemistry 121-122-123</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE and ROTC (see below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 104-125</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Chemistry 261-262-245</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Psychology 110</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Social Science</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE and ROTC (see below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 370</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Physics 121-122-123</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>For. Language 101-102-103</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Social Science</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 302</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE and ROTC (see below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Language 213-215</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(French and Spanish)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Science sequence</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Social Science</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 101-102-103</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE 201-202-203</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ROTC 101-102-103</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Graduate Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101 or 104</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Psychology 110</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 104-125</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Chemistry 261-262-245</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>H&amp;PE and ROTC (see below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The above curriculum is designed to meet the requirements of the University of Montana and the pre-medical sciences programme. It is not a guarantee of acceptance into medical school. It is recommended that students consult with their pre-medical sciences adviser before making final decisions regarding their academic programmes.
PSYCHOLOGY is the science concerned with principles of human behavior. It deals with processes of motivation, emotion, perception, learning, thinking, imagination, and intelligence.

The Bachelor of Arts and Master of Arts degrees are offered.

Minimum preparation for professional work in psychology requires an MA degree, and full professional competence requires the Ph.D. degree. The fully trained student may select from a variety of positions in clinics, hospitals, schools and colleges, business and industry, and governmental agencies. At present and in the foreseeable future, the number of jobs far exceeds the number of trained persons who can fill them.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PSYCHOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in psychology: at least 45 credits in psychology, including Psychology 110, 210, 211, 212, 220, and 411, with at least 25 credits in psychology courses numbered above 299; Mathematics 125; and a reading knowledge 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 202.

RECOMMENDED COURSE SEQUENCE

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 110—Introduction to Psychology</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mathematics 106—Intermediate Algebra</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics 125—Statistics</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modern Language: 101-102-103</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English 101-102-103</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Psychology 220—Psychological Statistics</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18-18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice of appropriate Psychology courses</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Modern Language 213-215</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology 240—Social Psychology</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 310-311-312—Experimental Psychology</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Philosophy 210 or Electives</td>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoology 203—Human Physiology</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>5-12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice of 400-level Psychology Courses</td>
<td>4-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>1-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN PSYCHOLOGY. In addition to the general requirements of the Graduate School, the following special requirements must be completed for the Master of Arts degree in psychology: at least 45 credits in courses numbered above 299, which may include not more than 10 credits in Psychology 699, and which must include Psychology 505-506-507, 511, and 521. Upon completion of two quarters in residence or completion of 30 graduate credits, the student is required to pass a comprehensive written examination in selected areas of psychology.

MASTER OF ARTS IN GUIDANCE AND COUNSELING. See statement under Graduate School for requirements.

FOR UNDERGRADUATES

110 INTRODUCTION TO PSYCHOLOGY 1Q A W S Su 5 (3-0).

190 PSYCHOLOGICAL INVESTIGATION A W S Su V 1-3 R-5

206 COMPARATIVE PSYCHOLOGY 1Q S 3 (3-0) o/y Prereq 110. A comparative study of human and animal behavior, and a survey of the phylectic scale.

220 PSYCHOLOGICAL STATISTICS 1Q S 5 (4-2) Prereq 110 and Math 190. Application of statistical techniques to psychological data.

230 CHILD AND ADOLESCENT PSYCHOLOGY 1Q W S 5 (5-0)

240 SOCIAL PSYCHOLOGY 1Q A S Su 5 (3-0) Prereq 110. Effects of social environment upon human behavior.

241 PSYCHOLOGY OF BUSINESS 1Q A W S 5 (5-0) Prereq 110.

310-311-312 EXPERIMENTAL PSYCHOLOGY 3Q A W S 5 (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.

314 PSYCHOLOGY OF LEADERSHIP 1Q A S 3 (3-0) Prereq 110. The leadership role examined in terms of behavioral principles.

FOR GRADUATES

501 THEORY CONSTRUCTION IN PSYCHOLOGY 1Q Su V 6-13 Prereq 20 credits in Psych and c/l. Seminar approach to selected topics related to construction of rigorous theories in psychology.

595-596-597 PROFESSIONAL PROBLEMS IN PSYCHOLOGY 3Q A W S 1 (1-0). Open only to graduates in psychology. Bibliographic problems and the literature search; forms and problems of scientific communication; professional associations, relations with other professions and the public; legal and ethical problems of the psychologist.
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 S Su 4 (4-0) Prereq 311 or =: Critical review of current learning theories with attention to treatment of fundamental concepts.

521 ADVANCED PSYCHOLOGICAL STATISTICS 1Q A 5 (5-0)  
Prereq 230 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 o/y, Su 4 (4-0) Prereq 230 or Educ 265 and teaching experience. Theories and research on motivation, personality, emotions, attitudes, social learning and adjustment in children from birth through adolescence.

559-561 INDIVIDUAL APTITUDE TESTING 2Q A W S 3  
(1-4) Prereq 332 and c/l. Enter any quarter. Administration, scoring, and interpretation of standard tests, with supervised practice. (559) Stanford-Binet Scale; (561) 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.

571-573 RORSCHACH TECHNIQUES 2Q A W S 2  
(2-0) 2 (1-2) Prereq 361 or 561. Administration, scoring and interpretation.

576-577 THEME TEST ANALYSIS 2Q A W S 2  
(2-0) (1-2) Prereq 361 or 561. Administration and interpretation of thematic tests, with emphasis on the TAT.

581 PRINCIPLES OF PSYCHOTHERAPY 1Q W 5 (5-0) Prereq 561. 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 with a major in Radio and Television. In either case, emphasis is placed on a strong liberal arts background, and approximately three-fourths of the courses for either degree will be taken in the College of Arts and Sciences. In addition to required courses in radio and television, special requirements must be met in curricula of related fields. Most of the radio-television courses are offered by the School of Journalism, but some departments in the College of Arts and Sciences also have offerings in the program. Production of programs for broadcast from the University's studios is included in the course of study. Modern equipment of professional quality in new studios and related fields is included in the course of study. The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree with a major in Radio-Television.

University Requirements

English Composition, 101-102-103 9  
104-105 4  
109 1  
Physical Education 6  
ROTC (men) Mil. or Air Science 101-102-103, 501-502-503 6-9

Group I 16-13

37 37

Major Requirements:

<table>
<thead>
<tr>
<th>Group</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group II</td>
<td>25</td>
</tr>
<tr>
<td>Group III</td>
<td>23-25</td>
</tr>
<tr>
<td>English 201</td>
<td>3</td>
</tr>
<tr>
<td>Speech 118</td>
<td>3</td>
</tr>
<tr>
<td>Drama 121, 121</td>
<td>4</td>
</tr>
<tr>
<td>Journalism 270, 297</td>
<td>6</td>
</tr>
</tbody>
</table>

22 hours from the following courses:

<table>
<thead>
<tr>
<th>Group</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group IV</td>
<td>22</td>
</tr>
<tr>
<td>Group V</td>
<td>26-33</td>
</tr>
<tr>
<td>442</td>
<td>2</td>
</tr>
<tr>
<td>443</td>
<td>4</td>
</tr>
<tr>
<td>494</td>
<td>1</td>
</tr>
</tbody>
</table>

RELIGION courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Religion, up to 15 credits in the courses listed below may be counted for graduation in other curricula where the professional requirements leave room for such electives. The instruction includes the use of religious literature, including the scriptures, along with church and religious history and contemporary thought and scholarship. No attempt is made to indoctrinate the student in beliefs or creeds.

The Montana School of Religion was organized in 1924 by a committee representing the University and several religious denominations for the purpose of making courses in religion available to students. The School is affiliated with the University, under a director who is responsible to a Board of Trustees representing the cooperating denominations and the University.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

118 INTRODUCTORY STUDY OF RELIGION 1Q A W S 2. Some major religions of the world, and some basic religious problems a student must face. Open only to Freshmen and Sophomores.

124 LIFE AND TEACHINGS OF JESUS 1Q W S 2. The origins, backgrounds, problems, occasions, motifs and messages of the four gospels with an attempt to relate the teaching for today.

142 RELIGION IN AMERICA 1Q A W S 3. The beliefs and practices of Judaism, Protestantism, Roman Catholicism, and representative sects.


224 LIFE AND TEACHINGS OF PAUL 1Q W S 3. The origins, backgrounds, problems, occasions, motifs and messages of ten epistles of Paul the apostle and their implications and applications for today.

241 CHRISTIANITY TO 1700 1Q W S 3. The background and trends of the Christian Church, its spread through the Roman Empire and its growth in Europe.

250 BASIC CHRISTIAN CONVICTIONS 1Q W S 3. The realities of God, man, sin, Jesus Christ, and redemption interpreted in meaningful terms for our day.

251 CHRISTIAN THINKERS BEFORE 1500 1Q W S 2. The thoughts of outstanding theologians such as Augustine, Aquinas, Luther, and Calvin, through study of their writings.

252 MODERN RELIGIOUS THINKERS 1Q W S 3. The thoughts of outstanding theologians such as Kierkegaard, Tillich, Marcel, and Buber, through study of their writings.

254 COMPARATIVE WORLD RELIGIONS 1Q A S 5, Su 3. Ten to twelve living religions of the world, their historical sequence and philosophical and theological foundations.

259 THE PROPHETS AND THEIR TIMES 1Q A 3. The Old Testament prophets including Isaiah, Jeremiah, and Ezekiel and twelve other personalities from the biblical writer's point of view and related to today.

330 PRINCIPLES OF RELIGIOUS EDUCATION 1Q S 2. The objectives and curricula of the religious education of a child in relationship to home, school, university and church according to his particular religious culture.
The ROTC program is conducted by career Army and Air Force personnel. Both Departments offer 6 quarters of ROTC, each satisfying University requirements. All undergraduate male students other than veterans are required to take two years of Air Science or Military Science. Freshmen and sophomores are selected for the Advanced Course. Students interested in the Air Force or Army should consult the Professor of Military Science and the Professor of Air Sciences, respectively.

AIR SCIENCE

Benjamin Course: Air Age Citizenship Education

The academic requirements of the basic courses are presented in the following sections.

101-102-103 Foundations of Aerospace Power 3Q A W 0, S 2. (101-102) Basic Military Training, including exercise in drill ceremonies, and customs and courtesies. Emphasis is placed on teamwork and team spirit. Concurrent enrollment in a minimum of 2 credits course selected from appropriate Group Requirements. (102) Potentials of aerospace power, air vehicles, and principles of flight. Basic military training including drill ceremonies and customs with emphasis on proficiency and teamwork.

201-202-203 Fundamentals of Aerospace Weapon Systems 3Q A W S 3. (201) Professional opportunities. The military instrument of national security. Introduction to fundamentals of aerospace weapon systems, warheads, missiles, and characteristics of manned aircraft, propulsion systems. Nuclear energy and effects of nuclear weapons. (202) Target intelligence, electronic warfare, defense operations, tactical commands, astrometry, and contemporary military thought. (203) Basic military training, with emphasis on command and control techniques and responsibilities of cadet non-commissioned officers. Concurrent enrollment required in a minimum of 2 credits in a course selected from appropriate Group Requirements.

110 Air Force Band 1Q S 0. Taught by the School of Music, which must approve all admissions. may be substituted for the basic military training phase of Air Science 103 and 203, except for those sophomores who have been selected for the Advanced Course. Band formations and marching, military ceremonies.

Advanced Course: Air Force Officer Development

Admission to the Advanced Course is on application of the student and acceptance of the Professor of Air Science and the President of the University. Once begun, successful completion of the six quarters and the Summer Training Unit is a requirement for all bachelor's degrees.

301-302-303 Air Force Officer Development 3Q A W S 3. (301) Principles and practices of leadership. Includes basic psychology of leadership, staff organization functions of an Air Force Base, air crew and aircraft, physical training and individual weapons. (401) Practical and cultural features of a state in relation to problems of unity and diversity. Introduction presenting the navigational aspects of air masses and world weather such as temperature, pressure and air masses. (402) Navigation, globes, and maps in the air age world. Introduction to modern aerial doctrine and the responsibilities of an Air Force Officer. (403) Continuation of Leadership, Drill and Command. (404) Leadership Laboratory: Practical work as Cadet officers in staff and command positions. (302) Advanced tactical training program. (Material on International Relations is presented in Pol Sci 231, material on Geography in Geog 331-332.)

Military Science

High School Preparation. In addition to the general requirements for admission to the University, the student needs algebra and geometry. It is 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>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
<td></td>
</tr>
<tr>
<td>English 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Military Science 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>201-202-203</td>
<td>9</td>
</tr>
<tr>
<td>Elective</td>
<td>2-5</td>
</tr>
</tbody>
</table>

(In his freshman and sophomore year, the student must select one of the academic electives listed below)

Major Requirements

- (Group requirements satisfied herein)
  - Mathematical Sciences 116, 117, 118, or equivalent 15
  - Physics 111-112-113 or 221-222-223 15
  - History 102, 103, and 104 15
  - Political Science 102, 103, 231 16
  - Geography 331-332 9
  - English 201, 202 and 304 9
  - Foreign Language (French, German, Spanish or Russian 101-102-103, 213, and 215 or equivalent) 23
  - Psychology 344 3
- Air Science 301-302-303, 401-402-403, and 313 118

Electives

- (50% must be in upper division courses. A second major in one of the areas listed above is recommended) 39-42
- 166

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:

101-102-103 Introduction to the Army 3Q A W 0, S 2. Enter any quarter. (101) Principles of Army organization, missions, chain of command, and practices of individual responsibility. Practice in leadership, drill and command, basic and progressive training in leadership through practical exercises in drill ceremonies, military customs and courtesies. Emphasis is placed on teamwork and individual proficiency. (102) It is recommended that one of the "Electives" listed under University Requirements be substituted during the freshman and sophomore quarters and continuing training in leadership through practical exercises in drill ceremonies, military customs and courtesies. Emphasis is placed on teamwork and individual proficiency.

Advanced Course: Officer Training

Enrollment in the advanced course is by application only. An applicant must pass a physical examination and the written 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 complete his course to its completion, unless sooner relieved by competent authority, and further that he will accept a commission if tendered. Advanced Corps cadets are paid a subsistence allowance of $60 per day through the year except while at summer camp in which case he receives the pay of a Private E-1. If commission is tendered, the length of service is as required by Federal Reserve Forces Act of 1955, with Amendments.


Physical Education

Elective ___________ .
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 for election of additional secretarial courses if added proficiency is desired. The work in home economics includes the study of nutrition, home equipment, house planning and furnishing, budgeting, child development, and family living. In addition, a general education is provided in areas outside the major fields.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN SECRETARIAL-HOME ARTS.

<table>
<thead>
<tr>
<th>University Requirements</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Physical Education</td>
<td>6</td>
</tr>
</tbody>
</table>

Group Requirements

<table>
<thead>
<tr>
<th>Group</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>12-15</td>
</tr>
<tr>
<td>Group II</td>
<td>12-15</td>
</tr>
<tr>
<td>Group III</td>
<td>24-30</td>
</tr>
</tbody>
</table>

Major Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Economics 141, 155, 157</td>
<td>11</td>
</tr>
<tr>
<td>210</td>
<td>3</td>
</tr>
<tr>
<td>240</td>
<td>4</td>
</tr>
<tr>
<td>246 or 346</td>
<td>4</td>
</tr>
<tr>
<td>302</td>
<td>5</td>
</tr>
<tr>
<td>303</td>
<td>5</td>
</tr>
<tr>
<td>311</td>
<td>3</td>
</tr>
<tr>
<td>366, 367, 368 or Soc. 402</td>
<td>3</td>
</tr>
<tr>
<td>1 other course above 300</td>
<td>2</td>
</tr>
</tbody>
</table>

Home Economics courses with credit toward major with 186 total credits not to exceed 39 cr.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration 182 (Placement test required)</td>
<td>2</td>
</tr>
<tr>
<td>183 (Placement test required)</td>
<td>2</td>
</tr>
<tr>
<td>184, 185, 186 (1 year in H.S., no cr. in 184; 2 yrs. in H.S., no cr. in 184 or 185)</td>
<td>15</td>
</tr>
<tr>
<td>187</td>
<td>5</td>
</tr>
<tr>
<td>190</td>
<td>4</td>
</tr>
<tr>
<td>199</td>
<td>3</td>
</tr>
<tr>
<td>201</td>
<td>3</td>
</tr>
<tr>
<td>284</td>
<td>3</td>
</tr>
</tbody>
</table>

Business Administration courses with credit toward major with 186 total credits not to exceed 39 cr.

**SOCIAL WELFARE** explores the ways in which social problems affect people; the agencies which help people deal with these problems; and the methods used in such endeavor. Social Welfare courses involve case records and some field work or observation in addition to regular class work. Broad studies in other social sciences are required.

Those seriously considering a career in the field should plan on the two years of graduate professional training for which the course is preparatory. Social workers are employed in such positions as caseworkers, group workers, supervisors and administrators in public and private social agencies, courts, hospitals, mental-health clinics and youth serving organizations.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree with a major in Social Welfare: 50 credits in departmental courses including at least 30 credits in Social Welfare. A foreign language is required as listed earlier in the catalog.

During the first two years, the following courses should be taken to provide a broad foundation in the liberal arts: 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 two years, one course number 300 or above is taken in fields involving the study of 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 the social problems facing society. Emphasis is placed on achieving 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 those requiring more varied 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 UNDERGRADUATES

For explanation see Index under "Symbols"


201 INTRODUCTION TO RECREATION LEADERSHIP 1 Q A 3 Prereq Sociology 101. Sociology of play, recreation and leisure time; community approach to recreation; recreation for industrial workers, hospital patients, senior citizens, playgrounds; facilities and resources. Credit not allowed for this and H&PE 302.

202 RECREATION LEADERSHIP (SOCIAL RECREATION) 1 Q W 3 Prereq Sociology 101. Principles and practice in group leadership, program skills for various age groups and for special groups such as the handicapped. Credit not allowed for this and H&PE 302.

203 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1 Q S 3 Prereq Sociology 101. Principles and practice in group leadership of camping activities; skills and understandings essential to organized camping. Credit not allowed for this and H&PE 303.

301 GROUP METHODS IN TEACHING 1 Q 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


302 GROUP METHODS IN MODERN SOCIETY 1 Q S 4 Prereq 15. Purposes, principles and methods involved in group process. The place of group experience in the development of leadership effectiveness. Group dynamics.

303 PUBLIC WELFARE 1 Q A 4 Prereq 181. Development, organization, functions and methods of governmental programs designed to protect individuals and families against the loss of income due to such hazards as unemployment, illness, disability, old age and death.

304 CASE STUDIES 1 Q S 4 Prereq 12 credits in Social Welfare and 181. The analysis of case records drawn from a variety of social work settings.

402 COMMUNITY RELATIONS 1 Q A 4 Prereq 10 credits in Social Welfare. The place of the professional person in community life, his responsibilities as a citizen, his philosophy and ethics especially as they relate to the community, his contributions to community welfare and his concern for human needs and problems.
SOCIOLOGY, SPEECH—75

483 FIELD PRACTICE: COMMUNITY SERVICES LABORATORY 20 Q A S V 2-4 R-10 Prereq 181. A program of self-help project experiences in dealing with community needs and resources. Theoretical analysis of experienced situations. Learning by means of the laboratory method.

484 CHILD WELFARE SERVICES 1Q W 4 Prereq 181. Development, organization, functions and methods of public and voluntary programs designed to meet the special needs of children and their families, foster home and institutional care, adoption services, school social services, youth services, etc.

485 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq c/l.

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 of the Bachelor of Arts degree with a major in Sociology. A foreign language is required as listed earlier in the catalog.

At least 35 of the 50 major credits must be in sociology courses, including Sociology 101, 205, 303, and 310. Anthropology 102 or 123 and Social Welfare 151 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 290.

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 304, and at least 12 additional credits of upper division sociology; Economics 201-202-203, 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

101 INTRODUCTORY SOCIOLOGY 1Q A W S Su 5. A general study of interpersonal 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 3 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 Psy 110. Work plants such as factories, offices, and stores; work group and applied problems; industrial relationships in the group 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 in Montana and the Northwest.


402 THE FAMILY 1Q W 5 Prereq 101. Comparative, historical and analytical study of the family.

403 ADVANCED PROBLEMS a/q V 1-2 R-6 Prereq c/l.

404 SOCIOLOGY OF WORK 1Q A 3 Prereq 101. Structure and function of occupations and professions. Problems of organization and relationships of work groups.

405 FIELD OBSERVATION 1Q S 3 Prereq 101 and 205 or 303. Interviewing procedures and social science research; guided experiences in interviewing related to actual research programs.

407-408-409 SEMINAR 3Q A W S V 2-5, R-10 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.

405 ADVANCED METHODS 1Q A 5 Prereq 305 or 310. Required of all graduate students in sociology.

FOR GRADUATES

501 GRADUATE RESEARCH a/q V R-10.

509 THESIS a/q V R-15.

SPEECH includes courses in the field of General Speech, and according to the interest of the student, speech research, guide-lines 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 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, 352, 353, and either 344 or 345; Speech Pathology 251 and 359. The foreign language requirement listed earlier in the catalog must be satisfied. A special comprehensive examination is required of all candidates for honors in Speech.

FOR UNDERGRADUATES

111 PRINCIPLES OF SPEECH 1Q A W S 5. This course aims, through various experiences in group discussion, oral reading, and public speaking, to develop constructive attitudes, organized thinking, and discriminative listening as these contribute to effective communication and human relations.

112 ARGUMENTATION 1Q A W S 5. The principles by which belief and conduct are influenced through appeals to logical reasoning. Attention to evidence, analysis, logic, fallacies, refutation, rebuttal, and their application to current economic, social and political problems.
SPEECH PATHOLOGY AND AUDIOLOGY

113 PARLIAMENTARY PROCEDURE IQ S 2. The principles and practice of parliamentary procedures used in the conduct of fraternal, professional, and community meetings.

118 VOICE AND DICTIO 1Q A W S 3. Application of principles to the improvement of voice and diction.

119 PHONETICS 1Q A 3. The speech mechanism in relation to the production of auditory symbols. Introduction to the use of phonetic symbols.

123 PUBLIC SPEAKING 1Q A W S Su 3. Prereq 111. A beginning course in public speaking, offering additional theory and practicum to what is offered in 111.

214 DISCUSSION TECHNIQUES 1Q A 3. Study and practice in the techniques of making inquiries into and solving problems by the means of group thinking.

241 RADIO-TELEVISION SPEECH 1Q W 3 Prereq 118 and Journalism 140. Study and practice in the styles and techniques of oral presentation for radio and television under broadcast conditions.

261 INTRODUCTION TO ORAL INTERPRETATION 1Q A 3 Prereq 118. Study and practice of the techniques in the oral presentation of manuscript materials.

262 ORAL INTERPRETATION OF LITERATURE 1Q W 3 Prereq 261 or =. Critical analysis of literature for oral presentation and the enhancement of literature through oral and auditory experience.

315 PUBLIC PERFORMANCE IQ A W S V 1-2 R-6 Prereq c/i. The principles of public performance. Practice in presenting before public audiences oral readings, lecture recitals, or public addresses.

FOR UNDERGRADUATES AND GRADUATES

316 BUSINESS AND PROFESSIONAL SPEAKING 1Q A W S 3 Prereq 10 credits in Speech. The methods and techniques of speaking by leaders in business, labor, education, and the professions.

317 SPEECH IN TEACHING AND LEARNING 1Q A 3 Prereq 5 cr in Speech. The speech competence of the teacher, the use of speech as an instruction technique, and the principles by which the teacher works with the speech of his students.

318 APPLIED PHONETICS 1Q S 3 Prereq 119 or =. The narrow transcription into phonetic symbols of dialects, deviations from, and variation within standard American speech, their causes and frequency of appearance.

321 THE TEACHING OF SPEECH 1Q W 3 Prereq 10 credits in Speech. Planning the speech curriculum and its relationship to other school subjects; instructional materials, and methods of teaching Speech.

322 THE MODERN FORENSICS PROGRAM 1Q Su only 3 Prereq 10 credits in Speech. The coaching and direction of debate, oratory, declamation, extemporaneous speaking, and other speech contest activities in high schools and colleges.

343 ADVANCED PUBLIC SPEAKING 1Q S 3 Prereq 10 credits in Speech. Theories of speech composition, models of contemporary public address.


345 HISTORY OF PUBLIC ADDRESS 1Q 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 Psych 110 and 5 credits in Speech. 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.

353 GENERAL SEMANTICS IQ S 3 Prereq Psych 110 and 5 credits in Speech. The role of language in human relations; concepts of: abstraction, extensionalization, identity, multordinality, etc. in evaluation, decision, and action.

389 ADVANCED ORAL INTERPRETATION OF LITERATURE 1Q S 3 Prereq 122 or =. The oral traditions of literature and modern theories of oral interpretation.

371 PRINCIPLES OF SOCIODRAMA 1Q W 3 Prereq 5 credits in Speech. Principles and practice of role-playing as a technique of communication; the development of the spontaneous-creative and the extemporaneous types of sociodrama.

374 HISTORICAL PAGEANT DRAMA 1Q W S Su V 2-5 Prereq 5 credits in Speech. Communication techniques of organizing programs, in schools and in the community, dramatizing sequences in the history of the community; writing and staging of a production based upon such data.

441-442-443 RADIO-TELEVISION PRODUCTION AND DIRECTION. (See Journalism).
WILDLIFE TECHNOLOGY—77

WILDLIFE TECHNOLOGY is the study of basic science with particular emphasis upon the biological sciences, together with the development of special skills and techniques as a preparation for professional work in fish and 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 program. 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 101, 306, 308, 328, 451; Botany 306; Chemistry 123, 245; Geology 101. 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 305, 307, 310, 328; Forestry 210; Geology 101; Microbiology 280.

CURRICULA IN WILDLIFE TECHNOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Group Requirements (5 or 10 credits winter or summer)</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
</table>

Botany 121, 122, 123—General Botany, Local Flora 5 5 3
Chemistry 101, 201—General, Survey Organic 4 5 5
English 101, 102, 103—Freshman Composition 3 3 3
Mathematics 110—Intermediate Algebra (if required by placement) 0-2
Mathematics 113—Trigonometry

Group Requirements

Health & Physical Education 101, 102, 103 1 1 1
ROTC 101, 102, 103—Military or Air Science 1 2 2

Sophomore Year

<table>
<thead>
<tr>
<th>Group Requirements (5 or 10 credits winter or summer)</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
</table>

Zool 104-105, 201—Eplem. Zoology, Comparative Vertebrate Anatomy 5 5 5
Phys 111, 112 or 113—General Physics 5 5 5
Group Requirements (5 or 10 credits winter or summer) 5 5 5
Hist 360—General Range Management 5 5 5

Aquatic Option

<table>
<thead>
<tr>
<th>Group Requirements (5 or 10 credits winter or summer)</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
</table>

For 252, 250—Surveying, Mapping 5 2
Bot 255, 256—Plant Physiology, General Systematic Botany 5 5
Math 125—Statistics 5 5
Group requirements

15 15 15

Senior Year

<table>
<thead>
<tr>
<th>Group Requirements (5 or 10 credits winter or summer)</th>
<th>A</th>
<th>W</th>
<th>S</th>
<th>Cr</th>
<th>Cr</th>
</tr>
</thead>
</table>

Zool 269 or 306—Mammalogy, Ornithology 5 5
Zool 307—Aquatic Biology
Zool 435—Fishery Science
Bot 355—Plant Ecology
For 360—General Range Management
Elective (vary depending on Zool 308 or 309)

15 15 15
ZOOLOGY is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education.

The Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are also offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summers, extensive field experiences are available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and conservation agencies. Many, with further training, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: 45 credits in Zoology including Zoology 104-105, 106, 201, 202, 203, 340, 341, 368, 1 credit of 429.

The following must also be completed: Botany 121-122, 123; Chemistry 121-122-123; Mathematics 110, 116, 118; and Physics 111-112-112 or 221-222-223.

Students who contemplate graduate work in Zoology should elect during their junior or senior years, Microbiology 200 and Zoology 300, 305.

The foreign language requirement listed earlier in the catalog must be satisfied. French, German, Russian, or other language approved by the department may be used. It would be wise for prospective graduate students to secure a reading knowledge of both French and German if possible.

The Pre-medical Sciences student may earn a degree in Zoology by completing requirements in that curriculum and presenting a total of 35 credits in Zoology or related fields as follows: Zoology 104, 105, 201, 302, 365; any one course from Zoology 106, 300, 309, 310, 321, 323, 324, 363, 365, 461; any one course from Microbiology and Public Health, or from Botany or one course from Zoology 300, 305, 333, 340, 341.

Senior examinations are given only to candidates for honors.

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

SUGGESTED CURRICULUM IN ZOOLOGY

Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 104</td>
<td>Zoo 104, 105, 106—Elementary Zoology and Field Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 101, 102, 103</td>
<td>Zoological Composition, McGraw-Hill</td>
<td>3</td>
</tr>
<tr>
<td>Math 110, 112, 113</td>
<td>College Algebra, Trig., and Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>Group Requirements</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121-122-123</td>
<td>College Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>For Language 101-102-103—Elementary French, German, or Russian</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group Requirements</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Zoology 201—Comparative Vertebrate Anatomy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Language 101-102-103—Elementary French, German, or Russian</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group Requirements</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Physics 201-202-203—Military or Air Science | 2

Zoology 304—Comparative Vertebrate Anatomy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Requirements</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Botany 121, 122—General Botany, Local Flora | 5

Health and Physical Education 101-102-103—Intermediate, Advanced | 1

Senior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 300</td>
<td>Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Botany 101, 102, 103</td>
<td>Zoology</td>
<td>5</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"


101 GENERAL ZOOLOGY 1Q A W Su 5 (3-4). Certain basic biological principles as exemplified by the study of the characteristics of animal protoplasm and selected invertebrates and a vertebrate form.

104-105 ELEMENTARY ZOOLOGY 2Q A W 5 (3-4). A survey of the invertebrates and the prochordates, anatomy, physiology, phylogeny and various zoological principles.

106 FIELD ZOOLOGY 1Q S 3 (2-5) Su at Biological Station. Prereq Pre 101 or 104, 106. 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 Zoology. Comparative anatomy, morphology, and phylogeny of the vertebrates.

202 HUMAN PHYSIOLOGY 1Q S Su 5 (3-4) Prereq Sophomore standing or two quarters of college Zoology. The normal physiology of blood circulation, respiration, digestion, excretion, irritability, locomotion, coordination, and reproduction.

FOR UNDERGRADUATES AND GRADUATES

101 GENERAL COMPARATIVE EMBRYOLOGY 1Q A 5 (3-4) with 1Q S 3 (2-2-2). The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

102 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).

103 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.

201 HISTOLOGY AND MICROTECHNIQUE 1Q W 5 (3-4) Prereq 201, 101, or 105 and c/l. Basic tissues are studied and a limited amount of work is done on organology. Microtechnique with emphasis on the paraffin method.

205 HEPATOLOGY 1Q W 3 (2-5) o/y Prereq 201. The physiology, distribution, and life histories of amphipods, and reptiles.

307 AQUATIC BIOLOGY 1Q A 5 (3-7, 10) Prereq 106 and Bot 125. The biology of fresh water sources with emphasis upon the flora and fauna and their adaptability. Plan, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below the vertebrates.

308 ORNITHOLOGY 1Q S 5 (3-4), Su 3 at Biological Station. Prereq 201. The structure, classification, and life histories of birds. Weekly field trips. Students are expected to provide themselves with binoculars.

309 MAMMALOGY 1Q A 5 (3-4), Su 6 at Biological Station. Prereq 201. The classification, identification, and life histories of mammals. Saturday field trips.

310 ECHTHYOLOGY 1Q A 5 (3-4) Prereq 201. The systematics and distribution of the more important orders of fish, their collection and identification. Life histories and certain fundamentals of the physiology of fish are considered. Field trips.

311-312 INVERTEBRATE ZOOLOGY 2Q A 5 (3-4) o/y Prereq 104-105 and one additional Zoology course. The anatomy, embryology, and physiology of the invertebrate animals.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>321</td>
<td>PROTOZOOLOGY 1Q A 5 o/y</td>
<td>1-3</td>
<td>Prereq 104-105. Taxonomy, structure, natural history, physiology, and ecology of non-parasitic protozoa.</td>
</tr>
<tr>
<td>328</td>
<td>ANIMAL ECOLOGY 1Q S 5 (3-8) e/y</td>
<td>1-3</td>
<td>Prereq 106, Bot 122 or =. Zool 207 or 311, 312 recommended. The relationships between animals and their environment, with special emphasis on the invertebrates. Saturday field trips.</td>
</tr>
<tr>
<td>332</td>
<td>VERTEBRATE ENDOCRINOLOGY 1Q S 3 (2-4) Prereq 201, 302.</td>
<td>1-3</td>
<td>The microscopic anatomy and the normal physiology of the major glands of internal secretion of vertebrates. Correlative problems employing surgical and experimental techniques may be undertaken.</td>
</tr>
<tr>
<td>340-341</td>
<td>VERTEBRATE PHYSIOLOGY 2Q A W 5 (3-4) Prereq 201 or =.</td>
<td>3-4</td>
<td>Three quarters of college chemistry. (340) General physiological properties of protoplasm: blood, body fluids, and circulation; respiration and excretion; (341) digestion, nutrition and intermediary metabolism; excitation, conduction, responses, senses; endocrines and reproduction.</td>
</tr>
<tr>
<td>350</td>
<td>ECOLOGY OF WILDLIFE POPULATIONS 1Q W 3 (3-0) Prereq 201</td>
<td>3</td>
<td>The population dynamics of wildlife species, with emphasis on recent literature. Productivity, turnover, carrying capacity, predation, methods of census and harvest.</td>
</tr>
<tr>
<td>364</td>
<td>INVERTEBRATES OF THE INTERMOUNTAIN REGION 1Q</td>
<td></td>
<td>Prereq 106. The ecology, taxonomy and distribution of the invertebrates of the Rocky Mountain area, exclusive of parasites and insects.</td>
</tr>
<tr>
<td>365</td>
<td>ENTOMOLOGY 1Q S 5 (3-4) o/y Su 6 at Biological Station</td>
<td>5 (4)</td>
<td>Prereq 101 or 104-105. The structure, classification, life histories, distribution and ecology of insects.</td>
</tr>
<tr>
<td>396</td>
<td>AQUATIC INSECTS 1Q Su 3 (3-12) Prereq 104-105 or 101</td>
<td>5 (4)</td>
<td>and one additional Zool course. The insect fauna, both immature and adult, aquatic habitats of Western Montana.</td>
</tr>
<tr>
<td>397</td>
<td>GENETICS 1Q A 5 (3-4) Prereq 201 or Bot 225.</td>
<td>5 (4)</td>
<td>The mechanism of heredity, involving consideration of Mendelian inheritance, linkage, linkages, chromosomal aberrations, extra-chromosomal inheritance, and their relationship to structure and function.</td>
</tr>
<tr>
<td>398</td>
<td>EVOLUTION 1Q A 3 (3-0) o/y Prereq 106 and Bot 121, 122</td>
<td>3</td>
<td>123, 305 or concurrent registration. The theories of evolution from the historical point of view; the nature of evolutionary processes, the evidence for evolution, and the factors of evolution. Credit not allowed for this and Bot 386.</td>
</tr>
<tr>
<td>401</td>
<td>CELLULAR PHYSIOLOGY 1Q W 5 (3-4) o/y Prereq Physics 113 or 225, Chem 263, and 2 courses in Botany, Microbiology, or Zoology. The life processes at the cellular level emphasizing the methods of physical science.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>COMPARATIVE PHYSIOLOGY 1Q W 5 (3-4) e/y Prereq Physics 113 or 225, Chemistry 263 and one animal physiology course. A survey of the diverse ways in which different kinds of animals meet their functional requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>413</td>
<td>FISHERY SCIENCE 1Q W 3 (3-6) e/y Prereq 307, 310.</td>
<td>3</td>
<td>The problems involved in investigations on fisheries biology with an analysis of, and some actual field experience in, methods employed in attacking these problems. Field trips.</td>
</tr>
<tr>
<td>429</td>
<td>BIOLOGICAL LITERATURE 2Q A W 1 (2-0) Prereq 20 credits</td>
<td>3</td>
<td>in Bot or Zool. Student reports of literature of the trend of investigation and experimentation in biological fields.</td>
</tr>
<tr>
<td>431</td>
<td>PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5</td>
<td>3</td>
<td>Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Primarily a problems type course involving semi-independent work. By variation of content, the course may be repeated during succeeding quarters.</td>
</tr>
</tbody>
</table>

FOR GRADUATES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>432</td>
<td>PROBLEMS IN VERTEBRATE PHYSIOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>435</td>
<td>PROBLEMS IN VERTEBRATE PHYSIOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>434</td>
<td>PROBLEMS IN INVERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5</td>
<td>3</td>
<td>Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.</td>
</tr>
<tr>
<td>435</td>
<td>PROBLEMS IN INVERTEBRATE PHYSIOLOGY 1Q a/q V 1-5 Prereq 25 credits in Zool including adequate background courses in the subject and c/l. Semi-independent work. By variation of content, the course may be repeated during succeeding quarters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>461</td>
<td>LIMNOLOGY 1Q Su 6 (5-25) Prereq 101 or 105 and Chem 103 or 123. Ecology of lakes, streams and ponds, with emphasis on the physical, chemical and biotic factors which determine their biological productivity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>490</td>
<td>SEMINAR IN BIOLOGY 1Q Su 1 (2-0) Special problems in Biology. Offered at the Biological Station.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

699 THESIS a/q V R-15.
INDEX

Absences 22
Accreditation of University 10, 17
Activities 22
Activities Centers, Student 21
Administrative Offices 3
Admission 11
Advanced Placement 12
Conditional 12
Early 12
Examination, by 12
General 12
High School Preparation 11
Law School 57
From Non-English Speaking Countries 11
Registration Fee, Advance 12
Special Students 12
Transfer 12
Unclassified 12
Arts and Sciences, College of 13
Associate Dean of Students 19
A.S.M.S.U. Fee 19
Athletics 20

 Biological Station 20
Board, Local Executive 3
Board of Education, State 1
Building Fee 19
Building 2
Business and Economic Research, Bureau of 10
Calendar, Condensed 1
Calendar, State University, Law 2, 56
Campus and Facilities 10
Certification to Teach 36
Changes in Program of Studies 12
College of Arts and Sciences 13, 24
Composite Requirement, Freshmen 14
Conditional Admission 12
Control and Administration 10
Correspondence Study 14
Correspondence and Summer Study 20
Department 19
Graduate Students 19
Health Service 19
Incidental 19
Later Registration 19
Limited Registrants 19
Listeners 19
Non-resident 19
Payment of Refunds 19, 20
Registration, Change of 19, 20
Removal of Incomplete 19
Special Examination 19
Special Purposes 20
Student Activity 19
Student Union 19
Summary 18, 19
Transcript of Record 19
War Service Examinations 19
Field Trips 19
Financial Aid 21
Financial Obligations 21
Of Individual Students 21
Of Organizations 21
Fine Arts, School of 13, 24
Foreign Language Requirement 14, 17
Forest and Conservation Experiment Station 10
Fraternal and Sorority Houses 21
Grade Point Requirements (Quality of Work) 21
On Transfer Credits 21
Graduate Points 21
Graduate Plan 22
Graduate School 19
Abstract of Thesis 19
Admission to Candidacy, Admission to 18, 18
Certification to Teach 17, 17
Course Load 19
Course Requirements, Distribution, Quality of Work 18
Credit Requirements 19
Degrees Offered 18
Dissertation 18
Doctor of Education Degree 17
Doctor of Philosophy Degree 17
Examination Work 17, 17
Extension and Correspondence Courses 16
Fees 19
Final Examination 19
Foreign Language Requirement 17
Graduation 18
Graduate Record Examination 16
Major and Minor Areas 17
Master's Arts in Guidance and Counseling 17
Master of Arts or Master of Science in Teaching 17
Master's Degrees 16, 17
Registration 16
Residence Requirement 16
Special Programs 17
Thesis, or Professional Paper 17
Time Limit for Degree 16, 17
Transfer Credit 16, 16
Graduation, Catalog Governing 13
Graduation, Requirements for Group Requirements 14
Health Service, Student 20
High Schools, Admission from Honors, Senior Examination for 15
Honors, Senior Examination for 15, 15
Housing, Family 15
Housing, Student 21
Incomplete Grades, Fee for Removal 15
Incomplete Grades, Removal of 13
Independent Work 13
Instruction, Organization of 24
Interscholastic, Annual 23

Leaves of Absence 22
Library, The 10
Limited Registrants 19
Listening 21
Living Accommodations 21
Loans 21
Major, Credits for 13
Master's Degree 15, 16, 17
Absence at Required 16
Admission to Candidacy 16
Examination 16
Foreign Language Requirement 17
Residence 16
Thesis 16
Time Limit 16
Transfer Credit 15, 15
Montana State University 19
Motor Vehicles, use of 21
Museum, University of 21
Music Fees 62
Non-Resident Fees 19
Number System of Courses 24
Official Directory 3
Organizations of Instruction 24
Organizations 24
Orientation Week 12
Placement Service 20
Press and Broadcasting Research, Bureau of 11
Prizes and Scholarships 13, 21
Professional Schools 13
Publications 23
Public Service, Division of 11
Quality of Work 17
Railway Fare Refund 20
Refunds 20
Registration Days 20
Registration Fee 20
Registration and General Regulations 20
Residence 20
Removal of Incomplete, Time Limit 20
Removal of Incomplete Fee 19
Repetition of Course 20
Required Courses 12, 14
Requirements, Group 14
Requirements for Admission 14
Requirements for Graduation 13
Requirements of Particular Curricula 13
Residence Halls 20
Residence Requirements 19
ROYC 72

Scholarships and Prizes 21
Scholastic Requirements, Minimum 15, 21
School of Business Administration 24, 28
School of Education 24, 35
School of Fine Arts 24
School of Forestry 24, 44
School of Journalism 24, 55
School of Law 59
School of Pharmacy 65
School of Public Service, Affiliated 65
Secondary Teaching Certificate 36
Senior Examinations 15
Senior Examinations for Honors 15
Social Functions 22
Societies 22
Special Examination Fee 19
Special Methods Courses 17
Special Programs 17
Special Subjects, Admission of 12
Speech and Hearing Clinic 20
Standards of Student Conduct 20
Student Contracts and Obligations 25
Student Fees 19
Student Loans 20
Student Loans 19
Student Marriages 22
Student Organizations 22
Official Recognition of 22, 23
Financial Obligations 25
Student Services 25
Student Standards 21
Summary 21
Support and Endowment 19
Symbols, Explanation of 24
Teacher's Certificate 36
Teaching 36
Testing Center 20
Transfer Credit 20
Transfer Students, Admission of 12
Typographical Laboratory and University Press 11
Unclassified Students 12
University of Montana 12
University Testing Center 12
Veteran Registration 13
War Service Fee Examinations 19
Wildlife Research Unit 11
Withdrawals from the University 14
Women's Cooperative House 21