1-1-1962

1962-1963 Course Catalog

University of Montana--Missoula. Office of the Registrar

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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 Barbell, Executive Secretary

The University of Montana is constituted under the provisions of Chapter 92 of the Laws of the Thirty-third 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 BACCOCK, Governor Ex-Officio President
FORREST H. ANDERSON, Attorney General Ex-Officio
HARRIET A. MILLER, Sup't. of Public Instruction Ex-Officio
EARL L. HALL, 1963 Great Falls Reserve
GEORGE N. LUND, 1964 Missoula Reserve
MRS. F. H. KEITH, 1963 Missoula Reserve
BOYNTON G. PAIGE, 1966 Missoula Reserve
MRS. HARRY BYRNE, 1967 Helena Reserve
G. D. MULLENDORE, 1968 Glendive Reserve
GORDON L. DOERING, 1969 Helena Reserve
JOHN E. O'NEILL, 1970 Butte Reserve

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

MONTANA STATE UNIVERSITY, MISSOULA
Established February 13, 1893, and consisting of:
The College of Arts and Sciences
The School of Law
The School of Pharmacy
The School of Forestry
The School of Journalism
The School of Business Administration
The School of Education
The School of Fine Arts
The Summer Session
The Graduate School

H. K. Newburn, President

MONTANA STATE COLLEGE, BOZEMAN
Established February 15, 1893, and consisting of:
The Division of Agriculture
The Division of Education
The Division of Engineering
The Division of Forestry and Extension
The Division of Professional Schools
School of Architecture
School of Art
School of Home Economics
School of Nursing
The Agricultural Experiment Station
The Montana Grain Inspection Laboratory
The Montana Wool Laboratory
The Central Montana Branch Station (Moccasin)

R. O. Brockmann, 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 Teacher Education, Elementary and Secondary
The Summer Quarter
The Teacher Service Division
The Graduate Division

James E. Short, President

EASTERN MONTANA COLLEGE OF EDUCATION, BILLINGS
Established March 12, 1893, 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, 1893, and consisting of:
The Four-year Course in Teacher Education, Elementary and Secondary
The Two-year Course in Teacher Education, Elementary

L. O. Brockmann, President

CONDESED 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 16, 1964

MONTANA SCHOOL OF MINES
Butte
Second Semester opens February 5, 1962
Summer Field Work opens June 11, 1962
First Semester opens September 24, 1962
Second Semester opens February 4, 1963
Summer Field Work opens June 10, 1963
First Semester opens September 23, 1963
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 29, 1962
Summer Quarter opens June 11, 1962
Autumn Quarter opens September 24, 1962
Winter Quarter opens January 2, 1963
Spring Quarter opens March 29, 1963
Summer Quarter opens June 12, 1963
Autumn Quarter opens September 24, 1963
Winter Quarter opens January 6, 1964
Spring Quarter opens March 30, 1964
Summer Quater opens June 15, 1964

NORTHERN MONTANA COLLEGE
Havre
Winter Quarter opens January 2, 1962
Spring Quarter opens March 29, 1962
Summer Quarter opens June 13, 1962
Autumn Quarter opens September 23, 1962
Winter Quarter opens January 2, 1963
Spring Quarter opens March 29, 1963
Summer Quarter opens June 13, 1963
Autumn Quarter opens September 24, 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.

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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 27-28, Thursday and Friday Week and Registration
October 1, Monday Instruction begins
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

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 Spring recess begins

SPRING QUARTER

April 1, Monday Registration
April 2, 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

1963

AUTUMN QUARTER

September 22-28, Monday through Saturday Orientation
September 24-29, Monday through Saturday 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 11, Monday Veterans Day, a holiday
November 22, Thursday Thanksgiving Day, a holiday
December 18-20, Monday through Friday Examinations
December 20, 5:20 p.m. Autumn Quarter ends Christmas recess begins

LAW CALENDAR 1962 - 1963

FALL SEMESTER, 1962

September 24-29, Monday through Saturday 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 21-25, 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 8-12, Wednesday through Saturday Pre-registration
January 28-Feb. 2, Monday through Saturday Semester examinations

SPRING SEMESTER, 1963

February 6, Wednesday Registration for Spring Semester
February 7, Thursday Classes begin at 8:00 a.m.
March 21, Saturday Spring Vacation begins after last class
April 30, Thursday Classes resume at 8:00 a.m.
May 29-June 2, 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 21-25, Wednesday through Sunday Thanksgiving holiday
December 21, Saturday Christmas vacation begins after last class
January 6, 1964, Monday Classes resume at 8:00 a.m.
January 19-Feb. 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 2, Tuesday through Tuesday Semester examinations
June 6, Monday Commencement
OFFICIAL DIRECTORY, 1961—1962

LOCAL EXECUTIVE BOARD

THEODORE JACOBS, Missoula
MRS. THOMAS E. MULKOWSKY, Missoula
ALEX M. STEFANOFF, Missoula

ADMINISTRATIVE OFFICERS

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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. RICHMAN, Ed.D., University of Cincinnati, D.Mus. (hon.), College-Conservatory of Music of Cincinnati, Dean of the School of Fine Arts
ROBERT E. SULLIVAN, LL.B., University of Notre Dame, Dean of the School of Law
ROBERT L. VAN HORNE, Ph.D., State University of Iowa, Dean of the School of Pharmacy
ROSS A. WILLIAMS, M.F., Yale University, Dean of the School of Forestry
ANDREW C. COGGSWELL, 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

DIETERT, REUBEN A., Ph.D., State University of Iowa, Professor and Chairman
BERHAN, 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
GERHART, 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
HARRIS, JAMES R., Ph.D., University of Wisconsin, Assistant Professor
HARVEY, LEROY H., Ph.D., University of Michigan, Professor; Curator of the Herbarium; Assistant Director, Biological Station
HOYER, BILL H., Ph.D., University of Minnesota, Lecturer (Courtesy)
KRAMER, JOSEPH, Ph.D., University of Nebraska, Professor Emeritus
LAACKMAN, DAVID B., Ph.D., University of Pennsylvania, Lecturer in Immunology (Courtesy)
NARUMURA, MITSURO J., Ph.D., Boston University, Associate Professor
CRAMER, RICHARD A., Ph.D., Brown University, Lecturer in Biochemistry (Courtesy)
PEERCH, SHEFFER J., JR., Ph.D., Washington State University, Assistant Professor
SALVIN, SAMUEL B., Ph.D., Harvard University, Lecturer (Courtesy)
SEVERN, JOSEPH W., Ph.D., University of Wisconsin, Professor Emeritus
SOLBERG, RICHARD A., Ph.D., University of California at Los Angeles, Assistant Professor (also Education) (Winter and Spring Quarters)
STEIN, OTTO L., Ph.D., University of Minnesota, Assistant Professor (on leave 1961-62)
TAYLOR, JOHN J., Ph.D., Ohio State University, Assistant Professor
GARRIB, V. ANITA (MRS.), B.S., Michigan State University, Graduate Assistant
GARRIB, RICHARD, B.A., Montana State University, Graduate Assistant
HOUSE, EDWIN W., B.S., Western Montana College of Education, Graduate Assistant (resigned January 31, 1962)
KOPP, JAMES R., B.S., Montana State University, Graduate Assistant
MENARD, CHARLES, B.S., Colorado State University, Graduate Assistant (Winter and Spring Quarters)
OVERHOLSER, DONALD L., B.S., Oregon State University, Graduate Assistant (Fall and Winter Quarters)
THULEN, ROBERT J., B.S.F., Montana State University, Graduate Assistant

Chemistry

STEWART, JOHN M., Ph.D., University of Illinois, Professor and Chairman
BAITELMAN, WILLIAM G., Ph.D., Yale University, Professor Emeritus
GRIMES, R. MEWIN, Ph.D., Michigan State University, Assistant Professor (resigned December 31, 1961)
HOWARD, JOSEPH W., Ph.D., University of Illinois, Professor Emeritus
JURATY, RICHARD E., Ph.D., University of Wisconsin, Professor
LONEY, EARL C., Ph.D., Johns Hopkins University, Professor
OSTERHELD, ROBERT K., Ph.D., University of Illinois, Associate Professor
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VAN MEER, WAYNE P., Ph.D., University of Washington, Assistant Professor
YATES, LEWAND M., Ph.D., Washington State University, Associate Professor (in charge of the storeroom)
LABBY, MATTHIAS M., M.S., Oregon State College, Graduate Assistant
RAMAGE, EUGENE B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)

Economics

WALLACE, ROBERT F., Ph.D., University of Minnesota, Professor and Chairman
HELKEN, GEORGE B., Ph.D., University of Michigan, Associate Professor
LEONARD, JAMES R., B.A., University of Texas, Instructor
SHANNON, RICHARD E., Ph.D., Ohio State University, Associate Professor
WHEELER, ROBERT D., M.A., Northwestern University, Instructor
ENG, THOMAS P., B.A., Montana State University, Graduate Assistant
FRY, PAUL R., B.A., Montana State University, Graduate Assistant

English

GILBERT, VEDDER M., Ph.D., Cornell University, Professor and Chairman
ALF, HERBERT A., M.F.A., State University of Iowa, Instructor
ALLEN, JAMES D., Ph.D., University of Washington, Instructor
BENNETT, JAMES R., Ph.D., Stanford University, Assistant Professor
BETTSKY, SEYMOUR, Ph.D., Harvard University, Professor
BIER, JESSE, Ph.D., Princeton University, Associate Professor
BONES, AGNES V., Ph.D., University of Minnesota, Associate Professor
BROWN, WALTER L., Ph.D., University of California, Professor
CARPENTER, NANCY C., Ph.D., Yale University, Professor
CHALMERS, ROBERT A., Ph.D., Pennsylvania State University, Assistant Professor
OFFICIAL DIRECTORY

Clapp, Mary B. (Mrs.), M.A., University of North Dakota, Associate Professor Emeritus
Cliff, Merrel D., Jr., Ph.D., University of Michigan, Associate Professor (on leave 1961-62)
Coleman, Rufus A., Ph.D., Boston University, Professor Emeritus
Dundas, Judith, Ph.D., University of Wisconsin, Assistant Professor
Feldler, Leslie A., Ph.D., University of Wisconsin, Professor (on leave 1961-62)
Freeman, Edmund L., M.A., Northwestern University, Professor (retired December 31, 1961)
Guthrie, Jack S., M.A., University of Washington, Instructor
Harris, Phyllis L. (Mrs.), M.A., Montana State University, Instructor
King, Walter N., Ph.D., Yale University, Associate Professor
McLeod, Donald B., M.A., Montana State University, Instructor
Merrim, 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, Veda P., M.A., Punjab University (India), Instructor
Vinouur, Jacob, Ph.D., University of Wisconsin, Assistant Professor
Alsen, Phoeincia D., B.A., University of California, Santa Barbara, Graduate Assistant
Burke, 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
Burgress, Robert M., Ph.D., University of California, Los Angeles, Professor and Chairman (on leave Autumn Quarter)
Bischoff, Paul A., M.A., Oberlin College, Professor Emeritus
Breisky, 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., Louisana State University, Instructor
Dick, Ernst S., Ph.D., University of Munster (Germany), Instructor
Epstein, Marguerite H. (Mrs.), M.A., Montana State University, Associate Professor
Hoffman, Rudolph O., M.A., University of Wisconsin, Professor Emeritus
Lachschmottz, Gerd, M.A., University of Germany, Assistant Professor
Laxien, Peter G., Ph.D., University of California, Associate Professor
Ninierse, Patrick J. (Mrs.), M.A., Northwestern University, Instructor
Ortis, Domingo, Ph.D., University of California, Assistant Professor
Powell, Ward H., Ph.D., University of Colorado, Associate Professor
Sheppard, Douglas C., Ph.D., University of Wisconsin, Assistant Professor
Suzuki, Theodore H., Ph.D., University of Wisconsin, Professor (Acting Chairman, Autumn Quarter)
Soeosen, Toru, B.A., Mexico National University, Professor
Wick, Felix D., B.A., Jamestown College, Visiting Instructor (Spring Quarter)
Born, 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
Lear, E. Denise, B.A., Montana State University, Graduate Assistant
Marshall, Suzanne (Mrs.), B.A., Montana State University, Graduate Assistant
Nyk, Mika V. (Mrs), B.A., Montana State University, Assistant (Winter and Spring Quarters)

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

Geology
Honkala, Fred S., Ph.D., University of Michigan, Professor and Chairman
Fields, Robert L., Ph.D., University of California, Associate Professor
Hower, John J., Ph.D., Washington University (St. Louis), Associate Professor
Silverman, Arnold J., M.A., Columbia University, Assistant Professor
Weinberg, John F., Ph.D., University of Illinois, Associate Professor
Weissman, Robert M., Ph.D., University of California, Assistant Professor
Winston, Donald, M.A., University of Texas, Instructor
Chase, Ronald E., M.S., Montana State University, Graduate Assistant
Kunzel, William D., M.S., Montana State University, Graduate Assistant
Mowat, Thomas C., B.A., Rutgers University, Graduate Assistant
Rine, Stanley J., B.A., University of New Hampshire, Graduate Assistant
Wilkinson, William L., M.S., University of Oregon, Graduate Assistant

Health, Physical Education and Athletics
Schwank, Walter C., Ph.D., State University of Iowa, Director and Professor
Adams, Harry F., M.S., University of Washington, Professor; Head Track Coach
Brown, Ella C., M.A., Montana State University, Instructor
Chirnise, Edward B., M.A., Montana State University, Assistant Professor
Coop, Forrest 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
Hercules, Charles F., M.A., Columbia University, Professor
Jenkins, Ray M., University of Colorado, Assistant Professor; Head Football Coach
Lorenz, Marvin M., M.S., University of Washington, Assistant Professor
Osvald, Robert M., M.S., University of Washington, Assistant Professor
Rennehart, Naseby, B.A., Montana State University, Instructor; Trainer
Schreiner, William E., B.A., University of Wisconsin, Professor Emeritus
Schwenn, Milton E., B.A., Washington State University, Instructor; Assistant Football Coach
Seib, Kay F., B.S., Washington State University, Instructor
Stoody, A. Leo, Ed.D., Stanford University, Professor
Swanson, Harlan L., M.S., University of Oregon, Instructor
Wilson, Vincent, M.A., New York University, Associate Professor
Ballinger, Robert D., B.S., Concordia College, Graduate Assistant
Collins, Lewis H., B.S., Montana State University, Graduate Assistant
Jones, Delores M., B.S., Montana State University, Graduate Assistant
Matthews, John L., 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, Morten, Ph.D., Columbia University, Associate Professor
Carver, Paul A., Ph.D., Columbia University, Associate Professor
Cookson, Robert W., Ph.D., Stanford University, Professor; Dean College or Arts and Sciences; Director of the Summer Session
Hollis, Hilda C. (Mrs.), B.A., Eastern Washington College of Education, Graduate Assistant
Konovsky, Richard J., B.S., College of Great Falls, Assistant (Winter and Winter Quarters)
Koress, Edmund R., B.A., Montana State University, Assistant (Winter Quarter)
Luebeck, Allan D., B.A., Montana State University, Assistant (Autumn and Winter Quarters)
Narkevicius, Richard S., B.A., Montana State University, Graduate Assistant
Sheaff, Marleagh C. (Mrs.), Assistant (Winter Quarter)
Snylva, Robert L., B.A., Doane College, Graduate Assistant
Swan, Jack A., B.S., Eastern Montana College of Education, Assistant (Winter Quarter)
Tesch, Cary G., B.S., College of Great Falls, Assistant (Autumn Quarter)
Trickey, George W., Assistant (Winter Quarter)
Young, Diane M. (Mrs.), Assistant (Winter Quarter)

**Philosophy**

Marylin, Edwin L., M.A., Harvard University, Professor and Chairman
Adamczewski, Zygmun, Ph.D., Harvard University, Assistant Professor
Chen, Chung-Hwan, Ph.D., University of Berlin, Visiting Professor (Autumn Quarter)
Lawry, John E., Ph.D., Harvard University, Assistant Professor
Schuster, Cynthia A. (Mrs.), Ph.D., University of California at Los Angeles, Associate Professor (on leave Autumn Quarter)

**Physics**

Jeppesen, C. Rulon, Ph.D., University of California, Professor and Chairman
Jeppesen, Randolph H., M.S., University of Illinois, Instructor
Hayden, Richard J., Ph.D., University of Chicago, Professor
Jaksen, Mark J., Ph.D., University of California, Professor
Shallenberger, G. D., Ph.D., University of Chicago, Professor Emeritus
Taylor, Archie B., Antioch College, Instructor; Director, Electronic Equipment Maintenance (part time)
Peterson, Richard W. B.A., Montana State University, Graduate Assistant (Autumn Quarter)

**Political Science**

Payne, Thomas, Ph.D., University of Chicago, Professor and Chairman
Abbott, Frank C., Ph.D., Harvard University, Professor; Academic Vice President
Karlin, Jules A., Ph.D., University of Minnesota, Professor (also History)
Karpas, Keman, Ph.D., New York University, Associate Professor (on leave 1961-62)
Stelson, Albert C., Ph.D., Columbia University, Associate Professor
Tai, Hung-Chao, Ph.D., University of Illinois, Instructor
Walsh, Ellis L., Ph.D., University of Wisconsin, Professor
Long, John A., B.A., Montana State University, Graduate Assistant
Sheree, James W., B.A., Montana State University, Graduate Assistant
Sorge, Gerald L., B.A., Montana State University, Graduate Assistant

**Psychology**

Griffith, William J., Jr., Ph.D., University of Cincinnati, Professor and Chairman
Ammons, R. B., Ph.D., State University of Iowa, Professor
Atkinson, E. A., M.A., Montana State University, Professor
Burkef, Thomas C., Ph.D., University of Minnesota, Associate Professor
Clow, Mathern, Ph.D., Stanford University, Professor; Associate Dean of Students
DeMar, Frank M., Ph.D., University of Texas, Professor
Miller, Arnold, Ph.D., Clark University, Assistant Professor
Noble, Clyde E., Ph.D., State University of Iowa, Professor

**Home Economics**

Brescor, Emma H. (Mrs.), M.S., Colorado State University, Assistant Professor and Chairman
Chamberlain, D. Gerard, B.S., University of Alberta, Instructor; Director, Food Service
Christopherson, Joan (Mrs.), M.A., Teachers College, Columbia University, Instructor; Head Teacher, Nursery School
Eberhardt, Fannie E., M.S., Washington State University, Assistant Professor
Gleason, Helen, M.A., Columbia University, Professor Emeritus
Lewis, Vanetta (Mrs.), M.Ed., Montana State University, Assistant Professor
Orlich, Patricia (Mrs.), M.A., Montana State University, Instructor (part time)
Platt, Anne C., M.S., University of Washington, Professor
Barr, Dorothy D. (Mrs.), B.A., Western Reserve University, Assistant
Barthelmes, Zoe (Mrs.), B.A., Montana State University, Assistant
Malott, Arline (Mrs.), B.S., University of Utah, Assistant
Yarnall, Maureen F. (Mrs.), B.S., Montana State University, Assistant (Spring Quarter)

**Mathematics**

Livingston, Arthur E., Ph.D., University of Oregon, Professor and Chairman
Ballard, William R., Ph.D., University of Chicago, Assistant Professor
Hashini, Joseph, Ph.D., University of Illinois, Associate Professor
Hewitt, Gloria C. (Mrs.), M.S., University of Washington, Assistant Professor
McRae, D. George, M.A., Montana State University, Instructor
Manis, Mabel E., M.A., Montana State University, Instructor (Winter and Spring Quarters)
Merrill, A. S., Ph.D., University of Chicago, Professor Emeritus; Vice President Emeritus; Dean Emeritus of the Faculty
Myers, William M., Jr., Ph.D., Ohio State University, Associate Professor
Peterson, John A., M.A., Montana State University, Assistant Professor
Reinishard, Howard E., Ph.D., University of Michigan, Assistant Professor (on leave 1961-62)
Sward, Donald V., M.A., Montana State University, Instructor (resigned December 31, 1961)
Baue, Harry, B.A., Montana State University, Graduate Assistant
Bingham, Ralph L., B.A., Montana State University, Assistant (Winter Quarters)
Bozog, Charles H., B.A., Carroll College, Graduate Assistant (Autumn Quarter)
Clitkindsbird, Errol C., B.A., Montana State University, Assistant (Winter Quarter)
Coleman, Denny D., B.A., University of Minnesota, Assistant (Winter Quarter)
Demarius, Frederick D., B.A., Montana State University, Graduate Assistant
SAPPENFIELD, Bert R., Ph.D., New York University, Professor
Baker, Blaine L., B.A., Montana State University, Graduate Assistant
COX, Daniel A., B.A., Montana State University, Graduate Assistant
Hugenbein, Baldwin R., B.A., Western Washington College of Education, Graduate Assistant
KEMP, R. Lawrence, B.A., Ashland College, Graduate Assistant
KOSKI, Charles H., B.A., Montana State University, Graduate Assistant
Paul, William J., Graduate Assistant
RICH, 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
Emery, 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 (AIC), Assistant
Lessack, Raymond (T/Sgt.), Assistant
Smith, Earl F. (T/Sgt.), Assistant
Walden, Edward (S/Sgt.), Assistant

Military Science (Army)
Moucha, M. F., Lieutenant Colonel, U.S. Army, B.S., U.S. Military Academy, Professor and Chairman
Fox, Donald C., Major, U.S. Army, B.G.E., University of Omaha, Associate Professor
Harris, Harold D., Captain, U.S. Army, B.A., University of Wyoming, Assistant Professor
FEDERER, 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
FREDERICK, Leo T. (Sgt.), Assistant
Greenway, Jack W. (M/Sgt.), Assistant

Sociology, Anthropology, and Social Welfare
Brower, W. Gordon, Ph.D., University of North Carolina, Professor and Chairman
Dwyer, Robert J., Ph.D., University of Missouri, Assistant Professor
Evans, Irvis 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, Marvin, Ph.D., University of Chicago, Assistant Professor
Hendrix, Albert C., M.Ed., University of Alaska, Instructor
Malouf, Carline L., Ph.D., Columbia University, Associate Professor
Taucher, Harold, Ph.D., University of Illinois, Professor
Taylor, Dee C., Ph.D., University of Michigan, Associate Professor
Arther, George W. B.S., Montana State College, Graduate Assistant
Guay, Myrna J. (Mrs.), B.A., Montana State University, Graduate Assistant
James, Douglas J., B.A., Montana State University, Graduate Assistant
Kishara, Mucko, B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)
Mitchell, Sandra L. B.S., South Dakota State College, Graduate Assistant
Zuerlein, Edith F., B.A., Yankton College, Assistant

Speech
McGinnis, Ralph Y., Ph.D., University of Denver, Professor and Chairman
Boehmer, Richard M., Ph.D., State University of Iowa, Associate Professor, Speech Pathology and Audiology
Bruskey, 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)
PAUKER, Charles D., Ph.D., State University of Iowa, Associate Professor of Speech Pathology and Audiology; Director, Speech and Hearing Clinic
SIMMONS, Josephine, M.A., University of Wisconsin, Visiting Lecturer (Winter Quarter)
WITT, Daniel M., M.A., University of Denver, Instructor
Basehart, John R., M.A., Montana State University, Assistant (Winter and Spring Quarters)
DIEGHERICH, Mary M., B.A., Holy Names College, Assistant, Speech Pathology and Audiology (Winter and Spring Quarters)
Ewing, Charlotte (Mrs.), B.S., Montana State College, Graduate Assistant (Winter and Spring Quarters)
HURST, SCOTT J., B.A., Panhandle A & M College, Assistant
JENNINGS, ROSSELL, B.S., Western Montana College of Education, Graduate Assistant
KNOWLTON, WILLIAM, Graduate Assistant
O'DELL, Donald R., B.A., Carroll College, Graduate Assistant (Autumn Quarter)
Petersen, Duane D., B.S., Eastern Montana College of Education, Graduate Assistant

Zoology
Weber, Philip L., Ph.D., University of Wisconsin, Professor and Chairman
BARTLAPA, GEORGE W., Ph.D., University of Chicago, Guest Investigator (Courtesy)
Browman, Ludvig G., Ph.D., University of Chicago, Professor
BROSNAN, ROYAL R., Ph.D., University of Michigan, Professor
Castle, Gordon B., Ph.D., University of California, Professor; Director, Biological Station (on leave Autumn Quarter)
Craighead, John J., Ph.D., University of Michigan, Professor (also Forestry); Leader, Montana Cooperative Wildlife Research Unit
Graws, Lynne B., Ph.D., The Ohio State University, Assistant Professor
Hoffmann, Robert S., Ph.D., University of California, Associate Professor
PFEIFER, E. W., Ph.D., University of California, Assistant Professor
PHILIP, CORNELIUS B., Ph.D., University of Minnesota; ScD. (hon.), University of Nebraska, Lecturer (Spring Quarter)
Senger, Clyde M., Ph.D., Utah State University, Assistant Professor
Wienkl, George F., Ph.D., University of California at Los Angeles, Professor
Croy, Thomas S., M.A., Montana State University, Graduate Assistant
Eaton, Almer 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
Yarwall, John L., B.S., Montana State University, Graduate Assistant

School of Business Administration
Blomgren, Paul A., B.B.A., Indiana University, Dean and Professor; Director, Bureau of Business and Economic Research
BARTH, GLENN R., M.B.A., Harvard University, Assistant Professor
Connoe, Roger, M.B.A., Ohio State University, Instructor (Winter and Spring Quarters)
Dobbins, Jack R., B.A., Montana State University, C.P.A. (Mont.), Instructor (part time)
Embling, Donald J., Ph.D., Columbia University, C.P.A. (Mont.), Professor
Endon, Gene L., Ph.D., University of Wisconsin, Associate Professor
Felix, William R., Jr., B.S., Montana State University, Instructor (part time)
Govanick, Joseph F., B.S., Montana State University, Instructor
Harling, Robert C., M.B.A., Indiana University, Assistant Professor
Hewing, Albert T., Ph.D., Johns Hopkins University, Professor
Kempner, Jack J., Ph.D., Ohio State University, C.P.A. (Mont.), Professor
SCHOOL OF EDUCATION

CARLETON, Linus J., Ed.D., University of Oregon, Dean and Professor
AMES, Walter R., Ph.D., University of Wisconsin, Professor Emeritus
GRANT, James W., Ph.D., Ohio State University, Associate Professor (also Biology) (on leave Winter and Spring Quarters)
GORMAN, Robert E., Ed.D., Indiana University, Associate Professor; Director, Placement Bureau and Counseling Center
GRADER, Irwin S., M.A., State University of Iowa; (L.S.), George Peabody College for Teachers, Assistant Professor
HARPER, Aaron W., Ed.D., University of Colorado, Associate Professor
HAYES, Torrence B., Intermountain Union College, Visiting Instructor (Spring Quarter)
JAY, Robert H., D.Ed., University of Oregon, Assistant Professor
LOTH, Kenneth V., Ed.D., Harvard University, Associate Professor
MADSON, William E., M.A., Stanford University, Professor Emeritus
MATTY, Charles R., M.Ed., Montana State University, Assistant Professor Emeritus
MILLIS, George H., Ed.D., University of Illinois, Associate Professor
MUNRO, James J. R., Ed.D., University of Washington, Assistant Professor Emeritus (on leave Winter Quarter)
OLSON, George M., Montana State University, Visiting Instructor (part time) (Winter Quarter)
PENLAND, Geneva T. (Mrs.), M.A., University of Wisconsin, Assistant Professor
RIESE, Haslan C., Ed.D., Montana State University, Assistant Professor
SLETES, Vernon O., Ed.D., University of Oregon, Professor; Director, Educational Research and Service
SMITH, Leo M., University of Washington, Registrar; Professor
SOLERIO, Richard A., Ph.D., University of California at Los Angeles, Assistant Professor (also Botany) (Winter and Spring Quarters)
WATSON, Frank J., M.A., Northwester University, Associate Professor (on leave Spring Quarter)
BLUMHILL, Richard E., M.A., Montana State University, Graduate Fellow
MASON, Gary B., A.A., Carroll College, Graduate Assistant
OLLICH, Donald C., M.S., University of Utah, Graduate Fellow
RAMSEY, Gerald M., B.A., Montana State University, Graduate Assistant (Winter and Spring Quarters)
SHEARS, William J., B.S., Nebraska State Teachers College, Graduate Assistant (Autumn Quarter)

THE SCHOOL OF FINE ARTS

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

ART

HOOK, Walter M., A.A., University of New Mexico, Professor and Chairman
ARNOLD, Aden F., M.A., State University of Iowa, Professor
AUTO, A. Rudi, M.F.A., Washington State University, Assistant Professor
DEW, James E., M.A., Oberlin College, Associate Professor
LEDY, James A., M.S., Michigan State University, Assistant Professor
ROBIN, Rand K., B.A., Montana State University, Graduate Assistant

MUSIC

BROWN, Firman H., Jr., M.A., Montana State University, Assistant Professor and Chairman
ECKHOLZ, Douglas H., Ph.D., University of Washington, Associate Professor
JAMES, Richard H., M.A., Northwestern University, Instructor
CUCIEN, George J., B.A., University of California, Santa Barbara, Graduate Assistant

OFFICIAL DIRECTORY—7

Drama

BROWN, Firman H., Jr., M.A., Montana State University, Assistant Professor and Chairman
ECKHOLZ, Douglas H., Ph.D., University of Washington, Associate Professor
JAMES, Richard H., M.A., Northwestern University, Instructor
CUCIEN, 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
ANDERSON, Eugene M., University of Washington, Professor
DOYLE, Gerald H., M.Mus., Northwestern University, Associate Professor
EVERSOLE, James A., M.Mus., College-Conservatory of Music of Cincinnati, Assistant Professor
HERSDE, Harald H., M.Mus., Eastman School of Music, Instructor
HEWES, Jungle, M.Mus., College-Conservatory of Music of Cincinnati, Instructor
HUMMEL, J. George, M.A., Columbia University, Associate Professor
JOHNSON, Donald O., Ph.D., Eastman School of Music, Assistant Professor (part time)
LESTER, John L., B.Mus., Southwestern University, Professor
LEWIS, George D., M.Mus., Montana State University, Assistant Professor
MANNING, William M., M.Mus., Drake University, Instructor
MUSLIMAN, Joseph A., M.Mus., Northwestern University, Assistant Professor (on leave 1961-62)
PERCY, Laurence B., M.Mus., Syracuse University, Instructor
RAMSHILL, Berenice 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)
RICHMAN, 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.E., Montana State University, Instructor
SMITH, Kenyag, M.A., Colorado State College, Instructor
WEIZEL, Eugene, B.Mus., Yale University, Professor
WENDT, Rudolph, M.Mus., Eastman School of Music, Professor
BUZAN, Beverly, B.A., Adams State College, Graduate Assistant
COLNESS, R. C. B.M., Montana State University, Graduate Assistant
CORNWELL, Forrest B., M.Mus., University of Wyoming, Graduate Assistant
PRENTICE, Carl, 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
BOLLE, Arnold W., D.F.A., Harvard University, Professor
COTTER, James F., B.S.F., Montana State University, Special Lecturer and Research Assistant
CRAIGHHEAD, John J., Ph.D., University of Michigan, Professor (also Zoology); Leader, Montana Cooperative Wildlife Research Unit
FAUNOT, James L., M.F., University of Washington, Assistant Professor
GESLACH, 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
MUBRAM, Lawrence C., M.F., Oregon State College, Assistant Professor (on leave Autumn and Winter Quarters)
MURRIS, Melvin S., M.S., Colorado State University, Professor
NIMLO, Thomas J., Ph.D., University of Wisconsin, Assistant Professor
PEARCE, William R., Ph.D., University of Washington, Associate Professor
STYLER, Robert W., M.F., University of Michigan, Assistant Professor
TARER, Richard D., Ph.D., University of California, Associate Professor
VON DREXEL, VOLLHAT, Ph.D., Goettingen University, Assistant Professor

SCHOOL OF JOURNALISM
BLUMBERG, 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, 1963)
COOGSWELL, 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)
JORGENSEN, 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 TAI-CHI, Ph.D., State University of Iowa, Associate Professor
MARKLE, BRIONT 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
BARNTY, RICHARD V., LL.B., University of Utah, Assistant Professor
BRIDGES, EDWIN W., LL.M., Harvard University, Professor
CROWELL, GARDNER, S.J.D., University of Michigan, Associate Professor
HOGHUN, ROBERT M., M.A./L.S. University of Denver; LL.B., University of San Francisco, Assistant Professor; Law Librarian
KIMBALL, EDWARD L., M.L.L., University of Pennsylvania, Associate Professor (on leave 1961-62)
LEHPART, CHARLES W., S.J.D., Harvard University, Dean Emeritus; Professor Emeritus
LOHN, SHEARNS V., LL.M., Harvard University, Assistant Professor (part time)
MASON, DAVID R., S.J.D., Harvard University, Dixon Professor
RUFOFF, LESTER R., LL.M., University of Michigan, Professor
SUTTON, 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)
TUCKLE, J. HOWARD, LL.M., Harvard University, Professor Emeritus
ANDERSON, ROBERT G., B.A., Montana State University, Assistant Professor (Spring Semester)
FREDRICKS, CONRAD B., B.S., Montana State College, Assistant (Spring Semester)

SCHOOL OF PHARMACY
HANSEN, ROBERT L., Ph.D., State University of Michigan, Dean and Professor
BRYAN, GORDON H., Ph.D., University of Washington, Professor
MOLETT, CHARLES E. F., M.S., University of Kansas, Professor Emeritus
PEINTHER, FRANK A., Ph.D., University of Washington, Assistant Professor
ROSCHER, 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
ROSCHER, HARVEY E. (Mrs.), B.S., University of Washington, Assistant Professor

AFFILIATED SCHOOL OF RELIGION
TATSUMI, TOSIMI, Th.D., Boston University, Assistant Professor and Director

SERVICES

Library
CAMPBELL, KATHLEEN, M.S., University of Denver, Librarian (Professor)
BREWER, BARBARA 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, ADRIAN S. (Mrs.), B.A., Montana State University, Assistant Catalog Librarian (Instructor)
MULL, 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)
SPIER, 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, LEBOY H., Ph.D., University of Michigan, Assistant Director; Professor of Botany
Staff of Botany and Zoology Departments

Forest and Conservation Experiment Station
WILLIAMS, ROSS A., M.F., Yale University, Director; Dean and Professor of Forestry
BALDWIN, DON, B.S.F., University of Minnesota, Superintendent Tree Nursery; Supervisor School Forest
COOK, ROBERT F., B.S.F., Montana State University, Research Associate (Courtesy)
Staff of Forestry School
FAHRMAN, 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
COOK, ROBERT F., B.S.F., Montana State University, Unit staff member; Research Associate, Forest and Conservation Experiment Station (Courtesy)
HOFMANN, ROBERT S., Ph.D., University of California, Unit Staff member; Assistant Professor, Zoology
PENGELLY, W. LESLIE, Ph.D., Utah State University, Head, Conservation Education Extension (Assistant Professor)
SCHINDLER, CLAYTON, M.P., Utah State University, Unit staff member; Assistant Professor, Zoology
TARER, RICHARD D., Ph.D., University of California, Unit staff member; Associate Professor, Forestry
WRIGHT, PHILIP L., Ph.D., University of Wisconsin, Unit staff member; Professor, Zoology
WOODCOCK, WESLEY L., M.S., Montana State University, Admin. Asst. Leader, Montana Cooperative Wildlife Research Unit, Montana Fish and Game Department; Research Associate, Forestry and Zoology (Courtesy)

Extension Division and Public Service
CROWDER, 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
OFFICIAL DIRECTORY—9

Counseling Center and Placement Bureau

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

Prestrewe, Albert M., B.A., Concordia College, Graduate Assistant

Alumni Office

Higham, Robert J., B.A., Montana State University; Executive Secretary, Alumni Association

Residence Halls

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

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

Family Housing

Larson, Keith T., B.A., Montana State University, Manager

Miscellaneous Administration

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

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

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

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

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

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

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

Murphy, Calvin L., B.A., Montana State University, Controller

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

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

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

ACCREDITATION

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

SUPPORT AND ENDOWMENT

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

CONTROL AND ADMINISTRATION

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

By statute the State's combined system of higher education is called "The University of Montana." 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 335,600 volumes in the library building and all other libraries, receives over 1,800 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 investigation on Wild Horse Island, which has an area of approximately 2,000 acres.

Facilities include an administration-recreation building, a four-room laboratory, three one-room laboratories, a kitchen and dining hall, three bath houses, thirty-five one-room and eleven two-room cabins, as well as various maintenance buildings.

During the summer, field courses and research in Botany and Zoology are offered for upper division and graduate students. By virtue of the station's location, there is opportunity for research in many fields of Biology.

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

THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH of the School of Business Administration is set up to provide Montana businessmen with the types of statistics useful to them in conducting their 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 Delmich (Silviculture), Earl McConnell (Lubrecht Forest Field Assistant), Melvin S. Morris (Range Management), Gordon D. Lewis (Forest Economics), Robert W. Steele (Forest Fire Control), Richard T. 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 1937. The Dean of the School of Forestry was designated as director. The Act specifies that the purpose of the Station is:

"To study the growth and the utilization of timber . . . To determine the relationship between the forest and water conservation and waterflow regulation; the forest and pasturage for domestic livestock and wild life; the forest and recreation and those other direct and indirect benefits that may be secured by the maintenance of or the establishment of forest or woodlands . . . To study and develop the establishment of windbreaks, shelter belts and 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 station is supported by funds appropriated by the Congress and the State of Montana, income from the sale of forest products, nursery products, grazing, mining and special leases, and by private grants. Some research is concentrated on the 22,000 acre Lubrecht Experimental Forest, and at appropriating locations throughout the State—much of it in cooperation with private, state and federal agencies.

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

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

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

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

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

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

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

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

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

THE TYPOGRAPHICAL LABORATORY AND UNIVERSITY PRESS serves both as a laboratory operation for instruction in the School 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. It is the department 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 1949 $3.00 registration fee and take it on campus before they register.

GENERAL ADMISSION. Applicants for admission must be of good moral character. Veterans of any branch of the United States Armed Forces should present a discharge marked other than “dishonorable.”

Graduates of any fully accredited Montana high school or academy are admitted to regular standing. The completion of a high school or preparatory course of four years, including three years of English and one year of American history and government, is the standard for regular admission.

HIGH SCHOOL PREPARATION. Although general admission to the University is granted as indicated above, additional units of high school work are needed for certain professional curricula. The test is also offered in April and June as well as in a limited number of summer test centers. After announcement of test centers, and well in advance of examination dates, student information booklets and registration blanks are sent to all high schools. Check with your High School Counselor or Principal. If information is not available, write to the Registrar, Montana State University, Missoula, Montana.

Results of these examinations are used for general advising purposes, to assist in identifying students with high college potential who may be seeking scholarships, for placement in English, and as part of the information used to determine non-resident admissions.

New students who do not take the AMERICAN COLLEGE TESTING PROGRAM examination, professional requiring November the test is also of­fered in April and June as well as in a limited number of summer test centers. After announcement of test centers, and well in advance of examination dates, student information booklets and registration blanks are sent to all high schools. Check with your High School Counselor or Principal. If information is not available, write to the REGIS­

TRAR, Montana State University, Missoula, Montana.

Applicants other than graduate students should take the AMERICAN COLLEGE TESTING PROGRAM examination, professional requiring November the test is also of­fered in April and June as well as in a limited number of summer test centers. After announcement of test centers, and well in advance of examination dates, student information booklets and registration blanks are sent to all high schools. Check with your High School Counselor or Principal. If information is not available, write to the REGIS­

TRAR, Montana State University, Missoula, Montana.

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TRAR, Montana State University, Missoula, Montana.

Students should check the curriculum of his choice and take in high school those courses listed as “needed” where such courses are indicated under “High School Preparation.” The “recommended courses” under “High School Preparation” would be helpful, but no loss of time would be involved if the student did not take them in high school.

STUDENTS FROM NON-ENGLISH SPEAKING COUNTRIES who wish to qualify for admission to Montana State University must give evidence of proficiency in English. Formal tests with certification by appropriate American diplomatic officers are now available at some United States diplomatic posts. If such tests are not available, the applicant must undergo 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, this fee is credited to his account in his registration fee for the quarter (semester) for which application was made (see STUDENT FEES), but it is not refundable if the student fails to register for the term indicated for entrance. This fee will be refunded if admission is refused.

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

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

ADMISSION BY TRANSFER. A transfer student must meet general admission requirements, be eligible to return to the school from which he is transferring, and not be such as would assure his admission to, or reinstatement at, this University had he been one of its students. Credits earned at Montana State College, Montana School of Mines, Northern Montana College, Eastern Montana College of Education, and the Universities of Montana and of Education in that state shall be transferred to the University. However, a number of highly specialized curricula are offered at these units of the University of Montana; consequently a student who changes his objective either while continuing in an institution or in changing from one institution to another must expect to lose time thereby. Excess credits earned in completing a two-year course of junior college rank may not be used to decrease the two years usually required to complete senior college work at Montana State University.

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

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

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

REGISTRATION AND GENERAL REGULATIONS

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

ORIENTATION WEEK. The first week of autumn quarter is set aside for the orientation and registration of new students. The program includes: (1) Acquainting the student with the campus, the classroom buildings, and residence halls. (2) Explaining the University program in detail—the types of instruction offered and the careers for which a student may prepare at the University. (3) Various tests to help the student determine University aptitudes and the courses in which he or she will learn most effectively. (4) Social gatherings at which students become acquainted with established classmates 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 sophomore students, 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 receive the additional credit. Pre-college courses in English Composition or Mathematics which carry no credit, count toward the maximum load according to the number of class hours per week.

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

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

CHANGES IN PROGRAM OF STUDIES. To drop or add courses, change from credit to listener or vice versa, the student must secure a Drop-Add card from the Registrar's Office and return it to that office after 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 appeal to the Academic Standards Committee is made after the third week and also for any unofficial withdrawal from a class. Changes from credit to listener or vice versa are allowed only within these same time limits. Ordinarily no course may be added after the second week.

WITHDRAWALS FROM THE UNIVERSITY. Students who withdraw from the University during a quarter are required to fill out withdrawal forms in the Registrar's Office. If this is not done the student will not be entitled to certification of honorable dismissal and "F" grades are
assigned. When withdrawal forms signed by the Dean or Associate Dean of Students are filed before the end of the first 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 supervision of instructors. Such work must be registered for at the beginning of the quarter. The student cannot obtain a larger number of credits than he is registered for, but a smaller number may be completed and credit obtained with the instructor's approval.

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

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

COLLEGE OF ARTS AND SCIENCES
Bachelor of Arts, with majors in:
- Anthropology
- Biological Sciences
- Botany
- Chemistry
- Economics
- Economics-Political Science
- Economics & Sociology
- English
- French
- Geography
- Geology
- German
- Health & Physical Education
- History
- History & Political Science
- Home Economics
- Latin
- Law
- Liberal Arts
- Library Science
- Music
- Nutrition
- Philosophy
- 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:
- Mathematics
- Microbiology and Public Health
- Philosophy
- Physical Sciences
- Political Science
- Political Science—Economics
- Pre-Medical Sciences
- Psychology
- Radio & Television
- Secretarial-Home Arts
- Social Welfare
- Sociology
- Sociology & Economics
- Spanish
- Speech
- Speech Pathology and Audiology
- Zoology

Bachelor of Science in the College of Arts and Sciences must complete 93 credits in that college, except that credits in Art and Drama may be included.

CREDITS REQUIRED FOR A DEGREE. The work in Montana State University is measured in terms of credit. One credit represents three hours of time per week for one quarter of twelve weeks. The time required for each credit may be distributed in any combination among preparation, recitation, lecture, or laboratory work. A total of 180 credits plus six credits in required physical education is necessary in all courses for graduation with a bachelor's degree except that more are required in Fine Arts, 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.

CREDITS REQUIRED FOR A MAJOR. Students may be required to complete from 45 to 60 credits in the chosen field. In some degrees education, the number of credits is from 40 to 60. In curricula allowing 5 credits of a survey course to count as part of major requirements, the total maximum of 60 credits allowed in the major includes these 5 credits. This rule on maximum credits allowed does not apply in the...
Schools of Business Administration, Forestry, Journalism, Law, Music, or Pharmacy. Exceptions to these regulations may be made on the basis of entrance credits in the Departments of Foreign Languages and Mathematics.

CREDIT LIMITATIONS. Not more than 65 credits in one foreign language and not more than 90 credits in all foreign languages may be counted towards graduation in that area.

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

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

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

Only students majoring in Business Administration, those taking a teaching major or minor in Business Administration or those following the curricula in Secretarial, Home Arts are allowed to present more than 19 credits earned in Business Administration 180-181-182, 183, 184-185-186, 187-188-189 and 190-191.

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

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

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

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

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

Challenge credit will be granted on a grade of B or better earned in an examination which must be at least in part written.

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

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

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

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

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

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

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

Students who complete the six weeks 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 elected to discharge from one of these programs will take the required ROTC.

Recognized causes and their effects are as follows:

- Physical disability as certified by the Health Director—Full Waiver
- Equivalent training at another institution—On equivalent basis

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

Less than six months—None

Six months but less than 12 months—3 quarters

12 months or more—Full Waiver

Two quarters of Air Science 110, Air Force Band, may be substituted for Air Science or Military Science 103 and 203.

(4) Freshman Composition English 101-102-103, 3 quarters (9 credits). All students registering for the first time take a placement examination; those who fail to demonstrate an acceptable college standard must take English 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 to 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 35 of the last 45 credits earned for a degree must be earned in resident study at the University. Extension credits earned on campus count towards residence requirements, but correspondence credits do not.

REQUIREMENTS OF PARTICULAR CURRICULA. Candidates for a Bachelor's degree must comply with any requirements annexed 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 1969 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—Major in Anthropology, Botany, Chemistry, Economics, English, French, Geography, Geology, German, Health & Physical Education, History, Home Economics, Latin, Mathematics, Microbiology, Philosophy, Physics, Political Science, Psychology, Sociology, Spanish, Speech and Zoology.

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

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

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

Master of Education

Master of Forestry

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

Doctor of Philosophy—Chemistry, Geology, Microbiology, Zoology

Doctor of Education

GENERAL REGULATIONS

Requirements relating to graduate work and the award of graduate degrees are administered in the Graduate School. 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 curricular 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 academic 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 substantial deficiencies in the amount or quality of performance in prior academic work, doubtful command of language, negative recommendations, or other uncertain factors. After one quarter or more of satisfactory graduate work a student with provisional graduate status may be advanced to full graduate standing upon recommendation of the major department of the school and approval by the Dean of the Graduate School.

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

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

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

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

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

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

GRADES. An average of "B" must be maintained in all courses taken for graduate credit. Courses in which grades below "C" have been received are not accepted for degree requirements but grades in all courses taken for graduate credit will be included in grade-point computations. A maximum of eight credits of work with grades less than "B" may be repeated with approval by the Graduate Council.

COURSE LOAD. Fifteen credits of graduate work in a quarter 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 fifteen credits in approved extension courses.

Correspondence courses will not be accepted for graduate credit.

THE MASTER'S DEGREES

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

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

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

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

TRANSFER OF CREDIT. A student may transfer up to 12 graduate course credits toward fulfillment of requirements for the Master's degree if such transfer is recommended by the student's major department or school. Residence requirements for the Master's degree may not be met by transfer except by students from Montana State College, who may transfer a maximum of 15 credits and 10 weeks of residence, on recommendation of the graduate adviser.

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

EXAMINATIONS. Each candidate for a Master's degree must pass examinations, which may be oral or written or both, covering his field of graduate study. In addition he will be examined on his thesis by a committee designated in the manner noted below. Examinations must be completed at least one week before the Master's degree is to be granted.

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

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

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

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

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

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

**THE MASTER OF ARTS AND MASTER OF SCIENCE DEGREES**

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

**SPECIAL PROGRAMS**

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

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

Sixty credits are required, including the following courses if not previously taken at undergraduate level: Psych 351-352-353 and 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.

C. Sixty credits including 35 graduate credits in the major field, 10 graduate credits in allied fields, and final oral and written comprehensive examinations. Candidates teaching a science in a secondary school, who lack required work in the sciences, may take 15 credits in lower division science courses to be included in the 60 credits for this option.

**THE DOCTOR OF PHILOSOPHY DEGREE**

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

A minimum of five quarters, three of which must be consecutive and prior to admission to candidacy, must be spent in graduate residence at Montana State University. To earn a full quarter of residence, the student must complete not less than 10 approved credits in any given quarter.

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

**TRANSFER OF CREDIT.** Credit for satisfactory graduate study may be transferred from an accepted graduate institution and applied toward the fulfillment of requirements for the Doctor's degree, but only after one quarter in residence at Montana State University and after the demonstration of satisfactory performance in graduate courses taken at Montana State University.

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

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

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

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

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

**DISSERTATION.** The candidate must submit a dissertation which demonstrates competence in independent re-
search. The dissertation must be an original contribution to knowledge; it must be presented in acceptable literary form and 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 may contain stipulations regarding time and circumstances for release of the dissertation. The candidate will pay the costs of binding and of microfilm publication.

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

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

THE DEGREE OF DOCTOR OF EDUCATION

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

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

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

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

COURSE REQUIREMENTS, DISTRIBUTION, AND QUALITY OF WORK. The candidate will submit a minimum of 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 on recommendation of the School of Education and approval of the Dean of the Graduate School, the student will be advanced to candidacy.

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

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

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

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

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

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

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

FINANCIAL OBLIGATIONS

SUMMARY OF EXPENSES. 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 Quarter Quarter For Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$111.00</td>
<td>$101.00</td>
<td>$101.00</td>
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<td>144.00</td>
<td>146.00</td>
<td>455.00</td>
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<tr>
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<tr>
<td>Deposit</td>
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</table>

**Total for Mont. Res.** $939.00 332.00 334.00 $1,605.00

**Students not residents of Montana, Add:** 25.00 25.00 25.00 75.00

**Tot. for Non-res.** $964.50 357.00 369.00 1,690.50

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.

### FEES FOR SPECIAL PURPOSES:

- **Registration Fee:** $10.00
- **Incidental Fee:** $10.00 (Refundable)
- **Building Fee:** $2.50
- **Student M.S.U. Building Fee:** $75.00
- **General Deposit:** $5.00
- **Health Service Fee:** $10.00
- **Student Activity Fee:** $15.00
- **Student M.S.U. Building Fee:** $92.50
- **Res. Halls Club Fee:** $2.00
- **Non-resident fee is based on a charge of $20.00; General Deposit $5.00; Building Fee $2.50; Student M.S.U. Building fee $75.00; Student Union Building $2.00; Health Service $10.00; Student Activity $17.00 (optional).**

### FEES FOR SPECIAL 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 $75.00; 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 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 defermemt. 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 defermemt. Failure to meet payments as agreed, without an authorized extension of the defermemt, will result in a penalty of $1.00 per day to a maximum of $5.00.

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

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

### REMOVAL OF INCOMPLETE. $2.00 per course.

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

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

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

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

Applied Music refund is based on a charge of $1.75 per
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 University Health Form signed by a qualified physician. During Orientation Week, patch tests will be given new students at the University Health Center.

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

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

Obstetrical care and non-emergency surgery are not covered. Accidents and illnesses arising from activities contrary to University regulations or due to use of alcohol are not covered. 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 of considerable assistance to students in connection with their training and teaching. The services also extend to business corporations and other organizations in search of University-trained personnel.

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

THE PLACEAMENT SERVICE endeavors to assist University graduates in finding positions consistent with their interests and training. The services are also extended to business corporations and 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 and six sorority houses, and University-approved rooms in private homes. A new women's residence hall is under construction and will be opened during the 1962-63 term.

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

RESIDENCE HALLS. Application forms and detailed information may be obtained by writing the Registrar's Office, Montana State University. A $90 prepayment on board and room, which includes a $10 deposit, may be made in the Accounting Office with each room application. If a room reservation is cancelled, notice in writing must be received by the Manager of Residence Halls on or before September 1 for fall quarter, December 5 for winter quarter, and March 6 for spring quarter, or the $10 deposit, included in the prepayment, will be forfeited. Students who live in the residence halls are required to board in the Lodge. See Residence Halls Bulletin for board and room rates.

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

Board is provided in the Lodge for the residents of all halls. Experienced dietitians provide appetizing and nutritionally adequate meals.

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

STANDARDS OF STUDENT CONDUCT

Personal honor and self-discipline play a large part in one's success in the University. A record, built during undergraduate years, for moral integrity and personal honor is as important for future success as academic accomplishment. The 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 record of merit and character 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 its students to maintain standards of society and law-abiding citizenship wherever they may go. 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:

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

A. Those who have fewer than 40 quarter credits of University work or equivalent work toward a degree.

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.
receive excuses directly from the Health Service for the 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 effect student. Each student is responsible for having his cards signed by his various instructors and returned to the Dean of Students office for filing.

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

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

STUDENT CONTRACTS AND OBLIGATIONS

STUDENT ORGANIZATIONS. The State Board of Education has made the following rule: "No contract shall be entered into and no financial obligation assumed by any student organization without the approval of the President or some member of the faculty designated by him."

INDIVIDUAL STUDENTS who owe bills to the University for fees, fines, board and room in the residence halls, and other charges are required to register for the succeeding quarter, secure transcript of record, or obtain diplomas, until the obligation is paid or satisfactorily adjusted. Similar action is taken when students owe bills to student organizations whose books are kept in the business office of Montana State University, including charges for board and room in fraternity and sorority houses.

ACTIVITIES

The University encourages a full and well-rounded program of activities designed to stimulate students' intellectual, vocational, and social interests. Among the types of student extra-curricular activities are student government, athletic teams and clubs of students engaged in particular studies, professional and honorary organizations, athletic clubs or teams for men or women, student publications, musical organizations, church groups, and residence hall clubs.

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

ATHLETICS. Athletics, including intercollegiate athletics, are a useful and valuable part of the University program for the development and growth of interested students. Facilities are provided for participation in some form of athletics by every member of the student body. Aid to students participating in athletics may be given only in 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 Inter-scholastic Editorial Association.

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

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

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

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

ORGANIZATIONS

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

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

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

In addition to several small musical ensembles, there are the following large organizations: The University Choir, Choral Unions, 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.

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

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

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

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

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

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

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

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

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

The 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

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GRADUATE SCHOOL

SCHOOL OF BUSINESS ADMINISTRATION

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

SCHOOL OF EDUCATION

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

THE SCHOOL OF FINE ARTS

Art
- Art
- Drama

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

SCHOOL OF FORESTRY

Forestry
- 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
- Advertising
- Community Journalism

Magazines
- News-Editorial
- Radio-Television

SCHOOL OF LAW

SCHOOL OF PHARMACY

AFFILIATED SCHOOL OF RELIGION (no major)

COURSE NUMBERING SYSTEM

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

- 001-099 Courses below college level. No college credit given.
- 100-199 Freshman courses
- 200-299 Sophomore courses
- 300-399 Junior courses
- 400-499 Senior courses
- 500-699 Graduate courses (masters level)
- 700-799 Graduate courses (doctoral level)

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

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

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

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

EXPLANATION OF SYMBOLS

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

- 106, 104-105, 101-102-103 — Course numbers of one, two, and three quarter courses. Unless otherwise stated, 104 is required before 105; 101 before 102, and 102 before 103.
- 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/hr.) — 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. The social structure of non-literate peoples: family, kinship structures, kin and local groups and associations, social classes, and political societies.

FOR UNDERGRADUATES AND GRADUATES

251 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.

252 ARCHAEOLOGY OF MONTANA 1Q S 3 e/y Prereq 152 or 153 or =, and c/l. The origins, development and distribution of aboriginal cultures in Montana and surrounding regions. Students are required to attend a minimum of three field trips in which 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 o/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 o/y Prereq 152 or =. The history, evolution, and present nature of man’s bodily structure. Identification and determination of age, sex, and race of human osteological materials.

360 INDIANS OF THE SOUTHWESTERN UNITED STATES 1Q S 3 o/y Prereq 152 or =. The development of Indian cultures in southwestern United States from the most ancient evidences of man to the present.

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

362 INDIANS OF SOUTH AMERICA 1Q W 4 o/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 10 credits in Social Sciences, and c/l. The history and culture of the Indian tribes of Montana.

366 NORTHWEST ETHNOLOGY Any quarter in which field parties are organized V 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 Gen 360. Some significant theories and the methodological assumptions of selected schools of linguistic theory.

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 o/y Prereq 152 or 153 or =, and Gen 360 or Sphc 119. Phonemic, morphological and semantic analysis of an unwritten language, using a native informant.

FOR GRADUATES

551 RESEARCH a/q V.

559 THESIS a/q V R-15.

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

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

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

Graduates teach in public schools, supervise art programs, teach in colleges, engage in commercial art work or simply set out as freelance 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 (8 cr), 125-126, 231-232*233, 257, 231, 190, 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, 375, 360); a minimum of 15 credits in the area of concentration (Art 340, 341 for painting majors; 330 and 355 for sculpture majors; 335 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. These 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.
127-128 CRAFTS 2Q A S Su 2. Enter either quarter. Projects using various materials: (127) wood, mosaic, metal, textile; (128) jewelry, enameling, plastics. Offered for one credit by extension.

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

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

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

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


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

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

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

FOR UNDERGRADUATES AND GRADUATES


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

325 ADVANCED DESIGN 3Q A W S V 1-6 R-12 Prereq 125-128. Advanced problems of a specialized nature.

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

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

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

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

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

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

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

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

FOR GRADUATES

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

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

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

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

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

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

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. BIOLOGICAL SCIENCES. In addition to the general requirements for graduation listed earlier in the catalog the following specific requirements must be completed for the Bachelor of Arts degree with a major in Biological Sciences: 45 or more credits in Biological Science including Botany 121-122 (General Botany), Botany 123 (Local Flora), Botany 229 (Plant Physiology), Zoology 104-105 (Elementary Zoology), Zoology 106 (Field Zoology), Zoology 201 (Comparative Vertebrate Zoology), Zoology 202 (Human Physiology), Microbiology 100 (Elementary Microbiology), General 300 (Conservation of Natural and Human Resources).

The following courses in allied sciences must be completed: Chemistry 101-102, 105 or 121-122-123 (students who do not advance in advanced work should take the Chemistry 121-122-123), 2 quarters (recommended in the following courses: a teaching minor in the physical sciences) of Physics 111-112 or 221-222-223.

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. Students are encouraged to go into graduate work. The better positions in the field require a master's or doctor's degree. For most teaching positions in colleges and universities the doctorate is essential.

Besides offering a Bachelor of Arts and a Bachelor of Science degree, the department also offers opportunities for graduate work leading to the Master of Arts and Master of Science degrees in the major areas of botany: Anatomy, Cytology, Ecology, Morphology, Mycology, Physiology, Forest Pathology and Taxonomy. More detailed information can be obtained from the chairman of the department 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, 123, 225, 355, 385, 386 and 3 cr. of 491, 2-3 credits from the following: 239, 329, 339, 349, 359, 369, 376; and the remaining credits from two of the following groups: (1) 325, 329, 339, 349, 359, 369, 376; (2) 341, 349, 359, 370, 376, (3) 359, 369, 366, 364, 485, 486.

Also required are Zoology 104, 105, Microbiology 200 and Chemistry 101-102, 105 or 121-122-123. Recommended electives: Geography 101-102-103; Physical Science 111-112-113 or 211-222-223; Zoology 106; Math 303-303 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, 367, and 370 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.


FOR UNDERGRADUATES

FOR EXPLANATION SEE INDEX UNDER "SYMBOLS"

121-122. GENERAL BOTANY 2Q A W Su 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 kingdom.

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


225. PLANT PHYSIOLOGY 1q A W 5 (3-4) Prereq 122 and Chemistry 101-106, 119 or 123. The various processes of plants under controlled conditions in the laboratory and greenhouse.

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

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

239. PROBLEMS IN PLANT ANATOMY AND CYTOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 335 or 351 and c/i. Individual or group work consisting of research problems, special readings, discussions, relating with aspects of plant anatomy and cytolgy not taken up in regular courses.

240. PROBLEMS IN MORPHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 343 or 345 and c/i. Individual or group work consisting of research problems, special readings, discussions, relating with aspects of plant morphology not taken up in regular courses.

239. PROBLEMS IN PLANT ECOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 250, or 355, and c/i. Individual or group work consisting of research problems, special readings, discussions, relating with aspects of plant ecology not taken up in regular courses.

239. PROBLEMS IN TAXONOMY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 365 and c/i. Individual or group work consisting of research problems, special readings, discussions, relating with aspects of plant taxonomy not taken up in regular courses.

239. PROBLEMS IN MYCOLOGY AND PHYTOPATHOLOGY 1Q a/q V 2-6 (0-3/cr) R-6 Prereq 341 or 370 or 375, and c/i. Individual or group work consisting of research problems, special readings, discussions, relating with aspects of mycology and plant pathology not taken up in regular courses.

FOR UNDERGRADUATES AND GRADUATES

239. 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, lipid, and protein metabolism; hormones, by-products of plant metabolism.

237. PLANT VIRUSES 1Q e/y V 3 (1-4) Prereq 122 or Microbiology 200, Chem 121, Chem 260 and Physics 225 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.

239. 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.

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

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

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

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

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

238. 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.

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

328. BRYOPHYTES 1Q S 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.

338. GENERAL SYSTEMATIC BOTANY 1Q S 5 (3-4). 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.

358. AGROSOLOGY 1Q W 5 (3-6) Given in summer at Biological Station for 3 credits. Prereq 263. Identification, classification and ecological relationships of grasses, sedges, and rushes.

358. AQUATIC FLOWERING PLANTS 1Q S 3 (0-7) Given only at the Biological Station. Prereq 265. Identification, classification and ecological distribution of the higher aquatic plants.

379. FOREST PATHOLOGY 1Q S 4 (2-4) Prereq 250 or 355, and For 200-291. The agencies of disease and decay of trees and structural timbers.

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

335. 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 366.

386. EVOLUTION 1Q A 3 (3-0) o/y Prereq 121, 122, 123, and 365 or concurrent registration; Zool 101 or 104-105, and 106. The theoretical basis of evolution from a 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 366.

464. CYTOTOXANOMY 1Q S 5 (3-6) Prereq 337, 355, 365, and 385. Modern concepts in taxonomy with emphasis upon cytological techniques in chromosomal studies related to problems of taxonomy.

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

490. SEMINAR IN BIOLOGY 1Q S 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.

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

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

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

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

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

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

699. THESIS a/q V R-15

FOR UNDERGRADUATES AND GRADUATES

COURSES OFFERED AT THE BIOLOGICAL STATION:

123, 349, 361, 363, 365, 366, 368, 368, 490, 521, 549, 551, 569, 600, 699.

BOTANY—27
BUSINESS ADMINISTRATION

The School of Business Administration of Montana State University is fully accredited by the American Association of Collegiate Schools of Business and the program of studies is based on two primary divisions:

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

At the undergraduate level the aim of the School of Business Administration is to provide a broad foundation in fundamentals so that the graduate may achieve a place of responsibility in the world of business as well as being a responsible citizen of his community.

Since the individual in business is faced with the difficult intellectual task of problem solving, the student is encouraged through course work and the teaching methods employed to evaluate information and points of view, to reason logically, and to reach sound conclusions. In the business courses there is a common emphasis on the over-all management point of view so that the student may achieve an awareness of the many factors that enter into the administration of business affairs and the decision-making processes.

The student may prepare for a variety of jobs by taking a general program of study specializing in areas as: accounting, finance, marketing, production and personnel management, secretarial work and business teacher training. Alumni of the School of Business Administration are to be found in professional, executive or managerial positions in many types of business activity. The fields of specialization indicate the many types of jobs which graduates may secure which are involved in the production and distribution of goods, the administration of the financial affairs of business activity, and the rendering of business services. For example, graduates secure positions in banks, investment houses, finance companies, insurance and credit agencies, certified public accounting firms, government, and industrial, wholesaling or retailing establishments. Training is available for those who desire to teach business subjects in secondary schools.

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

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

PRE-BUSINESS PROGRAM

A student, upon entering the University as a freshman, who desires to major in Business Administration registers as a pre-business administration major. In the first two years of study the student completes courses toward meeting the University's 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, 201-202-203; English 101-102-103; Mathematics 112; Accounting 180 or have a typing proficiency of 25 words per minute and a stenography proficiency by taking courses: Business Administration 353, or 466. / 

ADMISSION AND GRADE POINT REQUIREMENTS, Admission to the School of Business Administration requires a high school average of at least a "C" and a minimum of 24 credits earned. To continue work in the School of Business Administration the student must maintain a minimum of 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:

1. Complete the general university and pre-business administration requirements.
2. Select an area of concentration from the following: Accounting, Business Education, Finance, General Business Management—Option A, Management—Option B, Marketing, Secretarial Science. This selection of the area of concentration is to be indicated by completing a prescribed form available in the office of the Dean of the School of Business Administration and by filling the completed form in that office.
3. Complete the course work required in the selected area of concentration as indicated by the appropriate curriculum of the area of concentration below.
4. Offer not less than a total of 75 credits in courses in the School of Business Administration. Courses outside the School of Business Administration which may count toward the 75 credit requirement are: All courses offered by the Department of Economics; English 304; History 333, 374; courses listed in the curricula of the areas of concentration.
5. Present not less than 96 credits (including Health and Physical Education) of work taken in departments and schools other than the School of Business Administration.
6. Offer 180 credits plus 6 credits in Health and Physical Education.

CURRICULA OF THE AREAS OF CONCENTRATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION:

ACCOUNTING

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

Those students desiring to enter the industrial accounting field must complete the accounting courses listed in the curricula of the areas of concentration in addition to the basic requirements of the School of Business Administration:

A minimum of 14 credits chosen from:

Bus. Ad. 402—Income Tax ____________________________ 3
Bus. Ad. 305—Governmental Accounting ________________ 3
Bus. Ad. 404—Managerial Accounting __________________ 4
Bus. Ad. 409—Intermediate Accounting ________________ 6
Bus. Ad. 410—Advanced Accounting ____________________ 6
Bus. Ad. 401—Auditing ______________________________ 3

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:

Bus. Ad. 409—Intermediate Accounting __________________ 6
Bus. Ad. 410—Advanced Accounting ____________________ 6
Bus. Ad. 404—Managerial Accounting __________________ 4

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

Bus. Ad. 203—Cost Accounting ________________________ 3
Bus. Ad. 404—Accounting Systems _____________________ 4
Bus. Ad. 405—Governmental Accounting ________________ 3
Bus. Ad. 408—Advanced Accounting ____________________ 6
Bus. Ad. 403—Intermediate Accounting ________________ 6
Bus. Ad. 410—Income Tax ______________________________ 3

FINANCE

This program is designed to give a broad understanding of the role of finance in our economy including public and private 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. 409—Administrative Accounting —4
Bus. Ad. 411—Personnel Management —4
Bus. Ad. 412—Business Cycles and Business Forecasting —4
Bus. Ad. 442—Personnel Management —4
Bus. Ad. 444—Regulation of Industry —4

GENERAL BUSINESS

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

**BUSINESS ADMINISTRATION—29**

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 in accordance with the requirements of the School of Law, provided the student is certified as having completed the work of the first year of law to the satisfaction of the School of Law.

**REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS IN BUSINESS ADMINISTRATION**

To achieve the degree of Bachelor of Arts in Business Administration, the student must complete the general university and pre-business administration requirements listed above; the business administration requirements listed above; the major course work in the language area requirement; Bus. Ad. 468, 421, Public Finance or Labor Economics, and sufficient electives to offset one-half of the minimum of 75 credit hours; the university requirements for graduation.

**SPECIAL REQUIREMENTS FOR THE MASTER OF SCIENCE IN BUSINESS ADMINISTRATION**

In addition to the general requirements of the Graduate School, the candidate’s preparatory work must include Econ 201-202-203; Bus Ad 201-202, 250, 320, 349, and 360 or equivalent courses. Students may enter the graduate program of the School of Business Administration only if they meet the above requirements and must be offered in addition to the required forty-five credits.

A maximum of nine credits may be allowed for the required principles of accounting; including credits for thesis, are to be completed in one of the following areas of concentration: accounting, business education, finance, management, or marketing. The 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 analyzing the accounting records and preparing financial statements. Applications of the above principles are developed as they apply to individual proprietorships, partnerships, and corporations.

**305 GOVERNMENTAL ACCOUNTING 1Q A 3 Prereq 202.** The federal government. (205) Federal income tax; (206) Federal income tax. (305) Federal income tax.

**ACCOUNTING SYSTEMS**

**FOR UNDERGRADUATES**

For explanation see Index under "Symbols"

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

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

**401-402 INCOME TAX 2Q 401 A W 4, 402 S 4 Prereq 302.** 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 partnerships, returns, and the special problems of federal estate and gift taxes.

**ACCOUNTING SYSTEMS**

**FOR UNDERGRADUATES**

For explanation see Index under "Symbols"

**401-402 INCOME TAX 2Q 401 A W 4, 402 S 4 Prereq 302.** 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 partnerships, returns, and the special problems of federal estate and gift taxes.

**ACCOUNTING SYSTEMS**

**FOR UNDERGRADUATES**

For explanation see Index under "Symbols"
409-410 ADVANCED ACCOUNTING 2Q 409 W S 3, 410 S 3 Prereq 307. Enter either quarter. Problems of partnerships, installment sales, comprehensive, financial statements, income determination and preparation of consolidated statements in the second quarter.

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. Prerequisites: Accounting, accounting for estates and trusts. The theory and preparation of consolidated statements in the second quarter.

503 CONTEMPORARY ACCOUNTING THOUGHT AND PRACTICE 1Q W 3 Prereq 410 and approval of the graduate committee. Modern accounting thought and practice. Prerequisites: Accounting, accounting for estates and trusts.

504 THEORY OF INCOME DETERMINATION 1Q S 3 Prereq 410 and approval of the graduate committee. The theories underlying the accounting calculation and disclosure of periodic net income. Prerequisites: Accounting, accounting for estates and trusts. 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, creditors' rights,利润 property, introduction to the nature and types of negotiable instruments. Students taking the combined 5-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 any students except those taking the combined 5-year curriculum in Business Administration and Law. Review of contracts; negotiable instruments with interspersed review of other law subjects up to this 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

209 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

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

322 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.

323 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.

324 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.

325 PRINCIPLES OF INSURANCE 1Q A W S 3 Prereq Econ 320. Basic risk analysis; introduction to fire, casualty, life and health coverages; business and personal insurance needs; company organization and operations; the liability peril; automobile 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 need; 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. Comprehensive analysis of all insurance problems facing insurance analysts; liability perils; multiperil policies; legal interpretation; basic analysis; practical case problems in liability and direct loss situations.

420 INVESTMENTS 1Q S 4 Prereq 320. Investment principles and their application in formulating investment policies for individuals and institutions; decision-making, asset allocation, 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 money markets; the influence of the money supply, bank reserves, institutional portfolio policies, treasury cash balances and refunding operations, and the changing needs and instruments of corporation financing. 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 4 Prereq 521. Current analytical techniques used in the commercial banking system. The influence of central banking operations on conditions in the money market and on the general level of business activity.

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

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

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

699 THESIS a/q V R-9.

MANAGEMENT

FOR UNDERGRADUATES

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

344 AMERICAN INDUSTRIES 1Q S 4 Su 3 Prereq 340, 360. Economic problems and technological processes of selected manufacturing and communical industries. Location factors, company structures, mergers and competition and national policy relating to oligopoly.

FOR UNDERGRADUATES AND GRADUATES

349 INDUSTRIAL ORGANIZATION AND MANAGEMENT 1Q A W S 4 Prereq Econ 203. Basic production management problems and practices: organization and administration; plant facilities, layout and layout; production control; work simplification and personnel.

347 MANAGERIAL ECONOMICS 1Q A 4 Prereq 340. The application of economic analysis to the operation of a business. Demand and supply analysis and elasticity, price relationships, derivative pricing, and multi-line production and marketing problems.

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, 360. 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, 346, 360. Top-management oriented to develop an integrated view of the firm's objectives, decision-making tools in financial management problems involved in problem solving and in coordination.

494 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. A series of seminars, designed to provide the graduate student with the opportunity to develop his analytical skills in the production management area.

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 W 4. Current major administrative problems, 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 1Q 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 1Q A W S Su 4 Prereq Econ 203. Product policy, channels of distribution, merchandising, marketing institutions, marketing functions, pricing, governmental regulation.

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

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

363. ADVERTISING PRINCIPLES 1Q A S 4, Su 3 Prereq 360. The principles and techniques of advertising examined from the viewpoint of the businessman.

364. MARKETING MANAGEMENT 1Q W 4 Prereq 360 and 366. Management of the sales force; planning, coordination, and control of the marketing program.

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

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

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

465. CREDIT AND CREDIT ADMINISTRATION 1Q 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 1Q A S 3 Prereq 250, 350. The design and conduct of sample surveys of consumer behavior, intentions, habits, attitudes, and motivation.


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

FOR GRADUATES
560. MARKETING THEORY 1Q A 3. A critical analysis and synthesis of marketing literature and marketing from the viewpoint of other disciplines.

561. CURRENT MARKETING PROBLEMS 1Q a/q 2 R-6. Investigation of areas of current interest in marketing. Reports and discussions designed to develop an analytical attitude toward market problems.

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

699. THESIS a/q V R-9.

SECRETARIAL AND BUSINESS EDUCATION

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

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

183. ADVANCED TYPEWRITING 1Q A W S 2 Prereq 182 or placement. Application of basic skills to production jobs.

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


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

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

193. BEGINNING SECRETARIAL PRACTICE 1Q A W S 2 Prereq 182 Duplicating, dictating and transcribing machines.


FOR UNDERGRADUATES AND GRADUATES
380. METHODS OF TEACHING SHORTHAND, TYPEWRITING, AND TRANSCRIPTION 1Q A 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 1Q W 2 Prereq 201 or teaching experience in business subjects. Required of teaching majors and minors in Bus. Ad.

382. ADVANCED SECRETARIAL PRACTICE 1Q S. Alternate years. 9 Prereq 183, 187, 189, 190, 191 or placement. Practical application to typical secretarial activities. Required for secretarial majors.

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

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

591. IMPROVEMENT OF INSTRUCTION IN SECRETARIAL PRACTICE 1Q Su 2 Prereq 183 or business teaching experience, and c/l. Lecture, methods, and rotation-plan techniques in teaching secretarial machines. Duplication processes in producing the high school newspaper.

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

593. PROBLEMS IN TEACHING GREGG SHORTHAND 1Q Su 3 Prereq 186 or shorthand teaching experience and c/l. Developing a course of study using the latest methods and materials.

594. PROBLEMS IN TEACHING TYPEWRITING 1Q Su 3 Prereq 182 or typewriting teaching experience and c/l. Developing a course of study using the latest methods and materials.

595. UNIT COURSES IN BUSINESS EDUCATION 1Q Su V 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 1Q a/q V R-6. Special research problems.

699. THESIS a/q V R-9.

STATISTICS

FOR UNDERGRADUATES
250. INTRODUCTORY BUSINESS STATISTICS 1Q A W S 4 Prereq Math 112. Methods of collection, analysis, and presentation of economic, social, and business data. Ratios, frequency distributions, averages, variability, sampling error, and measures of association.

FOR UNDERGRADUATES AND GRADUATES
355. TIME SERIES ANALYSIS 1Q S 3 Prereq 250 or Math 125. The construction and historical analysis of economic time series including index number theory, techniques of the National Bureau of Economic Research, and regression studies.

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

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

Opportunities for employment for graduates with a Bachelor's degree in chemistry are many and varied. In addition to positions in laboratories connected directly with chemical industries, with petroleum companies, etc., there are many jobs for chemists in laboratories connected with state and national 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, 241-262-263, 344, 353, 371-372-373, 375-376-377, 431-432-433, and 6 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. College Physics and Mathematics through 252 are required. Every student is required to pass a senior comprehensive examination.

CHEMISTRY CURRICULUM

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Chem. 121-122-123</td>
<td>9</td>
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<tr>
<td>Math 116-117-118</td>
<td>13</td>
</tr>
<tr>
<td>Eng. 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Mill. Science or Air Science 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Phys. Ed. (Optional Elective Group II or III)</td>
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<td>Total</td>
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Sophomore Year

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<td>Chem. 261-262-263</td>
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<tr>
<td>Math. 291-292</td>
<td>5</td>
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<tr>
<td>German 101-102-103</td>
<td>9</td>
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<tr>
<td>Chem. 245</td>
<td>5</td>
</tr>
<tr>
<td>Mill. Science or Air Science 201-202-203</td>
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<td>Phys. Ed.</td>
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<td>29</td>
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Junior Year

<table>
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<tr>
<td>Physics 291-292-293</td>
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<tr>
<td>German 213-215-216</td>
<td>9</td>
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<tr>
<td>Chem. 322</td>
<td>5</td>
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<tr>
<td>Chem. 244</td>
<td>5</td>
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<tr>
<td>Electives</td>
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Senior Year

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>Chem. 371-372-373</td>
<td>9</td>
</tr>
<tr>
<td>Chem. 341-342-343</td>
<td>9</td>
</tr>
<tr>
<td>Elective or Chem. 481-483</td>
<td>4</td>
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<tr>
<td>Electives</td>
<td>5-6</td>
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<tr>
<td>Adv. Chem. courses</td>
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<td>Total</td>
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</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101-102 GENERAL CHEMISTRY 2Q A W 4 (5-5). 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 (5-5). 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 (5-5). For science majors and those students wishing more than one year of chemistry. The principles and theories of chemistry, properties and reactions of elements and inorganic compounds, including qualitative analysis. Students who have completed Chem 101-102 may not receive credit for 121-122 but are eligible for credit in 123.

214 QUANTITATIVE ANALYSIS 1Q W S Su 4 (3-6) Prereq 123. Grammetric, 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 245. The methods of quantitative analysis of mixtures and complex materials.

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

346 INSTRUMENTAL ANALYSIS a/q V 2-5 R-5 (2-3 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 and methods of qualitative analysis.

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

355 INORGANIC CHEMISTRY 1Q S 3 (3-0) Prereq 265. 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 102 or 122, and 15 credits of college physics. Those portions of physical chemistry which are of special interest to prospective students of medicine.

371-372-373 PHYSICAL CHEMISTRY 3Q A W S S 3 (3-4). Prereq Math 252. The more important methods, results and problems of theoretical chemistry.

375-376-377 PHYSICAL CHEMISTRY LABORATORY 3Q A W S S 1 (0-4) Prereq 246, 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; colloids.

431-432-433 CHEMICAL LITERATURE 3Q A W S Su 1 (0-2) R-4 since Chem 431 R-9 Prereq 283 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 245.

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

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

474 CHEMICAL THERMODYNAMICS 1Q S 3 (0-9) Prereq 245. The principles of thermodynamics and their application to chemical systems.

476 ELECTROCHEMISTRY 1Q A 3 (2-4) Prereq 273. The principles and applications of electricity to chemical reactions.

476 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.

656-662-663 ADVANCED ORGANIC CHEMISTRY 3Q A W S 3 (3-0) Prereq 263.

664, 666, 668 PHYSICAL ORGANIC CHEMISTRY 1Q a/q 3 (4-0) Prereq 373 and 464. Kinetics of organic reactions.

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

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

677 PHYSICAL CHEMISTRY SEMINAR 1Q a/q 2 (2-0) R-6 Prereq 375.

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 drama in the Montana State University School of Arts and Sciences.

1. A minimum of 5 credits in drama courses, 15 credits in selected periods of history.

2. Work must be presented in proper thesis form.

The following courses outside the drama department are required:

Speech 301 or 302: 3Q

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

4. The following courses are required for all graduating students:

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

   4. The following courses, if not previously taken at the undergraduate level, must be included: English 301-302, 341-342, and 343.

   5. All credits of required graduate work must include a minimum of 3 credits in technical theater courses, 15 credits in the area of concentration, 10 credits of non-Drama electives and a maximum of 15 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 thesis. Such a project will include design and execution of all technical aspects of the project to be produced in the University Theater. Completed designs and plans for the project must be presented in proper thesis form.

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

   FOR UNDERGRADUATES

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 acting, directing, design, etc., and an exposure to these arts.

121 ELEMENTARY ACTING 1Q W S 2 (2-2). Principles of pantomime and characterization with attention to expressive bodily action. Techniques of voice in acting and exercises for vocal flexibility, range, articulation, and enunciation.

131 ELEMENTARY STAGECRAFT 1Q 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 or monologue form will be considered and used in this course.

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

261-262-263 DRAMATIC LITERATURE 3Q A W S 2. Enter any quarter. The major works of various periods will be covered. Plays from the 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 101 or 106 or 201; 3 cr. from Drama 121, 131, 223. Techniques and practice in writing the one-act play and the full-length play. Experimental performances of plays.

307-308-309 THE DRAMA (see English)

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

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

333 ADVANCED STAGECRAFT 1Q S 3 Prereq 131. Principles and practice in scenic design, costume design, direction, playwriting, and elements of lighting and costume. Students will work on major productions.

341 STAGE COSTUMING 1Q S 2 Prereq 131. History of costumes of various periods. Principles of adapting the period style to the period play. Students will work on costumes for major productions.

345 ACTING FOR TELEVISION 1Q W 3 Prereq 121. Theory and the practice of acting before the television camera.

347 STAGE LIGHTING 1Q A 3 Prereq 131. Principles and practice in stage lighting. Theatrical lighting equipment and its use. Students will work on lighting for major productions.

351 ADVANCED ACTING 1Q A 3 Prereq 121. Study and practice in creating a role. Application of the principles of voice, body action, pantomime, characterization.

355 DRAMATIC INTERPRETATION 1Q S 3 Prereq Speech 291. Theory and practice of play-reading using a wide variety of dramatic materials and forms.

361 CREATIVE DRAMATICS FOR CHILDREN 1Q W Su V-4. Preparation of children's material for use in 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.

371 THEATER FOR CHILDREN 1Q Su only 2 or 4. Prereq training 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 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.

395 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 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.

396 THEATER FOR CHILDREN 1Q Su only 2 or 4. Prereq training 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.

397 THEATER FOR CHILDREN 1Q Su only 2 or 4. Prereq training 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.

401-402-404 THEATER PROJECTS 3Q a/q V-2-4 Prereq 10 credits in drama courses or in English 301-302-309, 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, stage design, costume design, direction, playwriting, study of drama.

423 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 threefold:

(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 and 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 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 in the sophomore or junior year, Economics 201-202-203; Mathematics 125; Political Science 202-205; and two quarters of History 201-202-203; Anthropology 125 or Sociology 111 and 112. The following may be counted as part of the 50 credits required for a major in Economics: History 333 and 374, Political Science 350, Mathematics 302-303, Business Administration 350, 351. 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, 202-203 and 15 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 economics required of majors, in the Economics-Political Science concentration.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

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

201-202-203 PRINCIPLES OF ECONOMICS 3Q a/q 3. (201) Nature of American economy, capitalistic production, money and its function in economic institutions; (202) Markets, value and price; (203) Functional distribution of income; selected economic topics.

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

FOR UNDERGRADUATES AND GRADUATES

201. MONEY AND BANKING 1Q A S SU 4 Prereq 203. Role of money in economic systems; Federal Reserve System as regulator of money; monetary theories, history and policy.

303. SOCIAL SCIENCE METHODS (See Sociology.)

FOR UNDERGRADUATES AND GRADUATES

301. MONE Y AND BANKING 1Q A S SU 4 Prereq 203. Role of money in economic systems; Federal Reserve System as regulator of money; monetary theories, history and policy.

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

311-312 INTERMEDIATE ECONOMIC ANALYSIS 2Q A W, 311 Theory of the firm; (312) Input analysis and welfare conditions.

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

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

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

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

331-332 INTRODUCTION TO INTERNATIONAL ECONOMICS 2Q A W, 331 Economic ideas from early times to 1890; (332) Theoretical analysis; (333) Problems of policy-making.


349. ECONOMIC DEVELOPMENT 1Q S 4 Prereq 203. Theoretical determinants of economic growth in poor and rich countries.

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

359. ECONOMICS OF TRANSPORTATION 2Q A 3 Prereq 203. (359) Economic significance, systems, freight rates and their relations to location of industries and markets centers, regulation; (360) Waterways, highways, pipelines, and airways.

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

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

376. MONOPOLY AND COMPETITION 1Q W Prereq 311. Economic determination of the economic well-being of the people of Montana.

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

MONE Y AND BANKING 1Q W Su 3 Prereq 203. Role of money in economic systems; Federal Reserve System as regulator of money; monetary theories, history and policy.

MONOPOLY AND COMPETITION 1Q W Prereq 311. Theories of imperfect markets and workable competition as applied to public policy.

MONE Y AND BANKING 1Q W Su 3 Prereq 203. Role of money in economic systems; Federal Reserve System as regulator of money; monetary theories, history and policy.

MONOPOLY AND COMPETITION 1Q W Prereq 311. Theories of imperfect markets and workable competition as applied to public policy.

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MONOPOLY AND COMPETITION 1Q W Prereq 311. Theories of imperfect markets and workable competition as applied to public policy.
EDUCATION

The introduction of youth into America's complex culture has become a major task of the schools and a challenge to all teachers. The problem is intensified by the steadily increasing numbers of young people in the last decade. This creates a growing need for teachers at all levels—elementary, secondary, and college—and requires that over half of the college graduates should, in addition to meeting the requirements for a teaching certificate, receive a college major in Education.

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 Becoming teacher recommendation eligibility 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 of these 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 advanced work in the field at the 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 field in 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 (and minor if any), with a minimum grade-point average of "C" or 2.0 or better; and those preparing 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 460.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN EDUCATION. In addition to the general requirements for graduation, the student must take the following courses which are prerequisites 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, 300, 342, 405 (10 credits), 407, 450 and 452 or their equivalents, and elective courses totaling 10 credits selected from other courses in Education. Students wishing to qualify for standard secondary certification are required to earn 45 or more credits in a teaching major and 30 or more credits in a teaching minor. Requirements for teaching majors and minors in various areas will be found in the last few pages of the Education section of the catalog.

Suggested Curriculum in secondary education:

**Freshman Year**

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<th>Course</th>
<th>Credits</th>
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<tr>
<td>Engl. 101-102-103—Freshman Composition</td>
<td>9</td>
</tr>
<tr>
<td>Genl. 121-122-123—Introduction to Biol Sc</td>
<td>9</td>
</tr>
<tr>
<td>Genl. 151-152-153—Intro to the Humanities</td>
<td>9</td>
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<tr>
<td>Hist. 101-102-103—Freshman Physical Education</td>
<td>11</td>
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<tr>
<td>ROTC 101-102-103—Military or Air Science</td>
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**Sophomore Year**

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<tr>
<td>History, Political Science, Sociology or Economics</td>
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<td>Educ. 110—Introduction to Teaching</td>
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<tr>
<td>Educ. 200—Orientation to Education</td>
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<tr>
<td>Teaching Major Sequence (listed later)</td>
<td>4-5</td>
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<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 201-202-203—Sophomore Physical Education</td>
<td>11</td>
</tr>
<tr>
<td>ROTC 201-202-203—Military or Air Science</td>
<td>11</td>
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**Junior Year**

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<tr>
<td>Educ 205—Educational Psychology</td>
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<td>Educ 305—Secondary School Teaching Procedures</td>
<td>5</td>
</tr>
<tr>
<td>Educ Methods Course (in one or both teaching areas)</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Major Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Teaching Minor Sequence (listed later)</td>
<td>4-5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

Other departments and schools which offer courses acceptable for Education credit include Art, Business Administration, English, Foreign Languages, Home Economics, Journalism, Mathematics, Music, and Religion.
Public Instruction. All such recommendations must be approved to teach in states other than Montana should investigate specific requirements to the State Department of Education including the following required courses totaling 37 credits: Education 200, 202, 201, 203, 303, 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, 25 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.

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 preparation for teaching the freshmen and sophomore years: men, 115, 116, 118; women, 115, 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>
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<tbody>
<tr>
<td>Edu 405—Student Teaching: Secondary</td>
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<tr>
<td>Edu 457—Curriculum Foundations</td>
<td>3</td>
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<tr>
<td>Edu 450—Guidance in the Elem and Sec School</td>
<td>4</td>
</tr>
<tr>
<td>Electives in Education</td>
<td>4-12</td>
</tr>
<tr>
<td>Teaching Major or Minor Sequence, or Electives</td>
<td>10-12 8-10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17 16-18 15-17</strong></td>
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</table>

**PREPARATION FOR TEACHING IN THE ELEMENTARY GP** (minimum of 42 credits)

Education including the following required courses totaling 37 credits: Education 200, 202, 201, 203, 303, 346, 404 (minimum of 10 credits), 467; and elective courses totaling 3 or more credits selected from other courses in Education.

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Edu 200—Orientation to Education</td>
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</tr>
<tr>
<td>Edu 205—The Elementary School Child</td>
<td>4</td>
</tr>
<tr>
<td>Edu 202—The Elementary School Child</td>
<td>5</td>
</tr>
<tr>
<td>Engi 201-202-203—Intro to Major American Writers</td>
<td>3</td>
</tr>
<tr>
<td>Psych 220—Child and Adolescent Psychology</td>
<td>5</td>
</tr>
<tr>
<td>HPE 201-202-203—Freshman Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>HPE 202—First Aid</td>
<td>1</td>
</tr>
<tr>
<td>HPE 201—Principles of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16-18 16-18</strong></td>
</tr>
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</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Edu 200—Orientation to Education</td>
<td>3</td>
</tr>
<tr>
<td>Edu 201—The Child and the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>Edu 303—Supervision and Teaching of Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>Genl 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Edu 346—Children’s Literature</td>
<td>4</td>
</tr>
<tr>
<td>Hist 251-252-253—United States History</td>
<td>4</td>
</tr>
<tr>
<td>HPE 303—Physical Education in the Elementary School</td>
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<tr>
<td>P.Sci. 101—Intro. to Govt. or P.Sci. 202—Am. Govt.</td>
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<tr>
<td>Elective course in Education</td>
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<td><strong>Total</strong></td>
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**Senior Year**

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>Edu 457—Curriculum Foundations (a/q)</td>
<td>3</td>
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<tr>
<td>HPE 303—School Health Problems</td>
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<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13-18 16 16</strong></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 (15 or more credits) in high school subjects. Additional requirements may be allowed.

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

1. Bachelor’s degree from Montana State University or other approved institution of higher education showing that the holder has completed a four-year course of elementary school education.
2. Specific requirements in general education that have particular reference to teaching at the elementary level. Students who expect to be certified to teach in the secondary grades are required to file with the School of Education at least two quarters preceding the quarter of practice teaching a statement of their pending teaching fields. Those who expect to be certified to teach in the elementary grades will similarly submit a statement of pending teaching fields. All candidates for a certificate for which they have not already received credit in Student Teaching (Education 405 or 406) will be assigned definite quarters in which they must register for this course.

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

Freshman or Sophomore year: Psyc 110 (not counted among the 8 credits required for secondary certification).

Sophomore or Junior year: Educ 200, 2 credits: Educ 205, 4 credits: Junior year: Educ 305, 8 credits.

Senior year: Educ 405, a minimum of 10 credits, Educ 407, 3 credits.

**B. Master of Education Without Professional Paper.** Candidates must have completed two years of satisfactory teaching in the same field of education. At least one year of teaching before entering the Masters’ program in the field. The candidate must present a thesis for which 6 to 9 credits are required.

**SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS IN EDUCATION.** In addition to the general requirements of the Graduate School (except for the foreign language requirement), candidates for inclusion in the program must have completed 15 credits of cognate work based upon a minimum of three courses. Such cognate work may not include courses that carry a dual listing shared by Education and any other school or department, and may not include any courses that are primarily concerned with techniques or training in specific skills. Each candidate will present a thesis for which 3 to 5 credits may be required.

**SPECIAL REQUIREMENTS FOR THE MASTER OF EDUCATION DEGREE.** Candidates must have completed two years of satisfactory teaching experience (two years teaching experience in a practical level is based solely upon the Bachelor’s Degree in Elementary Education). The candidate must present a thesis for which 6 to 9 credits are required.

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

A. **Master of Education With Professional Paper.** Candidates for this degree must complete 45 credits of graduate work, including credit in Methods of Educational Research (Education 565 or equivalent) and not less than 15 credits of course work offered must have been completed following the sophomore year. The candidate for the Master of Education degree must complete a minimum of 15 resident credits of graduate work in Education. The total number of credits in Education taken as undergraduate and graduate credit shall not be less than 54.

B. **Master of Education Without Professional Paper.** Candidates who choose not to do the professional paper will be required to take a total of 44 graduate credits, including Methods of Educational Research (Education 565 or equivalent) and not less than 15 credits of cognate work. They will take examinations covering the first 12 credits of Education such examinations to be arranged by the Dean of the School of Education.
MAJOR OF ARTS IN GUIDANCE AND COUNSELING, and MAJOR OF ARTS IN MASTER OF SCIENCE IN TEACHING. See statement under Graduate School.

FOR UNDERGRADUATES
For explanation see Index under "Symbols"

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

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

206 ELEMENTARY SCHOOL CHILD 1Q A W S 5, Su 3 Prereq 206 and Psy 110. Principles of growth and development and the psychosocial development of the elementary school student. 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.

301-302-303 THE CHILD AND THE CURRICULUM 3Q 301 A 5, 302 and 303 W S 3, Su 301-302-303, Prereq 200. (301) The language background of reading, reading readiness, psychology of the reading process, reading skills, and related diagnostic and remedial methods. Materials and teaching procedures in oral and written communications, spelling and handwriting. (302) The place and function of arithmetic, including theories of classification, the placement and organization of content. (303) The relationship of literature to social development, the development of basic concepts and appreciations in human relationships and community living; evaluating, organizing, and using related materials.

305 SECONDARY SCHOOL TEACHING PROCEDURES 1Q A W S 3 Prereq 300 and 305. Methods of planning, presentation, evaluation, and discipline. The materials of classroom teaching.

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

404 STUDENT TEACHING: ELEMENTARY a/g V R-18 Prereq Educ 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 Educ 305. Secondary School Teaching Procedure. 5 hours for selection, observation and participation are included, the main emphasis is upon responsible student teaching. It includes as a major part of the assignments regular duties and responsibilities of a teacher as can be included.

405 STUDENT TEACHING: SECONDARY a/g V R-10 Prereq Educ 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 Educ 305. Secondary School Teaching Procedure. 5 hours for selection, observation and participation are included, the main emphasis is upon responsible student teaching. It includes as a major part of the assignments regular duties and responsibilities of a teacher as can be included.

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

445 LIBRARY PRACTICE IQ A W S Su 5 Prereq 20 or more hours in Library Service and consent of Director of Library Service. The student performs library routines in a school, public or college library under the supervision of professional librarians. Weekly meeting with Director of Library Service.

FOR UNDERGRADUATES AND GRADUATES

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

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 content. Emphasis on the reading procedure and use of community resources.

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

317 SUPERVISION AND TEACHING OF ARITHMETIC 1Q Su 3 Prereq teaching experience and c/l. Characteristics of good teaching programs and their development in accordance with present day understandings of content. Emphasis on the teaching of arithmetic in the elementary school.

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

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

327 PROBLEMS IN CONSERVATION EDUCATION 1Q Su 3 Prereq Gen 300 and 12 credits in Supervision of a trained conservation program. Integral part of summer Conservation Education Workshop. Prereq Educ 326 or for 6 credits if preceded by Educ 326 and Gen 390. Describing, selection, and evaluation of materials for the teaching of conservation.

331 EARLY CHILDHOOD EDUCATION 1Q 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. Prereq for students not enrolled in a major.

332 REMEDIAL READING 1Q Su 3 Prereq 1 basic course in teaching of reading or teaching experience, and c/l. Diagnosis and treatment of remedial readers in the primary, intermediate, 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.


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

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

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

346 LIBRARY REFERENCE MATERIALS 1Q W 4, Su 3 Prereq 341 or 343. The place and function of reference materials in the small library. May not be counted in credit for Library Service major or minor.

347 AUDIO-VISUAL AIDS 1Q A W S 3. Classroom utilization of audio-visual aids. Film, lantern slides, filmstrip, radio, television, animation, and related techniques. May not be counted in credit for Library Service major or minor.

349 EDUCATIONAL SOCIOLOGY 1Q A 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.

350 THE TEACHER AND SCHOOL ORGANIZATION IQ Su 3 Prereq teaching experience or c/l. Characteristics of school organization, management, and financing of American public education, with special emphasis on personnel problems, community relations, and organizational structure of schools.

352 METHODS OF TEACHING SECONDARY SCIENCE 1Q W Su 3 Prereq 12 credits in Secondary Education, a science minor and c/l. 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.

353 SAFETY EDUCATION AND DRIVER TRAINING IQ Su 3 Prereq c/l. Supervised experience in teaching driving and theoretical aspects of driver education. To prepare teachers for Safety Education and Driver Training courses in high schools. Offered in cooperation with the American Automobile Association and the Montana Highway Patrol.

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

355 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.

356 THE SLOW AND RETARDED LEARNERS 1Q W Su 3 Prereq 12 credits in Education, Media Arts, Social Studies, special education, or psychology, and c/l. Characteristics of low and retarded pupils. Characteristics of learning disabilities. Techniques and methods of teaching slow and retarded learners.

357 EVALUATION OF SCHOOL LIBRARY SERVICES AND MATERIALS 1Q Su Su 3 Prereq 12 credits in Library Science. Methods of evaluating and improving school library services to teachers and students.

358 LIBRARY WORK WITH CHILDREN 1Q W 4, Su 3 Prereq 311 or 343 and a course in children's literature. Work with children in school and public libraries, including story telling and organization of the children's department in the public library.

359 LIBRARY WORKSHOP 1Q Su 3 Prereq 9 credits in Library Service. 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/q V 1-3 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 problems.

450 GUIDANCE IN THE ELEMENTARY AND SECONDARY SCHOOL 1Q A W S 5 Prereq 361-363 or 360 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 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 3 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 3 4 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 S 5 2. Historical and philosophical backgrounds of the secondary school. The curriculum trends in the separate subjects, and organizing for curriculum development.

455 CURRICULUM WORKSHOP 1Q W S 3 3 Prereq 450 or = and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

FOR GRADUATES

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


535 CURRICULUM WORKSHOP 1Q W S 3 3 Prereq 450 or = and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

540 ADVANCED EDUCATIONAL PSYCHOLOGY 1Q W 3 3. General orientation; motivation, reinforcement, testing for permanence and transfer. Current research in field.

542 PRACTICE IN GUIDANCE 1Q S W 3 3 Prereq 450 or = and c/i. Group analysis and discussion of individual projects. Application to specific teaching situations where possible.

555 GUIDANCE INSTITUTE 1Q S 3 3 Prereq 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) of guidance. Guidance practices and techniques for teachers charged with guidance responsibilities.

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

594 PHILOSOPHY OF EDUCATION 1Q A 4, Su 3. Leading philosophical points of view in Education; concepts of the individual, society, and education and their roles in Education.

598 SOCIOLOGICAL FOUNDATIONS OF AMERICAN EDUCATION 1Q W S 3 3 Prereq 360 or 361 or = and c/i. The background of education in its broadest sense as found in the religion, the economic system, the family, the estate, and other social institutions.

590 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 S 3 3 Prereq teaching experience. Problems in administering the elementary school. Role and competencies of the elementary principal.

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

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

578 SCHOOL POLICY 1Q S 5 3 Prereq teaching experience. Sources of school revenues; related costs, inequalities, legal limitations, and proper expenditures; relationship of foundation programs and districts to organization.

577 PLANNING THE SCHOOL BUILDING PROGRAM 1Q W 3-4 Prereq 570 or = and c/i. Procedures in determining building needs; site selection, planning the building, financing, and supervision of construction.

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

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

590 INDEPENDENT STUDY a/q V 2-4 Prereq consent of adviser and instructor. Selected topics under the guidance of a staff member.

594 SEMINAR a/q V 1-4 Prereq c/i. Group analysis of problems in specific areas of education.

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

597 EDUCATIONAL STATISTICS 1Q A S 4 Prereq Math 125, Educ 126 and 501. Concurrent registration therein and c/i.

599 RESEARCH a/q V 1-5 Prereq c/i.

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

600 DISSERTATION a/q V R-30.

EDUCATION COURSES TAUGHT BY OTHER SCHOOLS AND DEPARTMENTS

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

Art 307 Methods of Teaching Secondary Art.

B Ad 380 Methods of Teaching Typewriting and Transcription.

B Ad 381 Methods of Teaching Bookkeeping and Basic Business.

B Ad 388 Gregg Shorthand Theory for Teachers.

B Ad 511 Problems in Teaching Bookkeeping.

B Ad 532 Problems in Teaching Gregg Shorthand.

B Ad 534 Problems in Teaching Typewriting.

B Ad 550 Unit Courses in Business Education.

Engl 402 Methods of Teaching English.

For L 311 Methods of Teaching Foreign Languages.

For L 401 Foreign Language Workshop.

H&E 335 Methods of Teaching Physical Education.

H&E 373 School Health Problems.

H Ec 321 Methods of Teaching Home Economics.

H Ec 412 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 330 Principles of Religious Education (for Education majors only).

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, who are 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.

Students should keep in mind that a course may not be counted in more than one teaching major or minor.

ART

Teaching Major (45 credits)

Teaching Minor (30 credits)

Required Courses:

Art 123—Drawing

Art 125—Design

Art 127 or 129—Crafts

Art 129—Sculpture

Art 151—Life Drawing

Art 321-322—Art History or Art

Art 307—Methods of Teaching Secondary Art

7 credits from the following:

Electives:

Art 127 or 129—Crafts

Art 129—Ceramics

Art 133—Printing Arts

Art 138—Watercolor

Art 151—Life Drawing

4 credits from the following:

2-4
### BUSINESS ADMINISTRATION

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<tr>
<td>B Ad 183</td>
<td>Advanced Typewriting</td>
<td>2</td>
<td>2</td>
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<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>
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<tr>
<td>B Ad 193</td>
<td>Beg. Secretarial Pract.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 194</td>
<td>Records Management</td>
<td>4</td>
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<tr>
<td>B Ad 201-202-203</td>
<td>Elementary Accounting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B Ad 380</td>
<td>Methods of Teaching shorthand, typewriting and transcription</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 381</td>
<td>Methods of Teaching Bookkeeping and basic business</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B Ad 384</td>
<td>Gregg Shorthand Theory for Teachers</td>
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### Accountancy

- B Ad 194—Records Management
- B Ad 193—Beg. Secretarial Pract.
- B Ad 192—Office Machines Practice

### Russian (Minor Only)

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<th>Course Code</th>
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<td>Elementary</td>
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<tr>
<td>F.L. 215-Advanced</td>
<td>Survey of Literature</td>
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<tr>
<td>F.L. 215</td>
<td>Review Grammar and Composition</td>
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<td>3</td>
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<tr>
<td>F.L. 301-302-303</td>
<td>Survey of Literature</td>
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<tr>
<td>F.L. 301</td>
<td>Methods Tchrg. For. Lang. (may be taken for Educ. credit)</td>
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### Russian (Major Only)

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<tr>
<td>F.L. 101-103-105</td>
<td>Elementary</td>
<td>15</td>
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<tr>
<td>F.L. 215-Advanced</td>
<td>Survey of Literature</td>
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<td>F.L. 215</td>
<td>Review Grammar and Composition</td>
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<td>F.L. 301-302-303</td>
<td>Survey of Literature</td>
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<td>F.L. 301</td>
<td>Methods Tchrg. For. Lang. (may be taken for Educ. credit)</td>
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</tbody>
</table>

### ECONOMICS AND SOCIOLGY

### Teaching Major (31 credits)

- Anth 153—Social Anthropology or 155—Elementary Anthropology
- Econ 201-202-203—Principles of Economics
- Econ 360—Marketing Principles

### Teaching Minor (30 credits)

- Econ 383—Office Management

### ECONOMICS AND SOCIOLGY (Minor Only)

<table>
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<td>Hist. 101-102-103</td>
<td>Development of Western Civilization</td>
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<td>Hist. 251-252-253</td>
<td>U.S. History</td>
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<tr>
<td>Hist. 121</td>
<td>The English Language</td>
<td>3</td>
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<tr>
<td>Hist. 131-132</td>
<td>American History</td>
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<tr>
<td>Hist. 141-142</td>
<td>Modern History</td>
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### FOREIGN LANGUAGES

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

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<th>Course Code</th>
<th>Course Name</th>
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<tr>
<td>F.L. 215-Advanced</td>
<td>Survey of Literature</td>
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<td>F.L. 215</td>
<td>Review Grammar and Composition</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

### Notes:

1. Majors and Minors substitute courses 101-102-103, 201-202-203 for required of other lower division students.
2. Students planning to major or minor in this field must report to the Chairman of the Department by the first quarter of the junior year.
4. 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.
## HOME ECONOMICS

### Teaching Major

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Ec 102—Personal Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 141—Foods</td>
<td>5</td>
</tr>
<tr>
<td>H Ec 155—Textile Selection</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 157—Clothing Construction</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 210—Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 213—Ideal Management</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 246 or 246—Nutrition</td>
<td>4</td>
</tr>
<tr>
<td>H Ec 246—Clothing for the Family</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 252—Home Planning</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 303—Interior Design and Furnishings</td>
<td>5</td>
</tr>
<tr>
<td>H Ec 305—Problems of the Consumer</td>
<td>3</td>
</tr>
<tr>
<td>H Ec 310—Home Living Center</td>
<td>4</td>
</tr>
<tr>
<td>H Ec 311—Home Management</td>
<td>2</td>
</tr>
<tr>
<td>H Ec 321—Methods of Teaching Home Ec.</td>
<td>3</td>
</tr>
</tbody>
</table>

(30 credits)

### JOURNALISM (Minor Only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journ. 100—Introduction to Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 140—Introduction to Radio and Television</td>
<td>1</td>
</tr>
<tr>
<td>Journ. 196—Current Affairs</td>
<td>1</td>
</tr>
<tr>
<td>Journ. 210—Elementary Photography</td>
<td>1</td>
</tr>
<tr>
<td>Journ. 210—Reporting</td>
<td>1</td>
</tr>
<tr>
<td>Journ. 220—History and Principles of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 311—School Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 390—Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 371—Advanced Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 380—News Editing</td>
<td>3</td>
</tr>
<tr>
<td>Journ. 495—Editorial Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

(30 credits)

### LIBRARY SERVICE (Minor Only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educ 341—Org. &amp; Adm. of the School Library</td>
<td>3</td>
</tr>
<tr>
<td>Educ 344—Cataloging and Classification</td>
<td>3</td>
</tr>
<tr>
<td>Educ 345—Bibliography and Book Selection</td>
<td>3</td>
</tr>
<tr>
<td>Educ 346—Library Reference Materials</td>
<td>3</td>
</tr>
<tr>
<td>Educ 442—Evaluating Records in a Library</td>
<td>3</td>
</tr>
<tr>
<td>Educ 446—Evaluation of Library Materials</td>
<td>3</td>
</tr>
<tr>
<td>Educ 453—Cataloging and Classification</td>
<td>3</td>
</tr>
<tr>
<td>Educ 445—Library Practice</td>
<td>3</td>
</tr>
<tr>
<td>Engl 361—Literature for the High School Teacher</td>
<td>3</td>
</tr>
</tbody>
</table>

(35 credits)

### MATHEMATICS

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 116—College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>Math 118—Introduction to Analytic Geometry and Calculus</td>
<td>5</td>
</tr>
<tr>
<td>Math 251—Sophomore Math I</td>
<td>5</td>
</tr>
<tr>
<td>Math 352—Sophomore Math II</td>
<td>5</td>
</tr>
<tr>
<td>Math 300—Algebra for Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Math 304—Geometry for Teachers</td>
<td>5</td>
</tr>
</tbody>
</table>

(30 credits)

### 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

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 111, 112, 115—Theory I</td>
<td>6</td>
</tr>
<tr>
<td>Music 131-132-133—Sight Singing, Keyboard and Dictation</td>
<td>3</td>
</tr>
<tr>
<td>Music 227-228-229—Sight Singing, Keyboard and Dictation</td>
<td>3</td>
</tr>
<tr>
<td>Music 241, 242, 243—Theory II</td>
<td>6</td>
</tr>
<tr>
<td>Music 135, 136, 137—Introduction to Music Lit.</td>
<td>3</td>
</tr>
<tr>
<td>Music 277, 282 or 283—Conducting</td>
<td>3</td>
</tr>
<tr>
<td>Music 322, 324, 325—School Music (any 2 quarters)</td>
<td>5</td>
</tr>
<tr>
<td>Music 100—Secondary Applied Minor 12</td>
<td>5</td>
</tr>
</tbody>
</table>

(30 credits)

### ADDITIONAL COURSES: 9 credits from the following the following the following the following the following

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

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

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.

## BIOLOGICAL SCIENCE

### Required Courses:

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 200—General Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Bot 121—General Botany</td>
<td>15</td>
</tr>
<tr>
<td>Bot 123—Local Flora</td>
<td>3</td>
</tr>
<tr>
<td>Bot 255 or 341—Plant Phys. or Morph. of Thall.</td>
<td>5</td>
</tr>
<tr>
<td>Gen 300—Conservation of Natural and Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>Zool 104—Elementary Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 105—Elementary Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 106—Field Zoology</td>
<td>5</td>
</tr>
<tr>
<td>Zool 201—Comp. Vertebrate Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>Zool 203—Elementary Human Zoology</td>
<td>5</td>
</tr>
</tbody>
</table>

(30 credits)

### ELECTIVES: Limited to upper division courses in social sciences including one upper division course in Sociology.

## CHEMISTRY

### Required Courses:

<table>
<thead>
<tr>
<th>Teaching Major</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121—2-3—College Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Chem 221—2-3—Quantitative Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Chem 261—2—Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>Chem 322—Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem 370—Survey of Physical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Chem 371—Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Chem 384—Physical Chemistry</td>
<td>3</td>
</tr>
</tbody>
</table>

(25 credits)

## GENERAL SCIENCE*

(Broad Fields Major Only)

### PHYSICAL SCIENCE

(72-77 credits)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 221—2—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Phys 223—Light</td>
<td>4</td>
</tr>
<tr>
<td>Phys 223—Atomic Physics</td>
<td>6</td>
</tr>
<tr>
<td>Chem 221—2—College Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Chem 261—Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Chem 345—Quantitative Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Chem 352—Inorganic Chemistry</td>
<td>3</td>
</tr>
</tbody>
</table>

(33 credits)

### GEOLOGY

(Minor Only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 101—Introduction to Geology</td>
<td>10</td>
</tr>
<tr>
<td>Geol 120—Aerial Photos and Geol. Maps</td>
<td>4</td>
</tr>
<tr>
<td>Geol 130—Field Methods</td>
<td>2</td>
</tr>
<tr>
<td>Geol 200—General Paleontology</td>
<td>4</td>
</tr>
<tr>
<td>Geol 311—Mineralogy and Petrology</td>
<td>12</td>
</tr>
</tbody>
</table>

(72-77 credits)

### PHYSICS

(Minor Only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 221—2—General Physics</td>
<td>15</td>
</tr>
<tr>
<td>Phys 223—Light</td>
<td>4</td>
</tr>
<tr>
<td>Phys 223—Atomic Physics</td>
<td>6</td>
</tr>
<tr>
<td>Chem 221—2—College Chemistry</td>
<td>15</td>
</tr>
</tbody>
</table>

(45 credits)

### SOCIAL SCIENCES

(Broad Fields Major Only)

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc 101—Introductory Sociology</td>
<td>5</td>
</tr>
<tr>
<td>Hist 101—2—3—Development of Western Civilization</td>
<td>15</td>
</tr>
<tr>
<td>Econ 201—2—3—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>U. S. History courses</td>
<td>12</td>
</tr>
</tbody>
</table>

(75 credits)
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, work 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 want 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 80 credits in the department. The required courses in English are listed in the three schedules given below, one for students majoring in English listed in preparation for advanced work in literature, one for students seeking experience and guidance in writing, and one for students planning to teach in the secondary schools. By the beginning of his junior year the student should have decided definitely which of these schedules he is to follow.

Seniors in Schedules A and C should present for graduation a paper, critical or scholarly, prepared in English 488 or 489. Students in Schedule B may substitute for this a body of creative writing. All students majoring or minoring in English, whether their degrees are taken in the department of English or the School of Education, will be required to take the basic core curriculum in English studies. Schedules A, B, and C (see below) presume such a core curriculum and build from that.

I. All prospective English majors are expected to take, in their freshman year, the Introduction to Humanities (General 161-162-163), 5 credits of which will be counted toward the English major. (General 360 may be counted as English credit toward the major)

II. All students are expected to take, in addition, English 201; English 243 or 244 and 2 quarters in one sequence and one in the other from English 211-212-213, and 231-232-233.

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

SCHEDULE A: LITERATURE

- English 385 (Chatuer); 3 credits from 491-492-493; 496-498. The remaining credits for the completion of the minimum 30 credits may be selected from courses in English, American, or General Literature numbered above 200, and from the Related Fields. Among electives must be one course in American Literature and one course in English 342 or 343, 371, 381, 481, 495-499.

- Electives: 10 credits in the related fields below. Other electives may be chosen from courses in the Department of English, from courses in General Literature numbered above 200, and from the Related Fields. Among electives must be one course in American Literature and one course in English 342 or 343, 371, 381, 481, 495-499.

- Students planning to teach English in high school should supplement the core courses with the following required minimum: English 211-212-213 and 231-232-233, 12 credits chosen from 300-498.

- 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 500, unless they offer 498 or its equivalent in college credit. The candidate will present a thesis for which 6 to 9 credits may be allowed.

COMPOSITION, LANGUAGE AND LITERATURE

FOR UNDERGRADUATES

ENGLISH—41
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 reader-centered approaches, with the objective of enhancing the social and literary impact of their work. 5 credits.


331-332-333 STUDIES IN AMERICAN LITERATURE 3Q A W S Su 3 Prereg 12 credits of literature. Major American writers. (331) American Renaissance; (332) American Realism; (333) Modern American writing. 9 credits.


341-342-343 SHAKESPEARE AND CONTEMPORARIES 3Q A W S Su 3. Enter any quarter. Prereg 9 credits of literature. (341) Tudor Drama: early liturgical drama, medieval mystery and morality plays, Elizabethan and Jacobean plays with emphasis upon historical development and stylistic characteristics. (342) Intensive study of three of Shakespeare's plays. (343) Extensive reading of Shakespeare's work with attention to dramatic structure, Renaissance ideology, and Shakespeare's artistic development. 9 credits.

344-345 THEORIES OF DRAMA 3Q A W S Su 3. Enter either quarter. Prereg 4 credits 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. 6 credits.

360 INTRODUCTION TO LINGUISTICS (See General Courses.)


386-387-388 BRITISH LITERATURE: RENAISSANCE TO 1660 3Q A W S Su 3. Enter any quarter. Prereg 12 cr of literature. 9 credits.


395-396-397 BRITISH LITERATURE: RECENT 3Q A W S Su 3. Enter any quarter. Prereg 12 cr of literature. Major figures in prose and verse from 1870 to the present. 9 credits.

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 4. Enter at any quarter. Prereg 9 credits of literature. Major writer, American or British, will be given special attention each quarter. Millon will be given one quarter a y. Prereg 9 cr of literature. A chronological survey, with emphasis on close reading of representative works by major British and American Authors. 9 credits.


405 INDEPENDENT STUDIES 3Q A W S Z 2-8, 2 R-4. Work in several fields of literature. For undergraduate and graduate students, particularly seniors who are seeking honors. 9 credits.

497 SEMINAR: PROBLEMS IN ENGLISH LINGUISTICS 1Q S Su 3. Prereg 12 credits of English Gen 300-399. Projects in various problems in teaching reading and writing, in teaching English as a foreign language, and in phonemics, morphemics, and stylistics. 3 credits.

498-499 SEMINAR 2Q A W S 2. First instruction and practice in research, with creative project permitted, with consent of advisor, for students in schedule B. 6 credits.

FOR GRADUATES


505 WORKSHOP 1Q Su only V R-10 Prereg teaching experience and c/1. 3 credits.

600 SEMINAR: PROBLEMS IN RESEARCH a/q V R-6. Guidance in graduate subjects and research. 3 credits.

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

FOREIGN LANGUAGES provide instruction and practice in speaking, reading and writing the tongues of other peoples for commercial, and governmental, or cultural purposes. Intercommunication among the nations of the world depends upon knowledge of modern languages, and such understanding is particularly necessary as the importance of the United States increases in global affairs. Educated men and women find language skills not only important for social reasons, but as equipment for research in many fields of humanistic and scientific inquiry. Knowledge of a foreign language is also recognized as contributing greatly to the student's ability to use his own tongue. Such is particularly true of the classical languages, Latin and Greek, which are useful 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 languages. Placement examinations are required of all entering students who continue languages in which high school entrance credit is presented. Students with one high school unit in a modern language will normally enter course 103; those with two units, course 215; those with three or more units, courses numbered 300 or over.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN LANGUAGES. Not more than 50 credits in all foreign languages may be counted toward the Bachelor of Arts degree. The total number of credits for a major in a foreign language varies with the student's high school preparation. Specific requirements are set forth below in connection with each language.

FRENCH

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

1. French 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
217 FRENCH GRAMMAR REVIEW AND COMPOSITION 1Q A S Su 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 FRENCH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF FRENCH LITERATURE 3Q A W S 2 Prereq 217.
305 ADVANCED FRENCH PHONETICS 1Q S Su 2 Prereq 217 or =.
311 MEDIEVAL FRENCH LITERATURE 1Q A 3 o/y Prereq 217.
321 FRENCH RENAISSANCE 1Q W 3 e/y Prereq 217.
331 17th CENTURY FRENCH LITERATURE 1Q S 3 e/y Prereq 217.
341 18th CENTURY FRENCH LITERATURE 1Q A 3 e/y Prereq 217.
361 CONTEMPORARY FRENCH LITERATURE 1Q W 3 o/y Prereq 217.
491 SEMINAR 1Q a/q V 2-3 R-15 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

GENERAL LITERATURE

161 CLASSICAL MYTHOLOGY 1Q a/q 2. Deities and myths of the Greeks and Romans, with emphasis on those of most importance to Western literature and art.

221 FOREIGN LITERATURES IN TRANSLATION 1Q A W S Su 3 R-6. Works of foreign authors in English translation. Periods and literatures vary from quarter to quarter. No knowledge of foreign languages necessary.

440 STUDIES IN COMPARATIVE LITERATURE 1Q a/q 3. The origin and dissemination of important literary ideas, trends, and movements.

GERMAN

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in German must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. German 101 to 217 inclusive, or equivalent.
2. At least 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, 214, 311, 314, 317, 321.

FOR UNDERGRADUATES

101 ELEMENTARY GERMAN 1Q A W Su 5.
102 ELEMENTARY GERMAN 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY GERMAN 1Q A S Su 5 Prereq 102 or =.
111-112-113 GERMAN FOR ELEMENTARY TEACHERS 3Q a/q 2 Prereq c/i. Grammar, conversation, and methods of teaching German in the elementary school.

200 ELEMENTARY GERMAN CONVERSATION 1Q a/q 1 R-2 Prereq 103 or =. Primarily for majors and minors.
213 INTERMEDIATE GERMAN 1Q A W Su 4 Prereq 103 or =.
215 ADVANCED GERMAN 1Q W S Su 4 Prereq 213 or =.
217 GERMAN GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 GERMAN CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF GERMAN LITERATURE 3Q A W S 2 Prereq 217.
341 18th CENTURY GERMAN LITERATURE 1Q A 3 o/y Prereq 217.
351 19th CENTURY GERMAN LITERATURE 1Q S 3 e/y Prereq 217.
491 SEMINAR 1Q a/q V 2-3 R-25 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 1Q W Su 5.
102 ELEMENTARY GREEK 1Q S 5 Prereq 101.
103 ELEMENTARY GREEK 1Q A Su 3 Prereq 102.
213 INTERMEDIATE GREEK 1Q W 3 Prereq 103.
215 ADVANCED GREEK 1Q S 3 Prereq 213.

ITALIAN

No major is given in Italian.

101 ELEMENTARY ITALIAN 1Q A 5.
102 ELEMENTARY ITALIAN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY ITALIAN 1Q S 5 Prereq 102.
213 INTERMEDIATE ITALIAN 1Q A 4 Prereq 103.
215 ADVANCED ITALIAN 1Q W 4 Prereq 213.
217 ITALIAN REVIEW GRAMMAR AND COMPOSITION 1Q S 3 Prereq 215 or =.

LATIN

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in Latin must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. Latin 101 to 217 inclusive, or equivalent.
2. At least 18 credits selected from Latin Seminar (Latin 491).
3. The Ancient World, History 203-204.
4. Greek 101-102 may be substituted for a Latin course above 217.

FOR UNDERGRADUATES

101 ELEMENTARY LATIN 1Q A Su 5.
102 ELEMENTARY LATIN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY LATIN 1Q S 5 Prereq 102 or =.
213 INTERMEDIATE LATIN 1Q A Su 4 Prereq 103 or =.
215 ADVANCED LATIN 1Q W 4 Prereq 213 or =.
217 LATIN READINGS 1Q S 3 Prereq 215 or =. Works of outstanding Latin writers.

FOR UNDERGRADUATES AND GRADUATES

491 SEMINAR 1Q a/q V 2-3 R-30 Prereq 217. Works of outstanding writers.

FOR GRADUATES

699 THESIS a/q V R-15.

ROMANCE PHILOLOGY

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

RUSSIAN

No major is given in Russian.

101 ELEMENTARY RUSSIAN 1Q A 5.
102 ELEMENTARY RUSSIAN 1Q W 5 Prereq 101 or =.
103 ELEMENTARY RUSSIAN 1Q S 5 Prereq 102 or =.
213 INTERMEDIATE RUSSIAN 1Q A 4 Prereq 103 or =.
215 ADVANCED RUSSIAN 1Q W 4 Prereq 213 or =.
217 RUSSIAN REVIEW GRAMMAR AND COMPOSITION 1Q S 3 Prereq 215 or =.
301-302-303 SURVEY OF RUSSIAN LITERATURE 3Q A W S 2 Prereq 217.

SPANISH

MAJOR REQUIREMENTS. Candidates for the degree of Bachelor of Arts with a major in Spanish must meet the following requirements in addition to the general requirements for graduation listed earlier in the catalog.
1. Spanish 101 to 217 inclusive, or equivalent.
2. At least 19 credits from courses numbered 300 or over.
3. Four quarters, or equivalent, of another language.
4. Two quarters in history of Europe or Spanish America, chosen from the following: History 210, 215, 216, 250, 255, 257, 323.

FOR UNDERGRADUATES

101 ELEMENTARY SPANISH 1Q A W Su 5.
102 ELEMENTARY SPANISH 1Q W S Su 5 Prereq 101 or =.
103 ELEMENTARY SPANISH 1Q A S Su 5 Prereq 102 or =.
111-112-113 SPANISH FOR ELEMENTARY TEACHERS 1Q a/q 2 Prereq c/i. Grammar, conversation, and methods of teaching Spanish in the elementary school.

200 SPANISH CONVERSATION 1Q a/q 1 R-2 Prereq 103 or =.
213 INTERMEDIATE SPANISH 1Q A W Su 4 Prereq 103 or =.
215 ADVANCED SPANISH 1Q W S Su 4 Prereq 213 or =.
217 SPANISH GRAMMAR REVIEW AND COMPOSITION 1Q A S 3 Prereq 215 or =.

FOR UNDERGRADUATES AND GRADUATES

300 SPANISH CONVERSATION 1Q a/q 2 R-4 Prereq 217.
301-302-303 SURVEY OF SPANISH LITERATURE 3Q A W S 2 Prereq 217.
FORESTRY

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

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

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

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 to 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 expenses.

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

Fifth Year

FOREST ENGINEERING

Second Year

Third Year

Fourth Year

Fifth Year

WOOD UTILIZATION

Second Year

Third Year

Fourth Year

Fifth Year
RANGE MANAGEMENT  

Second Year
Autumn: For 50, 210, 252, 290; Phys 111; H&PE 201; ROTC 201. Winter: For 200, 230, 253; Bot 251; Psych 110; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 205; ROTC 203.

Third Year

WILDLIFE MANAGEMENT  

Second Year
Autumn: For 250, 210, 252, 290; Physics 111; H&PE 201; ROTC 201. Winter: For 200, 230, 253; Bot 251; Psych 110; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 205; ROTC 203.

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

Fourth Year

SOIL AND WATER CONSERVATION  

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

Third Year
Autumn: For 310, 360; Geol 110. Winter: Bot 368; Econ 203; For 352, 370. Spring: Bot 365; For 361, 411; Jour 334.

Fourth Year
Autumn: For 422, 460, 462. Winter: For 421, 461, 480, 484; Pol Sci 362; Electives. Spring: For 300, 461, 499; Electives.

WATERSHED MANAGEMENT  

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

Third Year
Autumn: For 300, 310, 360; Geol 110. Winter: For 301, 352, 450, 490; Econ 201; Psych 112. Spring: For 301, 311; H&PE 200; Psych 113; Econ 202; Electives.

Fourth Year
Autumn: For 420, 441, 460; Geol 200. Winter: For 400, 421, 494; Geol 203. Spring: For 365, 471; Zool 306.

CURRICULA LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN FOREST CONSERVATION  

FOREST CONSERVATION  

(All group requirements are not included)

CONSERVATION is the scientific management of natural resources. The term management as used here pertains more specifically to the “wise use” of our renewable natural resources and involves in large part the multiple and coordinated use of several resources existing on the same, adjacent or associated areas. Forests and forestry play an important part in the solution of many conservation problems, however, the forester’s training is from necessity specialized to meet the demands of the profession.

Introduction to differential leveling, stadia surveying, plane table survey methods. Adjustment of horizontal and vertical controls. Establishment of a triangulation, horizontal and vertical controls by transit and level. Topographic surveys and maps or topographical mapping.

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.

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

First Year
Bot 121-122—Forest Botany
Bot 123—Local Flora
Chem 101-2—General Chemistry
Chem 160—Survey of Organic Chemistry
Eng 101-2—Freshman Composition
Math 113, 116—Trigonometry and College Algebra
Speech 111—Principles of Speech
H&PE 101-2—Physical Education
ROTC 101-2—Military of Air Science

Fourth Year
Autumn: For 420, 441, 460; Zool 309. Winter: Econ 202; For 352, 370; Bot 366. Spring: Bot 370, For 311, 361; Bot 370; Econ 202; Electives.

Second Year
Autumn: For 50, 210, 252, 290; Zool 101; H&PE 201; ROTC 201. Winter: For 200, 230, 253; Bot 251; Psych 110; H&PE 202; ROTC 202. Spring: For 200, 230, 253; Bot 205; ROTC 203.

Third Year
Autumn: For 300, 310, 330, 360. Winter: For 352, 370; Bot 366. Spring: BOT 480; Electives. Winter: Bot 366; For 352, 370; Pol Sci 362; Electives. Spring: For 380; Zool 380; Electives.

Fourth Year
Autumn: For 490; Econ 201; Electives. Winter: For 250, 470, 472, 480; Electives. Spring: For 471, 481; Econ 202; Electives.

For UNDERGRADUATES
For explanation see Index under “Symbols”

10 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). General survey of the fields and subject matter of forestry and introduction to the profession; fundamentals and field problems in the forest against elements other than fire and disease; insects, wildlife, man, grazing, and recreation.

200 ELEMENTARY FOREST MENSURATION 1Q S 4 (2-4)

16-18 18 20


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 382 prior to or concurrent with For 252. (253) Use of tape, staff compass, Abney level, Engineer’s level, transit, plane table, and telescopic alidade. Introduction to differential leveling transit, stadia, and plane table surveys. Public land survey methods. (253) Instrument adjustment. Establishment of a triangulation, horizontal and vertical controls, and plane table surveys, and maps obtained by various combinations of instruments. Solar observations. Introduction to earthworks.

255 FOREST AESTHETICS 1Q W 4 (2-3) Prereq standing in the School of Forestry and C/1. Historical development and problems in recreational use of forests and wild lands. Appreciation of natural landscape values. State, national park and wilderness areas and introduction to planning. Field trips.

300-391 DENDROLOGY 2Q A W 3 (2-3) Prereq standing in the School of Forestry and C/1. The taxonomic relations and distribution of the principal forest and ornamental trees of the United States and Canada. Identification, uses, range, and silvical characteristics.
309 FORESTRY 1 Q 4 (3-0) Prereq 230. Principles and problems of organizing and directing personnel in executing private and public forest policies.

310 MECANICALLY DERIVED WOOD PRODUCTS 1 Q 3 (3-0) Prereq 350, 360. Principles and problems involved in the use of wood in the round, including design, grading, and drying operations on location.

311 ADVANCED WILDFIRE MANAGEMENT 1 Q W 5 (3-0) Prereq 309, Econ 201 and c/i. Range regions from an economic standpoint. Range value and c/i. Legislation and policies developed in the acquisition of federal, state and private range properties. Administration, organization and methods for regulation and development of range, wildlife and fishery resources. The application of statistical methods to forest mensuration; (301) Prediction and testing of forest tree seed; direct seeding; nursery practice; and (311) Application of silvicultural methods to planimetric and topographic mapping; (450) Collection of field data for a logging plan. Planimetry, mapping, and fire prevention techniques.
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 476 and c/i. May be taken concurrently with 470. 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, 370 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. Possible alternative uses of resources as a basis of choice in conservation planning. (56) 30 hr. per week. Staff of university specialists in fields involved. One month, 30 hr. per week. Staff of university specialists in fields involved.

490-481 RESOURCE MANAGEMENT AND CONSERVATION PLANNING 2Q W 4 (3-4) Prereq Econ 201-202-205, For 310, 360, 482 and c/i. (480) Methods of analyzing and planning the multiple uses of land and forest resources. The development of the economic, social, and political problems involved in integrating resource development. Possible alternative uses of resources as a basis of choice in conservation planning. (481) Emphasis on field work in working out problems of integrated resource management and developing conservation plans for selected forest types.

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

494 WATERSHED MANAGEMENT 1Q W 5 (5-0) 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, and sediment. The hydrologic cycle. The application of the principles of range, forest, and wildlife management to watersheds and their relationships to the control of soil erosion and water conservation.

495 FOREST METEOROLOGY 1Q W 4 (4-0) Prereq Physics 111, junior standing and c/i. 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 4 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.

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

530 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 accounting principles. One month, 30 hr. per week. Staff of university specialists in fields involved.

535 FOREST FIRE BEHAVIOR 1Q A 3 (3-0) 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.

542 WOOD RESIDUE UTILIZATION 1Q a/q 4 (2-3) Prereq 341, 440, 441, 451. Techniques for volumetric survey. Classification and product uses for various products with detailed emphasis on the type most pertinent to interests of student concerned.

543 WOOD RECONSTRUCTED BOARDS 1Q W 3 (1-8) Prereq 342, 440, 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.

550 ADVANCED RANGE MANAGEMENT 1Q a/q 3 Prereq 360 and 460. Analysis of range management problems by regions and forage types.

555 ADVANCED FOREST RECREATION 1Q A 5 (3-8) Prereq 350. 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.

591-592 RESEARCH METHODS 2Q W 3 Enter any quarter. Prereq at least one course in statistics or statistical elements and Public Health and Zoology.

595 WILDERNESS IN THE COMMUNITY 1Q A 3 (1-2) Prereq 360, 401. A course designed to enable students to work with people in the community concerning their relation to the environment and to their role in the environment. Emphasis is placed on the principles underlying improved management of the natural resources of the community through 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.

596 WILDLIFE SEMINAR 1Q A 2 Prereq senior standing in Wildlife, Forestry or Forestry. Legal problems, policy and administration 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.)

221 FOREIGN LITERATURES IN TRANSLATION. (See Foreign Languages.)
SUGGESTED CURRICULUM IN GEOGRAPHY

Freshman Year

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<td>ForL 101-102-103—Elementary French or German</td>
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<td>Geol 110—General Geology</td>
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<td>H&amp;PE 101-102-103—Physical Education</td>
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<td>ROTC 101-102-103—Military or Air Science</td>
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<td>Econ 201-202-203—Principles of Economics</td>
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<td>ForL 213—Intermediate French or German</td>
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<td>ForL 215—Advanced French or German</td>
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<td>Geol 101—Elements of Geography</td>
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Junior Year

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<td>Geog 305—Geography of Europe</td>
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<td>Geog 306—Climatology</td>
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<td>Geog 309—Cartography</td>
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Senior Year

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FOR UNDERGRADUATES

For explanation see Index under "Symbols"

101 ELEMENTS OF GEOGRAPHY 1Q A W S Su 5. Field, content and methodology of geography, with emphasis on the earth and planetary relations, maps, climate, landforms and population distribution.

111-112-113 ECONOMIC GEOGRAPHY 3Q A W S 2. Enter any quarter. 
(112) the significance, structure, and distribution of manufacturing industries; (113) service industries with an emphasis on trade and transportation. A review of economic regions.

201 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 102. Industries producing food and raw materials; (112) the significance, structure, and distribution of manufacturing

301 PHYSIOGRAPHY OF NORTH AMERICA 1Q A 3 Prereq 101, Geology 110, or =. The geomorphic regions of the continent, their topography, climate, soils, and vegetation.

303 GENERAL GEOGRAPHY 1Q Su 3. Description and analysis of basic relationships between a physical and human elements in geography. Not for geography majors.

305 GEOGRAPHY OF EUROPE 1Q A Su 3 Prereq 101 or =. The distribution and analysis of geographic features. Contemporary problems and developments.

310 GEOGRAPHY OF LATIN AMERICA 1Q A 3 Prereq 101 or =. The physical environment and economic developments.

312 GEOGRAPHY OF AFRICA 1Q A 3 e/y Prereq 101 or =. Regional differentiation and political and economic development of the whole continent.

315 GEOGRAPHY OF THE FAR EAST 1Q S 3 Prereq 101 or =. The lands and peoples of monsoon Asia interpreted as the basis of economic activities with special reference to population problems.

318 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 changing human adjustments in the Pacific Northwest.

331-332 POLITICAL GEOGRAPHY 2Q A W 3. (331) The physical and cultural features of a state in relation to problems of unity and diversity; (332) The nature and scope of geopolitics. A geopolitical analysis of the United States and selected states in Europe and Asia.

335 HUMAN GEOGRAPHY 1Q A 3. Human societies in their environmental setting. A comparative approach to man, space and resources.

345 URBAN GEOGRAPHY 1Q W 3 Prereq 101 or =. The growth, morphology and functions of towns and cities. Examination of the contemporary urban scene.

350 CLIMATOLOGY 1Q W 5 Prereq 101 or =. Elements and controls of weather and climate. Classification and distribution of climatic types.

370 LANDFORM ANALYSIS 1Q S 3 Prereq 101 or =. Topographic elements of the earth's surface with emphasis on processes of morphologic change.

371 PHYSICAL GEOGRAPHY OF ARID LANDS 1Q W 3 Prereq 101, Geology 110, or =. Landform development in the desert environment.

405 THE HISTORY OF GEOGRAPHY 1Q W 3 Prereq 12 credits in Geography or =. Geography from early Greek and Roman times to the close of the nineteenth century.

410 PROBLEMS IN GEOGRAPHY 1Q a/q V 1-2 R-R 12 credits in Geography.

450 SEMINAR IN GEOGRAPHY 1Q a/q V R-R 16 Prereq 16 credits in Geography including 101, or =.

FOR GRADUATES

500 MODERN GEOGRAPHIC THOUGHT 1Q S 3. The analysis of geographical concepts, approaches, and techniques developed in the twentieth century.

500 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 may be employed in geological investigation under actual working conditions. Such studies are accompanied by theoretical work as well as courses in other basic sciences.

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

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

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN GEOLOGY.** In addition to the general requirements for graduation listed earlier in the catalog the following requirements must be completed for the Geology curriculum: Geology 110, 120, 130, 200, 202-203, 311-312, 315, 320, 3 cr of 325, 330-331, 461. Also required are Mathematics 116, 117, 118; Chemistry 121-122-123; English 245; Physics 111-112-113 or 221-222-223; English 304; Geography 370; Zoology 104-105 or Mathematics 252-252. A foreign language, 23 credits in one language, or a reading knowledge, is required. French, German, Russian or Spanish is recommended.

Departmental requirements can be waived for students who at the end of any complete year have a B average in all college courses previously taken while pursuing a standard geology curriculum. A special geology curriculum may be devised for these students in consultation with their advisers. This will, for example, allow special curricula planned for special areas of interest as geochemistry or paleontology. This is applicable at the end of the freshman year and to transfer students, and can be revoked if the grade average falls below B.

**COMBINATION GEOLOGY AND LAW PROGRAM.** Students in this program all of the above requirements except Geology 350, 461; Math 117, 118; Physics 111-112-113 or 221-222-223; Zoology 104-105; English 245, and their course requirements 370, 203, 101-102 INTRODUCTION TO GEOLOGY 2Q A W S 101, W S 102: 5 (3-4). (101) Minerals, rocks, and structure of earth's crust; the dynamic processes, volcanism, diastrophism, and glaciation which shape the earth's landscape; (102) the origin of the earth and its development through geologic 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 glaciation which shape the earth's landscape. Credit not allowed for 110 and 101.

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

**130 FIELD METHODS** 1Q S 3 (1-3) Prereq 110, 120. 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. 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 exercises.

**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 (2-6) Prereq 312. Common rocks, their mineral composition and characteristics, classification, identification in the field, origin and structural features.

**320 FIELD GEOLOGY** 1Q Su 8 (5½ days per week for 6 weeks in the field) Prereq 120, 200, 215. Given by Indiana University Geography Department staff at their field station near Whitehall, Montana. 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 S Su 3 (2-3) 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 S only 3 (2-3) Prereq c/l. 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.

### CURRICULUM IN GEOLOGY

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50—HEALTH & PHYSICAL EDUCATION

308 INTRODUCTION TO VERTEBRATE PALEONTOLOGY 1Q 4 (2-4) Prereq 200 or =. Principles of vertebrate paleontology, vertebrate evolution; comparative laboratory examination of representative fish, amphibians, reptiles, mammals, and birds.

319 GEOMORPHOLOGY 1Q A 4 (3-3) Prereq 203, 220. Topographic features that comprise the landscape; their origin, development, and classification.

400-401 METALLIC MINERAL DEPOSITS 2Q A W 4 (2-2) Prereq 331, Physics 113 or 223, and Math 116. Use of polarizing microscope to identify minerals; application of microscopes to identification of mineral fragments and minerals in thin section.

405 NON-METALLIC MINERAL DEPOSITS 1Q S 4 o/y (3-2) Prereq 203, 315. Theoretical and practical aspects of nature, origin, classification and geologic environments of non-metallic mineral deposits.

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

420 OPTICAL MINERALOGY 1Q A 4 (2-6) Prereq 315, Physics 113 or 223, and Math 116. Use of polarizing microscopy to identify crystals; theory of optical phenomena observed with microscope; identification of mineral fragments and minerals in thin section.

425-426 PETEROGEOGRAPHY 2Q W S 4 (2-6) Prereq 315, 420. (425) Optical examination and identification in thin section of igneous minerals; use of polarizing microscope; (426) similar treat metallochemical and sedimentary rocks. Advanced petrologic considerations in both quarters.

427-428 GEOCHEMISTRY 2Q A W 3 (3-0) Prereq Chem 123, Math 253. (427) Fundamental chemical principles governing abundance, distribution, and migration of elements within the earth. (428) Principles of the application of chemical principles as it relates to formation and transformation of rocks.


442 PRINCIPLES OF SEDIMENTATION 1Q A 4 (2-3) Prereq 110, 315. Texture, structure and classification of sedimentary rocks with emphasis on environments of deposition; factors influencing texture of modern sediments; (442) principles of sedimentation; (443) principles of sedimentation.

450 PETROLOGY GEOL 1Q S 3 (3-0) o/y Prereq 331. Theories of origin of, stratigraphic and structural controls of occurrence; some of the problems associated with development.

440 INTRODUCTION TO GEOPHYSICS 1Q S 3 (3-0) Prereq Physics 113 or 223, Math 116 or 118. Fundamental concepts of geophysics; principles of geophysical methods, including gravity, magnetic, seismic, electric and radiometric; emphasis on the interrelationships of geophysical anomalies and geologic structure. Geophysical case histories.


451 GROUND WATER GEOLOGY 1Q S 4 (3-3) Prereq 203, 315. Physics 113. Geologic and hydrologic conditions controlling occurrence and distribution of ground water; emphasis on conditions in Montana and vicinity.

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

459 HISTORY OF GEOLOGY 1Q W 1 (2-0) Prereq 30 credits in Geology. Analysis of development of some of the fundamental concepts in geology. History of major branches of geology.

495-496-497 VERTEBRATE PALEONTOLOGY 3Q 495-496 W, 496 S, 4 (2-4) Prereq Zoology 201 or Geol 290 or =. (495) The lower vertebrates. Taxonomy, morphology, paleoecology, and geologic history of amphibians and primitive fishes. (496) Taxonomy, paleoecology and geologic history of fossil mammals o/y. (497) History and paleoecology of mammals and birds; emphasis on Rocky Mountain Cenozoic stratigraphy o/y.

FOR GRADUATES

500 ADVANCED SEDIMENTATION 1Q W 4 (3-3) Prereq 420. 430, 432. Composition and classification of sedimentary rocks with emphasis on environments of formation and tectonic history of grains using petrographic and other techniques.

501 CLAY MINERALOGY 1Q S 4 (3-3) Prereq Chem 123, Geol 315 and 445. Crystal structure and composition of clay minerals; ion exchange reactions, clay-water systems, chemistry of formation of clay minerals, identification of clay minerals by x-ray analysis, and chemical composition of clay minerals.

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

510 GEOTECTONICS 1Q S 3 o/y (3-0) Prereq 331. Analysis, synthesis of regional structural features including geology, tectonics, and geodynamic history of areas; appreciation of structural sequence; determination of deformation.

515 STRUCTURE OF MINERAL DEPOSITS 1Q S 3 o/y (3-0) Prereq 331, 400, 401. Classification of mineral deposits according to structural, chemical, and environmental characteristics; special reference to origin as related to tectonic control.

520-521 PETROGENESIS 2Q W S 3 o/y (3-0) Prereq 426 and 428. Advanced discussion of modern theories of origin of igneous and metamorphic rocks.

525 MICROSCOPIC DETERMINATION OF OPAQUE MINERALS 1Q S 3 o/y (2-0) Prereq 400, 401, 402. Identification of minerals in polished sections by physical and microscopic tests. Theoretical and practical study of mineral classification.

530 X-RAY CRYSTALLOGRAPHY 1Q W 3 o/y (3-2) Prereq 445. X-ray crystallography and structural determination of minerals by single crystals of Weissenberg and other methods.

590 SEMINAR a/q V Prereq graduate study in geology or comparable training in cognitive areas and o/y.

599 ADVANCED PROBLEMS a/q V. Investigations of geologic problems, including theses research. Advanced discussion of modern theories of origin of igneous and metamorphic rocks.

599 THESIS a/q V. Directed research to serve as thesis for graduate degrees.

HEALTH AND PHYSICAL EDUCATION

50—HEALTH & PHYSICAL EDUCATION deals primarily with muscular activity and recreation to provide the individual with wholesome psycho-motor and organic development, with fitness for daily living, and with resources for universal civilization. The program provides (1) instruction in a wide variety of sports and recreation skills, (2) opportunity for student groups to organize teams and to participate in formal and informal competition in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, track and field, softball and volleyball, and (3) preparation for professional careers in the various fields related to physical education and recreation.

A student may earn either a Bachelor of Arts degree or a Bachelor of Science degree with a major in this field. The Master of Arts and the Master of Science degrees are also offered.

Theory courses include structure and function of the human body, basic principles and teaching procedures, history and philosophy, and planning and administration of programs. Professional activities include training in team sports, teaching team games, individual and dual sports, gymnastics and tumbling, aquatics, and forms of the dance. Students interested in physical therapy and orthopedic rehabilitation may include courses in physical therapy to relate knowledge and skills, (1) instruction in a wide variety of sports and recreation skills, (2) opportunity for student groups to organize teams and to participate in formal and informal competition in such activities as archery, badminton, basketball, bowling, golf, horseshoes, skiing, swimming, tennis, track and field, softball and volleyball, and (3) preparation for professional careers in the various fields related to physical education and recreation.

Many graduates enter the teaching profession. Some choose to continue graduate studies with specialization in physical therapy or recreation therapy. Others become field directors for the American Red Cross in the areas of first aid, life saving and water safety. Many elect careers in leadership positions in youth-serving organizations, in playground and recreation centers, in summer camps, in the armed forces, in industrial recreation, and in recreation in hospitals and rehabilitation centers.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN HEALTH AND PHYSICAL EDUCATION. Two degrees are offered in this Department: Bachelor of Arts, which requires that the foreign language requirement listed earlier in the catalog be satisfied, and Bachelor of Science, which requires no courses in a foreign language. Students electing the Bachelor of Science degree will offer the following courses: Home Economics 246, Psychology 220, Speech 111, Microbiology 105, and 8-0 credits selected from two of the following areas: Sociology Anthropology, General 151-152-153. Requirements for both degrees are identical in all other aspects.
### CURRICULUM IN HEALTH AND PHYSICAL EDUCATION

For Bachelor of Science Degree

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### FOR UNDERGRADUATES

For explanation see Index under "Symbols"
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 outings and facilities; 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 giving first aid. Prereq: successful completion of requirements, providing a student has reached the 20th birthday.

337 THE ELEMENTARY SCHOOL PHYSICAL EDUCATION PROGRAM 1Q W 3 Su S 3 Prereq: 196 and 333. Theory and practice in selecting and presenting activities for different age levels; characteristics of growth and development related to course content. Credit not allowed for this and 338.

339 TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOLS 1Q A S Su 3 Prereq: major in elementary education and either 302 or teaching experience. Principles and foundations of educational school physical education; theory and practice in selecting and teaching activities for children in grades one through eight, with special attention given to children of the grade school teacher. Credit not allowed for this and 337.

336 CURRICULUM CONSTRUCTION 1Q W 4 Prereq: 337. Classification and analysis of physical education activities; criteria for selecting activities; construction of programs for specific situations.

374 PROBLEMS IN PHYSICAL EDUCATION 1Q on demand 4 R-4 Prereq: = of a teaching minor in physical education. Class and departmental requirements and student activities. Recitation in competition, intramurals, GRA's, teaching of sex hygiene, recreation, facilities, program progression, and supervision. Individual projects.

359 SURVEY OF PROFESSIONAL LITERATURE 1Q Su 2 Prereq: 336. A teaching major in physical education. Recent publications in physical education and related fields; survey and evaluation.

373 SCHOOL HEALTH PROBLEMS 1Q W S 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 u/y. The physiological effects of the different types of exercise on the functions of the human body.

330 APPLIED ANATOMY 1Q W S 3 Su o/y. The bones, muscles and joints of the body. Bodily movements and joint mechanics. The action of muscles in relation to physical education and activities of daily life.

385 KINESIOLOGY 1Q W S 5, Su o/y Prereq: 380. Advanced study of muscle action and joint mechanics of the body.

395 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. Emphasis on the follow-up program of remedial education.

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

399 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.

460 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.

468 TESTING IN PHYSICAL EDUCATION 1Q A 3, Su e/y. Orientation to testing and measuring, administrative use of tests, elementary statistical techniques and procedures.

469 SUPERVISION IN PHYSICAL EDUCATION 1Q Su 4 Prereq: 386 or =. Roles and responsibilities of supervisors in exerting effective leadership.


FOR GRADUATES

501 RESEARCH 1Q 2 R-4. Scientific methods in Health, Physical Education and Recreation. Practice in employing research techniques in planning and developing individual projects.

505 ADVANCED TESTS AND MEASUREMENTS 1Q W 4, Su o/y Prereq: 465 or =. Specific tests for evaluation of organic, neuro­muscular, psychological, physiological, and educational results in construction and application of tests, and interpretation of results.

690 THESIS a/q V R-15.

HISTORY as taught at Montana State University is a study of man's past activities with the hope that lessons may be learned which will be applicable in solving problems of the present era. For the student who is in search of a broad basis of education rather than training for some particular occupation, this department offers a program of instruction calculated to provide knowledge and understanding of the back­grounds and the possibilities of present national and world situations.

Courses are offered in European, American, Far Eastern, Canadian, and Latin-American History. Many students combine the fields of History and Political Science.

The department offers the Master of Arts degree in History involving the completion of an acceptable thesis based on original research. Admission to graduate work requires an acceptable academic record as well as the equivalent of an undergraduate major in history.

Occupationally this department helps to prepare men and women for either the domestic or the foreign service of the federal government and for positions in state and local government. It not only provides teachers, lawyers, journalists, and businessmen with 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 this catalog, all 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 30 credits from courses numbered 401-499, including History 491 or 492. Only 2 credits in 491 or 492 will count in fulfilling the minimum of 20 credits required for the Bachelor of Arts degree with a major in History. 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 and including courses History 491 or 492, or Political Science 491 will count in fulfilling the minimum of 20 credits required 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, 304-305, 331, 333 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 History and Political Science the 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 do not generally propose a joint program than is ordinarily required from Departmental majors. The student must satisfy as many positive requirements for graduation as is possible during his freshman year. As a sophomore, he will be expected to register for
for History 241, 242 and 243, 251, 252 and 253, and Political Science. 202, 203 leaving free approximately seven hours per quarter for the completion of required work. Prereq 101, 102, 207, 208 and 211. Also for History, the student will select a minimum of 31 hours from the offerings of the Department with Political Science 332 and 333, 361 and 362, and 365 and also History 366, 367, 368. Electives are recommended courses. In lieu of or in addition to the above, electives may be chosen from Economics 304, 305, History 306, 370, and Political Science 391, 393, 395, 378, 387, 388, 396, depending on the student's preparation and objectives.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

HISTORY—53


207-208 MEDIEVAL EUROPE 2Q A W 3. Enter either quarter. (207) The political, economic, social and religious development of Europe from the third century to the eleventh century. (208) A unified account of the history of Europe from the early Middle Ages to the First World War.


251-252-253 UNITED STATES HISTORY 3Q A W Su 4. Enter any quarter. (251) United States History, 1600-1815. Colonial beginning and growth; Revolution and development of the Constitution; early political development; the War of 1812. (252) United States History 1815-1890. The new nationalism; sectionalism; Civil War and reconstruction; Agriculture, industry and immigration. (253) United States History 1890-present. Capitalism and contemporary changes; Progressive Movement; World War I; the Depression and the New Deal; World War II.

255-256-257 HISPANIC-AMERICAN HISTORY 3Q A W Su 4. Enter any quarter. (255) The European background; the political and economic development of Latin America from the Incan and Mayan empires to the rise of modern Latin American states. (256) The Spanish and Portuguese colonies; the revolution of independence and the foundation of present day Latin American states. (257) The development of Latin American States in the 19th and 20th centuries.

FOR UNDERGRADUATES AND GRADUATES

303 HISTORY OF ANCIENT GREECE 1Q A 4 Prereq 101 or 102. (303) An introductory survey of the ancient Near Eastern Empires, and a study of Greek civilization and Hellenistic culture. The Republic, the Principate and the Empire.

305 HISTORY OF ANCIENT ROME 1Q W 4 Prereq 101 or 102. Early Etruscan civilization; Rome as part of Hellenistic culture. The Latin, the Roman Republic, the rise of Rome.

306 MEDIEVAL CIVILIZATION 1Q S 3 Prereq 101, 207-208 or = . Institutional, social and cultural progress in the Middle Ages.

311 THE AGE OF ABSOLUTISM 1Q W 3 Prereq 102. The political, economic and social development of Europe from 1600 until the outbreak of the French Revolution.

314 FRENCH REVOLUTION AND NAPOLEONIC ERA 1Q S 4, Su 3 Prereq 102 or 211 or = . Political, economic and social development in France and the international reactions to the revolution.

318 THE EARLY 20TH CENTURY (1900-1925) 3Q S 1 Prereq 243. A college course in modern European history. Internal development of Britain and of the continental powers. International rivalry prior to World War I; its causes and its results. The growth of the United States.

319 CONTEMPORARY EUROPEAN HISTORY 1Q S 4 Prereq 3 S 4. A college course in modern European history. The internal affairs and the external relationships of the principal European states since 1914.


324-325-326 HISTORY OF RUSSIA 3Q A W S Su 4. Prereq a college course in modern European history. Internal development of Russia and of the other states of the former Soviet Union. By beginnings of Russia to 1850. (325) Russia since 1850. (326) Russia since 1900. Revolution of 1905. Russia in World War I. The Revolutions of 1917. The Soviet Russian Republic after World War II.

328 MODERN FRANCE AND SPAIN 4Q S 4 Prereq 102 or 314. The political, economic and social development of France and Spain from the beginning of the 19th century to the present. Some attention will be paid to cultural, religious and intellectual trends.


333 ECONOMIC HISTORY OF EUROPE 1Q A Su 4. The economic development of Europe from the early Middle Ages to the present time.

334 MODERN WAR AND WESTERN SOCIETY 1Q S 3 Prereq 304. An introduction to problems of strategy, and on theories of war.


336 HISTORY OF CANADA 1Q A 4, Su 3 Prereq 102, 241, or 251. A unified account of the history of Canada to the present time with emphasis on the economic, social and political economic and political relations; the growth of the Canadian West.

345-346 ENGLISH CONSTITUTIONAL HISTORY 2Q A W 3 Prereq 102. (345) English institutional development to the end of the Middle Ages. (346) English institutional development since the Middle Ages.

349 ECONOMIC HISTORY OF ENGLAND 1Q A 4 Prereq 102-104. The economic and social background and development of modern England; the growth of England.

355 AMERICAN COLONIAL HISTORY 1Q W 4 Prereq 242 or 251. Discovery and settlement; development of colonial society; government in the colonies and in England; Anglo-French rivalry in America; the British colonial system and colonial administration.

355 THE AMERICAN REVOLUTION 1Q S 3 Prereq 242 or 251. Causes and development of the American Revolution; the Declaration of Independence; the organization of governments; the Confederation period, western lands, finance, commerce; the Constitutional convention.

357 THE AGE OF JEFFERSON 1Q A 4 Prereq 251. The early national period concentrating on the ideas, development, and significance of the Federalists and Jeffersonians.

358 THE AGE OF JACKSON 1Q W Su 3 Prereq 252. American history, 1815 to 1840, emphasizing the growth, significance and decline of Jacksonian democracy.

359 RECENT AMERICAN HISTORY 1Q S 4 Prereq 242 two quarters of United States history. The international affairs and external relationships of the United States in the 20th century.

360-361-362 SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES 3Q A 4 Prereq 253. The origin and growth of the constitution, of American culture in the light of some leading social, religious, literary, and philosophical ideals; (361) continuation of 360; (362) continuation of 361.

365 NORTH AMERICAN FRONTIERS 1Q A 3 Prereq 251-252. From the first settlements on the continent to the end of the 19th century. Emphasis is placed on the political, economic, and social factors and the interplay between the frontier and the older regions of the United States and Europe.

367-368 HISTORY OF THE NORTHWEST 2Q W 3. Enter either quarter. Prereq 234 or 251. The location and evaluation of historic sites in Montana and the Northwest. Field trips under the joint supervision of archaeologists and historians.

369 MONTANA HISTORY 1Q A 3 Prereq 253. A continuation of 368.


371-372 DIPLOMATIC HISTORY OF THE UNITED STATES 2Q S 4 Prereq 254-255-256. The diplomatic history of the United States with emphasis on the role of the Supreme Court in United States history.


381-382 THE FAR EAST 2Q A W Su 4. Enter either quarter. Prereq 5 cr. in history. (381) Development of the social, economic and political conditions of China, Japan, and Korea, from 1776 to 1914. (382) Continuation of 381 to the present with some stress on political developments in the Far East.

385 PROBLEMS IN HISTORY 1Q a/v W 2-4 R-9. In Hist 381. Prereq 25 or 261-262-263. An introduction to the problems and methods of history with emphasis on the use of primary sources.

390-391 SPECIAL STUDIES IN HISTORY a/v R-4. Offered by different instructors under various titles.

401 EUROPEAN HISTORICAL THOUGHT 1Q A Su 2 Prereq 25 cr in History. The contributions of leading 19th-century European historians to the development of modern historical analysis and interpretation.
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 80 credits in Home Economics selected as follows:

- Required for all majors: Home Economics 102, 141, 155, 157, 210, 242, 246, 302, 303, 310, 311 and 366.
- The following courses are required according to the area of interest selected by the student.

1. GENERAL: Home Economics 258 or 256, 398 and 367.

2. TEACHING: Home Economics 258 or 256, 398, 344, 369; Education 200, 205, 260, 407; 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

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<th>Freshman Year</th>
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<td>Engl 101-102-103</td>
<td>H E 210—Household Equipment 3</td>
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<tr>
<td>Chem 101-102-160</td>
<td>H E 242—Meal Management 3</td>
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<td>H. Ec. 141, 102, Psych 110</td>
<td>H E 258—Clothing For the Family 3</td>
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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 168, Econ 201 and Business Ad 201.

FOR UNDERGRADUATES

For explanation see Index under "Symbols"
JOURNALISM is a broad study of the various media of communication, with emphasis on the history, privileges, obligations and responsibilities of the media; methods by which events and ideas are transmitted, and their effects on readers and listeners. It includes instruction in the techniques for professional careers in newspaper work, radio and television, magazines and books, advertising and photography, public relations and promotion, free lance writing, and related fields. Approximately one-fourth of the academic work for a bachelor of arts degree in Journalism will be in the School of Journalism. The other three-fourths of the total credits required for graduation will provide a background in the liberal arts, with emphasis on history, government, economics, philosophy, literature, foreign languages, psychology, and sociology.

The degree of Master of Arts in Journalism also is offered (see Graduate School). Undergraduates specialize in a field which may be news-editorial, radio-television, community newspapers, advertising, or magazines. They receive training in reporting, copy editing, advertising, and the history and layout 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.

For explanation see Index under "Symbols"

199 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.

200 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.

201 INTRODUCTION TO RADIO AND TELEVISION 1Q W S 3. Open to non-majors. History, organization, economics, social and legal aspects. Theory of radio and television as media of mass communication.

202 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 production of film and prints.

203 STUDIO OPERATIONS 1Q A 1 (1-2) Open to non-majors. Operation of broadcasting and recording equipment. Production of programs.

204 RADIO-TELEVISION CONTINUITY 1Q S 3 Prereq 140 and Eng 201. The techniques of writing for radio and television. Writing programs for broadcasting.

270 REPORTING 1Q A W S 3. Open to non-majors. Groundwork in gathering, writing and evaluating news.
290 HISTORY AND PRINCIPLES OF JOURNALISM 1Q S 3. Open to non-majors. American Journalism from colonial times against a background of U. S. history with attention to the struggle for freedom of expression.

297 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.

323 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 3 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 promoting public relations.


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.

350 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.

360 ADVERTISING MEDIA 1Q W 3 Prereq 360. Open to non-majors. Evaluation of advertising media; rate structures and preparation of advertising and schedules.

361 ADVERTISING SALES 1Q A W S 2 Prereq 360 or concurrent registration. Preparation, promotion, and sales of advertising. Lecture and newspaper work.

362 ADVERTISING LAYOUT AND COPY 1Q A W S 3 Prereq 360. Open to non-majors. Application of typographical and advertising principles to preparation of layouts and copy.

364 RETAIL STORE ADVERTISING IQ 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.

376 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.

391 ADVANCED NEWS EDITING 1Q A W S 2 Prereq 380. 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 advisors 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, parents, and the community. For school administrators and teachers.

390 PUBLIC OPINION 1Q A W S 3. Open to non-majors. Theories of public opinion, factors involved in its formation, and methods of 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.

398 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.

441-443 RADIO-TELEVISION PRODUCTION AND DIREC- TION 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.

491-493 SENIOR SEMINAR 3Q A W S 3 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 information 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 research and analysis of communications.

601 RESEARCH IN JOURNALISM 1-3Q A W S Su V Prereq consent of the dean.

699 THESIS a/g 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 September Registration of Upperclass Law Students

Fall Semester Classes begin at 8:00 a.m.

November 21-22, Wed. 2:00 p.m. through Sunday Thanksgiving holiday

December 22, Saturday Christmas vacation begins after last class January 17, Tuesday Registration

January 18-19, Wednesday through Saturday Pre-registration

January 20-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 16 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 any period of law study, will be automatically dropped from the Law School. (2) Weighted Average: A student otherwise eligible to continue, who has obtained an index of 1.5 or less at the end of his first two semesters of law study in all law courses for which he has registered and received a grade, will be placed on probation. 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, or who is not otherwise qualified to continue, who has obtained 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 (LL.B.) must: (1) be graduates of an approved college or university; (2) complete six semesters in residence at an approved law school, the last two of which must be at Montana State University; (3) complete ninety semester hours of law school work; (4) complete the following required courses: all courses taught in the first and second years at an approved law school. 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 high scholastic average and is exceptionally qualified to pursue the study of Law.

The Law School Admission Test is required of all applicants for admission to the Law School. It should be taken during the year preceding the one for which admission is sought. Information concerning the Test and application forms may be obtained from the School of Law or from the Educational Testing Service, P.O. Box 592, Princeton, New Jersey.

A number of combination programs have been formulated by the Law School in cooperation with various departments of the University. These include Accountancy and Law, Business Administration and Law, Economics and Law, History and Political Science and Law, and Philosophy and Law. Combination programs in other departments, if duly authorized, will be recognized. Students enrolled in approved combination programs receive an undergraduate degree in the area in which the combination was undertaken: (b) a verified questionnaire, on a form prescribed by the Law School, dealing with the moral character and fitness of the applicant as a prospective member of the legal profession, and (c) a report of his grade on the Law School Admission Test.

ADMISSION TO ADVANCED STANDING: Applicants for admission to the Law School with advanced standing shall satisfy the requirements for admission to the Law School and show: (1) that the law work previously undertaken is approved by the Law School; (2) the average in all law work for which the student has registered and received a grade is equivalent to that required for graduation from an approved law school; (3) that the student is in good standing and eligible to continue in the law school previously attended; (4) that the student is not otherwise qualified to continue in his Law School under the policies specified herein. An applicant is not likely to be admitted unless he has a very high scholastic average and has completed a law course previously taken and is exceptionally qualified to pursue the study of law.

COVERS

LAW—57


ESTATE PLANNING I & II 2 Sem A S 3. Materials to be announced.


INTRODUCTION TO LAW I & II 2 Sem A S S. Continuous. Casebook to be announced.


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. Forsland, 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. Mimeographed materials of instructor.


REMEDIES 1 Sem S 3. Wright, Cases on Remedies.


TRADE REGULATIONS 1 Sem A 2. Handler, Cases on Trade and Regulation.

WATER LAW 1 Sem S 2. Mimeographed 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.

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 Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition 101-102-103</td>
<td>9</td>
</tr>
<tr>
<td>Group 1 (Lab. sciences and mathematics recommended)</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Military Science (men)</td>
<td>6-9</td>
</tr>
<tr>
<td>Major Requirements (Courses under 300)</td>
<td>9</td>
</tr>
<tr>
<td>1. Art 231-232-233</td>
<td></td>
</tr>
<tr>
<td>2. Economics, Psychology, Sociology, Anthropology</td>
<td></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 231-222-223 recommended)</td>
<td>20</td>
</tr>
<tr>
<td>6. Philosophy</td>
<td>12</td>
</tr>
</tbody>
</table>

**Major Requirements (Courses 300 and above)**

In two of the following three fields, the student elects upper division courses equal to the number of credits indicated for those fields:

1. Economics, Psychology, Sociology, Anthropology
2. History and Political Science
3. Literature or Philosophy

**Free Electives**

-7-10-17-24

**Total**

**186**

---

**LIBRARY SERVICE** courses are designed to prepare students for professional work in small and medium sized public and college libraries. Students preparing for school library work should work toward a major in the School of Education with a minor in library service. Students preparing for public or college library work should register for the four-year program leading to the degree of Bachelor of Arts with a major in library service.

This program is so planned that the student is given basic preparation for admission to a graduate library school if he wishes to prepare for work in larger libraries. The course outlined here is primarily designed to meet the needs of Montana for trained librarians, but will also prepare the student for library work in similar libraries in the Northwest and other areas.

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 Title</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—Survey of Western Civilization</td>
<td>15</td>
</tr>
<tr>
<td>French or German 101, 102, 103—Elementary French or German</td>
<td>15</td>
</tr>
<tr>
<td>Psych 110—Introduction to Psychology</td>
<td>5</td>
</tr>
<tr>
<td>Health &amp; PE 101, 102, 103</td>
<td>3</td>
</tr>
<tr>
<td>ROTC 101, 102, 103</td>
<td>4-4</td>
</tr>
<tr>
<td>Total</td>
<td>49 or 51</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course Title</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 211, 212—Intermediate and Advanced</td>
<td>8</td>
</tr>
<tr>
<td>History 232, 233—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 201-202-203—Principles of Economics</td>
<td>9</td>
</tr>
<tr>
<td>Group II 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>
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</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 233, 234, 235—Intro to Major American Writers</td>
<td>6</td>
</tr>
<tr>
<td>Political Science 101—Intro to Government</td>
<td>5</td>
</tr>
<tr>
<td>Speech 111—Principles of Speech</td>
<td>4</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 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 IV Requirements</td>
<td></td>
</tr>
<tr>
<td>Electives (selected from upper division courses)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

**Total**

**51**
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. 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 effective teaching in colleges and universities, Industry and government make increasing use of skilled mathematicians. Such positions may involve work ranging from elementary computation to highly complicated statistical procedures and research.

Modern high speed computing devices, instead of replacing mathematicians, have increased their usefulness. Graduates find a growing range of occupations open to them—in engineering, the sciences, economics, or business. They may teach in high schools or with further training, in colleges and universities. Industry and government make increasing use of skilled mathematicians. Such positions may involve work ranging from elementary computation to highly complicated statistical procedures and research.

For explanation see Index under "Symbols".

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 inequalities, 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 a 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 112 and 113 or exemptions by examination. (Credit not allowed toward a degree in mathematics.) Elementary analytic geometry, function, limit, derivative, differentiation of algebraic functions, applications.

125 STATISTICS 1Q A W S Su 5 Prereq 100 or 112 or satisfactory performance in an examination in intermediate algebra.

130 THEORY OF ARITHMETIC 1Q A W S 5 Prereq Math 100 or exemption by examination. The mathematical meaning and background of arithmetic. (Credit not allowed toward a degree in mathematics.)

251 CALCULUS I 1Q A W S Su 5 Prereq 118 or 153. Applications of the derivative; transcendental functions and their derivatives; integration.

252 CALCULUS II 1Q W 5 Prereq 251. Integration techniques; further applications of the derivative and the integral; mathematical induction.

253 CALCULUS III 1Q S 5 Prereq 252. Solid analytic geometry; partial derivatives; multiple integrals; infinite series.

FOR UNDERGRADUATES AND GRADUATES

300 ALGEBRA FOR TEACHERS 1Q W S 5 Alternate years Prereq 222 or 251 or concurrent registration. The processes of elementary algebra and arithmetic considered from a mature point of view for the teacher of high school algebra.

302-303 STATISTICAL METHODS 2Q A W S 3/4 Prereq 125. Principally intended for those who wish to apply 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 5 Alternate years Prereq c/i. The subject matter of high school geometry compared with that of other geometries.

305 TOPICS IN MATHEMATICS Su V Prereq 1 year experience in teaching high school mathematics. The main purpose of this course is to help high school teachers improve their background in mathematics. Content varied to meet the needs of the student. Not allowed towards a major in Mathematics.

306 HISTORY OF MATHEMATICS 1Q S 4 Prereq 15 credits in Mathematics and c/i.

306-310 ADVANCED CALCULUS 2Q A W 3 Prereq 254 or 258. (306) Sequences of real numbers, continuous functions; partial derivatives. (310) Riemann integrals; series of functions; power series; line integrals.


314 LINEAR GROUPS 1Q S 3 Prereq 312.

318 MODERN ALGEBRA 1Q S 5 Prereq 15 credits in 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. (Intended primarily for those enrolled in NSF Institute. A limited number of other students may enroll by special permission.)

320 SYNTHETIC PROJECTIVE GEOMETRY 1q given on demand 3 Prereq 251. Projective transformations and projective invariants; conics; geometric construction of fields; applications to metric geometry.

322 ANALYTIC PROJECTIVE GEOMETRY 1q given on demand 3 Prereq 311. Projective transformations, projective invariants, and conics by means of coordinate systems.

324 ELEMENTARY NUMBER THEORY 1q given on demand 3 Prereq at least 20 or in Math with a grade of C- or better.

327 FOUNDATIONS OF GEOMETRY 2Q S 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.)
MEDICAL TECHNOLOGY

is a combined study of chemistry, physics, physiology and microbiology. A medical technologist is one who, by education and training, is capable of performing, under the supervision of a pathologist or other qualified physician, the various chemical, microscopic, bacteriologic, and other medical laboratory procedures used in the diagnosis, study and treatment of disease. Four years are required to earn the degree of Bachelor of Science in Medical Technology.

The first two years are devoted to the development of a sound foundation in physics, chemistry and biology and in obtaining an understanding of social science and cultural subjects. The last two years are designed to develop efficiency in the fields of microbiology and clinical methods.

To be certified by the Board of Registry, a student after satisfying the minimum course requirements, must have an internship of at least 12 consecutive months in an approved school of Medical Technology endorsed by the American Medical Association. Schools of Medical Technology are located in every state in the Union, the District of Columbia, Puerto Rico and the Canal Zone. After successful completion of the internship, the student receives a diploma from the Board of Registry, certifying his qualification as a medical technologist. Although this Certification is desirable, persons receiving the B.S. in Medical Technology are qualified bacteriologists and can obtain positions in many laboratories as technicians. Medical Technologists are in demand in hospital laboratories, in physicians' offices, research institutions, and in federal and state health departments.

Most medical technology schools require at least 3 years of college work and one year of hospital practice. The curriculum in this department has been arranged so as to allow the student to complete all course requirements during the first three years. It is possible then to take three years of college work and 12 months of hospital practice to be certified by the Board of Registry as a Medical Technologist.

Two options leading to a Bachelor of Science degree in Medical Technology are offered in the Department of 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 3½ years of academic studies at the University and 12 months of hospital practice. Option I has a decisive advantage in giving the student a broader preparation for Medical Technology and a more balanced liberal education.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MEDICAL TECHNOLOGY: In addition to the general requirements listed earlier in the catalog, the following courses are required for the Bachelor of Science in Medical Technology: Microbiology 200, 302, 310; Physics 111, 112, 113; Zoology 104, 105, 202, Chemistry 121, 122, 123, 245, 361, 362; Math 116. A minimum total of 45 credits from Microbiology courses listed above and from the following courses is required: Microbiology 305, 320, 330, 341, 401, 402, 403, 404, 405, 406, 407, 408, 410, 420, 430; Zoology 303, 365, 369, 341, 340; 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

<table>
<thead>
<tr>
<th>Freshman Year</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>Eng 101-102-103—Freshman Composition</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;PE 101-102—Freshman Phys Ed</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ROTC 101-102—Military or Air Science (Men)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>16-18</td>
<td>16-18</td>
<td>16-18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 200—General Bacteriology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 261—Organic Chemistry</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 201—Comp. Vert. Anatomy</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bio 111—General Zoology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>16-18</td>
<td>16-18</td>
<td>16-18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 302—Medical Microbiology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Micro 310—Immunology and Serology</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Micro 401—Hematology</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>H&amp;PE 201-202—Military or Air Science (Men)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>16-18</td>
<td>16-18</td>
<td>16-18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microb 401—Clinical Diagnosis</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>16-16</td>
<td>16-16</td>
<td>16-16</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Option II</th>
<th>Freshman and Sophomore years same as Option I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</td>
<td>A</td>
</tr>
<tr>
<td>Microb 302—Medical Microbiology</td>
<td>5</td>
</tr>
<tr>
<td>Micro 310—Immunology and Serology</td>
<td>4</td>
</tr>
<tr>
<td>Micro 401—Clinical Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>Zool 202—Human Physiology</td>
<td>9</td>
</tr>
<tr>
<td>Elective</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>16-16</td>
</tr>
</tbody>
</table>
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 the equivalent of not more than 30 credit hours towards his B.S. degree for the successful completion of the hospital practice.

**MICROBIOLOGY AND PUBLIC HEALTH**

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 graduate curriculum may lead to the Master of Arts, 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 studies in this department. (For general requirements of all graduate students, see Graduate School.)

**HIGH SCHOOL PREPARATION.** In addition to the general requirements for admission to the University, it is recommended that high school preparation include Algebra, Geometry, Trigonometry, Chemistry, Physics and a foreign language.

**SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN MICROBIOLOGY.** In addition to the general requirements for graduation listed earlier in the catalog, the following courses must be completed for the Bachelor of Arts degree in Microbiology: Microbiology 200, 302, 310, 405; Zoology 104-105 or Botany 121-122; Chemistry 121-122-123, 245, 261-262; Physics 111-112-113; Math 116-117.

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, 330, 341, 402, 403, 404, 405, 410, 415, 420, and 430; Zoology 203, 206; Botany 225, 228, 235, 239, 275; 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

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
</table>
| Chem 121-122-123—College Chemistry___________ | 5 | 5 | Cr
| Zool 104-105—Elem Zool or Bot 121-122—Gen Bot___________ | 6 | 6 | Cr
| Eng 101-102-103—Freshman Composition________ | 3 | 3 | 3
| Math 116________ | 2 | 2 | 2
| Electives________ | 0 | 0 | 0
| Total________ | 16-18 | 16 | 17-19

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
</table>
| Phys 111-112-113—General Physics________ | 5 | 5 | 5
| Chem 261-262—Organic Chemistry________ | 5 | 5 | 5
| Chem 245—Quantitative Analysis________ | 5 | 5 | 5
| Microbiology 200—General Microbiology________ | 5 | 5 | 5
| Electives________ | 2 | 2 | 2
| Total________ | 16-18 | 16 | 15-17

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
</table>
| Micro 316—Immunology and Serology________ | 5 | 5 | 5
| Micro 326—Medical Microbiology________ | 5 | 5 | 5
| Foreign Language________ | 5 | 5 | 10
| Electives________ | 5 | 15 | 15

### FOR UNDERGRADUATES

**FOR GRADUATES**

**FOR UNDERGRADUATES**

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>A</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
</table>
| Electives________ | 15 | 15 | 15
| Total________ | 16 | 16 | 16

**FOR GRADUATES**

500 ADVANCED TOPICS IN MICROBIOLOGY 1Q On demand 2 (2-0). Critical analysis of research papers in certain areas of microbiology and presentation of this material. Occasionally, a graduate student will be asked to present experimental data from his own research.
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

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, spicuous achievement in music, promise of development, and in scholarships 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 for graduation listed earlier in the catalog, the following special requirements must be completed:

1. All candidates for the Bachelor of Music degree must select academic electives so as to complete a minimum of 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 140-142. 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

<table>
<thead>
<tr>
<th></th>
<th>Non-Music Majors</th>
<th>Music Majors</th>
</tr>
</thead>
<tbody>
<tr>
<td>One half-hour lesson per week</td>
<td>$12.00</td>
<td>$12.00</td>
</tr>
<tr>
<td>Two half-hour lessons per week</td>
<td>24.00</td>
<td></td>
</tr>
<tr>
<td>Three half-hour lessons per week</td>
<td>36.00</td>
<td></td>
</tr>
</tbody>
</table>

RENTALS, PER QUARTER

Practice room without piano, one hour daily $2.00
Additional hour daily 1.00
Piano and practice room, one hour daily 3.00
Additional hour daily 2.00
Organ and practice room, one hour daily 4.00
Additional hour daily 6.00
Additional hour daily for Wind and string instruments *Music 114, 115, 116, (Piano in Class) *Music 125, 126, 127, or 129 (Strings in Winds Class) *Music 135, 136, 137 (Introduction to Music Literature) *English 101-102-103 *Health & Physical Educ. 101-102-103 R.O.T.C. 101-102-103 (Men) 2.00 or 0.02

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 exposure to music, Montana State University offers three major courses, each leading to the degree of Bachelor of Music with a major in Music Education.

Students desiring of teaching and directing both vocal and instrumental music may enroll for the General 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 Curriculum).

GENERAL SUPERVISOR MAJOR

<table>
<thead>
<tr>
<th></th>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 101, 102, 103 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 106-110 (Organization)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 111-112-113 (Theory I)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 131, 132, 133 (Sight Singing, Keyboard, and Dictation)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 114, 115, 116, (Piano in Class)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 125, 126, 127, or 129 (Strings in Winds Class)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 135, 136, 137 (Introduction to Music Literature)</td>
<td>2.2.</td>
</tr>
<tr>
<td>English 101-102-103</td>
<td>3.5.3.</td>
</tr>
<tr>
<td>R.O.T.C. 101-102-103 (Men)</td>
<td>2.02 or 0.02</td>
</tr>
</tbody>
</table>

B. SOPHOMORE YEAR:

<table>
<thead>
<tr>
<th></th>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 201, 202, 203 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 106-110 (Organization)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 214, 215, 216 (History of Music)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 237, 238, 239 (Sight Singing, Keyboard, and Dictation)</td>
<td>2.2.</td>
</tr>
<tr>
<td>Music 211, 212, 217 (Piano in Class)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 117, 118, 119 (Voice in Class)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 231, 232, 233 (Conducting)</td>
<td>2.3.5.</td>
</tr>
<tr>
<td>Electives (Non-Music) including Psych 110</td>
<td>3.1.</td>
</tr>
<tr>
<td>R.O.T.C. 201-202-203 (Men)</td>
<td>2.2. or 0.02</td>
</tr>
</tbody>
</table>

C. JUNIOR YEAR:

<table>
<thead>
<tr>
<th></th>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 301, 302, 303 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 106-110 (Organization)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music or Educ. 324, 325, 331 (School Music)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 125, 126, 127, or 129 (Strings in Winds Class)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Education 220, 202, 305</td>
<td>2.4.</td>
</tr>
<tr>
<td>Electives (Non-Music)</td>
<td>0.6.</td>
</tr>
</tbody>
</table>

D. SENIOR YEAR:

<table>
<thead>
<tr>
<th></th>
<th>Credits per Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 401, 402, 403 (Applied)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 106-113 (Organization)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Music 434, 435, 436 (History of Music)</td>
<td>2.2.</td>
</tr>
<tr>
<td>Music 320, 320, 331 (Orchestration)</td>
<td>2.2.</td>
</tr>
<tr>
<td>Music Electives (upon approval)</td>
<td>3.3.</td>
</tr>
<tr>
<td>Education 405 (Student Teaching)</td>
<td>1.1.</td>
</tr>
<tr>
<td>Education 406, 510 (Music Education)</td>
<td>0.0.</td>
</tr>
</tbody>
</table>

Mus. Ed. Majors taking piano as Sec. Applied Major, must complete Music 320, 321, 322, PIANO METHODS AND MATERIALS.

VOCAL MAJORS

Vocal majors in Music Education follow curriculum A with the following exceptions: Three credits only in Music 125, 126, 127 and 129. Music 233, 235, 239, 330 and 331 are not required, but Vocal majors must substitute 4 additional credits in upper division music electives. An academic teaching minor is recommended.
INSTRUMENTAL MAJOR

Instrumental majors in Music Education follow Curriculum A with the following exceptions: Music 117, 118, 119, 232 and 324 are not required. Music or academic electives may be substituted.

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: Credits per Quarter

Music 151-152-153 (Applied) 4.4,4
Music 106-110 (Organization) or Music 140 (Ensemble) 2,2,2
Music 111-112-113 (Theory I) 3,3,3
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) 3,3,3
Health & Physical Educ. 1,1,1
R.O.T.C. 101-102-103 (Men) 2,2,2 or 0,0,2

SOPHOMORE YEAR:

Music 251-252-253 (Applied) 4,4,4
Music 106-110 or 140 1,1,1
Music 241-242-243 (Theory II) 2,2,2
Music 237, 238, 239 (Introduction to Music Literature) 3,3,3
Music 247, 248, 249 (Keyboard Harmony) 1,1,1
Psychology 110 and Electives (non-music) 4,4,4
Health & Physical Educ. 1,1,1
R.O.T.C. 201-202-203 (Men) 2,2,2 or 0,0,2

JUNIOR YEAR:

Music 351, 352, 353 (Applied) 4,4,4
Music 106-110 or 140 1,1,1
Music 235-236-237 (Piano Methods and Materials) 2,2,2
Music 231-232-233 (Conducting) 3,3,3
Music electives (upper division) 4,4,4
Electives (non-music) 1,1,1

SENIOR YEAR:

Music 451-452-453 (Applied) 4,4,4
Music 106-110 or 140 1,1,1
Music 342-343-346 (History of Music) 3,3,3
Music 445 (Senior Recital) 1,1,1
Electives (non-music) 7,7,7

MAJOR IN VOICE

FRESHMAN YEAR: Credits per Quarter

Music 151, 152, 153 (Applied) 3,3,3
Music 106-110 (Organization) 1,1,1
Music 111-112-113 (Theory I) 3,3,3
Music 131-132-133 (Piano in Class) 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. 1,1,1
R.O.T.C. 101-102-103 (Men) 1,1,1 or 0,0,2

SOPHOMORE YEAR:

Music 251, 252, 253 (Applied) 4,4,4
Music 106-110 1,1,1
Music 237, 238, 239 (Sight Singing, Keyboard, and Dictation) 2,2,2
Music 234-235 (Theory I) 1,1,1
Music 215, 216, 217 (Piano in Class) 1,1,1
Psychology 110 and Electives (non-music) 3,3,3
Health & Physical Educ. 1,1,1
R.O.T.C. 201-202-203 (Men) 2,2,2 or 0,0,2

JUNIOR YEAR:

Music 351-352-353 (Applied) 4,4,4
Music 251, 252, 253 1,1,1
Music 140 (Ensemble) 1,1,1
Music 231, 232, 233 (Conducting) 3,3,3
Music electives (upper division) 4,4,4
Electives (non-music) 1,1,1

SENIOR YEAR:

Music 451, 452, 453 (Applied) 4,4,4
Music 106-110 1,1,1
Music 140 (Ensemble) 1,1,1
Music 434, 435, 436 (History of Music) 3,3,3
Music 235, 236, 237 (Intro to Music Literature) 2,2,2
English 101-102-103 (Freshman Composition) 3,3,3
Health & Physical Educ. 1,1,1
Electives (non-music) 6,6,4

MAJOR IN COMPOSITION OR THEORY

FRESHMAN YEAR: Credits per Quarter

Music 101, 102, 103 1,1,1
Music 150 1,1,1
Music 108-110 (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 150, 151, 152 (Ensemble) 4,4,4
Music 155, 156, 157 (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. 201-202-203 (Men) 2,2,2 or 0,0,2

SOPHOMORE YEAR:

Music 201, 202, 203 1,1,1
Music 100 1,1,1
Music 106-110 1,1,1
Music 237, 239, 239 (Sight Singing, Keyboard, and Dictation) 2,2,2
Music 241-242-243 (Theory II) 2,2,2
Music 250, 251, 253 (Composition II) 2,2,2
Music 231, 232, 233 (Conducting) 3,3,3
Electives (non-music) 4,4,4
Health & Physical Educ. 1,1,1
R.O.T.C. 201-202-203 (Men) 2,2,2 or 0,0,2

JUNIOR YEAR:

Music 301, 302, 303 1,1,1
Music 106-110 1,1,1
Music 329, 330, 331 (Orchestration) 2,2,2
Music 330, 360, 361 (Composition) 2,2,2
Music Electives (upper division) 5,5,5
Psychology 110 and Electives (non-music) 5,5,5

SENIOR YEAR:

Music 401, 402, 403 1,1,1
Music 434, 435, 436 (Sight Singing, Keyboard, and Dictation) 1,1,1
Music 235, 236, 237 (Intro to Music Literature) 2,2,2
Music 459, 460, 461 (Composition) 2,2,2
Electives (non-music) 7,7,7

ADDITIONAL REQUIREMENTS: Students taking voice or instrumental majors 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 150, 160, 161 and Music 250, 290, 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 - 90 cr., General (other than music and Phy. Ed.) - 60 cr., Quarterly Group—Applied, Theory or Composition—11 and 111-116 credits. Maximum credits acceptable toward this degree: Applied Music - 12 cr., Ensemble Music—6 cr.

FRESHMAN YEAR: Credits per Quarter

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 131, 132, 133 (Sight Singing, Keyboard, and Dictation) 1,1,1
Music 150, 151, 152 (Intro to Music Literature) 2,2,2
English 101-102-103 (Freshman Composition) 3,3,3
General 151-152-153 (Humanities) 5,5,5
Health & Physical Educ. 1,1,1
R.O.T.C. 101-102-103 (Men) 2,2,2 or 0,0,2

MUSIC—63
MUSIC 100—Secondary Applied Minor a/q 1-2 Prereq c/i.

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 sound technical training in music that may be useful as an applied field for the tenor, Just return this application as a tool rather than as a medium for performance. E. Music majors may take 6 credits. For undergraduate study and the professional paper, and three credits in Band, Orchestra, Chorus (or 140, summer only).

COURSES OF STUDY

Upon entrance into any applied music course the student will be given a placement examination and assigned to the course to which his ability, previous training and experience entitle him.

MUSIC 101, 102, 103 (First year)—301, 302, 303 (Second year)—301, 302, 303 (Third year)—401, 402, 403 (Fourth year)

Secondary Applied Major a/q V 1-2 Prereq audition and c/i. Individual instruction in voice, piano, organ, string, wind, and percussion instruments. The students in Curriculum B must show evidence of the equivalence of the degree in Music that is held in this application as a tool rather than as a medium for performance. In music classes, the student entering in Music I must have evidence of the equivalence of the degree in music that is their primary major, i.e., Music majors may take 6 credits. For undergraduate study and the professional paper, and three credits in Band, Orchestra, Chorus (or 140, summer only). Students majoring in Applied Music (Curriculum B) must show talent for solo performance and evidence of the equivalence 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 116 are major musical organizations. 3Q A W S 1 PreReq c/i. Major in music must take a minimum of 12 credits; non-music majors may take 6 credits.

111-112-113 THEORY I 3Q A W S 2 Prereq pass music placement examination. The art and science of music structure (emphasis on the central problem 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 post-tonal Harmonization of single tones with I IV V7 chords. Materials such as Oxford and Burrows Adult Beginners books. Transposition, memorization, and sight-reading.

117-118-119 VOICE IN CLASS 3Q A W S 1 Breathing, resonance, vocal formation, and production. Simple vocalises; methods of producing crescendo, diminuendo, legato, staccato, legato and legato. Sight reading. The teaching of vocal techniques illustrated.

122-123 MUSIC EDUCATION IN THE ELEMENTARY SCHOOLS

SQ W S 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; basic rudiments of music and keyboard fundamentals. (123) Construction of 123, dealing more specifically with topics presented generally during the first quarter. Other topics included; beginning part singing; dramatizations; integrated units with social studies, art, and literature; listening and use of phonograph; instruments of the orchestra by sight and sound; additional work in vocal music, applied 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 as an accompanying factor. For non-majors only.

129 WIND AND PERCUSSION INSTRUMENTS IN CLASS 3Q A W S Su 1 R-S. Enter any quarter. To enable music education majors to gain a practical knowledge of the instruments of the band.

131-132-133 SIGHT-SINGING, KEYBOARD, AND DICTATION 3Q A W S 1 Prereq pass music placement examination. Study of materials used in Theory I to the various areas of ear-training (sight-singing, melodic and harmonic dictation).

134 INTRODUCTION TO CONCERT MUSIC 1Q A W S Su 3 Music in our present-day culture; illustrated lectures for the layman on forms, styles and composers of concert music. Guided listening to recordings and concert attendance. For non-majors only.

135-136-137 INTRODUCTION TO MUSIC LITERATURE 3Q A W S Su 2 Pre Req c/i. Musical understanding; the place of music in history with emphasis on the development of music and to the history of other arts. Comparative survey of masterpieces of music from the medieval period through the Twentieth Century. Review of all periods of music history. Study of music majors only.

140 ENSEMBLE GROUPS 1Q A W S Su 1 Any small group of two more players or singers may have a course outlined by the instructor. The development of sight reading and acquaintance with basic working habits of an ensemble group. Students may register for more than one ensemble group in any one quarter.
190-191 COMPOSITION 3Q A W S 2 Prereq c/l. An introduction to the basic art of music composition.

215-216-217 INTERMEDIATE PIANO IN CLASS 3Q A W S 1 Prereq 3 credits in either Piano I, Music 11A-11B-11C, or placement test. All major and minor scales 2 octaves HT. Further development of harmonization, transposition, memorization, and sight-reading. Materials such as Feldman, Progressing Studies and Bartok Mikrokosmos Books I and II.

231-232-233 CONDUCTING 3Q A W S Su 3 Prereq 10 credits in music including Music 111-112. (231) Fundamentals of conducting. Prereq for 232 or 233. (232) Choral conducting; (233) Instrumental conducting. Practical conducting experience is provided through individual conducting projects, the class being used as a clinic chorus of harmonization, transposition, memorization, and sight-reading.

247-248-249 KEYBOARD HARMONY 3Q A W S 1 Prereq 243 or concurrent registration, and placement in Piano or Organ 131. Practical application of theory principles to the keyboard. Exercises in modulation, transposition, and development of extemporary playing.

250-251-252 COMPOSITION 3Q A W S 2 Prereq 151. A continuation of Music 131, 132 and 133.

241-242-243 THEORY II 3Q A W S 1 Prereq Music 113. Continuation of Theory I. The study of altered chords, the inter-relationship of harmony and counterpoint, and the analysis of 18th and 19th century compositions.

247-248-249 KEYBOARD HARMONY 3Q A W S 1 Prereq 243 or concurrent registration, and placement in Piano or Organ 131. Practical application of theory principles to the keyboard. Exercises in modulation, transposition, and development of extemporary playing.

250-251-252 COMPOSITION 3Q A W S 2 Prereq 151. A continuation of Music 131, 132 and 133.

261 PIANO FOR THE CLASSROOM TEACHER 1Q Su 2. Presenting simple material at a basic level of skill, toward a wider utilization of the piano in classroom and school situations.

265-266-267 PIANO METHODS AND MATERIALS 3Q A W S 2 Offered 1963-64 and alternate years. Prereq placement in Piano in Piano 301. Methods and materials for teaching piano classes in public schools and private studios. Emphasis is on the teaching of beginners and advanced students in private studios. Practical demonstrations and supervised laboratory experience with children and children's classes.

283-284-285 SCHOOL MUSIC 3Q A W S Su (324-325) Prereq 231 or concurrent registration. Enter any quarter. Music Education majors must register one quarter of 323-324-325 as education in their primary purpose in advanced study is preparation for administrative or supervisory work in music education.

319 MUSIC AND THE ALLIED ARTS 1Q Su 1. Discussion and illustration of masterworks of music in the 17th through the 20th centuries with comparative examination of selected art forms (painting, architecture, literature, and the minor arts) contemporary with each composition. Each student will prepare one oral report on one of the arts.

344-345-346 HISTORY OF MUSIC 3Q A W S 3. Prereq 137. Enter any quarter. The history of music in Western Civilization from its origins to modern times and its relationship to general cultural development.

445 SENIOR RECITAL 1Q V 1-2 Prereq concurrent registration in Music 451, 452 or 453.

FOR UNDERGRADUATES AND GRADUATES

308 WORKSHOP IN MUSIC EDUCATION 1Q Su V 1-3 Prereq junior standing in music or teaching experience. Special workshops and clinics in elementary and secondary public school teaching problems.

311-312-313 THEORY III 3Q A W S 2 Prereq 243. Chromatic harmony; altered chords, foreign modulation; analysis and writing in Classic and Romantic styles, both instrumental and vocal.


384 INSTRUMENTAL REPAIR 1Q Su 3. The care and maintenance of woodwind, brass, string, and percussion instruments with special attention given to repair projects covering those problems which most often confront the high school instrumental teacher.


397 PSYCHOLOGY OF MUSIC 1Q Su 2. Individual difference in musical capacities and the related application in teaching. Current psychological tests and measurements in music.

398-399-400 SIXTEENTH CENTURY COUNTERPOINT 3Q A W S 2 Prereq 243 or concurrent registration. Writing and analysis Renaissance vocal and instrumental style.


424 MUSIC OF THE ROMANTIC PERIOD 1Q S Su 3 Prereq 137 and 243. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Nineteenth Century.

424 MUSIC OF THE TWENTIETH CENTURY 1Q S Su 3 Prereq 137 and 243. Detailed analysis and comparison of selected instrumental, vocal and keyboard compositions of the Twentieth Century.

431 ADVANCED CONDUCTING 1Q A W S 3 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 work with university performing groups.

450-460-461 COMPOSITION 3Q A W S 2 Prereq 243. A continuation of composition with writing in the larger forms.

471-472-473 ADVANCED ORCHESTRATION 3Q A W S 2 Prereq 233. (471) Styles in orchestration 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

501-505-503 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 W 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.

556 PEDAGOGY OF THEORY 1Q W Su 3. The teaching of theory, including techniques, procedures and sequences of materials and a comparison of standard harmony texts. The application of teaching techniques, and organization of the teaching of theory in secondary schools and in colleges.

562 SEMINAR a/q V 1-3 R-15. Investigation of research in fields of individual interest.

569 COMPOSITION a/q V R-12.

601-602-603 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, combustion, 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 administering 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. 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 pre-pharmacy preparatory courses 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 prior to the time that an applicant is ready to enter school. Such elective courses will be determined by the area of specialization chosen by the student, and must be approved by the faculty advisor.

A program of study leading to the Master of Science degree in the areas of pharmacy, pharmaceutical chemistry, pharmacognosy, and pharmacology is also offered.

HIGH SCHOOL PREPARATION. In addition to the general requirements for admission to the State University, the following subjects must be completed for graduation. Such elective courses will be determined by the area of specialization chosen by the student, and must be approved by the faculty advisor.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education and is accredited by the Accreditation Council for Pharmaceutical Education of Colleges of Pharmacy and is accredited by the American College of Pharmacists.

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 251; Chemistry 245; Pharmacy 206 or Elective, 220 or Elective, 324-325, Zoology 240-241, Electives

Second year: Business Administration 259; Chemistry 284; Microbiology 241; Pharmacy 414-415-416, 441, 452, 461, 462, 463, 470, 480, 490, and Electives

Third year: Pharmacy 503, 504, 505-506, 516, 517-518-519, 540-545-546, 547, 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.

256 PHARMACOLOGICAL CALCULATIONS 1Q W 3 (3-0). Metrology, pharmaceutical arithmetic, computational Latin, and the form of the prescription including prescription calculations.

324-325 PHARMACOGNOSY 2Q W 4 (3-2), S 4 (3-2) Prereq Bot 130 and Chem 203 or =. The plant and animal products used in pharmacy and medicine.

414-415-416 ORGANIC MEDICAL PRODUCTS 3Q A W S 3 (3-0) Prereq Chem 203. Organic substances used medicinally with emphasis on the correlation of chemical structure with therapeutic activity.

418 ORGANIC MEDICAL PRODUCTS LABORATORY 1Q W 2 (0-6 to 9) R-4 Prereq 414. Synthesis, identity and purity tests, of organic medicinals.

411 INTRODUCTION TO PHARMACOLOGY 1Q S 3 (0-3) Prereq Chem 203. An introduction to pharmacology and the quantitative evaluation of drug action.

452 DRUG ANALYSIS 1Q A 4 (2-6) Prereq Chem 205. Special and instrumental methods used in the analysis of pharmaceutical preparations.

453 PHARMACEUTICAL CHEMISTRY 1Q A 3 (3-0) Prereq 220 and Chem 203 or =. An introduction to the elementary chemical principles as applied to pharmacy and pharmaceuticals.

453-455 OPERATIVE PHARMACY 2Q W S 5 (3-4) Prereq 220 and 461. Fundamentals of pharmacy techniques and the various classes of pharmaceutical preparations.

466 MEDICINAL PLANTS 1Q On demand 2 (0-6) Prereq 325. The collection, identification, drying, gambling, 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 (0-4) 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.

502-504 BIOLOGICAL MEDICAL PRODUCTS 2Q W S 3 (3-0) Prereq Microbiology 204. Biologics, antibiotics, vitamins, hormones, and other medicinal products of biological origin.

505-506 DISPENSING 2Q 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 College of Pharmacy 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. The pharmacodynamics of drugs and its application to therapeutics.

550 ANIMAL HEALTH PRODUCTS AND PESTICIDES 1Q S 3 (310) 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 pharmacist.

FOR UNDERGRADUATES AND GRADUATES

570 COSMETICS 1Q On demand 3 (1-6) Prereq 463. The theory and technic of cosmetic formulation.

585 ADVANCED DRUG ANALYSIS 1Q On demand 3 (1-6) Prereq 463. The more involved methods of analysis as applied to pharmaceuticals.
PHILOSOPHY is the search for wisdom by carefully reasoned reflection. Philosophical inquiry 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.

PHILOSOPHY—67

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHILOSOPHY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Philosophy: a minimum of 50 credits, including Philosophy 110, 120, 201, 202, 203, and three or more credits in courses numbered 400 or above. Normally students are expected to complete Philosophy 110, 201, 202, 203, and 400 or above by the end of their senior 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, 220, 222, and either 330 or 430, and should take as many as possible of the following courses: Philosophy 330, 360, 390, 393, 399, and 422.

FOR UNDERGRADUATES

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.

121-122 ETHICS 2Q A W 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.

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.

200 HISTORY OF ANCIENT PHILOSOPHY 1Q A 5.

201 PHILOSOPHY OF THE MIDDLE AGES AND RENAISSANCE PHILOSOPHY 1Q W 5 Prereq 201.

203 HISTORY OF MODERN PHILOSOPHY 1Q S 5 Prereq 202.

210 SYMBOLIC LOGIC 1Q W 5. Theory and practice in the kind of logic also known as formal or mathematical logic. Application in the foundations of mathematics and in theory of scientific investigation.

FOR UNDERGRADUATES AND GRADUATES

201-302-303 GREAT PHILOSOPHERS 3Q A W S 1. (Given in the summer for 3 cr as 304). Enter any quarter. (301) Greek, Roman, and mediaeval times. (302) The 19th century. (303) Recent and modern thinkers. (304) Recent and contemporary thinkers. Not open to Philosophy majors for graduate credit.

320 MODERN ETHICS 1Q W 3 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 nature of rationalism, empiricism, pragmatism, mysticism, authoritarianism, and scepticism.

351 METAPHYSICS 1Q W 3 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 3 e/y Prereq 5 credits in Philosophy and c/l. Recent investigations into the structure of ordinary and ideal languages as systems of signs and resulting conclusions for Philosophy.

353 CONTEMPORARY PHILOSOPHIES OF SCIENCE 1Q A 3 e/y Prereq 110 or =. History and critical study of some contemporary theories concerning the nature and limits of science, including logical empiricism and operationalism.

354 PHILOSOPHY OF RELIGION 1Q W 3 e/y Prereq 13 credits in Philosophy. Philosophical interpretation of religious experience, belief, and practice.

355 ORIENTAL THOUGHT 1Q W S 3 e/y Prereq 5 credits in Philosophy and c/l. A study of philosophical themes in some Hindu, Buddhist, and Taoist literature.

356 PLATO 1Q W 3 e/y Prereq 201; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

357 ARISTOTLE 1Q S 3 e/y Prereq 201; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

358 DESCARTES, SPINOZA, LEIBNIZ 1Q A 5 e/y Prereq 203; or 10 credits in Philosophy and c/l. The development of Continental Rationalism.

359 LOCKE, BERKELEY, HUME 1Q W 5 e/y Prereq 203; or 10 credits in Philosophy and c/l. The development of British Empiricism.

360 KANT 1Q S 5 e/y Prereq 203; or 10 credits in Philosophy and c/l. Reading and interpretation of selected works.

363 NINETEENTH CENTURY DIALECTICAL PHILOSOPHY 1Q W S 3 e/y Prereq 203; or 19 credits in Philosophy and c/l. Dialectical idealism (Hegel) and dialectical materialism (Marx).
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 some intensive work in one or more of them.

FOR GRADUATES

500 RESEARCH a/q V R-15. Work on selected problems under direction.

699 THESIS a/q V R-15.

PHYSICS is the science that has as its objective the formulation and verification of laws or relationships among the different physical quantities. Some of the most important of these quantities are mass, time, length, force, energy, momentum, electric charge, electric field strength, entropy, wave length. These quantities and the relations among them, that we call laws, have been found to serve in and to explain a wide range of phenomena such as occur in the subjects of mechanics, heat, electricity, magnetism, light, atomic and nuclear physics and in such related subjects as engineering, biophysics, meteorology and geophysics. In addition the subject of philosophy is profoundly influenced both by the methods and developments of physics.

The Bachelor of Arts and Master of Arts degrees are offered.

HIGH SCHOOL PREPARATION: In addition to the general requirements for admission to the University, the student needs algebra and geometry. It is also recommended that the high school preparation include advanced algebra, solid geometry, and trigonometry.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN PHYSICS: Students should consult 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 study should take Physics 221-222-223 in the sophomore year. Required courses offer the following degrees: Mathematics 111, 112, 113 or 221-222-223; Chemistry 121-122-123, 151, 251, 252, 253; Physics 111-112-113 or 221-222-223; Geology 201-202-203 or 211, 212, 220, 310.

FOR UNDERGRADUATES

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. 111 is prerequisite for 112 and 113, but 112 is not prerequisite to 113. 111 Mechanics and wave motion; 112 heat, electricity and magnetism; 113 Sound, light and atomic physics. Credit not allowed for both 111-112-113 and 221-222-223.

121-122 RADIO ELECTRONICS 3Q A W 5 (5-0) Prereq 112.

122-223-224 GENERAL PHYSICS 3Q A W S 8 (6-4) Prereq for 223: Math 118. 221 is prerequisite for 222 and 223, but 222 is not prerequisite 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.

251 WEATHER 1Q W 2 Prereq 221-222-223. Elements of meteorological phenomena including observational quantities, air mass relations and application to air transportation.

252-253 LABORATORY ARTS 3Q A W S 1 (0-3). Open to upper division science majors who have completed 223. Enter any quarter. Elements of glass blowing, machine shop practice, and electronic construction techniques.

271 VECTOR ANALYSIS 1Q S 3 (3-0) Prereq 222 and Math 252.

FOR UNDERGRADUATES AND GRADUATES

314-315-316 ELECTRICITY 3Q A W 3 (3-0), S 4 (3-3) Prereq 271.
POLITICAL SCIENCE

is the study of government and politics both in their domestic and international aspects. By meeting requirements outlined below, a student may earn a Bachelor's degree in Political Science, in Political Science and Economics, or in Political Science and History. A Master of Arts degree in Political Science is also offered.

Courses offered in the Political Science department are designed to aid students in attaining the following objectives:

1. To assist all students in securing a broad liberal education and to equip them with the foundations for effective discharge of the duties of American citizenship;

2. To provide undergraduate preparation for those students who propose to continue the study of Political Science at the graduate level with the ultimate goal college teaching and research;

3. To offer a broad program of training for those students who plan careers in government or politics, including training both for the foreign service and the domestic public service at the national, state, and local levels;

4. To aid 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 300 to 400 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 300 and including Political Science 491 or History 491 or 492. 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. Required courses are: Political Science 101, 200, 201, 202, 203, 301 and 311. At least 12 additional credits will be chosen from the upper division Economics courses, all 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 303 will be required.

Either the completion of five quarters of a foreign language or the demonstration of a sound reading knowledge of historical, legal or political science materials in such a language is recommended. In the context of the Chico curriculum, 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 comprehensive examination.

With permission of the Chairman of the Department, majors may offer credit earned in Economics 365, 390, 395, 331, and 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 major requirements. The study of Law is recommended in fulfilling the foreign language requirement. The student must complete 60 credits as many of the major requirements and as 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 202, 203, 302, 303, 366 leaving over 300 including either Political Science 491 or History 491, each quarter for the completion of requirements and for electives. As a junior, the student will select a minimum of five quarters from the offerings of the Department with Political Science 332, 333, 361 and 362 and also History 376 and 474 as required or recommended courses. For electives, credits in lieu of or in addition to the above, electives may be chosen from Economics 364, 395, and History 366, Political Science 331, 333, 343, 357, 367, 395, 396, 397, 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 IQ S Su 4. Comparative study of fundamental political institutions of modern government, including constitutions, political parties, legislatures, executives, and courts.

200-203 AMERICAN GOVERNMENT IQ A W S Su 4. (202) The American political institutions, including government of the national government, Congress, the presidency, and the courts. The functions of the national government, including finance, business, labor, agriculture, conservation, welfare, and foreign policy. Selected problems of national government will also be discussed.

231 INTERNATIONAL RELATIONS IQ S, S Su 4. A general introduction to the nature of the nation system; factors of national power and policy, forces inducing tension, legal and institutional devices for adjustment of conflicts of interest. The policies of the United States toward the chief regions of the world, the Bretton Woods Agreement, the United Nations, and other international organizations. The role of interest groups in a democracy; their interaction of interests and their influence on public opinion, political parties, legislatures, executives, and administrative and legislative bodies in the United States. The theory of collective action and the public policy process. Problems of international relations and collective security.

241 POLITICAL PARTIES AND ELECTIONS IQ A S 3 Prereq 236. The organization and work of American political parties; the conduct and control of nominations and elections; parties and political power. A historical introduction of major political parties and figures in American history. An introduction to the study of American political parties and elections; the role of interest groups in a democracy; their interaction of interests and their influence on public opinion, political parties, legislatures, executives, and administrative and legislative bodies in the United States. The theory of collective action and the public policy process. Problems of international relations and collective security.

311 INTERNATIONAL ORGANIZATIONS IQ A S 3 Prereq 234. The machinery of international cooperation with particular reference to the United Nations.

322-333 INTERNATIONAL LAW 2Q A W S 3 Prereq 236. A historical introduction of major political parties and figures in American history. An introduction to the study of American political parties and elections; the role of interest groups in a democracy; their interaction of interests and their influence on public opinion, political parties, legislatures, executives, and administrative and legislative bodies in the United States. The theory of collective action and the public policy process. Problems of international relations and collective security.

341 PRESSURE GROUP POLITICS IQ W 3 Prereq 236. The role of interest groups in a democracy; their interaction of interests and their influence on public opinion, political parties, legislatures, executives, and administrative and legislative bodies in the United States. The theory of collective action and the public policy process. Problems of international relations and collective security.

352 THE DEVELOPMENT OF POLITICAL THOUGHT IQ A W 4 Prereq 235 or 236. (236) Western Political thought from ancient origins to the early modern period; (352) Western Political thought from ancient origins to the early modern period. The study of the development of political thought in the West from ancient times to the present.
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. It is also recommended that the high school preparation include one year of a laboratory science, two years of French or German and considerable background in literature and social studies.

PRE-MEDICAL SCIENCES STUDENT. The majority of medical schools now expect a broad background of knowledge, experience, and training on the part of applicants. The field in which a student receives his Bachelor's degree is not important provided he has the minimal course requirements, demonstrates a high level of 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., Mil. Sci., Group and other University requirements listed earlier in the catalog; Chemistry through Organic Chemistry and Quantitative Analysis; one year of college mathematics; one year of college physics; Zoology through comparative anatomy and embryology; (Genetics is recommended); A reading knowledge or 25 credits in French, German or Russian.

SPECIAL REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR 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 another 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

For Graduates

SEMINAR IN POLITICAL SCIENCE 1 Q A W S B V R-10 (100-122) Pre-requisite 20 or in the Department and 401 or History 401. Special problems in political science.

THESIS a/q V R-15.
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, 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

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Psychology 110—Introduction to Psychology</td>
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<tr>
<td>Mathematics 106—Intermediate Algebra</td>
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<tr>
<td>Modern Language 101-102-103</td>
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<tr>
<td>English 101-102-103</td>
</tr>
<tr>
<td>Psychology 220—Psychological Statistics</td>
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<tr>
<td>ER 101-201-301</td>
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<tr>
<td>Basic Science 210-211-212</td>
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Sophomore Year

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<th>Course</th>
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<tr>
<td>Choice of appropriate Psychology courses</td>
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<tr>
<td>Modern Language 210-211-212 or Electives</td>
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<tr>
<td>Psychology 240—Social Psychology</td>
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<tr>
<td>Electives</td>
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<tr>
<td>PE 201-202-203—Physical Education</td>
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<tr>
<td>ROTC 201-202-203—Military or Air Science (Men)</td>
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Junior Year

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<th>Course</th>
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<tbody>
<tr>
<td>Psychology 310-311-312—Experimental Psychology</td>
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<tr>
<td>Philosophy 210 or Elective</td>
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<tr>
<td>Zoology 202—Human Physiology</td>
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<tr>
<td>Electives</td>
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Senior Year

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<th>Course</th>
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<tr>
<td>Psychology 411—Systematic Psychology</td>
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<tr>
<td>Choice of 400-level Psychology Courses</td>
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<tr>
<td>or 3</td>
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<tr>
<td>Electives</td>
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<td>15-17</td>
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SPECIAL REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN PSYCHOLOGY. In addition to the general requirements of the Graduate School, the following special requirements must be completed for the Master of Arts degree in psychology: at least 45 credits in courses numbered above 299, which may include not more than 10 credits in Psychology 699, and which must include Psychology 563-566-567, 511, and 521. Upon completion of two quarters in residence, or completion of 30 graduate credits, the student is required to pass a comprehensive written examination in selected areas of psychology.

MASTER OF ARTS IN GUIDANCE AND COUNSELING. See statement under Graduate School.

FOR UNDERGRADUATES

110 INTRODUCTION TO PSYCHOLOGY 1Q A W S Su 5 (3-0).

FOR GRADUATES

501 THEORY CONSTRUCTION IN PSYCHOLOGY 1Q Su V-R Prereq 20 credits in Psy or c/l. Seminar approach to selected topics related to construction of rigorous theories in psychology.

505-506-507 PROFESSIONAL PROBLEMS IN PSYCHOLOGY 3Q A W S 1 (3-0).

TOPICAL SEMINAR 1Q a/v V-R Prereq 15 credits in psychology or c/l. Topics of current interest with critical examination of the literature.

FOR GRADUATES

501 THEORY CONSTRUCTION IN PSYCHOLOGY 1Q Su V-R Prereq 20 credits in Psy or c/l. Seminar approach to selected topics related to construction of rigorous theories in psychology.
RADIO AND TELEVISION courses are designed
to prepare students for occupations
in the broadcast media, for effective
use of radio and television in connec-
tion with occupations in other fields,
or for greater appreciation of the
media as audience members. Gradu-
ates in radio-television have many
tional opportunities as announcers,
performers, writers, newsmen,
spiritual directors, managers and ex-
ecutives 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 Televi-
sion. In either case, emphasis is placed on a strong liberal arts background, and approxi-
mately 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 require-
ments must be met in curricula of related fields. Most of the radio-television courses are
offered by the School of Journalism, but some departments in the College of Arts and Sciences also have offerings in the program. Production of programs for broadcast from the
University's studios is included in the course of study. Modern equipment of professional quality in new studios and an adherence to high standards of performance prepare stu-
dents to make significant contributions and successful careers in the broadcasting profession.

Note: Students wishing to major primarily in radio or television Journalism should take the radio-televisi-
on sequence in Journalism.

The College of Arts and Sciences and the School of Journalism offer the following curriculum leading to a Bachelor of Arts degree with a major in Radio-Television.

University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>9</td>
</tr>
<tr>
<td>ROTC (men) Mil. or Air Science</td>
<td>6-9</td>
</tr>
<tr>
<td>Physical Education</td>
<td></td>
</tr>
<tr>
<td>Group I</td>
<td>16-13</td>
</tr>
<tr>
<td></td>
<td>37</td>
</tr>
</tbody>
</table>

Major Requirements:

Group II 25
Group III 23-25
English 201 3
Speech 118 3
Drama 121, 121 4
Journalism 270, 397 6

23 hours from the following courses:

Journalism 140, 240, 242, 345, 346, 348, 440, 441, 442, 443, 494
Speech 241
Drama 243
Free Electives

RELIGION courses of a non-sectarian nature are offered for general education purposes. Although no degree is offered in Reli-
gion, up to 15 credits in the courses listed below may be counted for graduation in other curricula where the profes-
sional 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 scholar-
ship. 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 reli-
gious denominations for the purpose of making courses in religion available to students. The University is affiliated with the University, under a director who is responsible to a Board of Trustees representing the cooperating denomina-
tions and the University.

FOR UNDERGRADUATES

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.

122 LIFE AND TEACHINGS OF JESUS 1Q W S 3. The origins, backgrounds, problems, occasions, motifs and messages of the four gospels with an attempt to relate the teaching for today.

142 RELIGION IN AMERICA 1Q A W 3. The beliefs and practices of Judaism, Protestantism, Roman Catholicism, and repres-


224 LIFE AND TEACHINGS OF PAUL 1Q W S 3. The origins, backgrounds, problems, occasions, motifs and messages of the Pauline 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 CONVINCIONS 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 1800 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.

304 COMPARATIVE WORLD RELIGIONS 1Q A S 5. Ten to twelve living religions of the world, their historical sequence and philosophical and theological implications.

320 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.

380 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.
RESERVE OFFICERS TRAINING CORPS

The ROTC program is conducted by career Army and Air Force personnel. Both Departments offer 6 quarters of ROTC to satisfy University requirements. All undergraduate male students other than veterans are required to take two years of Air Science or Military Science during their junior and senior years. Students interested in careers in the Air Force or Army should consult the Professor of Air Science or the Professor of Military Science.

AIR SCIENCE

**BASIC COURSE: AIR AGE CITIZENSHIP EDUCATION**

The academic requirements of the basic courses autumn and winter quarters of the freshman year and spring quarter of the sophomore year will be met through enrollment in any group requirement with the exception of Art, Drama, or Music courses.

101-102-103 FOUNDATIONS OF AEROSPACE POWER 3Q A W 0, S 2. (101-102) Basic Military Training, including exercises in drill and ceremonies, with emphasis on proficiency and teamwork (concurrent enrollment in a minimum of 2 credit course selected from appropriate Group Requirements). (103) Potentials of aerospace power, air vehicles and principles of military training including drill ceremonies and customs with emphasis on proficiency and teamwork.

201-202-203 FUNDAMENTALS OF AEROSPACE WEAPON SYSTEMS 3Q S 2, W 1, S 2. (201) Professional opportunities. The military instrument of national security. Introduction to fundamentals of aerospace weapon systems, warheads, missiles. Characteristics of manned aircraft, propulsion systems. Nuclear energy and effects of nuclear weapons. (202) Target intelligence, electronic warfare, defensive operations, tactical commands, astromatics, and contemporary military thought. (203) Basic military training, with emphasis on fundamentals and customs 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 or 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 recommendation 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 5, S 3. (301) Principles and practices of leadership. Includes basic psychology of leadership, staff organization and functions. (302) Principles of problem solving in Air Force application. Analysis of rules and cliches. Translation of knowledge into speaking, writing, and listening skills. Creative and practical logical. Military correspondence and reports. (303) Military justice system and preparation for Summer Training Unit. Leadership laboratory: Practical work as a junior officer with command and command voice, instructing flight and squadron drill.

304 SUMMER TRAINING UNIT No credit. Four weeks at an Air Force Base after completion of Air Science 301-302-303. Organization and functions of an Air Force Base, air crew and aircraft in doctrine, officer orientation, military fundamentals, physical training and individual weapons.

401-402-403 GLOBAL RELATIONS 3Q A W 2, S 1. (Concurrent enrollment in Geog 301-302 recommended.) (401) Historical, political, and cultural features of a state in relation to problems of unity and diversity. Introduction to the nations and key states associated with the area. (402) Industrial and natural resources of the area. (403) Historical, political and cultural features of a state in relation to problems of unity and diversity. Introduction to the nations and key states associated with the area.

MILITARY SCIENCE

**HIG SCHOOL PREPARATION.** In addition to the general requirements for admission to the University, the student needs algebra and geometry. If no courses in trigonometry, physics and either French, German, Spanish, or Russian.

**REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE WITH A MAJOR IN MILITARY SCIENCE**

<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>2</td>
</tr>
<tr>
<td>Military Science 101-102-103 and 201-202-203</td>
<td>9</td>
</tr>
<tr>
<td>Elective</td>
<td>2-5</td>
</tr>
</tbody>
</table>

(In his freshman and sophomore year, the student must select one of the elective courses listed below)

**MAJOR REQUIREMENTS**

(100) Principles of Air Force organization, missions, chain of command; practical instruction in individual functions and responsibilities of the officer. Leadership, drill and command, basic and progressive training in leadership through practical exercises in drill ceremonies, military customs and courtesies. Embarrassment is placed on teamwork and individual proficiency. (102) It is recommended that one of the "Electives" listed under University Requirements be substituted during the junior and senior years and cumulative training in leadership through practical exercises in drill ceremonies, military customs and courtesies. Leadership laboratory: Practical work as a junior officer in staff and command positions, including homework, problems, presentations of material and individual review of work. (103) General introduction to the nation-state system: factors which lead to organizational, tactical, logistical, operational, strategic, social and similar patterns found in our present-day Army. Origins of the American Army to the present with emphasis on the various components and their role as a part of the national defense team. Continuation of leadership, drill and command.

101-102-103 INTRODUCTION TO THE ARMY 3Q A W 2, W 0, S 2. Enter any quarter. (101) Principles of Army organization, missions, chain of command; practical instruction in individual functions and responsibilities of the officer. Leadership, drill and command, basic and progressive training in leadership through practical exercises in drill ceremonies, military customs and courtesies. (102) Continuation of American Military History, and Map and Aerial Photographic Reading to include application of basic principles, emphasizing terrain appreciation and evaluation. (103) Continuation of leadership, drill and command. (105) US Army and National Security with emphasis on the various components and their role as a part of the national defense team. Continuation of leadership, drill and command.

201-202-203 ADVANCED INDIVIDUAL TECHNIQUES 3Q A W 1, S 2. 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 take each course of 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 90e per day through the year except while at summer camp in which case he receives the pay of a Private E-1. If commissioned, the length of service is as required by Federal Reserve Forces Act of 1935, with Amendments.

301-302-303 PRINCIPLES AND TECHNIQUES OF THE MILITARY LEADER 3Q A W 5, S 3. (Concurrent enrollment in S 2 recommended.) (301) Leadership and instructional principles, including characteristics, qualities, requirements, problem solving and theoretical and practical exercises in giving military instruction; organizational structure and functions of the branches of the Army. Leadership, Drill and Command, and personnel problems. (302) Principles and techniques of effective small unit tactics and ability to use them. Leadership, Drill and Command, and personnel problems. (303) Continuation of small unit tactics and ability to use them. Leadership, Drill and Command.

**ELECTIVES**

(39-42)

**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 take each course of 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 90e per day through the year except while at summer camp in which case he receives the pay of a Private E-1. If commissioned, the length of service is as required by Federal Reserve Forces Act of 1935, with Amendments.

**RESERVE OFFICERS TRAINING CORPS—73**
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>Major Requirements</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>242</td>
<td>3</td>
</tr>
<tr>
<td>245 or 346</td>
<td>4</td>
</tr>
<tr>
<td>302</td>
<td>3</td>
</tr>
<tr>
<td>303</td>
<td>3</td>
</tr>
<tr>
<td>312</td>
<td>3</td>
</tr>
<tr>
<td>355, 365, 383 or Soc 402</td>
<td>3</td>
</tr>
<tr>
<td>1 other course above 300</td>
<td>2</td>
</tr>
<tr>
<td>Home Economics courses with credit toward major with 186 total credits not to exceed 39 cr.</td>
<td>9</td>
</tr>
<tr>
<td>Business Administration 122 (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>1</td>
</tr>
<tr>
<td>192</td>
<td>1</td>
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<tr>
<td>193</td>
<td>2</td>
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<tr>
<td>201</td>
<td>3</td>
</tr>
<tr>
<td>384</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration courses with credit toward major with 186 total credits not to exceed 39 cr.</td>
<td>39</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group Requirements</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>

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 counselors, 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: Economics 201-202-203; Psychology 110; Sociology 181; 182; and 183.

During the second two years, one course numbered 300 or above must be taken in fields such as Anthropology, Economics, History, Political Science, Psychology, and Sociology. Work in the Community Services Laboratory during the senior year is required up to a maximum of 12 credit hours.

GENERAL INFORMATION: The undergraduate major in Social Welfare is available for those wishing a practical orientation toward social problems. Practical application is emphasized to achieve the effectiveness needed on the job. Those wishing to enter graduate schools of social work will find the program designed for this purpose as well as for effective 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".

181 THE FIELD OF SOCIAL WELFARE 1q a/q 5. Social welfare functions. Development of modern social welfare and the distinctive features of the profession.

201 INTRODUCTION TO RECREATION LEADERSHIP 1q A 3 Prereq Sociology 101. Sociology of play, recreation and leisure time; community approach to recreation; recreation for industrial workers, hospital patients, senior citizens, playgrounds; facilities and resources. Credit not allowed for this and HAP 302.

232 RECREATION LEADERSHIP (SOCIAL RECREATION) 1q W 3 Prereq Sociology 101. Principles and practice in group leadership, program planning, various age groups and for special groups such as the handicapped. Credit not allowed for this and HAP 302.

233 RECREATION LEADERSHIP (CAMP LEADERSHIP) 1q S 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 HAP 302.

325 GROUP METHODS IN TEACHING 1q Su only 3. Prereq 10 credits in the Social Sciences. The use of group methods in the teaching of content and skill subjects and the principles recognized as basic in their use.

FOR UNDERGRADUATES AND GRADUATES


333 GROUP METHODS IN MODERN SOCIETY 1q S 4 Prereq 10 credits in sociology, anthropology, economics, history, political science, psychology, and sociology. The place of group processes in a democratic society. Credit not allowed this and HAP 302.

384 PUBLIC WELFARE 1q 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.

481 CASE STUDIES 1q S 4 Prereq 12 credits in Social Welfare and 181. The analysis of case records drawn from a variety of social work settings.

483 COMMUNITY RELATIONS 1q A 4 Su 3 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 and his contributions to community welfare and his concern for human needs and problems.
SOCIETY 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).

SOCIOLOGY, SPEECH—75

309 INDUSTRIAL SOCIOLOGY 1Q S 4 S 3 Prereq 101 or Psych 110. Work plants such as factories, offices, and stores; work group processes 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 FIELD OBSERVATION 1Q S 3 Prereq 101 and 205 or 303. Investigation of questions and related 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.

502 ADVANCED METHODS 1Q A 5 Prereq 303 or =. Required of all graduate students in sociology.

FOR GRADUATES

501 GRADUATE RESEARCH a/q V R-10.

599 THESIS a/q V R-15.

SPEECH includes courses in the field of General Speech, and according to the interests of the student, science research, guide or more areas of concentration: Public Address and Forensics, Speech Pathology and Audiology, Speech Education, Oral Interpretation, Radio and Television, Historical Pageant-Drama and Sociodrama, and Communications Research and Theory. Speech Graduates teach Speech (including the coaching of forensics) in high school or college, enter employment in radio-television, public relations, and speech and hearing therapy, or do professional speaking.

The curriculum in Speech is designed to provide cultural background and technical training in oral communication which will contribute to student competence in social situations, in a chosen profession, and in professional speech work.

The Bachelor of Arts and Master of Arts degrees are offered.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in departmental courses are required for the Bachelor of Arts degree with a major in Sociology. A foreign language is required as listed earlier in the catalog.

At least 35 of the 50 major credits must be in sociology courses, including Sociology 101, 205, 303 and 310. Anthropology 152 or 153 and Social Welfare 101 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 340.

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.

M ASTER OF ARTS IN GUIDANCE AND COUNSELING. See statement under Graduate School.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE. In addition to the general requirements for graduation listed earlier in the catalog, 50 credits in departmental courses are required for the Bachelor of Arts degree with a major in Sociology. A foreign language is required as listed earlier in the catalog.

101 INTRODUCTORY SOCIOLOGY 1Q A W S Su 5. A general study of interhuman relations.

120 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

For explanation see Index under "Symbols"

101 INTRODUCTORY SOCIOLOGY 1Q A W S Su 5. A general study of interhuman relations.

120 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

For explanation see Index under "Symbols"
118 VOICE AND DICTION 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 in 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 116. Study and practice of the techniques in the oral presentation of manuscript materials.

262 ORAL INTERPRETATION OF LITERATURE 1Q W 3 Prereq 261 or 331. Critical analysis of literature for oral presentation and the enhancement of literature through oral and auditory experience.

265-266-267 DEBATE 3Q A W S 2 Prereq 112. (265) The techniques, strategy and style of debate; (266) Intercollegiate debating; (267) famous historical debates.

315 PUBLIC PERFORMANCE 1Q A W S V 1-2 R-6 Prereq c/l. Principles of public performance. Practice in presenting before public audiences oral readings, lecture recitals, choral reading or public addresses.

FOR UNDERGRADUATES AND GRADUATES

316 BUSINESS AND PROFESSIONAL SPEAKING 1Q A W S 3 Prereq 5 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 or cr in Speech. The speech competence of the teacher, the use of speech as a teaching device, and principles by which the teacher works with the speech of his students.

318 APPLIED PHONETICS 1Q S 3 Prereq 119 or 561. The narrow transcription into phonetic symbols of dialects, deviations from, and variations within standard American speech, their causes and frequency of appearance.

321 THE TEACHING OF SPEECH 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.

344 SURVEY OF RHETORIC 1Q A 3 Prereq 10 credits in Speech. Ancient, medieval, and modern rhetoric. The contributions of Socrates, Plato, Aristotle, Cicero, Quintilian, Longinus, St. Augustine, Ward, Campbell, Blair, Whately, and John Quincy Adams to modern rhetoric.

345 HISTORICAL ADDRESSING 1Q W 3 Prereq 10 credits in Speech. The biographies and speeches of representative speakers, and American public speakers of prominence.

FOR GRADUATES

351 LANGUAGE AND COMMUNICATION 1Q W 3 The nature and function of signs and sign systems in the communication process. Survey of relevant theory and research evidence.

490 PROBLEMS a/q V R-6 Prereq 25 credits in Speech and c/l.

499 SEMINAR 3Q A W S V R-10 Prereq 18 credits in Speech. Individual and group study and research on assigned areas of speech.

SPEECH PATHOLOGY AND AUDIOLOGY

Individuals with speech and hearing disorders constitute our largest group of exceptional persons. Study in the field of speech pathology and audiology evaluates these disorders, their causes and remedial principles.

Students interested in these studies take their Bachelor of Arts degree with a major in speech, but vary their course selection sufficiently to obtain the academic requirements necessary for Basic Speech Certification, or Basic Hearing Certification, or both, as designated by the American Speech and Hearing Association Standards. The clinical requirements leading to the various degrees are also sufficient to provide the necessary supervised clinical practice required in these certifications.

A thorough understanding of a person with speech or hearing disorders, or both, requires that the student be well founded in many areas of behavioral and natural science. Consequently the courses required are offered by many departments. Students study in Psychology, Speech, Education, Physiology, Anatomy, Acoustics, and Sociology as well as take specific courses in Speech Pathology and Audiology.

Graduates at the B.A. level are employed in public school systems or clinics as speech and hearing clinicians. A Master's Degree in Speech Pathology and Audiology is generally required for the many positions available in hospitals, clinics and government programs, or as supervisors in the larger school systems. A well qualified person in this field may go into college teaching, into research or into supervisory clinical positions. Positions in this field at the present time and in the foreseeable future far exceed the number of trained individuals.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN SPEECH: For students emphasizing Speech Pathology and Audiology. In addition to the general requirements listed earlier in the catalog, the following special requirements must be satisfied: at least 27 hours in speech pathology and audiology including 231, 232, 331-332, 335-336, 346, 347, and 6 hours of 333; Psychology 110, 230, 360, Sociology 111, 232, and Zoology 250. Other courses recommended for majors in this area are Speech 118, 232, 451; Psychology 216, 221, 231, 351, 352, 355, Sociology 366, 367, and 368; and Educ 200, 265, 301, 334, and 452.

FOR UNDERGRADUATES

231 VOICE SCIENCE 1Q W Su 3 Prereq Speech 119. Basic scientific concepts and principles fundamental to the understanding of voice and speech phenomena.

FOR UNDERGRADUATES AND GRADUATES

For explanation see Index under "Symbols"
serve 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 108, 306, 308, 309, 328, 421; 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 303, 307, 310, 328; Forestry 210; Geology 101; Microbiology 200.

CURRICULA IN WILDLIFE TECHNOLOGY

WILDLIFE TECHNOLOGY—77
ZOOLOGY is the study of animals—how they are put together, how their bodies work, and how they adjust to their surroundings. It is a basic science for many professional fields such as medicine, pharmacy, wildlife, and physical education. The Master of Arts (or Master of Science) and the Doctor of Philosophy degrees are also offered.

Undergraduate courses involve much laboratory work as well as opportunities for field work. During the summer extensive field experience is available at the Biological Station maintained on Flathead Lake for qualified upperclass and graduate students.

Graduates become high school teachers or, after advanced studies, instructors in colleges and universities. Others enter state or federal government service in health and conservation agencies. Many, with further training, enter medicine or related fields. A few establish themselves as fish culturists, fur farmers, pest control experts, and so on.

SPECIAL REQUIREMENTS FOR THE UNDERGRADUATE DEGREE IN ZOOLOGY. In addition to the general requirements for graduation listed earlier in the catalog, the following special requirements must be completed for the Bachelor of Arts degree with a major in Zoology: 45 credits in Zoology including Zoology 104-105, 106, 201, 302, 325, 340, 341, 385, 1 credit of 429.

The following must also be completed: Botany 121-122, 123; Chemistry 112-113-114; Mathematics 118, 116, 118; and Physics 111-112 or 221-222-223.

Students who contemplate graduate work in Zoology should elect during their junior or senior years, Microbiology 200 and Zoology 303, 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, 106, 201, 302, 325; any one course from Zoology 106, 309, 305, 350, 308, 350, 308-310, 321, 328, 304, 305, 306, 461; any one course from Microbiology and Public Health, or from Botany or one course from Zoology 303, 305, 333, 340, 341.

Senior examinations are given only to candidates for honors.

MAJOR 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>
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<th>Credits</th>
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<tbody>
<tr>
<td>For 255, 250—Surveying, Mapping</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Bot 225, 355—Plant Physiology, General Systematic Botany</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zool 309, 360, 308—Mammalogy, Ecology of Wildlife Populations, Ornithology</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Math 125—Statistics</td>
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<td>Group Requirements</td>
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Sophomore Year

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<tr>
<td>Chem 121-122-123—College Chem</td>
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<tr>
<td>For Language 101-102-103—Elementary French, German, or Russian</td>
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<td>Group Requirements</td>
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<tr>
<td>Zoology 201—Comparative Vertebrate Anatomy</td>
<td>5</td>
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<tr>
<td>Health and Physical Education 201-202-203</td>
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<td>ROTC 201-202-203—Military or Air Science</td>
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<td>or</td>
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Junior Year

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<tr>
<td>Zoology 340-341—Vertebrate Physiology</td>
<td>5</td>
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<tr>
<td>Physics 111-112-113 or 221-222-223 General Physics</td>
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<td>5</td>
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<tr>
<td>Foreign Language 213-215—Intermediate, Advanced French, German, or Russian</td>
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<tr>
<td>Group Requirements</td>
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<td>3-10</td>
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<tr>
<td>Senior Year</td>
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<td>14-17</td>
</tr>
</tbody>
</table>

FOR UNDERGRADUATES

For explanation see Index under "Symbols"

Courses also offered at Biological Station (costs only at Biological Station): Chemistry 121-122-123; Mathematics 118, 309, 350, 383, 431, 433, 434, 406, 461, 521, 551, 561, 600, 609.

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 101 or 104. Collection, identification and preservation of animals. Field work.

201 COMPARATIVE VERTEBRATE ANATOMY IQ S 5 (3-4) Prereq 101 or 104 or one laboratory course in Zoology. The comparative anatomy, morphology, and physiology 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

301 GENERAL COMPARATIVE EMBRYOLOGY 1Q A 5 (3-4) alternate 1st Fall. Prereq 212-213. The early stages of development of the invertebrates and vertebrates, including meiosis, fertilization, cleavage, formation of the germ layers and early organogenesis.

302 VERTEBRATE EMBRYOLOGY 1Q W 5 (3-4) Prereq 201. The early stages of development of the vertebrates, including organogenesis, with emphasis on birds (chick) and mammals (pig).

303 PARASITOLOGY 1Q W 5 (3-4) Prereq 104-105. Morphology, physiology, systematic, and life histories of representative animal parasites and techniques of their diagnosis, treatment, and control.

305 HISTOLOGY AND MICROTECHNIQUE 1Q W 5 (3-4) Prereq 201, 102, 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.

306 HERPETOLOGY 1Q W 5 (3-4) or y Prereq 201. The taxonomy, distribution, and life histories of amphibians and reptiles.

307 AQUATIC BIOLOGY 1Q A 5 (3-7) Prereq 108 and Bot 125. The biology of fresh water with emphasis upon the flora and invertebrate fauna, with some consideration of their relationship to the food chains and habitats of aquatic vertebrates. Ecology, identification and taxonomic position of aquatic organisms below vertebrates.

308 ORNITHOLOGY 1Q S 5 (3-4), Su 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 at Biological Station. Prereq 201. The classification, identification and life histories of mammals. Saturday field trips.

310 ICHEMTOLOGY 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 W 5 (3-4) or y Prereq 104-105 and one additional Zoology course. The anatomy, embryology, and physiology of the invertebrate animals.
402 COMPARATIVE PHYSIOLOGY 1Q W 5 (3-4) e/y Prereq 112 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.

413 FISHERY SCIENCE 1Q W 3 (3-6) e/y Prereq 307, 310. The problems involved in investigations on fisheries biology with an analysis of and some actual field experience in methods employed in attacking these problems. Field trips.

429 BIOLOGICAL LITERATURE 2Q A W 1 (2-0) Prereq 29 credits in Bot or Zoology. Student reports of literature of the trend of investigation and experimentation in biological fields.

431 PROBLEMS IN VERTEBRATE MORPHOLOGY AND TAXONOMY 1Q a/q V 1-5 Prereq 25 credits in Zoology 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.