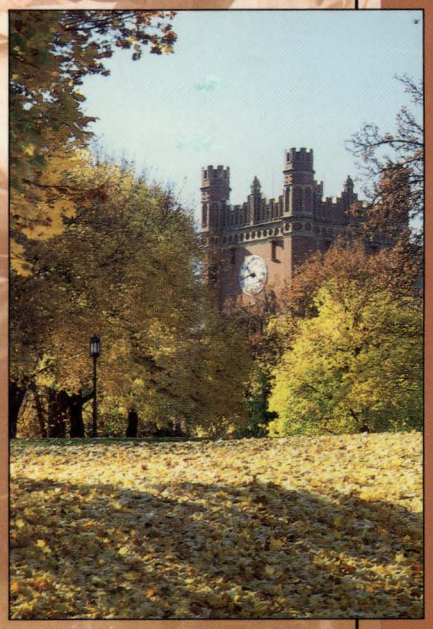
1988 Bulletin

UNIVERSITY OF IDAHO GENERAL CATALOG



Where Tradition Meets the Future

1889-1989

University of Idaho

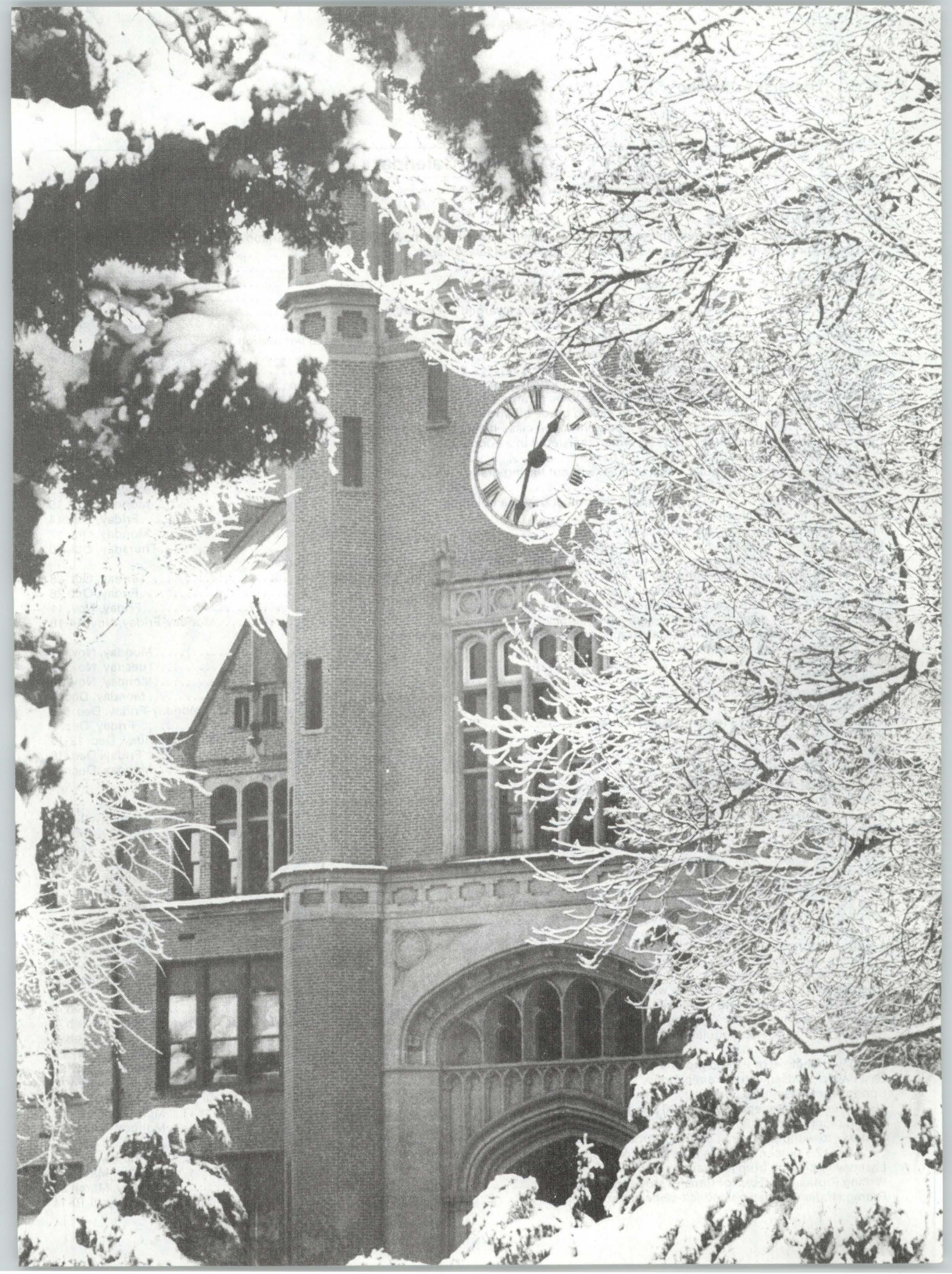
A university is . . . an *alma mater,*
knowing her children one by one,
not a foundry, or a mint, or a treadmill.
—John Henry Newman

The task of a university is the creation
of the future, so far as rational thought
and civilized modes of appreciation
can affect the issue.
—Alfred North Whitehead

For sources of additional information,
turn to the inside back cover.

University of Idaho

Bulletin (USPS 651-360)
Published in January, February, March, and July by the University of Idaho, Moscow, Idaho 83843.
Second class postage paid at Moscow, Idaho 83843
Postmaster: Send address changes to the University of Idaho, Moscow, Idaho 83843.



Academic Calendar

Dates in this calendar are subject to change without notice; dates appearing in admission and registration instructions take precedence over those listed below.

FALL SEMESTER 1988

Application closing dates for new and former students—see "Admission to the University" in the catalog.

Last day of preregistration advising and official opening date of fall semester ..... Monday, Aug. 22
Registration ..... Tuesday, Aug. 23
Classes begin ..... Wednesday, Aug. 24
Labor Day, a holiday ..... Monday, Sept. 5
Last day to file applications for baccalaureate degrees to be awarded in December ..... Tuesday, Sept. 6
Last day to register ..... Wednesday, Sept. 7
Last day to add course, change section, or change from audit to regular credit without special permission ..... Wednesday, Sept. 7
Last day to change from pass-fail to regular-grade basis ..... Wednesday, Sept. 7
Last day to avoid paying drop-add fee ..... Wednesday, Sept. 7
Last day to turn in "Partial Enrollment" and "Senior in 500s Course" forms to the Graduate Office ..... Wednesday, Sept. 7
Last day to file applications for graduate degrees to be awarded in December ..... Monday, Sept. 12
Last day to withdraw from a course without having grade of W recorded—in the case of accelerated or short course, when no more than 12.5 percent of the class-meeting hours have been completed ..... Wednesday, Sept. 21
Last day to reduce number of credits for which registered in a course or change from regular-grade to pass-fail basis ..... Wednesday, Sept. 21
Last day to change from regular credit to audit without having grade of W recorded ..... Wednesday, Sept. 21
Last day to remove or extend incompletes ..... Wednesday, Oct. 5
Classes WILL MEET this date, even though Columbus Day is a holiday ..... Monday, Oct. 10
Last day for midsemester examinations ..... Friday, Oct. 14
Midsemester grade reports due (1:30 p.m.) ..... Monday, Oct. 17
Writing Proficiency Test for transfer students (7 p.m.) ..... Thursday, Oct. 20
Last day to withdraw from a course or from the university—in the case of accelerated or short courses, after 12.5 percent but less than 60 percent of the class-meeting hours have been completed ..... Friday, Oct. 28
Last day to change from regular credit to audit ..... Friday, Oct. 28
Classes WILL MEET this date, even though Veterans Day is a holiday ..... Friday, Nov. 11
Preregistration for designated spring-semester courses ..... Monday-Friday, Nov. 14-18
Last day to file theses, dissertations, abstracts, and results of comprehensive examinations for graduate degrees to be awarded in December ..... Monday, Nov. 21
Fall recess begins (10 p.m.) ..... Tuesday, Nov. 22
Fall recess ends (7:30 a.m.) ..... Monday, Nov. 28
Field-trip completion deadline (7:30 a.m.) ..... Monday, Dec. 5
No-examination week ..... Monday-Friday, Dec. 5-9
Last day to report grades for challenged courses ..... Friday, Dec. 9
Final examinations ..... Monday-Friday, Dec. 12-16
Close of fall semester (5:30 p.m.) ..... Friday, Dec. 16
Semester grade reports due (5 p.m.) ..... Monday, Dec. 19

SPRING SEMESTER 1989

Application closing dates for new and former students—see "Admission to the University" in the catalog.

Last day of preregistration advising and official opening date of spring semester ..... Monday, Jan. 9
Registration ..... Tuesday, Jan. 10
Classes begin ..... Wednesday, Jan 11.
Classes WILL MEET this date, even though Martin Luther King Day is a national holiday ..... Monday, Jan. 16
Last day to file applications for baccalaureate degrees to be awarded in May ..... Monday, Jan. 23
Last day to register ..... Tuesday, Jan. 24
Last day to add course, change section, or change from audit to regular credit without special permission ..... Tuesday, Jan. 24
Last day to change from pass-fail to regular-grade basis ..... Tuesday, Jan. 24
Last day to avoid paying drop-add fee ..... Tuesday, Jan. 24
Last day to turn in "Partial Enrollment" and "Senior in 500s Course" forms to the Graduate Office ..... Tuesday, Jan. 24
Founders Day Celebration ..... Monday, Jan. 30
Last day to file applications for graduate degrees to be awarded in May ..... Monday, Jan. 30
Last day to withdraw from a course without having grade of W recorded—in the case of accelerated or short courses, when no more than 12.5 percent of the class-meeting hours have been completed ..... Tuesday, Feb. 7
Last day to reduce number of credits for which registered in a course or change from regular-grade to pass-fail basis ..... Tuesday, Feb. 7
Last day to change from regular credit to audit without having grade of W recorded ..... Tuesday, Feb. 7
Presidents' Day, a holiday ..... Monday, Feb. 20
Last day to remove or extend incompletes ..... Wednesday, Feb. 22
Last day for midsemester examinations ..... Friday, March 10
Spring recess begins (5:30 p.m.) ..... Friday, March 10
Midsemester grade reports due (1:30 p.m.) ..... Monday, March 13
Spring recess ends (7:30 a.m.) ..... Monday, March 20
Last day to withdraw from a course or from the university—in the case of accelerated or short courses, after 12.5 percent but less than 60 percent of the class-meeting hours have been completed ..... Friday, March 24
Last day to change from regular credit to audit ..... Friday, March 24
Writing Proficiency Test for transfer students (7 p.m.) ..... Thursday, March 30
Preregistration for designated fall-semester courses ..... Monday-Friday, April 10-14

Last day to file theses, dissertations, abstracts, and results of comprehensive examinations for graduate degrees to be awarded in May ..... Monday, April 17
Field-trip completion deadline (7:30 a.m.) ..... Monday, May 1
No-examination week ..... Monday-Friday, May 1-5
Last day to report grades for challenged courses ..... Friday, May 5
Final examinations ..... Monday-Friday, May 8-12
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Commencement Day ..... Saturday, May 13
Semester grade reports due (5 p.m.) ..... Monday, May 15

SUMMER SESSION 1989

Application closing dates for new and former students—see "Admission to the University" in the catalog.
Registration ..... Monday, June 12
Classes begin ..... Tuesday, June 13
Independence Day, a holiday ..... Tuesday, July 4
Close of summer session ..... Friday, August 4

Regents and Administration
(January 1988)

The Regents of the University of Idaho

BOARD MEMBERS

Roberta L. Fields, *President,* New Meadows (1989*)
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George M. Simmons, *Ph.D., Assistant Vice President for Academic Affairs and Research*
Eileen E. Hitchingham, *Ph.D., Dean of Library Services*
Matt E. Telin, *M.Ed., Director of Admissions and Registrar*

Major Academic Divisions

OTHER COLLEGES**

Jean'ne M. Shreeve, *Ph.D., Dean*

UNDERGRADUATE COLLEGES**

Letters and Science—Galen O. Row, *Ph.D., Dean*
Agriculture—A. Larry Branen, *Ph.D., Dean*
Engineering—William E. Saul, *Ph.D., Dean*
Law—Sheldon A. Vincenti, *J.D., Dean*
Mines and Earth Resources—Robert W. Bartlett, *Ph.D., Dean*
Forestry, Wildlife and Range Sciences—John C. Hendee, *Ph.D., Dean*
Education—N. Dale Gentry, *Ph.D., Dean*
Business and Economics—Raymond Dacey, *Ph.D., Dean*
Art and Architecture—Paul L. Blanton, *M.Arch., Dean*

*Date current appointment expires.
**Listed in the order of their founding.

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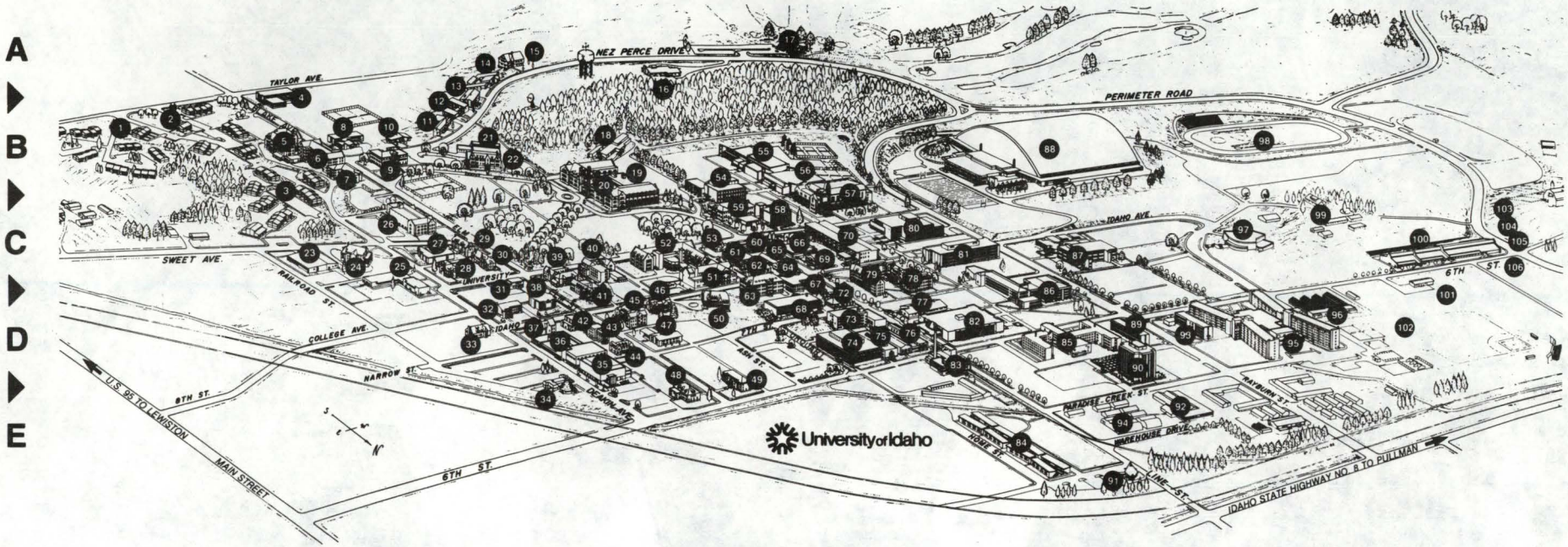

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28	Delta Sigma Phi	C-3
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38	Phi Delta Theta	C-4
39	Phi Gamma Delta	C-4
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42	Delta Gamma	D-4
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48	Alpha Phi	D-5
49	Delta Delta Delta	D-5
50	Delta Tau Delta	D-5
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102	Wicks Field	D-9
103	Animal Research Pavilion	C-10
104	Beef Research Center	C-10
105	Animal Sciences Farm	C-10
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The University

The University of Idaho was created in 1889 by a statute of the 15th territorial legislature. Commonly known as the university charter, that act became part of the state constitution when Idaho was admitted to the Union in 1890.

The university is a publicly supported comprehensive land-grant institution with principal responsibility in Idaho for performing research and granting the Doctor of Philosophy degree. The liberal arts and sciences, offered through the College of Letters and Science, are the heart of the university's educational programs. The primary areas of statewide responsibility of the university are agriculture, architecture, engineering, forestry and wildlife, mining and metallurgy (including international programs in those areas), foreign languages, and law.

Additional university responsibilities include programs in business, economics, and education as well as the regional medical and veterinary medical education programs in which the state participates.

To assist with its statewide mission, the university maintains resident instructional centers in Coeur d'Alene, Boise, and Idaho Falls, extension offices in 42 of Idaho's 44 counties, research and extension centers in Sandpiont, Moscow, Parma, Caldwell, Kimberly, Aberdeen, Tetonia, and Dubois, and field stations at McCall, Clark Fork, Point Springs, and the Taylor Ranch in central Idaho. Through its international programs, the university extends its services to many other countries.

About 9,500 students from all states and 61 foreign countries choose programs from a vast array of disciplines. Strong undergraduate programs are coupled with nationally recognized research and scholarly achievements. There are more than 700 faculty members in teaching and research, and 1,400 staff and professional personnel.

The University Library contains over 1.5 million volumes of books, bound periodicals, microforms, and U.S. government publications. These resources, together with the libraries at Washington State University (eight miles to the west), equal those of major metropolitan areas.

The Moscow campus and adjacent farms cover nearly 800 acres. Other university lands, including the nearby university farms and experimental forests, exceed 10,000 acres.

The university is proud of its friendly campus atmosphere and sense of community. For example, the tradition of "Hello Walk" leading to the Administration Building dates from the 1920s, when the university president greeted students and members of the faculty and staff with a warm hello and friendly smile on his way to work. The university has granted more than 56,000 degrees since its founding, including 1,585 to the class of 1987.

The feeling of comaraderie that pervades the campus extends to Moscow, the university's "hometown." It is a thriving community of 17,000 friendly people located in the northern part of the state about 90 miles southeast of Spokane, Washington.

Moscow is the gateway to a natural wonderland. The surrounding Palouse hills and the mountains and lakes of northern Idaho provide a scenic background for university facilities. Skiing, boating, and other outdoor recreation resources are available within easy driving distance. They include the Sawtooth and Hells Canyon national recreation areas, Frank Church River of No Return Wilderness, and scenic rivers such as the Snake, Clearwater, Salmon, Lochsa, and Selway.

The university is a member of the National Association of State Universities and Land-Grant Colleges and is accredited by the Northwest Association of Schools and Colleges. Additional approval or accreditation for specific programs has been granted by the following organizations: American Bar Association, American Chemical Society, American Dietetics Association, Association of American Law Schools, Accreditation Board for Engineering and Technology, National Architectural Accrediting Board, American Society of Landscape Architects, National Association of Schools of Music, National Council for Accreditation of Teacher Education, Society of American Foresters, National Association of School Psychologists, and the Council for the Accreditation of Counseling and Related Educational Programs.

General Honorary Societies

The university has long possessed nationally recognized marks of excellence, including chapters of national honorary and scholarship societies in practically every specialized field and chapters of the following general honorary societies: Phi Beta Kappa (since 1926), Phi Kappa Phi (since 1960), and Sigma Xi (since 1922). For information on officers of these societies, call the program coordinator at the Student Union Building.

Phi Beta Kappa. To qualify for nomination to Phi Beta Kappa, a candidate must have achieved a cumulative grade-point average of at least 3.30 and have fulfilled the following distribution requirements: humanities (seven semester credits); laboratory sciences and/or mathematics (12 semester credits); social sciences (seven semester credits); foreign language (completion of a single foreign language through the intermediate level, or the equivalent — 16 semester credits or four high-school units in a single foreign language).

Phi Kappa Phi. To qualify for nomination by the local chapter of Phi Kappa Phi, a candidate must be (1) registered at UI for at least one year and (2) enrolled in the final period of his or her junior year and rank scholastically in the upper 5 percent of the class *or* a senior enrolled in a course of study leading to a baccalaureate degree and rank scholastically in the upper 10 percent of his or her class.

Sigma Xi. To qualify for nomination to associate membership in Sigma Xi, a student must have shown marked aptitude for research in some field of pure or applied science. An associate member must have shown noteworthy achievement as an original investigator in some field of pure or applied science to qualify for nomination to full membership.

Libraries

The University Library and Law Library contain collections of over 1.6 million volumes, to which approximately 70,000 volumes are added annually. The library receives 12,750 periodicals (serials) and 117 newspapers and, as the regional depository in Idaho for U.S. government documents, houses a collection of over 650,000 official publications. The U.S. Geological Survey and the U.S. Defense Mapping Agency also use the library as a depository; there are now about 140,000 maps in the library's collection.

Subject librarians administer three open-stack divisional libraries (humanities, social sciences, and science/technology), which have been organized to conform with the academic divisions of the university. The library shares the university objectives of teaching, research, and service, and offers individual and group instruction in elementary and advanced techniques of bibliographic research.

The Special Collections Department contains rare and curious books, and books that constitute a unique assemblage, such as the Day-Northwest Collection, which consists of over 12,600 volumes on Idaho and the Pacific Northwest.

The library also maintains a Browsing Room composed of books of current interest, popular periodicals, and state, out-of-state, and foreign newspapers.

The library is air-conditioned, is open 100 hours a week during

the regular school term, and provides photocopying at a nominal fee. Free hand calculators are available for use in the library, courtesy of ASUI. Computer literature searches are available for a fee.

There is a reciprocal use agreement between the UI and WSU libraries. A daily shuttle service runs between the two libraries to pick up and return library materials.

As a member of the Western Library Network, the library has access to the collections of other academic libraries within the region.

Galleries

The University Gallery occupies the main floor of Ridenbaugh Hall on campus (corner of Blake Street and Campus Drive); it is open during the regular academic year. The Prichard Gallery is located at 414 South Main Street in downtown Moscow; it is open throughout the year. All gallery programs and exhibitions are open to the public and no admission is charged.

The galleries serve the university, community, state, and region and are the principal facilities emphasizing the visual arts in northern Idaho. Through the galleries' rotation of exhibits, visitors may see examples of the full range of visual arts, including architecture, landscape architecture, interior design, and photography as well as the traditional art media. The objectives of these galleries are to provide opportunities for local, regional, and national artists to exhibit their work, a means by which visitors' awareness and appreciation of the arts is heightened, and an excellent teaching device. Ties between the university and local and regional communities are strengthened by the outreach efforts of the Prichard Gallery, which are coordinated by an advisory board composed of university and community leaders.

Exhibitions mounted each year traditionally include those by faculty members and undergraduate and graduate students from the College of Art and Architecture. Public receptions held in connections with some exhibitions, occasional musical performances presented at the galleries, and seminars with guest artists and lecturers are ways in which the gallery broadens its impact.

The gallery facilities are administered through the College of Art and Architecture by a full-time director and the programs and exhibitions are coordinated by the Gallery Committee of the college faculty.

Computer Services

Computer Services provides facilities for instructional, research, and computational needs of members of the university community, for federal, state, and other governmental agencies, and for other groups and individuals when this service appears to be in the best interests of the university and the state of Idaho.

The center is equipped with two IBM 4300 computers with related systems and remote terminals. It maintains a library of computer programs and provides consulting assistance in programming and in the use of the library and other computer facilities.

Ten microcomputer laboratories are available for teaching and student use.

The center also supports a campus-wide office automation network for word processing and electronic mail.

A microcomputer sales outlet is available to serve faculty and staff members, students, and departments.

Short courses in computer languages, job control, and related subjects are offered periodically. Formal courses in programming and computer science are offered by the Department of Computer Science.

Idaho Water Resources Research Institute

The Idaho Water Resources Research Institute was established at UI by the regents on October 24, 1963. Subsequently, the institute was designated by the Office of Water Resources Research of the U.S. Department of the Interior to stimulate, sponsor, coordinate, and supplement research programs in the field of water resources. The institute serves the state by developing and coordinating water research programs intended to assure the state, region, and nation adequate supplies of high-quality water.

The area of water resources planning, development, and management is a composite of many disciplines. Consequently, the Idaho Water Resources Research Institute believes that educational needs in these areas are best achieved by individuals with strong basic education in a traditional academic department tempered by programs of study in water resources problems and professional practice. The university has developed procedures that encourage existing schools and departments to strengthen their programs in the light of the special needs for water resources. The Idaho Water Resources Research Institute has coordinated master's and doctoral programs in several disciplines and specializations through various participating divisional programs.

The objectives of the institute are to: (1) promote water resource research and coordinate the efforts of the various university divisions and departments involved in water resources research; (2) strengthen and coordinate water-related undergraduate and graduate programs and course offerings so that the university can supply well-trained teachers and leaders; and (3) develop, gather, and disseminate research findings within the university and to various federal, state, local, and civic organizations interested in water resources.

University Research Office

The University Research Office serves as the coordinated center for research and development activities at the university. While colleges, departments, and other units commonly develop and administer their own research programs, the Research Office coordinates activities by helping to organize and promote research and development activities, by ensuring that policies and procedures are recognized and followed, by helping to provide grant and contract information and assistance to the faculty, staff, and students, and by processing and recording all grant and contract proposals.

Working very closely with the associate vice president for research is the Research Council, the faculty's standing committee involved with development of research policy and overseeing policy implementation. The council serves to resolve differences in interpretation and implementation of these policies. Additionally, the council acts as the peer review board in the university's internal competitive grants programs.

Idaho Research Foundation

The Idaho Research Foundation is a nonprofit corporation that (a) promotes the research function of the university, (b) functions as an agent of education, (c) promotes, reviews, and publishes written scholarly works through its subdivision, the University of Idaho Press, and (d) promotes and supports development of patents and copyrights generated by the faculty and staff, and initiates filing and copyright registrations and licensing arrangements of those with commercial potential.

Electron Microscopy Center

A campus-wide facility, including scanning and transmission electron microscopes, is available for use in teaching, research, and service. Located in the Veterinary Medicine complex at the western edge of the campus, this facility is available to students

and faculty. Information concerning use of the EM Center may be secured directly from the facility or through the College of Graduate Studies.

Laboratory Animal Research Facility

A centrally located facility for housing and maintaining small animals for use in teaching and research is available to faculty and students. Information concerning space availability, use, and services provided is available through the University Research Office or through the facility itself.

Degrees Granted

On completion of specific courses of study and recommendation of the faculty, the degrees listed below are granted by the Regents of the University of Idaho. In addition, the Certificate of General Proficiency is granted to students who complete specified lower-division educational programs at the UI/Idaho Falls Center for Higher Education.

Baccalaureate Degrees

Bachelor of Arts, B.A.
Bachelor of Science, B.S.
Bachelor of Science in
- Agricultural Economics, B.S.Ag.Econ.
- Agricultural Education, B.S.Ag.Ed.
- Agricultural Engineering, B.S.Ag.E.
- Agricultural Mechanization, B.S.Ag.Mech.
- Animal Science, B.S.An.Sc.
- Art Education, B.S.Art Ed..
- Bacteriology, B.S.Bact.
- Business, B.S.Bus.
- Business Education, B.S.Bus.Ed.
- Cartography, B.S.Cart.
- Chemical Engineering, B.S.Ch.E.
- Civil Engineering, B.S.C.E.
- Computer Science, B.S.C.S.
- Education, B.S.Ed.
- Electrical Engineering, B.S.E.E.
- Entomology, B.S.Ent.
- Fishery Resources, B.S.Fish.Res.
- Forest Products, B.S.For.Prod.
- Forest Resources, B.S.For.Res.
- General Agriculture, B.S.Gen.Ag.
- Geography, B.S.Geog.
- Geological Engineering, B.S.Geol.E.
- Geology, B.S.Geol..
- Interdisciplinary Studies, B.S.I.S.
- Home Economics, B.S.H.Ec.
- Mechanical Engineering, B.S.M.E.
- Metallurgical Engineering, B.S.Met.E.
- Mining Engineering, B.S.Min.E.
- Office Administration, B.S.O.Ad.
- Physical Education, B.S.P.E.
- Plant Protection, B.S.Pl.Prot.
- Plant Science, B.S.Pl.Sc.
- Pre-Dental Studies, B.S.Pre-Dent.
- Pre-Medical Studies, B.S.Pre-Med.
- Range Resources, B.S.Range Res.
- Recreation, B.S.Rec.
- Soil Science, B.S.Soil Sc.
- Veterinary Science, B.S.Vet.Sc.
- Wildland Recreation Management, B.S.Wildland Rec. Mgmt.
- Wildlife Resources, B.S.Wildl.Res.

Bachelor of Applied Physics, B.Appl.Phys.
Bachelor of Architecture, B.Arch.
Bachelor of Dance, B.Dan.
Bachelor of Fine Arts, B.F.A.
Bachelor of General Studies, B.G.S.
Bachelor of Landscape Architecture, B.L.Arch.
Bachelor of Music, B.Mus.
Bachelor of Naval Science, B.N.S.
Bachelor of Technology, B.Tech.

Master's Degrees

Master of Arts, M.A.
Master of Science, M.S.
Master of Architecture, M.Arch.
Master of Arts in Teaching, M.A.T.
Master of Business Administration, M.B.A.
Master of Education, M.Ed.
Master of Engineering, M.Engr.
Master of Fine Arts, M.F.A.
Master of Forestry, M.F.
Master of Music, M.Mus.
Master of Natural Science, M.Nat.Sc.
Master of Public Administration, M.P.A.

Specialist Degrees in Education

Specialist in Counseling and Human Services—Couns.-Hum. Serv.Sp.
Specialist in Education—Ed.Sp.
Specialist in Educational Administration—Ed.Admin.Sp.
Specialist in School Psychology—Sch.Psych.Sp.
Specialist in Special Education—Sp.Ed.Sp.
Specialist in Vocational Education—Voc.Ed.Sp.

Professional Degree in Law

Juris Doctor, J.D.

Doctoral Degrees

Doctor of Philosophy, Ph.D.
Doctor of Education, Ed.D.

Programs Offered

Programs offered by the university are shown in the list below. Entries followed by degree abbreviations are major curricula leading to the degrees indicated. After a student has completed the requirements for a degree, the degree name and, if not already a part of the degree name, the major curriculum as shown in this list are printed on the student's diploma. (By contrast, the options listed under some curricula are areas of concentration within the major. Options and academic minors are recorded only on the student's final permanent transcript.) In parentheses after each major curriculum in the list is the college or unit through which the program is offered. The abbreviations used are: *Ag,* College of Agriculture; *A&A,* College of Art and Architecture; *B&E,* College of Business and Economics; *Ed,* College of Education; *Engr,* College of Engineering; *FWR,* College of Forestry, Wildlife and Range Sciences; *GS,* General Studies Program; *Law,* College of Law; *L&S,* College of Letters and Science; *Min,* College of Mines and Earth Resources. Graduate degrees, except the degree of Juris Doctor, are offered through the College of Graduate Studies. See the note at the end of this list.

Accounting (B&E) B.S.Bus.
Agribusiness (Ag) B.S.Ag. Econ., B.S.An.Sc., B.S.Soil Sc.
Agricultural Economics (Ag) B.S.Ag.Econ., M.S.
Agricultural Education (Ag) B.S.Ag.Ed., M.S.
Agricultural Engineering (Engr) B.S.Ag.E., M.S., M.Engr., Ph.D.
Agricultural Mechanization (Ag) B.S.Ag.Mech.
Agriculture: General (Ag) B.S.Gen.Ag.
Air Force Officer Education Program, cooperative with Washington State University

American Studies (L&S) B.A.
Animal Science (Ag) B.S.An.Sc., M.S.
Anthropology (L&S) B.A., B.S., M.A.
Architecture (A&A) B.Arch., M.Arch., M.A.
Army Officer Education Program
Art (A&A) B.F.A., M.A., M.F.A., M.A.T.; also (L&S) B.A.
Art Education (A&A) B.S.Art.Ed.
Bacteriology (Ag) B.S.Bact., M.S., Ph.D.,; also (L&S) B.S.
Biochemistry (Ag-L&S) M.S., Ph.D.
Biological Sciences (L&S) M.Nat.Sc.
Biology (L&S) B.A., B.S.
Botany (L&S) B.A., B.S., M.S., Ph.D.
Business (B&E) M.B.A.
Business Education (Ed) B.S.Bus.Ed., M.Ed.
Cartography (Min) B.S.Cart.
Chemical Engineering (Engr) B.S.Ch.E., M.S., M.Engr., Ph.D.
Chemistry (L&S) M.S., M.A.T., Ph.D.
Chemistry: General (L&S) B.S.
Chemistry: Professional (L&S) B.S.
Chemistry: Technical Literature (L&S) B.S.
Chemistry: Technological (L&S) B.Tech.
Child Development and Family Relations (L&S) B.S.; also (Ag) B.S.H.Ec.
Civil Engineering (Engr) B.S.C.E., M.S., M.Engr., Ph.D.
Classical Studies (L&S) B.A.
Clothing, Textiles and Home Design (Ag) B.S.H.Ec.
Communication (L&S) B.A., B.S.
Computer Science (Engr) B.S.C.S., M.S.
Counseling and Human Services (Ed) M.S., M.Ed., Couns.-Hum.-Serv.Sp. Doctoral programs in this field are offered under "Education."
Criminal Justice (L&S) B.S.
Crop Management (Ag) B.S.Pl.Sc.
Crop Science (Ag). B.S.Pl.Sc.
Dance (Ed) B.Dan.
Distributive Education (Ed) B.S.Bus.Ed.
Earth Science (Min) M.A.T.
Economics (B&E) B.S.Bus., M.S.; also (L&S) B.A., B.S.
Education (Ed) Ed.Sp., Ed.D., Ph.D.
Educational Administration (Ed) M.S., M.Ed., Ed.Admin.Sp. Doctoral programs in this field are offered under "Education."
Electrical Engineering (Engr) B.S.E.E., M.S., M.Engr., Ph.D.
Elementary Education (Ed) B.S.Ed., M.S., M.Ed. Doctoral programs in this field are offered under "Education."
English (L&S) B.A., M.A., M.A.T.
English as a Second Language (L&S) M.A.
Entomology (Ag) B.S.Ent., M.S., Ph.D.
Finance (B&E) B.S.Bus.
Fishery Resources (FWR) B.S.Fish.Res., M.S. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Food and Nutrition (Ag) B.S.H.Ec.
Food Science (Ag), cooperative with Oregon State University
Foreign Languages (L&S) B.A.
Forest Products (FWR) B.S.For.Prod., M.S., M.F. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Forest Resources (FWR) B.S.For.Res., M.S., M.F. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Forestry, Wildlife and Range Sciences (FWR) Ph.D.
French (L&S) B.A., M.A.T.
General Studies (GS) B.G.S.
Geography (Min) B.S.Geog., M.S., M.A.T.; also (L&S) B.A., B.S.
Geological Engineering (Min) B.S.Geol.E., M.S.
Geology (Min) B.S.Geol., M.S., Ph.D.
Geophysics (Min) M.S.
German (L&S) B.A., M.A.T.
History (L&S) B.A., B.S., M.A., M.A.T., Ph.D.
Home Economics (Ag) B.S.H.Ec., M.S.
Home Economics Education (Ag) B.S.H.Ec.
Horticultural Science (Ag) B.S.Pl.Sc.
Human Resources Management (B&E) B.S.Bus.
Hydrology (Min) M.S.
Industrial Education (Ed) B.S.Ed., M.S., M.Ed.
Industrial Technology (Ed) B.Tech.
Information Systems (B&E) B.S.Bus.
Interdisciplinary Studies (L&S) B.A., B.S., M.A., M.S. (May also be offered under the B.S.I.S. by colleges other than L&S)
Interior Planning and Design (A&A) B.F.A.
Journalism (L&S) B.A., B.S.
Landscape Architecture (A&A) B.L.Arch.
Landscape Horticulture (Ag) B.S.Pl.Sc.
Latin (L&S) B.A.
Latin-American Studies (L&S) B.A.
Law (Law) J.D.
Marketing (B&E) B.S.Bus.
Mathematics (L&S) B.A., B.S., M.S., M.A.T., Ph.D.
Mathematics: Applied (L&S) B.S.
Mechanical Engineering (Engr) B.S.M.E., M.S., M.Engr., Ph.D.
Medical Education (WAMI), cooperative with University of Washington
Medical Technology (L&S) B.S.
Metallurgical Engineering (Min) B.S.Met.E., M.S.
Metallurgy* (Min) M.S.
Mining Engineering (Min) B.S.Min.E., M.S.
Mining Engineering-Metallurgy (Min) Ph.D.
Music (L&S) M.A., M.Mus.
Music: Applied (L&S) B.A.
Music: Composition (L&S) B.Mus.
Music: History and Literature (L&S) B.A.
Music: Instrumental Performance (L&S) B.Mus.
Music: Theory (L&S) B.A.
Music: Vocal Performance (L&S) B.Mus.
Music Education: Instrumental (L&S) B.Mus.
Music Education: Vocal (L&S) B Mus.
Music Education: Vocal-Instrumental (L&S) B.Mus.
Natural Resources and Rural Development (Ag) B.S.Ag.Econ.
Naval Science (L&S) B.N.S.; also Navy-Marine Officer Education Program
Nuclear Engineering* (Engr) M.S., M.Engr.
Office Administation (Ed) B.S.O.Ad.
Office Occupations Education (Ed) B.S.Bus.Ed.
Organizational Communication (L&S) B.A., B.S.
Philosophy (L&S) B.A., B.S.
Photography (A&A) B.F.A.
Physical Education (Ed) B.S.Ed., M.S., M.Ed. Doctoral programs in this field are offered under "Education."
Physics (L&S) B.A., B.S., B.Appl.Phys., M.S., M.A.T., Ph.D.
Plant Protection (Ag) B.S.Pl.Prot.
Plant Science (Ag) M.S., Ph.D.
Political Science (L&S) B.A., B.S., M.A., Ph.D.
Poultry Science (Ag) B.S.An.Sc.
Pre-Nursing Studies (L&S) 2-year program
Production/Operations Management (B&E) B.S.Bus.
Psychology (L&S) B.A., B.S., M.S.
Public Administration (L&S) M.P.A.
Range-Livestock Management (Ag) B.S.An.Sc.
Range Resources (FWR) B.S.Range Res., M.S. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Recreation (Ed) B.S.Rec., M.S.
School Psychology (Ed) Sch.Psych.Sp.
Secondary Education (Ed) B.S.Ed., M.S., M.Ed. Doctoral programs in this field are offered under "Education."
Sociology (L&S) B.A., B.S.
Sociology-Anthropology (L&S) M.A.T.
Soil Science (Ag) B.S.Soil Sc., M.S., Ph.D.
Spanish (L&S) B.A., M.A.T.
Special Education (Ed) B.S.Ed., M.S., M.Ed., Sp.Ed.Sp. Doctoral programs in this field are offered under "Education."
Sport Science (Ed), B.S.P.E.

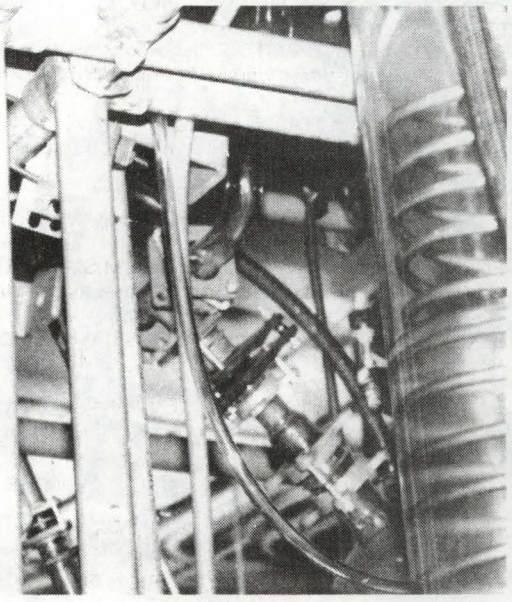
Statistics (L&S) M.S.
Technical Education (Ed) B.S.Ed.
Telecommunication (L&S) B.A., B.S.
Theatre Arts (L&S) B.A., B.S., B.F.A., M.F.A.
Theatre Arts-Speech (L&S) M.A.T.
Trade and Industrial/Technical Education (Ed) B.S.Ed.
Veterinary Science (Ag) B.S.Vet.Sc., M.S.; also Veterinary Medicine, cooperative with Washington State University and Oregon State University.
Vocational Education (Ed) M.S., M.Ed., Voc.Ed.Sp. Doctoral programs in this field are offered under "Education."
Wildland Recreation Management (FWR) B.S. Wildland Rec.Mgmt., M.S., M.F. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Wildlife Resources (FWR) B.S.Wildl.Res., M.S. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Zoology (L&S) B.A., B.S., M.S., Ph.D.

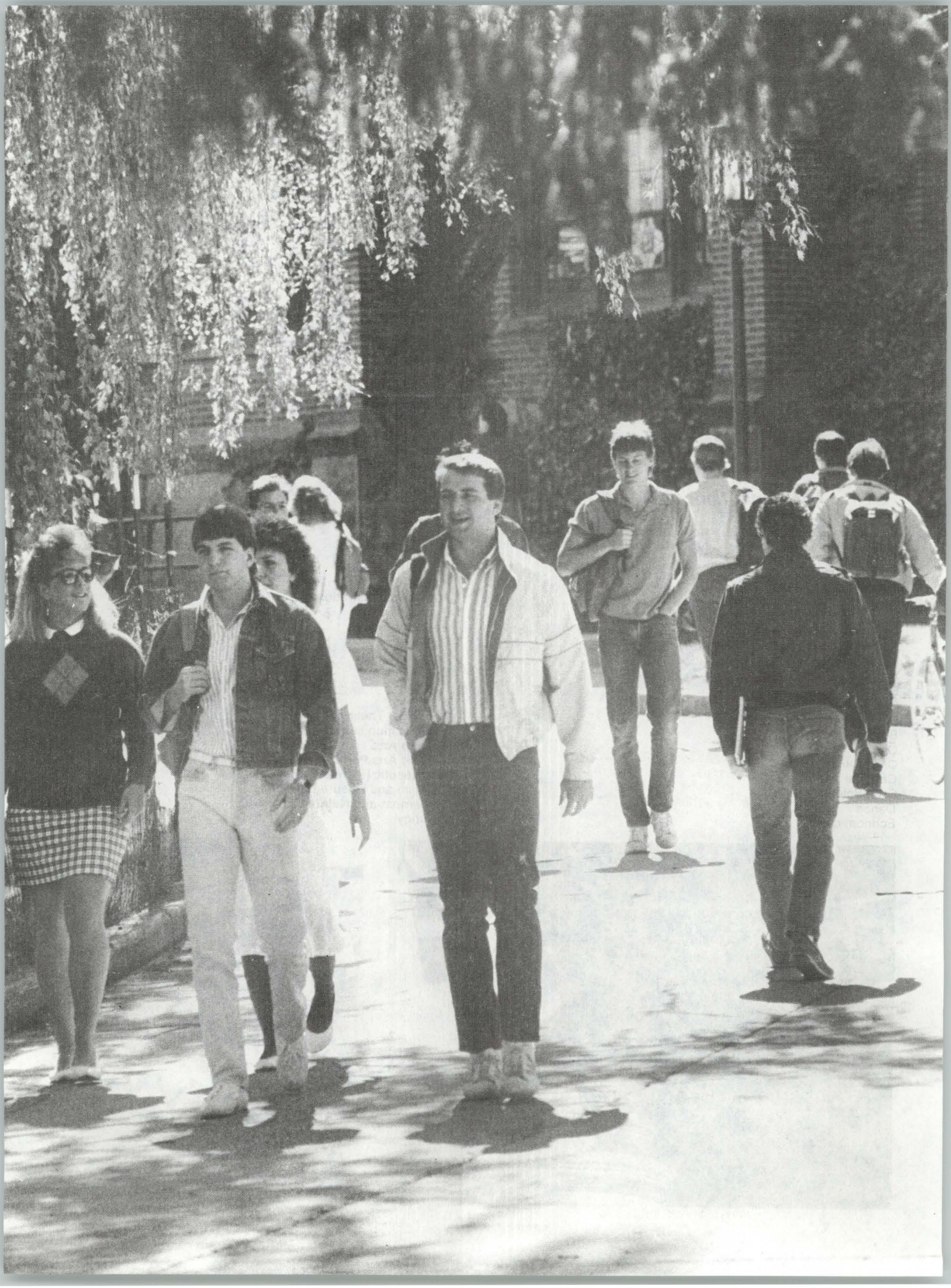
*The graduate majors in metallurgy and nuclear engineering are limited to students enrolled in the UI/Idaho Falls Center for Higher Education.

Academic Minors Offered

A student may elect to pursue one or more of the academic minors listed below. See regulation J-9 in part 3.

Advertising
Agribusiness
Agricultural Economics
Agricultural Extension Education
Agricultural Mechanization
American Government/Public Law
Anthropology
Art
Bacteriology
Biochemistry
Biology
Botany
Chemistry
Classical Studies
Criminal Justice
Crop Science
Dance
Economics
English
English as a Second Language
Entomology
Foreign and International Politics
Forest Products
Forestry, Wildlife and Range Sciences
French
Geology
German
Greek
History
Horticulture
Interdisciplinary Studies
Interpersonal Communication
Journalism
Latin
Mathematics
Metallurgical Engineering
Mining Engineering
Music
Natural Resource Communication
Natural Resource Economics and Community Development
Naval Science
Outdoor Recreation Leadership
Philosophy
Photography
Physics
Plant Protection
Political Science
Psychology
Public Administration
Public Relations
Recreation
Social Work
Sociology
Soil Science
Spanish
Statistics
Technical Theatre
Telecommunication
Theatre Arts
Theatre Arts Performance
Therapeutic Recreation
Tourism and Leisure Enterprises
Wilderness and Nature Conservation
Zoology





Admission to the University

Students desiring to enter the university for the first time should write to the Admissions Office to request an admissions folder. It contains detailed instructions on the application procedure and provides a means of requesting information on housing and various types of financial aid.

This catalog section contains general information pertinent to all applicants for admission to the university. See "Admission of International Students" and "Admission to the College of Graduate Studies and the College of Law," near the end of this catalog section, for additional information.

Students who have not earned a college degree are classified as undergraduates: freshmen (fewer than 26 credits), sophomores (fewer than 58 credits), juniors (fewer than 90 credits), or seniors.

Applicants who are still in high school should apply during the first semester of their senior year and should ask the school to send a record of their first seven semesters to the Admissions Office. If otherwise qualified, the applicant will be given an early notice of tentative acceptance for fall entrance based on this record. Final acceptance will be granted when the university receives confirmation that the applicant has graduated from an accredited high school.

Admission Procedures

Credentials. Applicants for admission are required to submit:

1. Personal data on the regular "Application for Admission" form. Failure to list all instititions attended as specified on the application form is considered fraud and subjects the applicant to immediate cancellation of his or her registration.

2. A certificate of secondary-school record from the last high school attended and a transcript and statement of honorable dismissal from each institution attended beyond high school. TRANSCRIPTS SUBMITTED IN SUPPORT OF AN APPLICATION MUST BE OFFICIAL AND MUST BE SENT DIRECTLY TO THE ADMISSIONS OFFICE BY THE ISSUING INSTITUTION (or certifying agency in the case of international students). THEY WILL NOT BE ACCEPTED FROM THE APPLICANT. THEY BECOME THE PROPERTY OF THE UNIVERSITY AND CANNOT BE RETURNED OR FORWARDED. To be official, a transcript must be signed by the registrar, superintendent, principal, or other authorized official of the school.

3. Each applicant for admission to the freshman class (including transfer students with fewer than 14 semester credits) is required to have the scores attained on the College Entrance Examination Board (SAT) or the American College Testing Program (ACT) or the Washington Pre-college Test (SAT Conversions) sent to the Admissions Office before registration.

Application Fee. With certain exceptions, all **new** applications for admission must be accompanied by a $15, nonrefundable application fee. This fee is not charged to those applying for admission to summer sessions short courses, continuing-education programs, the UI/Idaho Falls Center for Higher Education, or domestic student exchange programs.

Final Dates for Application. To provide time for evaluation and for notice of acceptance to reach the applicant before registration, applications and credentials should be received by the Admissions Office by August 1 for fall-semester entrance and by December 15 for spring-semester entrance (see "Admission of International Students" for final dates of application by those students). Applications and credentials for summer sessions should be received by the Admissions Office at least three weeks before the opening date of the summer sessions or the program in which the student intends to enroll. Applications received after the above dates will be accepted in the order of their receipt only as long as additional new students can be accommodated. Acceptance will be subject to space limitations in the division in which the applicant wishes to register.

Acceptance.

1. When an applicant's credentials have all been received and he or she has been found eligible, a letter of final acceptance, current costs, and registration procedures will be sent.

2. Acceptance is granted for a specified semester or summer session. If an applicant does not register for the term for which he or she applied and was accepted, it will be necessary to submit a supplemental application if entrance at a later time is desired.

Admission Requirements

All applicants for admission to the university must present satisfactory evidence of good character.

Applicants Without Previous College Credit.

1. Applicants who are either residents of Idaho or sons or daughters of nonresident alumni of the university are eligible for admission if they are graduates of accredited high schools.

2. Nonresident applicants who are graduates of accredited high schools are selected for admission from those who rank scholastically in the upper three-quarters of their graduating class.

3. Applicants who are not graduates of accredited high schools may qualify for admission in one of the following ways:

a. **By Recommendation.** Applicants who have completed 15 acceptable units in accredited high schools and who rank scholastically in the upper half of their class, but have not graduated, may be admitted upon special written recommendation from the principal and approval by the director of admissions.

b. **By Examination.** Applicants who are graduates of nonaccredited high schools and those who are not graduates of any high school will be considered for admission on the basis of individual evaluation of their capability to benefit from a university education as shown by such indicators as previous academic records and scores on specified standardized tests. Applicants to whom this provision applies should write to the Admissions Office for detailed information and instructions. To assist in this evaluation, an applicant must submit, along with the UI application for admission, three letters of evaluation from counselors, teachers, or other educational authorities who can attest to the applicant's academic potential. As this is a special admissions procedure, the applicant, if admitted, will be required to attend preacademic planning within a specified office or program to be stated in the letter of acceptance.

4. **High School Preparation.** TRANSCRIPTS SUBMITTED IN SUPPORT OF AN APPLICATION MUST BE OFFICIAL AND MUST BE SENT DIRECTLY TO THE ADMISSIONS OFFICE BY THE ISSUING INSTITUTION (or certifying agency in the case of international students). THEY WILL NOT BE ACCEPTED FROM THE APPLICANT. THEY BECOME THE PROPERTY OF THE UNIVERSITY AND CANNOT BE RETURNED OR FORWARDED.

a. **Definition of High School Units.** A "unit" represents a subject taught five times a week in periods of not less than 40 minutes duration (80 minutes for laboratory periods) for a school year of at least 36 weeks. Units earned in the ninth grade of a junior high school are combined with those earned in a three-year senior high school. Units are classified as "academic" or "nonacademic." Academic units are those earned in English (composition and literature), foreign languages, mathematics, natural sciences, and social studies.

b. **Subject Requirements.**

(1) The subject-matter content of an applicant's secondary education does not enter directly into the determination of eligibility for admission. It does, however, provide a basis for evaluating the adequacy of his or her preparation, for advising as to the choice of college or curriculum, and for placement in certain college subjects. The recommended preparation for admission to the various colleges of the university is set forth in the table in this catalog section.

(2) Students may be admitted with fewer academic units than the minimum total indicated for their particular college or they may be admitted with the total academic units required but with fewer units in one or more subjects than indicated. In either case the student's college will identify subject inadequacies and prescribe the means by which these deficiencies are to be removed or satisfied. Courses needed as preparation for the student's college curriculum should be taken during the student's first year at the university.

Advanced Placement. Credit is granted for successful completion of the CEEB Advanced Placement Examination, the College Level Examination Program (CLEP), and courses at military schools as recommended by the American Council on Education. Students who expect to take the CLEP exams, or want their CLEP credits evaluated, should write to the registrar for a set of guidelines to avoid duplication of credit. Inquiries about other advanced placement should be addressed to the Admissions Office.

Applicants with Previous College Credit.

1. Applicants who have been enrolled in other colleges or universities accredited by one of the regional agencies, such as the Northwest Association of Schools and Colleges, and whose scholastic records at these institutions are satisfatory may be admitted to advanced standing. These students must submit the following credentials to the Admissions Office of the University of Idaho at least one month before they expect to enter the university: a certificate of secondary school record from the last high school attended and separate transcripts from each of the higher institutions attended. TRANSCRIPTS SUBMITTED IN SUPPORT OF AN APPLICATION MUST BE OFFICIAL AND MUST BE SENT DIRECTLY TO THE ADMISSIONS OFFICE BY THE ISSUING INSTITUTIONS (or certifying agency in the case of international students). THEY WILL NOT BE ACCEPTED FROM THE APPLICANT. THEY BECOME THE PROPERTY OF THE UNIVERSITY AND CANNOT BE RETURNED OR FORWARDED.

2. Upon admission of a transfer student, all credits earned or attempted and all grades received in college-level courses at accredited institutions are evaluated and core-curriculum equivalencies designated by the Admissions Office (see item 9 below). The applicability of these credits to the student's program of study is determined by the student's major department. No grade points for this work are included in the computation of his or her grade-point average at the University of Idaho. All transfer credits are recorded on the student's permanent record after he or she is officially registered.

3. Students admitted to the University of Idaho from other collegiate educational institutions must have complied with the academic regulations for continuance in the institution(s) that they have attended in addition to the academic regulations that are applied to students enrolled in this institution.

RECOMMENDED PREPARATION

For Students Entering the University in the Academic Year 1988-89*

UNDERGRADUATE COLLEGES

Students who plan to enter the General Studies Program (see part 4) should use this chart as a guide for minimum high school preparation.

HIGH SCHOOL UNITS IN	Agriculture	Art & Architecture	Business & Economics	Education	Engineering	Forestry, Wildlife & Range Sciences	Letters & Science	Mines & Earth Resources[6]
English	3	3	3	3	3	3	3	3
Social science	2	2	2	2	2	2	2	2
Mathematics[1]								
Algebra	1	1	1	1	1	1	1	1
Plane geometry	1	1[2]	1	1	1	1	1[2]	1
Advanced Algebra	½		1		1	1		½
Trigonometry					½	½		
Other					½			½[3]
Natural science								
Unspecified	2	2	2	2	1	0	2	1[4]
Biology						1		
Chemistry					1	1		
Physics					1	1		1[5]
Unspecified academic units	1½	2	2	2		½	2	1
Total academic units	11	11	12	11	12	12	11	11
Additional academic, vocational, or elective units	4	4	3	4	3	3	4	4
Total units required	15	15	15	15	15	15	15	15

***NOTE: Beginning with the fall semester, 1989-90, the requirement for entrance into any of the colleges will be not less than the following numbers of units (these standards will not apply to students who graduate from high school before 1989): English, 4; speech, ½; mathematics, 2; natural science, 2 (including at least 1 in a laboratory science); social science, 2½; fine arts, humanities, or foreign language, 2.**

1 High schools offering modern mathematics programs may have course names that differ from the traditional ones, yet contain equivalent material.

2 Or one unit of advanced algebra. Both plane geometry and advanced algebra are recommended, especially for prospective students of mathematics, science, or architecture.

3. One-half unit of either advanced algebra, trigonometry, or solid geometry (in this order of preference) is required.

4 Chemistry strongly recommended.

5 One unit required for mining, metallurgical, or geological engineering, but not required for geography where two units of natural science (unspecified) are required.

6 Geological, metallurgical, and mining engineering recommend the same preparation as for the College of Engineering.

4. Advanced-placement credit granted by other accredited institutions will be honored on transfer to the University of Idaho.

5. Transfer students are selected from those applicants who present a cumulative grade point average of at least 2.00 (C) for all college-level study attempted in all accredited colleges attended, exclusive of courses for which grade points are not allowed. Students transferring from out-of-state schools into the College of Engineering must have a cumulative grade-point average of at least 3.00 (B).

6. Advanced-standing applicants with fewer than 26 semester hours of transfer credit must meet both beginning freshman and advanced-standing admission requirements, including submission of the required test scores.

7. The university may grant credit for completion of certain educational programs sponsored by the armed forces. In evaluating these programs, consideration will be given to recommendations made by the American Council on Education and other appropriate agencies and to university degree requirements.

8. A maximum of 70 credits earned at junior or community colleges, or one-half of the total credits required for the student's intended baccalaureate degree program, whichever is the higher number, may be transferred to the University of Idaho.

9. One of the requirements for a UI baccalaureate degree is fulfillment of the general-education or "core-curriculum" requirement. Students who enter UI with transfer credit have two options for fulfilling this requirement. One option is to satisfy the requirement as outlined in regulation J-3 in part 3 of this catalog. In this case, transfer credits are evaluated on a course-by-course basis for equivalency to courses specified in J-3, and deficiencies are made up by completing the necessary additional credits in nonduplicating courses listed in J-3. As an alternative, a transfer student may satisfy the general-education requirements established by the State Board of Education as set forth immediately below. In this case, transfer credits are evaluated by category, rather than on a course-by-course basis, and deficiencies are made up by completing the necessary additional credits in nonduplicating courses listed in J-3.

Alternative General-Education Requirements for Transfer Students

A total of at least 36 credits that fit within the following categories and credit ranges must be completed.

	Course(s)	Credits
a. Communications ..... Courses in this area enhance the student's ability to communicate clearly, correctly, logically, and persuasively in spoken English. Disciplines — debate, rhetoric, and speech.	1	2-3
b. English Composition ..... To satisfy this category, students must be able to express themselves in clear, logical, and grammatically correct written English. The first three credits may be exempt by ACT, SAT, WPCT, or CLEP (institution-accepted testing procedure).	1-2	3 to 6*
c. Behavioral and Social Science ..... Courses in this area provide instruction in the history and culture of civilization; the ways political and economic organizations, structures, and institutions function and influence thought and behavior; and the scientific method as it applies to social science research. Disciplines — anthropolgy, economics, geography, history, political science, psychology, and sociology. Courses must be distributed over two different disciplines.	2-4	6-12
d. Humanities, Fine Arts, and Foreign Language ..... Courses in this area provide instruction in the creative process, history and aesthetic principles of the fine arts, philosophy and the arts as media for exploring the human condition and examining values, and communication skills in a foreign language. Disciplines — art, drama-theatre, foreign languages, literature, music, and philosophy.	2-4	6-12
e. Natural Science ..... Courses in this area provide an understanding of how the biological and physical sciences explain the natural world and introduce the basic concepts and terminology of the natural sciences. Disciplines — biology, chemistry, geology, physical geography, and physics. Courses may be distributed over two different disciplines; at least one course must have had an accompanying laboratory experience.	2	7-12
f. Mathematics ..... Courses in this area are intended to develop logical reasoning processes; skills in the use of space, numbers, symbols, and formulas; and the ability to apply mathematical skills to solve problems. Courses may include college algebra, calculus, finite mathematics, and statistics.	1	3-5

*Depending on initial placement results.

Applicants with Vocational-Technical Credit. Credits earned in vocational-technical courses at accredited or state-approved vocational-technical schools may be the basis for waiving requirements or transferring credits to the University of Idaho in accordance with the following regulations:

1. When equivalence has been validated by the academic department and college that offer comparable subject matter, credits may be transferred as unspecified credits in the appropriate discipline (for example, a block of credits in agriculture) or for specific lower-division courses taken at the other institution.

2. In those cases in which comparable subject matter is not taught at the University of Idaho, the amount and characerization of the credits to be transferred is determined by the department and the dean of the college into which the student is transferring.

3. A grade of P (pass) is recorded for such credits that are transferred.

4. Credits transferred from vocational-technical schools are included within the 48-credit limitation of extramural and similar credits that may be counted toward a baccalaureate degree (see regulation J-5-b).

5. The department into which the students transfers decides what curricular requirements, if any, will be waived (this determination may be made independently of the transfer of credits).

6. If there are any questions concerning the waiving of distributional requirements in the college into which the student transfers, such questions are to be resolved by the dean of the college into

which the student is transferring.

7. Except as substitutions for equivalent courses offered by the student's academic department, no credits in vocational-technical courses taken at a vocational-technical school may be counted toward the minimum of 128 credits required for a liberal arts degree (i.e., B.A. or B.S.) in the College of Letters and Science.

Admission as a Nonmatriculated Student. This category is for applicants who wish to pursue studies for their personal edification and who do not want to work toward a formal degree at the University of Idaho. A transcript from the last accredited institution attended and additional documentation may be required in support of the application. Transcripts must be received by the Admissions Office directly from the issuing institutions.

If a student wishes to change to a degree program, he or she will be required to file a regular application for admission and meet regular admission requirements. The department in which the student plans to major determines how much of the credit earned while a nonmatriculated student will be counted toward the degree. Degree requirements are those listed in the catalog in effect at the time of enrollment in the University of Idaho as a degree-seeking student.

The applicability of credit earned while registered in this category is the responsibility of the student. Permission of the dean of the Graduate School and the student's adviser is required to enroll in courses numbered 500-600. Permission of the dean of the College of Law is required to enroll in courses numbered 800-999. All students in the nonmatriculated category who register for a full course load (i.e., 12 or more credits in any semester or six or more credits in a summer session) will be disqualified if a 2.00 is not earned during that semester or summer session. Nonmatriculated students who are disqualified are ineligible to continue in the university unless readmitted.

Students admitted to the nonmatriculated category at the University of Idaho are not eligible to receive federal Title IV financial aid.

A nonmatriculated student who has registered for 12 credits or more for each of two semesters is required to petition the Admissions Committee if he or she wishes to continue as a nonmatriculated student enrolled for 12 credits or more. Such a student will be required to file the same credentials as required of a regular student.

A nonmatriculated applicant must complete a special application form indicating an understanding of the limitations of this category.

Registration as a nonmatriculated student does not meet the Immigration Service requirements for the issuance of a visa.

Admission of International Students. The University of Idaho accepts qualified students from other countries to the extent that space is available. International students are selected for admission to the university from among applicants whose previous academic records meet the minimum levels stated in 3 below.

1. **Credentials.** Official transcripts or certified copies of the certificate, diploma, or government examination report received from any college or university must be translated into English and MUST BE SENT BY THE CERTIFYING AGENCY DIRECTLY TO THE ADMISSIONS OFFICE.

2. **Final Dates for Application.** To provide time for evaluation, for notice of admission status to reach the applicant, and for INS requirements to be met for issuance of a student visa, applications and credentials should be received by the Admissions Office no later than the applicable date shown below:

a. From applicants who are currently residing outside the U.S.—for fall semester, April 15; for spring semester, September 15; for summer session, March 15.

b. From applicants who are currently residing in the U.S.—for fall semester, June 15; for spring semester, December 1; for summer session, May 1.

3. **Grade-Point Average.**

a. Applicants who have had no previous work at the college level must have at least a high "C" average.

b. Applicants for admission as undergraduate students who have attended a college-level institution must have completed at least one year of full-time study at an accredited college or university and must present a minimum grade-point average of 2.80 for all baccalaureate-level work attempted.

c. Applicants for admission as graduate students are expected to have qualifications similar to those required of other graduate students, including at least a 2.80 cumulative grade-point average (or its equivalent on a different grading scale).

4. **English Proficiency.** Applicants must present the minimum score on the Test of English as a Foreign Language (TOEFL) prescribed by the academic unit in which they plan to study, with the exception of those from English-speaking countries and those who have earned a degree from either a U.S. institution or an institution in another English-speaking country. Written permission from the director of admissions must be obtained to substitute the results of another examination for TOEFL. Those transferring with a minimum of one year of full-time baccalaureate study will be evaluated individually by the Admissions Office and the appropriate department to determine whether English proficiency has been demonstrated or the TOEFL is to be required.

5. **Financial Statement.** International students must present to the Admissions Office satisfactory statements of finances and adequate proof of financial responsibility or sponsorship by a reputable American citizen or organization for all financial obligations while attending the university.

Mutual Responsibility Agreement

UI's acceptance of a student for admission and the student's enrollment in the university constitute an agreement of mutual responsibility. The student's part of this agreement is to accept established UI policies and rules, to respect the laws of governmental units, and to act responsibly and in a manner appropriate to these laws, policies, and rules. UI's part is to carry out its commitment to higher education, to fulfill its responsibilities in pursuit of the academic goals and objectives of all members of the university community, and to meet its obligation to provide an atmosphere in which students will have an opportunity to be heard in matters affecting their welfare as students. UI must take appropriate disciplinary action when it has been ascertained that a student's action is contrary to UI regulations and thus that this agreement has been violated.

Fees and Expenses

The rates quoted in this section were in effect during the 1987-88 academic year. They are subject to change without notice.

Expenses for attending the University of Idaho vary with the taste and financial means of each student. The university takes pride in its record of providing high-quality instruction at reasonable cost.

Board and room are available at relatively low rates under a variety of plans. Single-occupancy rooms are subject to availability of space and cost more each semester than double-occupancy rooms. Students may reduce their living costs by sharing the work in the cooperative residence halls.

Annual Expenses

In forecasting total costs for the academic year, double the 1987-88 semester costs, allow for normal increases, and add miscellaneous costs — clothing, laundry, transportation, incidentals, social and recreational expenditures, fraternal affiliations, and personal needs.

An undergraduate student coming to the university needs about $1,390 to meet initial payments, including the first installment on the board payment. Out-of-state students need an addtional $1,000 to cover tuition. Personal checks, bank drafts, money orders, or travelers checks are all accepted by the university. Also see "Deferred Payment of Fees" further on in this catalog section.

1987-88 Costs per Semester

	Idaho Residents	Nonresidents
Tuition[1]	0	1,000
Regular full-time student fees	521	521
Books, supplies, etc.	225	225
Room and board[2]	1,112	1,112
TOTAL[3]	$1,858	$2,858

1 In addition to special fees applicable to students enrolled in the Graduate School, the College of Law, etc.
2 Double-occupancy rate in unversity-owned residence halls with 14 meals per week. Cooperative dormitories in which residents provide their own janitorial and dining hall services are available at a lower cost.
3 Not including personal, incidental, or travel expenses.

Regular Student Fees

Unless exempted, students carrying eight or more credits (or equivalent) and all graduate/instructional assistants (including faculty-staff spouses) on full appointment pay the full-time student fees applicable to the particular division in which the student enrolls. Students in all divisions pay $521 a semester. Students in certain divisions pay additional amounts; see 'Special Fees" below. Fees are payable in full at the time of registration during the scheduled registration period. Also see "Deferred Payment of Fees," below.

Payment of full-time fees covers most laboratory and course charges and entitles the student to membership in the Associated Students University of Idaho (ASUI), to a nontransferable student identification card, to the services of the Alumni Office, and to the other services and facilities maintained by the university for the benefit of the students, subject to charges for special services and the payment of the special fees listed below. No reduction in fees can be made for students who may not want to use any part of these services.

Special Fees

Nonresident Tuition ($1,000 per semester). Students who are classified as nonresidents of the state of Idaho pay this special fee in addition to the regular student fees. For tuition purposes, a student who is a permanent resident of the U.S. may be classified as a resident of Idaho by meeting one or more of the following qualifications:

1. Any student whose parents or court-appointed guardians are domiciled in the state of Idaho and provide more than 50 percent of his or her support. To qualify under this section, the parents or guardians must be residing in the state on the opening day of the term for which the student matriculates. Domicile means an individual's true, fixed, and permanent home and place of habitation. It is the place where he or she intends to remain, and to which he or she expects to return when he or she leaves without intending to establish a new domicile elsewhere.

2. Any student who receives less than 50 percent of his or her support from parents or legal guardians who are not residents of this state for voting purposes and who has continuously resided in the state of Idaho for 12 months next preceding the opening day of the period of instruction during which he or she proposes to attend the university.

3. Any student who is a graduate of an accredited secondary school in the state of Idaho and who matriculates at a college or university in the state of Idaho during the term immediately following such graduation regardless of the residency of his or her parent or guardian.

4. The spouse of a person who is classified, or is eligible for classification, as a resident of the state of Idaho for the purpose of attending a college or university.

5. A member of the armed forces of the United States, stationed in the state of Idaho on military orders.

6. A student whose parent or guardian is a member of the armed forces and stationed in the state of Idaho on military orders and who receives 50 percent or more of support from parents or legal guardians. The student, while in continuous attendance, shall not lose his or her residence when his or her parent or guardian is transferred on military orders.

7. A person separated under honorable conditions from the United States armed forces after at least two years of service, who at the time of separation designates the state of Idaho as his or her intended domicile or who has Idaho as the home of record in service and enters a college or university in the state of Idaho within one year of the date of separation. (A copy of the DD-214 Separation Papers must be submitted in support of this qualification.)

8. Any individual who has been domiciled in the state of Idaho, has qualified and would otherwise be qualified under the provisions of this statute, and who is away from the state for a period of less than one calendar year and has not established legal residence elsewhere provided a 12 month period of continuous residence has been established immediately prior to departure.

For students who apply for special graduate and professional programs including, but not limited to, the WAMI (Washington, Alaska, Montana, Idaho) Regional Medical Program, the WICHE Student Exchange Programs, Creighton University School of Dental Science, the University of Utah College of Medicine, and the WOI (Washington, Oregon, Idaho) Regional Program in Veterinary Medicine, additional residency requirements shall be in force. No applicant shall be certified or otherwise designated as a beneficiary of such special program who has not been a resident of the state of Idaho for at least five calendar years previous to the application date, provided that the State Board of Education and Board of Regents of the University of Idaho may grant exceptions to the residency requirement under conditions specified by the board.

Additional information and interpretation of the residency regulations may be obtained from the Admissions Office.

Application Fee. For information concerning the application fee, see the section headed "Admission Procedures" at the beginning of this part 2 of the catalog.

Registration Packet Replacement Fee ($5).

Law Tuition ($167 a semester). Students who enroll in the College of Law pay this fee in addition to the regular student fees and, if applicable, in addition to nonresident tuition. Part-time fees are $17 per credit.

Graduate Tuition. Students who enroll in the College of Graduate Studies pay this fee in addition to the regular students fees and, if applicable, in addition to nonresident tuition. Fees are $167 per semester for full-time students or $17 per credit for part-time students. Undergraduate and nonmatriculated students enrolling in graduate courses must also pay the appropriate graduate fee.

WAMI Tuition. Students who enroll in the WAMI Medical Education Program pay this fee in addition to the regular student fees. For 1987-88 this fee is $2,404 a semester.

WOI Tuition. Students who enroll in the Washington Oregon Idaho Regional Program in Veterinary Medical Education enroll in and pay fees at Washington State University. For 1987-88 this fee is $2,028 a semester.

Registration Fee for Senior Scholars ($5). Persons 60 years of age and older are permitted to enroll in courses on the Moscow campus, on a space-available basis, for a total of $5 a semester or other academic session without regard to the number of credits taken or audited. Senior scholars are enrolled after the regular registration days. Special fees for specific courses, e.g., music lessons, are assessed, if such charges are made to other students who take the courses concerned. Registration under this program entitles the student to instruction and library privileges only, and does not include insurance, student health services, ASUI membership, or free admission to athletic events.

Part-Time Fee ($53.25 a credit or equivalent). Students who register for seven credits or less pay this fee and any special fees applicable to specific courses in lieu of regular fees and tuition. Graduate and law students pay an additional $17 a credit.

Audit or Zero-Credit Fee ($53.25 a credit or equivalent). Students who register as auditors or for zero credit pay this fee and any special fees applicable to specific courses unless the registration is part of a normal registration for a specific semester or other academic session for which the student has already paid the full registration fees.

Late Registration Fee ($50). Students who are allowed to register after the last day to add classes or change course sections pay this fee (see regulation C in part 3). They also pay the $5 petition fee (see below).

Drop/Add Fee ($5). A $5 fee is charged each time a request is filed to drop or add one or more courses after the tenth day of classes.

Petition Fee ($5). A $5 fee is charged for each petition submitted to the Academic Petitions Committee or Graduate Council.

Student Health Service Fees. Payment of student registration fees entitles a student to the basic services of the Student Health Service. Additional fees are charged for medications, certain studies, and additional services according to rates maintained and available at the clinic.

Music Special Fees. All students, including graduate-student appointees, enrolling in courses numbered MusA 114, 124, 134, 314, 324, 334, 514, 524, 534, and MusC 507, Individual Instruction, pay $100 for each credit or equivalent. (The individual-instruction fee may be waived for students whose programs of studies specifically require these courses for graduation.) In addition, each student presenting a formal recital performance in the Hampton School of Music Recital Hall is charged $35. If two or more performers present a program together, the $35 fee may be shared by the performers.

Departmental Special Fees. Special fees are charged for certain courses. Examples include the College of Art and Architecture that charges a general shop fee and/or fee for certain courses and the College of Education that charges special fees for physical education classes. Consult department offices for the current schedule of departmental special fees.

Advanced Standing Exam Fee ($20). Charged for each separate request or petition for extramural credit—except credit for external study/experience (see below)—that is processed subsequent to a student's initial enrollment in the university. This fee applies without regard to the number of credits sought, requested, or granted. Examples of "extramural credit" are: credit by examination (see regulation D-4); credit for technical competence under such catalog entries as VocEd 270, 370, 470, and 480; and credit for bypassed courses (see regulation I).

External Study/Experience Fee ($15 for filing and $10 for each credit granted). The filing fee is charged at the time the student initiates formal action to have his or her work evaluated for the granting of credit for external study/experience (see regulation I-5). The per-credit fee is charged at the time the credit is granted.

Diploma Fee ($10). This fee is payable at the time the student applies for each degree to be awarded by the university. An additional fee of $5 is charged for a special diploma insert.

Thesis/Dissertation Binding Fee ($13). At the time the application for the degree is filed, every candidate for an advanced degree who is submitting a thesis or dissertation (including such terminal projects as musical compositions) pays this fee to have two copies of the document bound.

Publication and Microfilming Fee ($40). Candidates for the Ph.D. or Ed.D. degree pay this fee for the publication of the dissertation abstract and for the microfilming of the dissertation.

Transcript Fee ($2). Every person who has established an academic record at the university (including continuing education and correspondence study) is furnished, upon request, one official copy of the academic record without charge. Additional copies, when requested, are $2 per copy.

Yearbook Fee ($15). Students wishing to order a copy of the *Gem of the Mountains* pay this fee at the time the order is placed.

Miscellaneous Fees.

1. For library charges, consult the University Library.

2. For costs of field trips and special equipment for certain courses, consult the instructor.

3. A greens fee is charged for the use of the Golf Course.

4. University employees and students are charged fees to park in university-owned lots.

Deferred Payment of Fees

Students who have no delinquent accounts with the university and who are assessed registration fees or tuition in excess of $100 are eligible to defer payment of part of the fees and tuition in accordance with the following regulations:

1. At least 40 percent of fees and tuition, in addition to the service charge specified below, must be paid at the time of registration.

2. Any special fees must be paid at the time of registration including deposits, special course fees, insurance, fines, penalties, special workshop fees, and other special charges or fees.

3. Service charges for the deferred payment plan are based

upon the amount deferred as follows:

Amount Deferred	Service Charge
to $100	$ 5
over $100	$10
over $300	$15
over $500	$20
over $800	$25

This charge is nonrefundable and must be paid at the time of registration.

4. The deferred balance is payable in two equal installments which are due on or about October 5 and November 5 for the fall semester and on or about February 5 and March 5 for the spring semester.

5. Any delinquent installments are assessed an additional $8 late charge, and the registration of the student concerned is subject to cancellation. If the terms of deferral are not fulfilled, the student loses the right to defer in the future.

6. Any aid received by a student for purposes of registration (scholarships, student loans, awards, etc.) must be applied toward the registration fees. If any aid funds remain, they are available for room, board, and books. If any fees remain, 40 percent must be paid by the student and the remaining balance paid in equal installments as noted above.

7. For students who wish to defer their registration fees, a separate table is set up in the Kibbie-ASUI Activity Center during registration. Students can check at this table if they can defer and, if so, a promissory note will be drawn up and signed.

8. In the event a student who owes deferred payments withdraws from school, the difference between the portion of charges that would normally be refundable, if any, and the amount paid on the deferred plan becomes immediately due and payable in full.

Refund of Fees

Students who withdraw in accordance with the regulations governing withdrawals are entitled to the following refund of fees (except that for full-time students $11 of the registration fee is nonrefundable once registration is completed; $5 for part-time students). This does not apply, however, to the Northwest Inter-institutional Council on Study Abroad (NICSA) program; once the overseas program has begun, no refunds are possible.

1. When withdrawal is accomplished during the scheduled registration days and before the beginning of classes, fees (less $11) are refunded in total.

2. When withdrawal is completed after classes have begun but before the close of the second week of classes, 75 percent of the fee balance (less $11) is refunded.

3. When withdrawal is completed after the close of the second week but before the close of the fourth week of classes, 50 percent of the fee balance (less $11) is refunded.

4. When withdrawal is completed after the close of the fourth week of classes, no refund is given.

Refunds are based upon the date of the application for refund after completion of withdrawal and not from the date of last attendance of class, except in cases of illness. When a student has paid special fees (such as fees for physical education, art and architecture, chemistry, mathematics, and the *Gem of the Mountains*), he or she must contact the respective office for a refund.

Refund of Music Fees. Special music fees for individual instruction in performance studies may be refunded upon prompt application by the student withdrawing. Application for this refund should be made to the director of the Hampton School of Music.

Student Housing

The University of Idaho is a residential campus with more than two-thirds of the single undergraduate students living in residence halls, fraternities, and sororities. The university recognizes that a student's total education is influenced by the nature and quality of the living environment outside the classroom and encourages the development of an environment in the living groups that will be conducive to broad intellectual growth and greater participation in the life of the academic community. Campus living groups benefit from guidance services provided by advisers associated with them.

In addition to 24 independent living groups and 26 sororities and fraternities, the university provides accommodations for married students and graduate students. Additional housing is available in Moscow and the surrounding area and information may be requested from the Moscow Chamber of Commerce, 130 East Third, Moscow, Idaho 83843, or the ASUI Housing Referral Office, SUB.

Appropriate regulations are established by the university to ensure acceptable living arrangements for all students.

Residence Halls

The university houses 24 living groups in 9 residence halls and provides meal services for the students who live in 21 of them. Two of the living groups, Steel House (women) and Targhee Residence (men), are cooperatives where students contribute their share of the labor in the kitchen, dining room, and public areas to reduce living costs. The Alumni Residence Center, for men and women who are 21 years of age or older or have graduate-student status, contains efficiency apartments, each with its own cooking facilities. Each residence hall has study and recreation areas, lounges, and complete laundry facilities; commercial linen service is also available. Personal items, such as sheets, pillowcases, bedding, towels, and other articles deemed convenient or necessary are NOT furnished by the university residence halls and should be provided by the student.

See the section headed "Fees and Expenses," above, for the approximate cost of living in residence halls. More detailed information concerning student housing may be obtained from the Residence Halls Office, Wallace Residence Center.

Sororities

Eight national sororities have chapters on the University of Idaho campus. Each chapter owns and operates its own house. These are: Alpha Chi Omega, Alpha Gamma Delta, Alpha Phi, Delta Delta Delta, Delta Gamma, Gamma Phi Beta, Kappa Kappa Gamma, and Pi Beta Phi. The average cost for living in a sorority is about $1,000 a semester, which includes charges for room, board, social fees and house corporation building fund. In addition there are pledge and initiation fees that are paid only once. Panhellenic Council coordinates intersorority relationships and formulates policies on rushing procedures.

Arrangements for Sorority Living. Membership in a sorority is by invitation only. Those women who are interested in sorority living should complete the appropriate section of the application-for-admission blank or write a letter to Panhellenic Council, Student Advisory Services. The selection of members in each sorority is made primarily during participation in a program known as "Formal Fall Rush," which is held before the beginning of the fall semester. Registration for rush *should be postmarked no later than July 20* and sent to Student Advisory Services. Formal Fall Rush is not the only opportunity to pledge a sorority; however, it is the only time each year that all sororities are participating in rush. Contact Student Advisory Services if you are unable to participate in Formal Fall Rush but are interested in sorority membership.

Fraternities

Chapters of 17 national fraternities are maintained on the University of Idaho campus. They are: Alpha Tau Omega, Beta Theta Pi, Delta Chi, Delta Sigma Phi, Delta Tau Delta, FarmHouse, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Tau, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Tau Kappa Epsilon, and Theta Chi. Each of these groups is represented in the Interfraternity Council, which unites them in common service to the university and promotes a spirit of cooperation and self-government among fraternities.

Membership in a fraternity is by invitation from the members of the group concerned. The university does not make arrangements for membership. The average cost for living in a fraternity is about $1,100 a semester, which includes charges for room, board, and social fees.

Arrangement for Fraternity Living. Anyone interested in fraternity living should so indicate on the admissions application or write for information to: Interfraternity Council, Student Advisory Services. Those who indicate an interest in fraternity living will receive information from the various fraternities during the spring and summer before their matriculation in the university. Invitation for living in a fraternity will generally be extended by the fraternities during the summer before matriculation; however, if necessary, these arrangements can be made through the Interfraternity Council upon arrival on campus for the fall semester.

Family Housing

For married students with families, the university operates three housing projects and more are being developed. Apartments in these projects in 1987-88 rented for about $210-275 a month. One-, two-, and three-bedroom units are available; some are not furnished. A $100 advance deposit and last month's rent are required. To apply for an apartment, write to the Family Housing Office. Day care facilities are available on a first-come, first-served basis.

Student Services

Student Rights, Conduct, and Records

The "Statement of Student Rights," "Student Code of Conduct," and "Student Records Policy" are published in the Time Schedule. Members of the university community are urged to familiarize themselves with these basic documents.

Academic Advising and Counseling

Academic advising is regarded by the faculty as an extension of the teaching function and, therefore, as an important responsibility of each faculty member. Each matriculating student is provided with the assistance of an adviser, a member of the faculty, who attempts to communicate to students, particularly freshmen, the meaning of higher education and its significance to the student. Advisers also explain university academic requirements and assist individual students in developing programs that satisfy these requirements. The Student Counseling Center and the Career Planning and Placement Center are available to assist students who are uncertain about their career objectives or are having difficulty with required curricula (see entries for these two centers below). Students should bear in mind that they have the primary responsibility for their own careers; therefore, they must take the intiative in seeking out advice and counseling. Asssistance, both formal and informal, from faculty advisers and specialists, is available once sought.

Student Advisory Services

The University of Idaho is comprised of a diverse student population: 25 percent of the students are married; 45 percent of the students live on campus in 17 fraternities, 8 sororities, and 24 living groups in 9 residence halls. Approximately 20 percent of the students are from out of state, and the international students represent 40 different countries. Students spend two-thirds of their time in out-of-class activities including clubs, student government, studying, intramurals, and intercollegiate activities.

A diverse student population requires that UI have a diverse student services program. Student Advisory Services provides a variety of services that focus on assisting all students. Programs and services include advising students in living groups as well as those off campus, and ethnic minority students, veterans, and international students. In addition, Student Advisory Services coordinates New Student Orientation, Women's Center, Child Care Center, and National Student Exchange Program, and provides judicial assistance to students, faculty, and staff. Two programs that are an integral part of the student's academic program are the Beat Academic Advising Program and the Peer Consultant Program.

Staff members in Student Advisory Services are trained to work with individuals and groups of students and they serve as a liaison between students, departments, and agencies on and off campus.

All of the services and programs of Student Advisory Services are supportive of the academic mission of UI and are an integral part of the student's total education at the university.

Study Abroad

Student Advisory Services maintains information on many kinds of foreign study and travel available to Idaho students and faculty. University of Idaho students may earn credit for foreign study and study-touring in the following ways:

1. Official University of Idaho study tours—credit may be earned under Ed 273 and 473 and departmental "special-topics" courses 204 and 404.

2. Directed study—students may plan their own educational experiences abroad, and arrange *in advance* for credit from any appropriate department. This is for education comparable to that gained in the other courses of the department, but it may be as general and inclusive as the department will allow.

3. Course challenge—certain courses may be challenged on the basis of knowledge gained abroad. See regulation D-4.

4. External study/experience—credit may be awarded to students for knowledge and/or competence gained in foreign travel. See regulation I-5. In view of the documentation required, the procedure noted in 3 above is much more effective than this "after-the-fact" procedure.

5. Transfer of credits—work in other accredited insitutions of higher learning can be recognized by the transfer of credits to the University of Idaho. This work may be in the study-abroad programs of other American schools or in foreign schools. Student Advisory Services has a variety of reference materials available for students to look through.

For more information about foreign study or travel, call or visit Student Advisory Services (telephone 886-6757).

Women's Center

The Women's Center serves as the focal point for women's concerns at the university and in the community. It provides a warm, comfortable place where people can explore what it means to be women and men in a changing world. It brings together people of diverse backgrounds who share a commitment to

opportunity, equality, and justice for women. Programs and services at the Women's Center include: sack lunch programs—presentations and discussions every Tuesday and Wednesday at 12:30 covering a wide variety of topics; library—a circulating library of over 300 books dealing primarily with women's issues and women's lives; resource files—vertical files of information about women and women's issues; information and referral—answers to questions and referral to other agencies and services; peer counseling—listening and support for human problems; drop-in lounge— a place to relax, read, have coffee, study, meet friends, and exchange ideas; outreach—programs and speakers for campus and community organizations; newsletter—a monthly publication including information about current programs and services and news about women's issues.

National Student Exchange

The National Student Exchange (NSE) provides state-college and university students an opportunity to become better acquainted with social and education patterns in other areas of the United States. Governed by the philosophy that participation is essential to education, the NSE encourages students to experience new life- and learning-styles, appreciate differing cultural perspectives, learn more about themselves and others, and broaden their educational preparation through courses or programs that may not be available on the home campus. The NSE consortium includes 50 colleges and universities. Depending on the exchange plan of the host school, an exchange student is assessed either in-state tuition and fees at the host campus or the appropriate University of Idaho fees and tuition. Credits and grades earned on exchange are incorporated into the student's University of Idaho academic record and grade point average, and credits earned fulfill University of Idaho residence-credit requirements.

To qualify for participation in the NSE, a student should: (1) be a full-time University of Idaho student; (2) be a sophomore, junior, or first-semester senior at the time of exchange; and (3) have a grade point average of 2.5 at the time the application is filed. Information and applications may be obtained from the NSE Office in the Women's Center (telephone 885-6285).

Services for the Handicapped/Disabled

The University of Idaho has established services for disabled students, faculty, and staff in accordance with section 504 of the federal regulations issued under the Rehabilitation Act of 1973. The coordinator of disabled student services is located in Student Advisory Services and is available to assist disabled persons locate and arrange for services they require because of their disability. A campus guide for disabled persons is available in print, braille, and cassette tape through Student Advisory Services.

Prospective students are invited and encouraged to visit the campus and meet with the coordinator of disabled student services to discuss specific concerns.

UI faculty and staff will provide academic adjustments for handicapped students (including learning disabled students) in order to enhance their chances of academic success.

Students are asked to notify Student Advisory Services as soon as possible if they will require special services once they arrive on campus. This voluntary self-discipline will not adversely affect any admissions decision.

Learning Disabled

To obtain information or arrange for services for learning-disabled students, visit the Office of Special Services, 302 Phinney Hall (telephone 885-6746).

Minority Student Programs

The staff in Minority Advisory Services is prepared to assist specific minority students and groups, i.e., Asian Americans, blacks, Chicanos, native American Indians, and nontraditional students in the following areas: academic advising and counseling, academic scheduling, various counseling and referral services, recruitment and retention services, office and student advocacy services, and financial aid information and planning services. Although these services are available to all students, Minority Advisory Services is designed to provide them more specifically to ethnic minority and nontraditional students.

All minority and nontraditional students are eligible for a full range of federal financial assistance as well as the opportunity to share in all university financial aid programs. In addition, several scholarships are available to minority students based on need and academic performance.

Counseling Center

The Student Counseling Center offers specialized counseling and testing services to full-time students and spouses without charge. Professionally trained counseling and clinical psychologists are available to discuss educational and vocational plans, personal problems, marital concerns, and any other matters of concern related to the student's progress in college. The goal of counseling is to assist the student in evaluating his or her situation and arriving at suitable conclusions based on the information at hand.

The center maintains an up-to-date vocational library on over 250 occupations that students may use at any time during the normal operation of the center. The center also serves as the university representative for a variety of national testing programs including the Graduate Record, Law School Admissions, Miller Analogies, and Medical Aptitude tests. Bulletins of information and application forms are available here.

Student Health Service

The Student Health Service is open when the university is in session, affording care to full-time and part-time students, student spouses and dependents.

Patientcare is available for fall, spring, and summer sessions, except during vacations. The Student Health Service is open Monday through Friday, 8 a.m. to 5 p.m. (including the noon hour), and Saturday, 9 to 11 a.m. It operates on a walk-in basis, with no appointment necessary. Emergency care is available at Gritman Memorial Hospital when the Student Health Service is closed.

The Student Health Service provides out-patient care only. When hospitalization is necessary, patients will be admitted to Gritman Memorial Hospital. Psychiatric evaluation is available from consulting psychiatrists, by referral from the Student Health Service or the Student Counseling Center. Nominal fees are charged for out-patient visits, certain procedures, and special services such as lab tests, x-rays and medications.

Students and interested family members are encouraged to visit the Student Health Service and acquaint themselves with the services available.

Health and Accident Insurance Coverage

All students are automatically covered by accident insurance during the academic year while at the university or participating in offical university activities. Limits of this coverage are $5,000 with $100 deductible.

An optional health and accident insurance plan is available to University of Idaho students and their spouses/children. This

coverage is intended to supplement the services provided by the Student Health Service and to supplement the insurance protection provided by the accident insurance described above. Health and accident insurance is designed to offset expenses resulting from a major accident or serious illness that might require medical care, hospitalization, and surgery beyond services provided through the Student Health Service or the student accident insurance. This optional health and accident insurance plan provides coverage for a full year where the services of the Student Health Services and the protection of the accident plan are available only during the time the university is in session. This optional supplemental insurance is especially useful in paying for a specialist's fees when recommended by a Student Health Service physician.

Students are asked to indicate during registration whether they wish to purchase optional student health insurance. Fees are paid at that time. Students who do not have other health insurance, foreign students, and students with dependents are especially urged to purchase optional health and accident insurance.

Brochures describing the Student Health Service, the mandatory accident insurance, and the optional health and accident insurance are available from the Student Health Service and distributed during registration.

Financial Aid

Financial aid is available through the Office of Student Financial Aid to qualified students who are in need of financial assistance to meet the normal costs of college attendance by helping them secure part-time employment, scholarships, State Student Incentive Grants, Perkins National Direct Student Loans, Federal Guaranteed Student Loans, and Pell and Supplemental Educational Opportunity Grants. Students interested in only no-need scholarships must submit a completed UI application for admission before the March deadline. Students interested in all scholarships and federal student financial assistance must submit the UI Scholarship and Financial Aid Application, the application for admission, and the College Scholarship Service Financial Aid Form (FAF) results. The results of the FAF, a completed application for admission, and the completed UI financial aid application must be received by the Office of Student Financial Aid by the deadline in early March for the following academic year to receive full consideration for all types of aid. Because the FAF takes six weeks to process, it should be completed and forwarded to the processor during the first three weeks of January. The exact deadline will be published in the financial aid brochure each year. If application forms or the description brochure were not received with the admissions material, they may be obtained from the Office of Student Financial Aid. Students who do not meet the March deadline may still apply for Pell Grants and Guaranteed Student Loans.

Students who qualify under the College of Work-Study Program (with respect to a definite and demonstrable financial need) may obtain part-time employment with the university. Application for work-study is made as part of the general application for financial aid. In most cases work-study job placements cannot be made before a student actually arrives in Moscow and has registered.

To receive state and federal student financial assistance a student must be in good academic standing according to the Financial Aid academic progress standards. A student does not meet the academic standards and therefore is not eligible for financial aid if having completed 0-32 credits the cumulative GPA is less than 1.60, or if having completed 33-64 credits the cumulative GPA is less than 1.80, or if having completed 65 or more credits the cumulative GPA is less than 2.00. The student must also progress toward a degree at the rate of at least 24 credits per academic year. A student who attends fall or spring semester only must complete at least 12 credits during that one semester. Once a student has accumulated 24 credits more than the minimum number required for a baccalaureate degree, the student is not eligible for financial assistance.

A graduate student is expected to make satisfactory academic progress to receive federal or state financial aid. A graduate student whose cumulative GPA is less than 3.00 is not eligible to receive financial assistance. The student must progress toward his or her degree by completing at least 18 credits per academic year. A student who attends fall or spring semester only must complete at least 9 credits during that one semester. Once a student accumulates 42 credits toward a master's degree, 72 credits toward a specialist or Master of Fine Arts degree, or 96 credits toward a doctoral degree, he or she is no longer eligible to receive financial assistance.

A student who holds any baccalaureate degree is considered a graduate student for financial aid purposes, as required by federal law. College Work-Study and loans may be awarded to these students, but on a lower priority basis.

All students receiving financial aid will be evaluated for satisfactory progress at the end of each academic year. All students applying for Title IV financial aid must be making satisfactory progress regardless of whether they have previously received aid.

On receiving a written petition from the student, the student's academic dean may recommend a waiver of the above criteria in a signed memorandum to the director of student financial aid, who makes the final decision. (It is to be noted that the eligibility criteria for financial aid differ from those for academic eligibility contained in regulation L-5.) The decision of the director of student financial aid may be appealed to the Student Financial Aid Committee and then to the Administrative Hearing Board. Students suspended from receiving aid may reinstate their aid eligibility by successfully completing 12 credits with a GPA within the established limitations. Once the successful semester has been completed, a written request for reinstatement must be submitted to the Office of Student Financial Aid by the student.

Students enrolled for less than full-time loads will have a lower priority for aid, and any aid given will generally be in proportion to their credit loads.

Nonmatriculated students are not eligible to receive federally funded financial aid.

Financial aid policies and procedures may change at any time to assure compliance with federal regulations. The Office of Student Financial Aid may be contacted about the most current policies. Additional information concerning financial aid is available in a student financial aid brochure published each year.

Veterans' Benefits for Educational Assistance

A Vietnam era veteran is entitled to educational assistance if he or she served at least 180 days of continuous active duty before January 1, 1977. A veteran serving after that date would be under the new G.I. Bill, which is a contributory program in which the Veterans' Administration will match the amount contributed by the veteran to his or her educational program on a two-for-one basis to a total of $8,100.

To qualify for payments, all veterans must be released under other than dishonorable conditions. To receive full benefits, a veteran must be pursuing an approved course of study leading to a degree or other professional objective. To be considered full time, undergraduate students must carry 12 credits or the equivalent, and graduate students must carry 9 credits or the equivalent (see regulation O-1 in part 3).

Educational benefits may also be available to dependents of veterans who are 100 percent disabled due to a service cause and

to dependents of veterans who are deceased.

An advisory service is available to veterans and additional information, advice on benefits, or application forms may be obtained by writing to the veterans' adviser in Student Advisory Services (UCC 241).

Special Awards

Many awards are made each year in recognition of outstanding achievement both in academic and nonacademic pursuits. A description of each award may be obtained from the Student Union program coordinator.

Recreational, Social, and Extracurricular Activities

The Student Union is the recreational and social center for the university community. Facilities include bowling alleys, billiard tables, music listening rooms, computer study rooms, cafeteria, snack bar, ballroom, theater, and meeting and banquet rooms. Dances, art exhibits, speakers and forums, movies, concerts, and games tournaments are scheduled in the Student Union Building during the school year. The twice-weekly campus newspaper, the *Argonaut*, and the yearbook, the *Gem of the Mountains*, are published by ASUI (Associated Students University of Idaho). These publications offer opportunities for those interested in journalism or photography. ASUI (to which every student who pays regular fees belongs) supports outdoor recreation programs, drama and music groups, and provides occasions for entertainment and participation. Extensive intramural athletic programs are available for both men and women under the direction of the Division of Health, Physical Education, Recreation and Dance. Recreational facilities located on the campus include the Kibbie-ASUI Activity Center, indoor and outdoor tennis and handball courts, golf course, and swimming pools.

Intercollegiate Athletics

Idaho has a strong intercollegiate athletic program for both men and women within the combined Athletic Department.

The teams are known as the Vandals. The men's program includes football, basketball, cross country, indoor and outdoor track, tennis, and golf.

The Vandal football team competes in NCAA Division IAA with some 93 other institutions across the country. All other men's and women's sports compete in NCAA Division I.

The women's program consists of basketball, volleyball, cross country, indoor and outdoor track, and tennis.

The men's and women's programs compete as members of the prestigious Big Sky Athletic Conference, which includes nine members. In addition to Idaho, Big Sky Conference members include Boise State University, Eastern Washington University, Idaho State University, Montana State University, Northern Arizona University, University of Montana, University of Nevada-Reno, and Weber State College.

The athletic program is fortunate to have splendid facilities that are among the best in the Northwest. The Kibbie-ASUI Activity Center (also known as the "Dome") houses the Athletic Department offices, team locker rooms, weight room, and athletic training room. The Dome itself is the site for football and all basketball games. The 16,000 seats for football and the approximately 9,000 seats for basketball make it an outstanding facility. Track and field and tennis make great use of the Dome as well with the five-lane, 300-meter track and the eight indoor tennis courts. The University of Idaho Swim Center is a magnificent two-pool facility, and the new Chevron 400-meter outdoor track stadium is a real asset. The 18-hole championship golf course and numerous outdoor tennis courts complete the facility picture.

Student Organizations

University of Idaho students may organize or join associations to promote their common interests. There are many student organizations on campus with varied objectives and programs. A list of these organizations, together with names of current officers, is maintained and information concerning them may be obtained from the program coordinator, Student Union.

New Student Services

The Office of New Student Services represents the University of Idaho to prospective students and assists those students and their counselors and parents with decisions about higher education. Staff members visit high schools and present programs about the university to interested students, attend college fairs, distribute brochures, coordinate the flow of information from UI's colleges to students who express particular educational interests, and answer questions raised by students, counselors, and parents.

New Student Services also sponsors a campus visitation program that offers prospective students an opportunity to spend three nights and two days on campus in a fraternity, sorority, or residence hall. Staff members provide campus tours, arrange appointments with faculty members, suggest classes and activities students may attend and provide meal tickets and activity passes. For more information, call the Office of New Student Services, 208/885-6163 or 800/422-6013.

Career Planning and Placement Center

The purposes of the Career Planning and Placement Center (CPPC) are to (1) assist UI students in any field of study and at any academic level in identifying and working toward their career objectives; (2) assist students and alumni in obtaining employment appropriate to their ability, education, and experience; and (3) serve the state, region, and nation by providing information on curricula and graduates to prospective employers.

A principal feature of the CPPC is the establishment and maintenance of a placement file for each registrant seeking employment. The files contain educational and experiential data as well as recommendations in conformance with the Educational Rights and Privacy Act. Throughout the year, representatives of business, industry, government, and education come to the CPPC to interview student and alumni registrants. The CPPC also maintains a part-time and summer placement system, and provides weekly newsletter publications that list employment opportunities.

Alumni Association

A principal purpose of the University of Idaho Alumni Association is to coordinate the support of alumni and friends of the university in strengthening the academic, research, service, and leadership-building programs of the institution. It also provides individual alumni services to its members throughout the world.

All former students who earned 26 or more credits at UI and associate and honorary alumni are members of the association. The director of alumni relations and staff, along with an elected board of directors, guide the many programs and activities of the more than 55,000 members.

The Alumni Association strives to keep alumni informed about their alma mater, encourage alumni moral and material support, and apprise the university community of alumni opinion. Through a variety of awards, the association honors outstanding alumni or other individuals who provide exceptional service to the institution or state of Idaho. Scholarships are given by the association to help entering students attend the university.

Alumni maintain close ties with the university as a result of Alumni Association services, such as travel tours, continuing-education programs, and campus and worldwide gatherings for special UI occasions, including Homecoming and Silver and Gold Days. The Alumni Office gathers and maintains records of alumni, and this contact service is available to the university and its alumni. The association also provides and organizes support for the university through active organizations, such as the Parents Association and the Student-Alumni Relations Board.

Areas of recent emphasis for the association include informing prospective students about the university, preparing for the university's centennial in 1989, establishing a Career Network, and increasing volunteer support through the development of alumni chapters and constituency groups.

Religious Activities

The university is served by three campus religious centers: Campus Christian Center, corner of University and Elm; LDS Institute of Religion, 902 Deakin; and St. Augustine's Roman Catholic Center, corner of Sixth and Deakin. These centers provide opportunities for the study and practice of religion as well as resources in counseling and guidance.

All of Moscow's churches provide opportunities for religious development for University of Idaho students.

Historical Photo Index

Reproduction and publication rights have been granted for the following photographs by the University of Idaho Library, Special Collections and Archives, Moscow, Idaho

Cover: 1-201-27; Main reading room of Library. 1934.

Some Who Made It Possible

Left: 6-44-7; Idaho pioneers at a UI reunion, May 17, 1922.

Right: 3-4a; First president of the University of Idaho, Franklin B. Gault, who served from 1892 to 1898. n.d.

Some Who Came

Left: 2-230-1; Class members of 1897.

Upper right: 2-7-7; Beta Sigma charter members. 1901.

Lower right: 2-221-1; Class members of 1910.

How They Came

Left: 2-88-17; The Student Special was a famous necessity to UI students and parents. n.d.

Right: 2-88-7; Student Special September arrival in 1922.

Where They Lived

Upper: 1-208-1; ROTC-Army camp. 1907c.

Middle left: 2-119-1; Off-campus student housing. 1897.

Middle right: 1-58-7; Entrance of Ridenbaugh Hall, UI's first dormitory. 1901c.

Lower center: 2-119-2; The March brothers of Loman, Idaho. 1932.

What They Learned

From top left to lower right:

1-224-26; Engineering drafting class. 1920c.

1-221-1; First domestic science class. 1895.

1-205-36; Dairy science. 1908.

1-223-3a; Mining students outfitted for mine-rescue class. 1922.

1-218-3; Forestry dendrology lab. 1927.

1-233-2; History of the Americas class. 1940.

1-214-1; Zoology lab. n.d.

1-224-17; Engineering class in motor mechanics. 1930c.

How They Played

From top left to lower right:

2-133-8; Traditional all-male yell leaders during an annual Idaho/Washington State College (WSU) game. 1920c.

2-102-6b; Erected pyramid for the traditional WSC football game bonfire. n.d.

2-115-16; Idaho/WSC football game. 1903.

1-230-1; Clog and tap-dancing session for men. 1935.

2-99-32; Winding the Maypole. 1939.

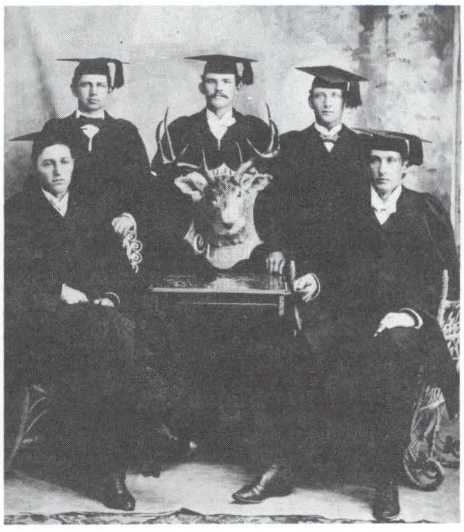
2-147-5; Red Cross Blood Drive rally. 1951.

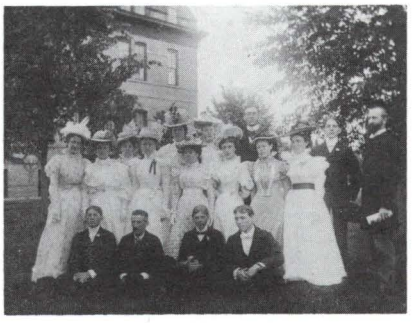
2-3-4; Alpha Tau Omega's Tin Can Dance. n.d.

100 Years
OF EDUCATION

Some Who Made It Possible

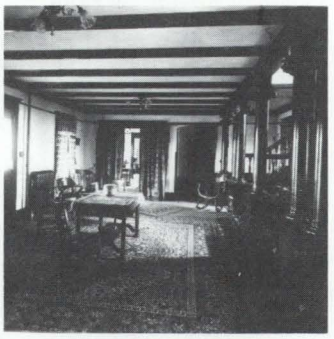
Some Who Came



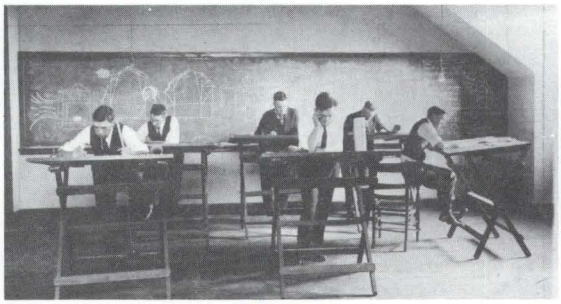


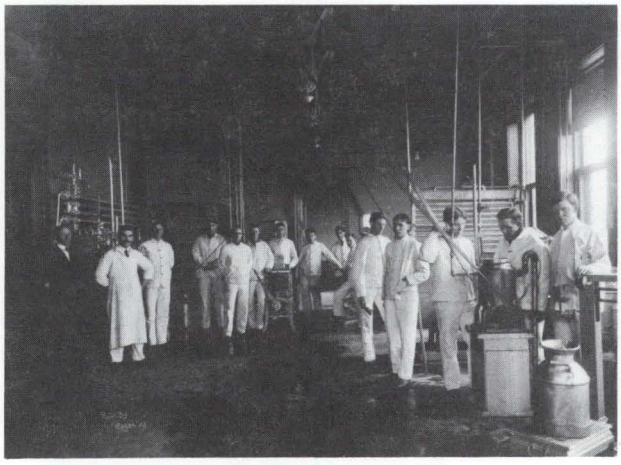
How They Came

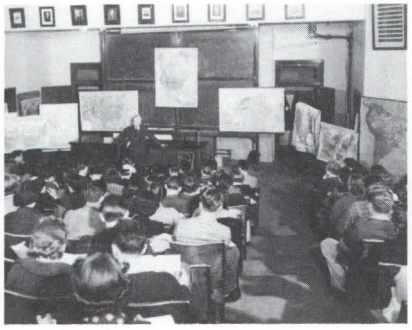
Where They Lived

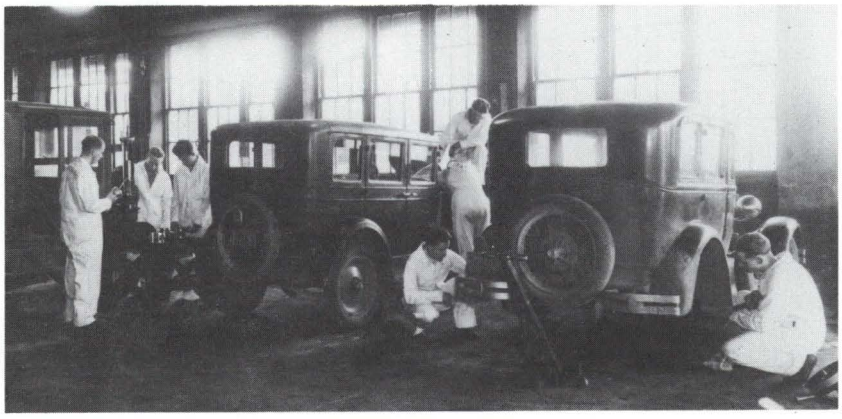


What They Learned

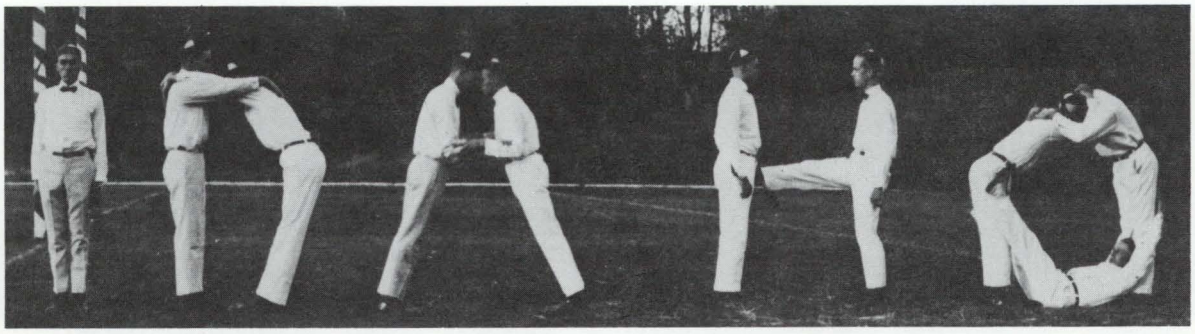


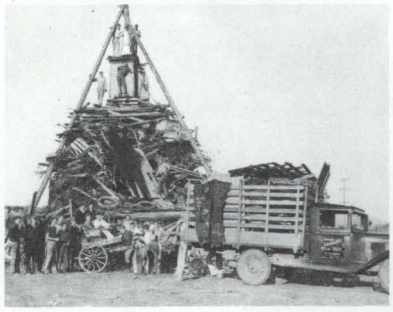


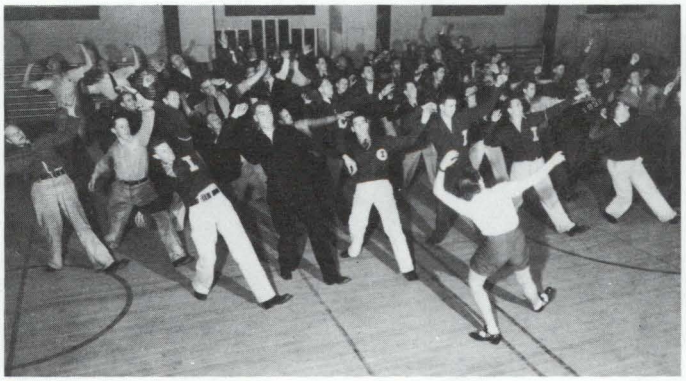


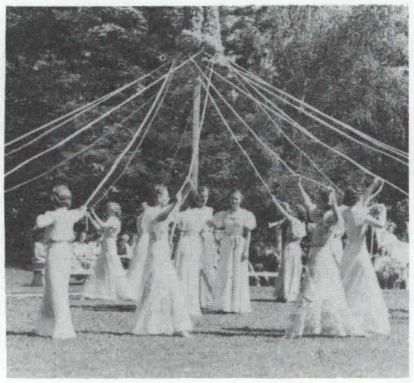


How They Played









General Requirements and Academic Procedures

These regulations were in effect as of January 1, 1988. See the Time Schedule for any substantive changes that may have been approved after this catalog went to press.

The following procedures and regulations have been adopted to help students, faculty members, and administrators successfully carry out UI's overall academic program. It is the responsibility of registration advisers, major professors, or deans to assist students to understand and comply with academic procedures. The registrar assists by checking students' records for compliance with the regulations in this section of the catalog. Students, with the help of faculty advisers, should check their records at each registration to ensure that they are systematically and progressively fulfilling their degree requirements. Students are responsible for knowledge of and compliance with academic procedures and standards, but should seek guidance whenever questions arise. An academic provision or standard is waived only when a student successfully petitions the appropriate departmental, college, or university-level committee. Student petitions for exceptions to the requirements and procedures in this catalog section should be presented to the Academic Petitions Committee on forms available in college offices.

A—Matriculation

Applicants for enrollment in any course offered by UI for college credit, except correspondence study, submit personal data and credentials covering all previous academic work. (See "Admission to the University" in part 2.) After UI has received these credentials and approved the application, registration forms are prepared and the applicant's first registration at UI concludes the matriculation process.

B—Registration

B-1. Preparation of Registration Materials. Official registration forms are prepared for new students as described above. They are also prepared for students enrolled in a given semester for the succeeding semester. However, those enrolled in the spring who plan to enroll in the summer should submit an application at least three weeks before the opening of summer session. Similarly, students entering UI in the summer who were not enrolled during the spring and who plan to continue in the fall must apply for a registration form at least three weeks before the opening of the fall semester. Former students who have not been enrolled in UI for a semester or longer should notify the registrar of their intention to reregister at least one month before the opening of the term. Such students will be required to submit transcripts from any institutions attended since their last registration at UI, and they may also be required to complete a residence questionnaire. Failure to meet the deadline may cause a delay in registration.

B-2. Admission to Classes.

B-2-a. Instructors do not admit anyone to class whose name does not appear on the class roster or for whom they have not signed an "add" card.

B-2-b. At the beginning of each academic session, students with their advisers' aid complete a trial study list. The information is then transcribed to the official registration form, which is signed by the adviser and is checked by such intracollege procedures as the student's college may require. After obtaining necessary approvals and receiving departmental validation for each course, the student files the completed registration form with the registrar. On payment of fees, admission to classes is authorized.

B-3. Auditing Classes. Auditing a course consists of attendance without participation or credit. Only lecture classes may be audited. Audited courses are not recorded on a student's permanent record.

B-4. Registration for Zero Credit. Any course offered for credit may be taken for zero credit. The implications of zero credit are:

B-4-a. Registrants are expected to do the assigned work and attend class sessions. Grades are received on the same basis as if the course were taken for credit and are entered on permanent records.

B-4-b. Students enrolled in a course for zero credit may take it P/F. This is separate from the "pass-fail option" outlined in B-11.

B-4-c. Courses taken for zero credit do not fulfill requirements.

B-4-d. Zero-credit grades have no effect on a student's grade-point average. Neither do they affect academic eligibility, disqualification, or reinstatement.

B-4-e. Students enrolled for zero credit count as regular registrants for statistical purposes, such as listing course enrollments, computing instructors' loads, and determining departmental services.

B-5. Correspondence-Study Courses. A student enrolled in the regular program is permitted to carry correspondence-study courses for college credit only with the prior written approval of his or her academic dean. Credit for correspondence-study courses will not be accepted without such approval.

B-6. Registration for Courses Without Completion of Prerequisites. Students who have not completed the prerequisites to a course for which they are otherwise eligible may register for the course with the instructor's approval.

B-7. Registration of Lower-Division Students in Upper-Division Courses. All academic programs give priority in the first two years to meeting the general requirements for the appropriate degree and acquiring the foundation for advanced study; therefore, lower-division students shall not take upper-division courses. Exceptions may be made for students who have fulfilled the prerequisites and who are well prepared in their field of study. In such cases, the instructor may, with the concurrence of the student's adviser and academic dean, authorize the exception.

B-8. Registration of Undergraduate and Nonmatriculated Students in Graduate Courses. Undergraduate and nonmatriculated students may register in graduate courses under the conditions outlined in the Graduate Bulletin with the prior written approval of the instructor of the course, the student's adviser, and the dean of the College of Graduate Studies.

B-9. Registration of Students with Baccalaureate Degrees as Undergraduates. To register as undergraduates, students with baccalaureate degrees must secure the permission of the dean of the undergraduate college and file a statement with the registrar indicating that they understand that the work will not be classified as graduate work and cannot be used toward a graduate degree at a later date. (See J-7-b and c.)

B-10. Registration for Accelerated and Other Short Courses. Students may register for accelerated and other short courses at any time up to and including the starting date of the course without petition.

B-11. Pass-Fail Option.

B-11-a. Undergraduate Students.

(1) After consultation with their advisers, undergraduates who have a cumulative grade-point average of 2.00 or higher are permitted to enroll in one course a semsester under this P/F option. (The grade-point requirement is not applicable to students who are taking university-level courses for the first time.) This procedure is separate from taking courses that are regularly graded P/F. Within the limitations specified above, an undergraduate may enroll under the pass-fail option in any course EXCEPT: **(a)** courses listed by number and title in the student's major curriculum as printed in part 5; **(b)** courses taken to meet

the distributional requirements of the college or curriculum, unless allowed for P/F enrollment by the department in which the student is majoring; **(c)** courses in the major subject field; and **(d)** courses in closely related fields that are excluded from this option by the student's department. (See B-11-d for "Reporting of Grades.")

(2) Students in officer education programs (OEP) may enroll under this regulation in courses required because of their affiliation with the OEP ONLY with the permission of the administrator of the OEP department concerned.

(3) A maximum of 12 credits earned in courses under this regulation may be counted toward a baccalaureate degree.

B-11-b. Graduate Students.

(1) With the approval of the major professor concerned (or adviser in the case of an unclassified student) and the dean of the Graduate School, graduate students may enroll in a limited number of couses under this P/F option. This procedure is separate from taking courses that are regularly graded P/F.

(2) Courses that may be taken by graduates under this regulation are: **(a)** any course that the student's graduate committee deems not essential to the major field and **(b)** any course required to remove a deficiency or to provide background for the student's program, unless the major department stipulates that such deficiency courses must be taken on a regular-grade basis and completed with an A or B.

(3) Of the minimum number of credits required for a degree, no more than three credits in a master's or specialist program or nine in a doctoral program may be taken under this P/F option.

(4) To have P recorded for courses taken under this regulation, a graduate student must earn a C or above. A grade of D will be converted to an F on the student's records.

(5) An unclassified student may enroll for courses under this option with the approval of his or her adviser (if assigned) and the dean of the Graduate School, If, however, at a later date an unclassified student is admitted to a degree program, the above regulations apply and no changes to regular letter grades will be permitted.

B-11-c. Adds, Drops, and Changes. Students may add or drop a P/F option course in the same manner as a regular course, and they may change from P/F to regular-grade classification, or vice versa, if they do so no later than the deadlines stated in regulation C and the academic calendar. Students may make these changes by securing the signatures of the major professor and dean concerned.

B-11-d. Reporting of Grades. Instructors are not notified as to which students are enrolled in courses under this P/F option. Grades are reported in the same manner as grades in courses taken on a regular-grade basis. The registrar is responsible for converting Cs or above to Ps on students' records and, for graduates, Ds to Fs. Grades of D reported for undergraduates are recorded on students' records and are not converted.

B-12. Registration for Fewer Credits than Authorized. Students may register for a particular course for fewer credits than indicated in the Time Schedule (they may also register for zero credit under the conditions outlined in B-4); likewise, departments may list courses in the Time Schedule for fewer credits than the number authorized by this catalog.

C—Changes in Registration

C-1. Students may change their registration as provided in the

Semester Schedule for Changes in Registration

See calendar in the front of the catalog for dates. The schedule for changes in enrollment in accelerated or short courses or during summer session is prorated, based on the number of class-meeting hours (see notes below). The calendar in the front of the summer bulletin lists the dates for summer sesssion.

DESIRED CHANGE	First two weeks of classes*	Third and fourth weeks*	Fifth week to end of second week following midterms**	After end of second week following midterms***
Drop course.	File form with registrar, if withdrawal is permitted (see regulations C-1 and C-2). No grade recorded.****		File form with registrar, if permitted. Grade is recorded as withdrawal (W). ****	For compelling reasons only, upon successful petition to Academic Petitions Committee (file petition through dean's office). Grade recorded as withdrawal (W).****
Add course (regular credit or audit).	File form with registrar.	Permission of instructor, adviser, and dean required. File form with registrar.		
Change course section.	File form with registrar.	Permission of instructor and dean required. File form with registrar.		
Change from regular credit to audit.	File form with registrar. No grade recorded.		File form with registrar. Grade of W recorded and counted in 20-credit limit for withdrawal.	Not permitted.
Change from audit to regular credit.	File form with registrar	Permission of instructor, adviser, and dean required. File form with registrar.		
Change from regular basis to pass-fail or reduce number of credits in course.	File form with registrar.		Not permitted.	
Change from pass-fail to regular basis.	File form with registrar.	Not permitted.		
Withdraw from university. (See regulation G.)	Obtain form from Student Advisory Serv., then file it in academic dean's office. No grade recorded.	Obtain form from Student Advisory Serv., then file it in academic dean's office. Grade recorded as withdrawal (WU).****		For compelling reasons only; complete medical withdrawal or petition Academic Petitions Committee (file petition through dean's office). Grade recorded as withdrawal (WU).****
Change in undergraduate curriculum or major. (Consult the graduate bulletin for procedures applicable to graduate students.)	Anytime. File form with registrar. The request to change must be approved by the dean of the college in which the new curriculum is offered. If the new curriculum is in a different college, students must meet the admission requirements of that college. Students must also see the dean of the college they are transferring out of for counseling and information purposes (not for permission to transfer). A cumulative grade point average of 2.00 or better is normally required to transfer from one UI college to another; however, any student may transfer to the General Studies Program by consulting the director of the program (the signatures in this case are only to certify that the student's academic records have been forwarded). The change of curriculum is official when the student files the completed form with the registrar.			

*In the case of accelerated or short courses, when no more than 12.5 percent of the class-meeting hours have been completed.

**In the case of accelerated or short courses, after 12.5 percent but less than 60 percent of the class-meeting hours have been completed.

***In the case of accelerated or short courses, after 60 percent of the class-meeting hours have been completed.

****In the College of Law, consult the dean's office for information concerning grades assigned when students withdraw from law courses after the second week of classes.

"Semester Schedule for Changes in Registration" accompanying this regulation. All registration changes are effective on the date they are filed with the registrar, except in the case of withdrawal from the university before the final four weeks of the semester, which is effective on the date the indefinite-leave-of-absence card is filed in the office of the student's academic dean (see G). Students may not drop a course by simply staying out of class. Students are expected to obtain the signature of the class instructor, adviser, and dean on the drop card. These signatures are informational and do not necessarily indicate approval.

C-2. Credit Withdrawal Limitation.

C-2-a. The number of credits that may be dropped and recorded on the student's permanent record is limited to 20 credits during a student's undergraduate career at UI. Petitions must be submitted to the Academic Petitions Committee to drop more than 20 credits during a student's undergraduate career at UI.

C-2-b. If a student attempts to drop a course that would bring the total credits he or she has dropped above 20, the student will not be allowed to do so. If a student attempts to drop two or more courses simultaneously and together they would bring his or her total credits dropped above 20, the student will be asked, through the dean's office, to submit a revised request to drop only one course or a combination of courses that would not cause the limitation to be exceeded. If the student cannot be reached or fails to submit a revised request, the registrar will record dropping the course or combination of courses that bear the highest course numbers and not cause the limitation to be exceeded; the dropping of the remainder will not be allowed.

D—Credit and Continuing Education Unit

D-1. Credit Defined. Each course is evaluated by a system of credits related to time spent in class, lab, study-preparation, or field investigation. A semester credit is expected to require a total of three hours of scholarly activity each week. Ordinarily one 50-minute hour of class attendance is scheduled for each credit, but any combination of class attendance, lab, study-preparation, or field investigation may be arranged. When students are permitted to register for credit in workshops and similar short courses, credit is granted on the basis of one semester credit for each week of full-time scholarly activity required. Exceptions to this policy for undergraduate courses must be approved by the University Curriculum Committee. Exceptions for graduate courses must be approved by the Graduate Council and the University Curriculum Committee.

D-2. Credit-Load Limitations. (Also see J-5.) The maximum loads specified below include credits for which the student is concurrently registered at other institutions (e.g., Washington State University and Lewis-Clark State College).

D-2-a. Regular Semester. A student may register for no more than 20 credits in a semester. This number may be increased to 22 with specific written approval by his or her academic dean. Registration for more than 22 credits (except for students enrolled in the WAMI Medical Education Program) is permitted only on approval of a petition to the Academic Petitions Committee (petition forms are available in deans' offices).

D-2-b. Summer and Other Sessions. A student may register for no more than 10 credits in an eight-week period. This number may be increased to 11 with specific written approval by his or her academic dean. The limitations during six-week and four-week periods are 8 and 6 credits, respectively. In the case of overlapping or consecutive periods, the limitation for the longer inclusive period governs. Registration for more than 11 credits in an eight-week period, 8 in a six-week period, or 6 in a four-week period is permitted only on approval of a petition to the Academic Petitions Committee (petition forms are available in the deans' offices).

D-2-c. Graduate-Student Appointees. An instructional or graduate assistant may register for no more than 12 credits in a semester or 6 credits in an eight-week period. On the written recommendation of the employing dean and approval by the dean of the College of Graduate Studies, an appointee is permitted to register for more than 12 credits in one semester but no more than an aggregate of 24 credits during two successive academic-year semesters.

D-2-d. Full-Time Employees. A full-time UI employee may register for no more than six credits in a semester or three credits in an eight-week period. Written approval by the employee's departmental administrator and dean or director must accompany the registration form.

D-2-e. Nonmatriculated Students. Nonmatriculated students are subject to the limitations stated in D-2-a and D-2-b. In addition, a nonmatriculated student who has been registered for 12 or more credits in each of two semesters must petition the Admissions Committee for permission to register for 12 or more credits while continuing as a nonmatriculated student.

D-3. Transfer Credit. Credit is accepted for work completed in accredited institutions of higher education as provided in the regulations covering the admission of transfer students. (See "Applicants With Previous College Credit" in part 2; also see E-4 and J-5.)

D-4. Challenged Courses (Credit by Examination). Degree-seeking students may challenge UI lecture and associated laboratory courses—earned credit by examination—as follows:

D-4-a. No examinations under this regulation may be conducted during the last two weeks of any academic session.

D-4-b. Students are not permitted to challenge a prerequisite course after having completed the advanced courses. (See I.)

D-4-c. Credit in courses offered by the College of Law may not be obtained by this procedure.

D-4-d. Students must submit evidence to the instructor that they have sufficient knowledge to challenge a course. After a student has been granted permission to challenge a course by the instructor, by the administrator of the department in which the course is offered, and by his or her academic dean, the extramural-credit fee is paid and the complete petition is filed with the registrar. The registrar checks the student's record and, if the student is eligible to take the advanced-credit examination, notifies the instructor to proceed with the examination.

D-4-e. Undergraduates must score C or higher to pass and obtain credit. Graduates must score B or A to pass and obtain credit. A passing grade is entered as P and is not included in grade-point computations. If students do not meet these standards, no entry is made on their records.

D-4-f. Results of the challenged courses must be forwarded to the registrar no later than the beginning of the last week of the semester. In the case of graduate students, the results are sent to the registrar via the chair of the student's major department and the dean of the College of Graduate Studies.

D-5. Review and Prerequisite Courses. Students will not receive credit for courses taken in review or for courses that are prerequisites of courses they have already completed, except as stated in I-1.

D-6. Continuing Education Unit. Learning activities for which regular university-level credits are not awarded may be evaluated by a system of uniform continuing education units. Such units are granted in accordance with the following guidelines, which are set forth by the (national) Task Force on the Continuing Unit: A continuing education unit is expected to require 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction,

and qualified instructors. Continuing education, as used in this definition, includes all instructional and organizational learning experiences in organized formats that impart noncredit education to post-secondary-level learners. These properties of continuing education may be applied equally under the system regardless of the teaching-learning format, program duration, source of sponsorship, subject matter, level, audience, or purpose. The number of units to be awarded is determined by considering the number of contact hours of instruction, or the equivalent, included in the educational activity. Reasonable allowance may be made for activities such as required reports, lab assignments, field trips, and supervised study.

E—Grades

E-1. Grading System.

E-1-a. For purposes of reporting and record, academic work is graded as follows: **A**-superior; **B**-above average; **C**-average; **D**-below average; **F**-failure; **I**-incomplete work of passing quality (see regulation F); **W**-withdrawal; **WU**-withdrawal from the university; **P**-pass (see below); **IP**-in progress (see E-2); **N**-unsatisfactory and must be repeated (used only Eng 101, 103, and 104).

E-1-b. Grades of P may be reported at the option of the department on a course-by-course basis in noncompetitive courses such as practicum, internship, seminar, and directed study. Grades of P are also reported in courses carrying the statement, "Graded P/F," in the course description. In courses in which Ps are to be used, the method of grading will be made known to the students at the beginning of the semester, and the grading system will be uniform for all students in the course, except as provided in B-4-b. Grades under the pass-fail option are not affected by this regulation because the conversion of the regular letter grade is made by the registrar after instructors turn in the class rosters.

E-1-c. Midsemester grades in undergraduate courses must also conform to the above regulations. It is permissible to report Ps at midsemester ONLY in courses that have been approved for grading on this basis.

E-2. IP Grades.

E-2-a. Grades in Undergraduate Senior Thesis or Senior Project. The grade of IP (in progress) may be used to indicate at least minimally satisfactory progress in undergraduate courses such as senior thesis or senior project that have the statement "May be graded IP" in the course description. When the thesis or project is accepted, the IP grades are to be removed (see E-2-c). Grades of IP in undergraduate courses are considered to represent grades of at least C or P. If, in any given semester, the instructor considers the student's progress unsatisfactory, an appropriate letter grade (D or F) should be assigned for that semester.

E-2-b. Grades in Graduate Research Courses. The grade of IP (in progress) may be used in courses 500 (Master's Research and Thesis), 599 (Research), and 600 (Doctoral Research and Dissertation). When the thesis, dissertation, or other research document is accepted, or when a student ceases to work under the faculty member who is supervising his or her research, the IP grades are to be removed (see below). Grades of IP in graduate courses are considered to represent at least grades of B or P. If, in any given semester, the faculty member supervising the student's research considers the student's progress unsatisfactory, a regular letter grade (C, D, or F) should be assigned.

E-2-c. Removal of IP Grades. Departments may use on a department-wide basis either the P/F grading system, or regular letter grades, as well as P, when removing the previously assigned IP grades (e.g., a student who enrolled for six credits in course 500 one semester, four credits another semester, and five credits an additional semester could have 15 credits of IP grades removed with different grades for each of the blocks of credit registered for each semester, such as six credits of A, four credits of B, and five credits of P).

E-3. Grades in Law Courses. For additional provisions applicable to grades in law courses, see the College of Law section in part 4.

E-4. Computing Grade-Point Averages. Grades are converted by assigning the following number of points per credit for each grade: A-4, B-3, C-2, D-1, F-0. In computing the grade-point average, neither credits attempted nor grade points earned are considered for the following: courses graded I, IP, P, W, WU, or N, correspondence courses, advanced placement credit, credit by examination, or courses taken at another institution before initial enrollment at UI. Credits attempted and grades received at another recognized institution subsequent to regular enrollment at UI for at least one semester or summer session are included in the computation; in particular, when a course in which the student has received a D or an F at UI is repeated at another institution both the UI grade and the grade from the other institution are included in the computation. "Regular enrollment" does not include enrollment as a nonmatriculated student.

E-5. Raising a Grade by Repeating a Course. A student who has received a D or F in a course at UI or elsewhere may repeat the course at UI in an effort to raise the grade, provided a more advanced course for which the first course is a prerequisite has not been completed in the meantime. Although all grades remain on the record, only the most recent grade is counted for grade-point purposes. (See the College of Law section in part 4 for the exception to this regulation applicable to students in that college.)

E-6. Reports of Grades and Grade Changes. Grades are reported to the registrar for all courses at the end of each academic session and at midsemester for undergraduate courses (see deadlines in the academic calendar). Students are furnished copies of grade reports. The assignment of grades and changes in grades are the sole prerogative of the instructor and are reported by the instructor directly to the Registrar's Office on forms provided by that office. With respect to grade changes, an instructor may only change a grade to a new grade that he or she could have assigned initially. After a grade has been reported to the registrar, it may not be altered except by a written request stating the reasons for the alteration, signed by the instructor who submitted the original grade. If it is determined that a grade change is warranted and the instructor cannot be reached, the departmental administrator may assume the prerogatives of the instructor in connection with the grade change.

F-Grades of "Incomplete"

F-1. A grade of "Incomplete" is assigned only when the student has been in attendance and has done satisfactory work up to a time within three weeks of the close of the semester, or within one week of the close of the summer session. It may be assigned in the case of withdrawal from UI only if the withdrawal occurs within the last three weeks of the semester. If a final grade of "Incomplete" is recorded, the instructor specifies in writing on the class roster what the student must do to make up the deficiency. The instructor also specifies the grade that is to be entered on the student's record in the event that the incomplete work is not made up by the deadline.

F-2. Removal of "Incomplete" Grades. Incomplete work should be made up within six weeks after the first day of classes of the term in which the student next enrolls in UI. A grade of "Incomplete" that is not removed before that date automatically converts to the grade specified by the instructor on the class roster (see F-1) unless the student previously has filed with the registrar a "Permit for Extension of Time" card, signed by his or her academic dean and the instructor concerned. If the "Incomplete" grade is not removed within the six-week period, the period may be extended once for not more than one calendar year from the

date such extension is approved. If an extension is granted and the work is not made up before the expiration date, the grade automatically reverts to the grade specified by the instructor on the class roster. It is the student's responsibility to see that the incomplete work is made up before the expiration date. The instructor must submit a "Removal of Incomplete" card to the registrar within 72 hours following the expiration date. In some cases, a student's eligibility to reregister is contingent on removal of "Incomplete" grades. In such cases, an extension of time for removal of the grades may not be granted. Moreover, if a student becomes academically disqualified (see L) when an "Incomplete" grade is removed, his or her registration may be cancelled.

F-3. "Incomplete" Grades on Record at End of Final Term. A student cannot graduate with a grade of "Incomplete" on his or her record. At the end of the term in which the student applies for a degree, a grade of "Incomplete" in any UI course reverts to the grade that the instructor had specified on the class roster (see F-1). Reverted grades that replace grades of "Incomplete" at the end of the final term are included in the computation of the student's cumulative grade-point average at graduation. Nonetheless, a student who has graduated may make up the incomplete work within the usual time limit in an effort to raise the grade on the permanent record.

G—Withdrawal Procedures.

G-1. Standard Withdrawal Procedures.

G-1-a. A student who wishes to withdraw from UI before the end of the second week following midterms must go to Student Advisory Services (241 UCC) where the process of withdrawal is started and further instructions will be furnished for completing the indefinite-leave-of-absence card. The date on which the card is filed in the office of the student's academic dean is the official date of withdrawal. Deans will not accept indefinite-leave-of-absence cards after the end of the second week following mid-terms.

G-1-b. A student is permitted to withdraw from UI after the end of the second week following midterms for compelling reasons only and after approval by the Academic Petitions Committee *or* after completing a medical withdrawal as explained in G-2. Examples of compelling reasons are: serious illness or injury of the student or death or serious illness or injury in the student's immediate family. Petitions for permission to withdraw after the end of the second week following midterms are forwarded *via the student's academic dean* to the Academic Petitions Committee on forms available in department and college offices. If the student's petition is approved, the Academic Petitions Committee will determine the effective date of the withdrawal. (See "Refund of Fees" in part 2.)

G-2. Medical Withdrawal Procedures.

G-2-a. The director of the Student Health Service is authorized to grant or require a student's withdrawal from UI for medical reasons.

G-2-b. Voluntary Medical Withdrawal. Students desiring to withdraw from UI for medical reasons will consult the director of the Student Health Service who will evaluate the request. If granted, the dean for student advisory services will be notified in writing to process the medical withdrawal.

G-2-c. Emergency Transfer to Institutional Care. The director of the Student Health Service is authorized to act as the representative of the president in emergencies that, under Idaho laws, require the transfer of a student to a community or state health facility. The student may be granted a medical withdrawal from UI at the discretion of the director.

G-2-d. Mandatory Medical Withdrawal. It is the responsibility of the dean for student advisory services to order a medical examination of a student if the dean has reason to believe that the student has a serious medical or psychiatric disability that substantially threatens or interferes with the welfare of the student, other members of the university community, or the educational processes of the university. The dean shall notify the student and the director of the Student Health Service that such an evaluation is to be conducted. This process may be started by the director of the Student Health Service for patients under care or counseling by notifying the student and the dean for student advisory services in writing.

(1) Request for Evaluation. On notification from the dean for student advisory services, the director of the Student Health Service shall request the student to undergo immediate professional evaluation by the director or the director's designee, or, at the student's request and expense, by a private physician or psychiatrist deemed appropriate by the director. A report of this evaluation shall be presented to the director with a specific recommendation as to whether a medical withdrawal is warranted.

(2) Evaluation Conference. The director of the Student Health Service shall provide the student written notice of a time and place at which the director and student will confer on the final determination as to mandatory withdrawal. The student may have the assistance of a representative at this conference. The director shall refer to reports, recommendations, and evaluations pertinent to the case and is empowered to request additional relevant medical or psychiatric examinations of the student.

(3) Determination of Director. Based on the evaluation and the conference, the director of the Student Health Service may determine: **(a)** that mandatory withdrawal **is** warranted by the student's medical or psychiatric condition; **(b)** that mandatory withdrawal **is not** warranted by the student's medical or psychiatric condition; or **(c)** that the student may remain enrolled subject to conditions specified by the director. The director shall transmit this decision in writing to the student and the dean for student advisory services. If withdrawal is ordered, the dean will process it.

(4) Finality of Determination. Decisions made by the director of the Student Health Service pursuant to these procedures are final.

(5) Refusal of Evaluation. If, after a request by the director of the Student Health Service, the student refuses to consult with a physician or psychiatrist, the director will, if practicable, seek the help of the student's family in persuading the student to seek appropriate professional assistance. Should these efforts not result in a student taking the desired action, the director shall summarize the steps taken to secure needed information and the reasons for the withdrawal and instruct the dean for student advisory services to process the withdrawal. A copy of this order for withdrawal shall be sent to the student. The dean will process the withdrawal as mandatory, but involuntary.

(6) Appeal. A student may appeal to the coordinator of student services either **(a)** to revoke the order of the dean for student advisory services for a medical examination or **(b)** in case a procedural error is alleged, to order the determination of the director of the Student Health Service reopened.

G-2-e. Any student placed on medical withdrawal may, if appropriate, be informed, in writing, by the director of the Student Health Service, that he or she is eligible to return to UI at a later date on the favorable recommendation of the director. When applying for readmission, the student is responsible for providing the director with evidence of satisfactory treatment of the condition that necessitated medical withdrawal. Medical withdrawals are subject to the same refund rules and procedures as other withdrawals (see "Refund of Fees" in part 2).

G-3. Grades for Students Who Withdraw. Grades for a student who withdraws are recorded as provided in C and F-1. A student

who withdraws from, or leaves, UI without official approval will receive Fs in all courses in which he or she is registered.

H—Final Examinations

H-1. The last five days of each semester are scheduled as a final exam week (two-hour exams) in all divisions except the College of Law. The following provisions apply:

H-1-a. No quizzes or exams shall be given in lecture-recitation periods during the week before final week. Exams in lab periods and in physical education activity classes, final in-class essays in English composition classes, and final oral presentations in speech classes are permitted.

H-1-b. Instructors must meet their classes during the exam period for which they are scheduled in the finals week, either for an exam or for a final class session.

H-1-c. Final exams or final class sessions are to be held in accordance with the schedule approved by the Faculty Council and published in the Time Schedule. Instructors may deviate from the schedule only on the recommendation of the college dean and prior approval by the vice president for academic affairs and research.

H-1-d. Where exams common to more than one course or section are required, they must be scheduled through the Registrar's Office and are regularly held in the evening.

H-1-e. Students with more than two finals in one day are permitted, at their option, to have the excess final(s) rescheduled to the conflict period or at a time arranged with the instructor of the course.

H-1-f. Final grades for each course must be filed with the registrar within 72 hours after its scheduled exam period.

H-1-g. Athletic contests are not to be scheduled during finals week; further, if a change in the calendar causes a scheduled athletic contest to fall within finals week, every reasonable effort must be made to reschedule the athletic contest.

H-2. Students who miss final exams without valid reason receive Fs in the exams. Students who are unavoidably absent from final exams are required to present evidence in writing to the instructor to prove that the absence was unavoidable.

H-3. Instructors, with the concurrence of their departments, may excuse individual students from final exams when such students have a grade average in the course that will not be affected by the outcome of the final exam. In such instances, the grade earned before the final exam is to be assigned as the final grade.

H-4. Early final exams are permitted for students, on an individual basis, who clearly demonstrate in writing that the reasons for early final exams are compelling (such requests require approval by the instructor and by the administrator of the department and the dean of the college in which the course is offered).

I-Advanced Placement for Undergraduates

(NOTE: See part 2 for special fee for extramural credits.)

I-1. With prior approval by the administrator of the department concerned, undergraduate degree-seeking students may bypass an elementary course and enroll in a higher vertically related course. When subject mastery of the bypassed course is regarded by the department to be essential to the understanding of the advanced course, the student with a C or better in the advanced course is eligible to receive credit and a P for any bypassed courses in the same subject-matter area. The necessary forms must be filled out and forwarded by the department concerned. *Advisers should make sure that students are aware of this opportunity for obtaining advanced-placement credit.*

I-2. Students who have completed courses at other institutions after bypassing lower vertically related courses, but have not been awarded advanced-placement credit, will be granted such credit on completion of a yet higher vertically related course at UI.

I-3. Credit is granted for advanced-placement courses completed in high school in which a rating of 5, 4, or 3 is attained in CEEB advanced-placement tests.

I-4. UI also grants credit for the successful completion of tests under the College Level Examination Program (CLEP), as approved for specific courses by UI departments, and for courses completed at military schools, as recommended by the American Council on Education.

I-5. With the approval of the University Curriculum Committee's Subcommittee on External Study/Experience and payment of the applicable fees, undergraduates may be awarded lower-division and/or upper-division (100-499 series) credit in recognition of university-level knowledge or competence gained in situations outside of UI's jurisdiction (e.g., in business, industry, government, or community agencies, through travel or private study, or while studying at a proprietary institution). Petitions for such credit must be approved by the student's departmental administrator and academic dean, and must be supported by such evidence as is needed to provide a sound basis for evaluating the student's achievements. Credits granted under this regulation are recorded as "external study/experience" and a P is assigned. The applicability of credits earned through external study/experience toward the satisfaction of specific degree requirements will be determined by the department and division through which the degree is to be granted. (See J-5.) Petition forms for external study/experience are available from the director of summer session.

I-6. Advanced-placement credit granted by other accredited institutions will be honored on transfer to UI.

I-7. A statement on all forms of advanced placement can be obtained from the Admissions Office.

J—General Requirements for Baccalaureate Degrees

Candidates for baccalaureate degrees must fulfill the following requirements. (See the Graduate Bulletin for the requirements for graduate degrees. See the College of Law section in part 4 for the requirements for the degree of Juris Doctor.)

J-1. Credit Requirements. For the minimum number of credits required in each degree program, see the major curricula of the various degree-granting units in part 5. A minimum of 36 credits in courses numbered 300 or above is required for a baccalaureate degree.

J-2. UI Course Requirements

J-2-a. After a student has completed 88 credits (120 credits in the case of a student working toward the degree of Bachelor of Architecture), he or she must complete a minimum of 32 credits in UI courses. No credits awarded for correspondence study, bypassed courses, credit by examination, College Level Examination Program (CLEP), external study/experience, or technical competence can be counted among these 32 UI credits. Exceptions to this requirement are stated below; exceptions are also made for study abroad and student exchange programs with prior approval by the student's academic dean.

J-2-b. Candidates for baccalaureate degrees at UI centers away from the Moscow campus and candidates whose curricula specifically require the completion of courses offered by institutions other than UI are exempt from the requirement stated in J-2-a. Instead, they must complete a minimum of 32 of the last 64

credits in UI courses other than those offered by correspondence study.

J-2-c. Candidates for the B.S.Ed. degree in trade and industrial/-technical education are exempt from the requirement stated in J-2-a; instead, they must complete a minimum of 64 credits in UI courses other than those offered by correspondence study.

J-3. Subject Requirements (Core Curriculum). A university education is a preparation both for living and for making a living. It offers an opportunity not only to lay the foundations of a career, but also to develop the mind to its highest potential, to cultivate the imagination as well as the power to reason, and to gain the intellectual curiosity that makes education a life-long enterprise. A central component of this preparation is the requirement that a student working toward a baccalaureate degree must complete 30-32 credits of course work in the four categories described below. This requirement is to be satisfied by earning the minimum number of credits specified for each category. (Transfer students have two options for fulfilling this requirement; these are described under "Admission Requirements" in part 2 of this catelog -- see paragraph 9 of "Applicants with Previous College Credit.") **Courses that have been approved for the fulfillment of the requirement in each category are listed below; students are advised to check with deans' offices for courses that may have been added after the publication of this catalog.** Generally, the approved courses are open to lower-division students and do not have prerequisites. Note: Though a given course may be listed under more than one category, it may be used to satisfy the requirement in only one category; remedial courses may not be used to satisfy any of this requirement. **Degree-seeking students must be enrolled in Math 050 or in a course that meets the core requirement in mathematical, statistical, and computer sciences and in Eng 103 or 104 in their first year in residence and in subsequent years until the core requirements in mathematical, statistical, and computer sciences and Eng 104 have been satisfied.**

J-3-a. Communication (5-7 cr). The purpose of this requirement is to develop the ability to organize one's thoughts, to express them simply and clearly, to observe the standards and conventions of language usage, and to suit tone to audience. The requirement is proficiency in written English equal to that needed for the completion of UI course Eng 104 and the completion of one additional course in this category. The following specific provisions apply to the English composition component:

(1) Students who attain a satisfactory score on the College Entrance Examination Board (CEEB) English Achievement or Scholastic Aptitude (Verbal) Test, the American College Testing (ACT) English Test, or the Washington Pre-college Test (SAT Conversions) will be awarded credit and grades of P for Eng 103 and 104. Also, students who attain a grade of 4 or 5 on the objective portion of the CEEB Advanced Placement Program English Test and whose essay portion of that test is evaluated as satisfactory by the Department of English will be awarded credit and grades of P for Eng 103 and 104.

(2) Students who do not meet either of the conditions stated in paragraph (1) will be tentatively placed, on the basis of their scores on the tests cited above, in either Eng 103 or 104. These students will take a diagnostic test given by the Department of English and, on the basis of this test, will either (a) be required to take both Eng 103 and 104, (b) be given credit and a grade of P in Eng 103 and required to take Eng 104, or (c) be given credit and grades of P in Eng 103 and 104.

(3) Although UI accepts credits earned in comparable writing courses taken at other accredited institutions, students who have taken such courses but who have not met either of the conditions stated in paragraph (1) must take a test given by the Department of English to demonstrate that they have attained proficiency in composition equivalent to that required to complete Eng 104. Students who do not demonstrate that level of proficiency may attain the required proficiency through independent study or by taking UI courses. (See credit limitation in J-5-d.)

(4) Credits granted for Eng 103 are not applicable to the fulfillment of this requirement J-3-a.

CommG 131, Fundamentals of Public Speaking (2 cr)
Eng 205, Advanced Expository Writing (3 cr)
Eng 317, Technical and Engineering Report Writing (3 cr)
FL/FR 101, Elementary French (4 cr)
FL/GN 121, Elementary German (4 cr)
FL/GK 341, Elementary Greek (4 cr)
FL/LA 161, Elementary Latin (4 cr)
FL/SP 181, Elementary Spanish (4 cr)

J-3-b. Natural and Applied Science (8 cr). The purpose of this requirement is to develop a better understanding of the physical and biological world by learning some of the principles that explain the natural phenomena of the universe, the experimental methods used to derive those principles, and their applications.

Bact 250, General Microbiology (4 cr)
Biol 100, Introduction to Biology (4 cr)
Biol 201, Introduction to the Life Sciences (4 cr)
Chem 101, Chemistry and the Citizen (4 cr)
Chem 103, Introduction to Chemistry (4 cr)
Chem 111, Principles of Chemistry (4 cr)
Chem 112, Inorganic Chemistry and Qualitative Analysis (5 cr)
Chem 114, General Chemistry (4 cr)
Ent 211, General Entomology (4 cr)
Geog 100, 101 Man's Physical Environment and Lab (4 cr)*
Geol 101, 102, Physical Geology and Lab (4 cr)*
Geol 106, 107, Historical Geology and Lab (4 cr)*
Phys 101, Fundamentals of Physics (4 cr)
Phys 113, 115, General Physics and Lab (4 cr)*
Phys 210, 212, Engineering Physics I and Lab (4 cr)*

*To be counted toward satisfaction of this requirement, the full four credits (that is, both the lecture course and the accompanying laboratory course) must be completed.

J-3-c. Mathematical, Statistical, and Computer Sciences (3 cr). The purpose of this requirement is to develop logical reasoning processes; skills in the use of numbers, space, symbols, and formulas; and the ability to apply these skills to realistic problems.

Math 111, Finite Mathematics (4 cr)
Math 140, Pre-calculus Algebra and Analytic Geometry (3 cr)
Math 160, Survey of Calculus (4 cr)
Math 180, Analytic Geometry and Calculus (4 cr)
Stat 251, Principles of Statistics (3 cr)

J-3-d. Humanities and Social Sciences (14 cr, including at least 6 cr in humanities and 6 cr in social sciences). The purpose of this requirement is to explore the collective experience of mankind as it is reflected in literature, philosophy, the arts, and history, to develop an understanding of the inner workings of social processes and institutions, and to provide knowledge of how individuals develop and interact with society.

Humanities
- AmSt 201 Interpreting America (4 cr)
- Art 101, Visual Art (3 cr)
- Eng 111 and/or 112, Literature of Western Civilization (3 cr each)
- Inter 126, Film and International Culture (3 cr)
- MusH 100, Survey of Music (3 cr)
- Phil 101, Ethics (3 cr)
- ThA 101, Introduction to the Theatre (3 cr)

Social Sciences
- Anthr 100, Introduction to Anthropology (3 cr)
- Econ 151 and/or 152, Principles of Economics (3 cr each)
- Econ 272, Foundations of Economic Analysis (4 cr)
- Geog 250, World Regional Geography (3 cr)
- Hist 101 and/or 102, History of Civilization (3 cr each)
- PolSc 105, Introduction to Political Science (3 cr)
- Psych 100, Introduction to Psychology (3 cr)
- Soc 110, Introduction to Sociology (3 cr)

J-4. Grade Requirements. To qualify for the baccalaureate degree, a candidate must have a cumulative grade-point average of 2.00 or better. See exceptions under E-4 and E-5.

J-5. Credit Limitations. A candidate may count toward a baccalaureate degree no more than:

J-5-a. Seventy credits earned at junior or community colleges, or one-half of the total credits required for a student's intended baccalaureate degree, whichever is the higher number.

J-5-b. Forty-eight credits in any combination of credits granted for courses taken at vocational-technical schools, external study/experience, technical competence, correspondence study, credit by examination, or advanced placement (such as CLEP, CEEB advanced-placement tests, courses completed at military schools, and credit for bypassed courses.) This 48-credit limitation may be exceeded for good cause with the approval of the Academic Petitions Committee (file petition through dean's office).

J-5-c. Twelve credits earned under the pass-fail option (see B-11).

J-5-d. Six credits in English composition.

J-5-e. Six credits in remedial-level courses; to be counted, these credits must have been earned before the fall semester 1983; no such credits earned after summer session 1983 may be counted.

J-6. Assignment of Curricular Requirements (Catalog Issue). In addition to fulfilling the general university requirements for degrees, candidates must satisfy the particular requirements specified for their curricula. The pertinent requirements are those contained in the UI catalog issue that was in effect at the time of or subsequent to the candidate's enrollment as a degree-seeking student at UI or another institution accredited by one of the regional agencies, such as the Northwest Association of Schools and Colleges. In any case, the catalog issue designated must have been in effect within seven years of the date on which the candidate is to receive the degree.

J-7. Second Baccalaureate Degree.

J-7-a. Students may concurrently pursue two different majors leading to two different baccalaureate degrees (e.g., B.A. and B.S.Ed.) from UI by working to fulfill the general university requirements for one degree and the departmental and college subject-matter requirements for each. For exceptions to this regulation, see notes with the curricula in general studies and general agriculture in part 5. Students who plan to pursue two degrees concurrently should develop a schedule of studies that combines the degree requirements and present it to the dean(s) of the college(s) concerned as early as possible, preferably before the end of the junior year.

J-7-b. Students who have earned a baccalaureate degree at UI and who wish to complete the requirements for a different major and receive a second baccalaureate degree must earn at least 16 credits in UI courses other than those offered by correspondence study after the receipt of the first degree and fulfill the departmental and college subject-matter requirements for the second degree. (See B-9.) Students may return to UI and earn a second degree carrying the same name as one previously granted by UI so long as the requirements for a different major are satisfied. For exceptions to this regulation, see notes with the curricula in general studies and general agriculture in part 5. This regulation does not apply to students who were concurrently pursuing two different degrees under regulation J-7-a.

J-7-c. Students who have a baccalaureate degree from another recognized institution and who wish to earn another baccalaureate degree at UI must earn a minimum of 32 credits in UI courses other than those offered by correspondence study after the receipt of the first degree and fulfill the departmental and college subject-matter requirements for the degree. (See B-9.)

J-8. Degree with Double Major. Students may complete two different majors (curricula) offered under a particular baccalaureate degree and have both majors shown on their academic records and diplomas, e.g., Bachelor of Arts with majors in history and political science. Each of the majors must lead to the same degree. When majors leading to different degrees are involved, see the requirements applicable to the awarding of a second baccalaureate degree.

J-9. Academic Minors.

J-9-a. An academic minor is a prescribed course of study consisting of 18 or more credits. For descriptions of minor curricula, see the programs of the degree-granting units in part 5. In the following paragraphs of J-9, "minor" denotes "academic minor," which is to be distinguished from "teaching minor"; for information on the latter, see the College of Education section of part 4.

J-9-b. A student may pursue one or more minors in addition to a major by filing with the registrar a declaration of intention to do so. Completion of a minor is required only if specified by the degree-granting unit, but any minor completed is recorded on the student's academic record.

J-9-c. Transfer credits may be applied to a minor with the approval of the department offering the minor; however, the last nine credits applied to completion of the minor must be earned in UI courses and may not include credits earned through correspondence study.

J-9-d. A student may complete an undergraduate minor even though he or she has already earned a baccalaureate degree. If the sole objective is to complete an undergraduate minor, the student normally registers as a major in the department offering the minor or as "undeclared" in the college in which the minor is offered. If the baccalaureate degree was earned at UI, the student must complete at least six additional UI credits that apply to the minor (these six credits may not include any earned through correspondence study). If the degree was earned elsewhere, the conditions stated in J-9-c apply.

K—Academic Honors

K-1. Graduation with Honors. Candidates for baccalaureate degrees are graduated with honors if their cumulative grade-point averages are as specified in K-1-a, K-1-b, or K-1-c and if they have earned at least 56 credits in UI courses. No credits earned through correspondence study, bypassed courses, credit by examination, College Level Examination Program, external study/experience, or technical competence may be counted among these 56 credits. With prior approval by the student's academic dean, credits earned in special programs, such as study abroad and student exchange programs, may be counted. Candidates for the degree of Juris Doctor are graduated with honors under the same conditions, except that at least 84 credits in law courses are required and the grade-point average considered is based exclusively on the student's record in the College of Law. Honors are not awarded with degrees earned through the College of Graduate Studies.

K-1-a. Candidates whose grade-point averages would place them within the top 3 percent of graduates from their respective colleges over the preceding five years are graduated *summa cum laude* (with highest distinction.)

K-1-b. Candidates whose grade-point averages would place them within the top 6 percent (but below the top 3 percent) of graduates from their respective colleges over the preceding five years are graduated *magna cum laude* (with great distinction).

K-1-c. Candidates whose grade-point averages would place them within the top 10 percent (but below the top 6 percent) of graduates from their respective colleges over the preceding five years are graduated *cum laude* (with distinction).

K-2. Dean's List. Students who are carrying 14 credits (10 in the College of Law) and attain a grade-point average of 3.30 (3.00 in the College of Law) for a given semester are placed on lists prepared for the college deans. (Except for grades of P earned in Eng 103 and 104, credits for which a student was graded P are not computed in the specified minimums.) These lists are publicized within UI and are distributed to news agencies.

L—Academic Probation, Disqualification, and Reinstatement

L-1. Academic Probation.

L-1-a. At the end of a semester, undergraduate students who do not attain the cumulative grade-point average required for their rank (see L-5) are placed on academic probation for the next semester of enrollment and are referred to the appropriate academic dean for advising. The effect of this probationary status is to serve notice that if a student's cumulative record at the end of the next semester in residence is unsatisfactory he or she will be disqualified and ineligible to continue at UI.

L-1-b. Students on academic probation who attain a cumulative grade-point average higher than the minimum required for their rank are automatically removed from probation.

L-1-c. Students on academic probation who attain a grade-point average of 2.00 or higher during the next or subsequent semester after being placed on probation, but whose cumulative grade-point average is still below the minimum required for their rank, remain on academic probation.

L-2. Disqualification. Students on academic probation will be disqualified at the end of a probationary semester unless the minimum cumulative grade-point average required for their rank, or a semester grade-point average of at least 2.00, is attained. To reregister after being academically disqualified, students must be reinstated.

L-3. Reinstatement.

L-3-a. After a disqualification, students may be reinstated (i.e., have their eligibility to continue restored) by petition to and favorable action by the college in which they are enrolled.

L-3-b. After a first disqualification, students may be automatically reinstated by remaining out of UI for at least one semester.

L-3-c. Students who have been reinstated may continue to be reinstated with the approval of the dean of the college in which they are enrolled so long as they attain a 2.00 or better grade-point average for each semester following the first disqualification.

L-3-d. Students who attend another institution while disqualified must meet the requirements applying to the admission of transfer students in order to reenter UI.

L-3-e. Students who are disqualified and reinstated are reinstated on academic probation.

L-4. Dean's Referral. Students who attain a grade-point average below 1.50 during a given semester without dropping below the cumulative grade-point average required for their rank receive a dean's referral. Although this does not affect their eligibility to register, the students are referred to the appropriate academic dean for advising.

L-5. Academic Probation and Disqualification Cutoff by Rank.

Rank (by Credits Earned)	Minimum Cumulative Grade-Point Average
0 through 32	1.60
33 through 64	1.80
65 and up	2.00

L-6. Registration Pending Removal of Incompletes. Regulation F-2 provides that in cases where a student's eligibility to reregister is contingent on removal of incomplete grades, the student may not be granted an extension of time for such a removal.

L-7. Summer Session. Disqualification at the end of a spring semester does not affect a student's eligibility to continue in the immediately ensuing summer, but to register in any subsequent term the student must be reinstated.

L-8. This regulation L does not apply to law, graduate, or full-time nonmatriculated students.

M—Attendance, Repeated Absences, Field Trips, and Official Student Travel

M-1. Attendance. Students are responsible for class attendance; in all cases of absence, students are accountable for the work missed. In the case of officially approved absence and on the request of the student, the instructor is obligated to provide an opportunity for the student to make up for missed work. In general, an absence is considered "official" when the student is: **(a)** participating in an approved field trip or other official UI activity (e.g., athletics, debate, music, or theatre arts); **(b)** confined in the Student Health Service; or **(c)** granted a leave of absence from UI for reasonable cause by his or her academic dean.

M-2. Repeated Absences. In courses where a substantial amount of the content can be mastered only or primarily through class participation, regular and punctual attendance is essential and may, therefore, be reflected in grading. Instructors will make clear at the beginning of each course the extent to which grades are dependent on attendance. Instructors may report to the registrar students who are repeatedly absent from classes (a form is available from departmental and college officials). Absences may be considered excessive when their number equals or exceeds the number of credits in a particular course.

M-3. Field Trips and Official Student Travel. "Field trip" is defined as any required, course-related student travel that exceeds 25 air miles from the campus or conflicts with other classes that the students involved are taking. (A trip taken within 25 air miles during the time scheduled for the particular class or at a time that does not conflict with other classes the students involved are taking is a "local trip," not a "field trip.")

M-3-a. Missed Class Work. Students participating in field trips, as defined above, or other official UI activities are responsible for conferring in advance with the instructors of any classes that will be missed in order to be eligible for making up missed class work. (See M-1.)

M-3-b. Approval of Course-Related Field Trips. Administrative approval for course-related field trips will be obtained by the person in charge of the trip as follows:

(1) Each field trip as identified in the catalog course description requires prior approval by the department in accordance with divisional procedures (application for approval should be made at least one week before the expected departure).

(2) Each field trip NOT identified in the catalog course description requires prior approval by the departmental administrator, the dean of the college, and the vice president for academic affairs and research (application for approval should be made at least two weeks before the expected departure).

M-3-c. Approval of Other Official Student Travel. Administrative approval for official student travel that is NOT course related is obtained from the coordinator of student services (application for approval should be made at least two weeks before the expected departure).

M-3-d. Costs. When a college can cover all or part of the cost of a course-related field trip from allocated funds, the college should do so. If the college cannot cover the cost, or a portion thereof, the cost (or remaining portion) must be borne in proportionate share by the students in the course. Students missing required field trips identified in the catalog course description must pay their proportionate shares.

M-3-e. Field-Trip Completion Deadline. All field trips and other UI-approved student travel must be completed before 7:30 a.m.

on the fifth day of classes before the start of final examinations.

M-3-f. Unofficial Student Travel. UI student accident insurance does not cover injuries sustained in the course of travel unless the travel has been officially authorized by the appropriate UI agent.

M-3-g. Vehicle Information. Information concerning privately owned vehicles (registration, insurance, driver's license, etc.) to be used for field trips or other official student travel must be filed in the Controller's Office (Rm. 101, Ad. Office Bldg.). Administrators of departments and divisions are responsible for ensuring that the required information is filed before the initial use of each privately owned vehicle in a given academic year.

N—Class Rating

Class ratings of undergraduates are determined as follows: sophomore—26 credits, junior—58 credits, and senior—90 credits.

O—Miscellaneous

O-1. Credit Requirements for Full-Time Students.

O-1-a. For purposes other than fees, UI students in all divisions except the Graduate School must carry 12 credits each semester to be classified as full time.

O-1-b. For fee and tuition purposes only, students carrying eight or more credits (or equivalent in audits and zero-credit registrations) and all graduate/instructional assistants on full appointment, regardless of the number of credits they register for, are classified as full-time students.

O-1-c. Students in the College of Graduate Studies are considered full time: **(1)** when registered for nine credits (or equivalent) of course and/or thesis work; or **(2)** when on regular appointments as instructional assistants or graduate assistants.

O-1-d. Veterans and war orphans attending UI on the G.I. Bill must carry certain minimum credit loads to be considered by the Veterans' Administration for benefits as indicated in the table accompanying this regulation. (Audits do not count; repeats and reviews may be included when the student's adviser certifies that the course is required in the student's curriculum or is needed to remove a deficiency or to provide essential background for the student's program; file a copy of the program with the veterans' clerk in the Registrar's Office.)

O-1-e. During the eight-week summer session, students are considered full-time for fee and other purposes when carrying six or more credits (or equivalent).

O-1-f. The president, vice president, and senators of the Associated Students University of Idaho are considered full time when paying full-time student fees and carrying at least the following credit loads: president, three credits; vice president and senators, six credits. The editor and associate editor of the *Argonaut* are considered full time when paying full-time student fees and carrying at least the following credit loads: editor, three credits; associate editor, six credits.

O-2. Academic Performance. Instructors and students are responsible for maintaining academic standards and integrity in their classes. An instructor may reduce a student's grade for dishonesty in a course, but the effect shall not be greater than the proportionate value of the work involved to the total requirements. If the student deems the reduction of the grade unfair, he or she may appeal through the appropriate departmental administrator and college dean, and finally to the Academic Hearing Board. Disciplinary penalties for academic dishonesty must be handled by the Student Judicial System.

O-3. Application for Degrees. Candidates for degrees must, at the beginning of the last semester or summer session in residence, pay the diploma fee and file an application with the dean of the division through which the degree is offered. If two degrees are to be received concurrently, separate applications must be filed with the dean(s) of the division(s) concerned. The application must be filed with the dean after the diploma fee has been paid at the Controller's Office. (See "Fees and Expenses" in part 2.) The last day for filing applications for baccalaureate degrees is the beginning of the third week of the semester or the beginning of the second week of summer session. The last day for filing applications for graduate degrees is the beginning of the fourth week of the semester or the beginning of the third week of summer session. If applications are received by deans after these dates, there is an additional fee if students wish to receive their diplomas at the close of the term. If applications for degrees are transmitted by the dean to the registrar less than one month before the end of the academic session in which graduation requirements are completed, the applications will be held by the registrar and processed with those received at the beginning of the next academic session.

O-4. Commencement. Formal commencement exercises are held only at the close of the spring semester; however, diplomas are also issued at the close of the summer session and the fall semester to such candidates as have completed their graduation requirements at that time. All students who graduate in the summer, fall, or spring are entitled to participate in the annual commencement exercises. Candidates who DO NOT intend to participate in the formal commencement exercises must notify the dean of the division in which the degree program is offered before the close of the academic session in which graduation requirements are completed so that appropriate arrangements can be made. Reservations for caps, gowns, and hoods must be made by the date specified by the registrar. Diplomas are ready about five weeks after the end of the academic session in which graduation requirements are completed.

O-5. Limitations on Class Size.

O-5-a. Limitations on class size must have prior approval by the dean of the college in which the course is offered. If it becomes necessary to limit the size of a class on a continuing basis (more than two semesters), the limitations must be approved through faculty channels — University Curriculum Committee and university faculty — and be made part of the catalog description of the course.

O-5-b. Any requirement for students to preregister for a course must have been approved by the dean of the college in which the course is offered and must be well publicized. If such preregistration is to be required on a continuing basis, approval must be obtained through faculty channels. The preregistration require-

MINIMUM CREDIT LOADS FOR VETERANS' BENEFITS

Benefits	Academic Year Undergraduate	Academic Year Graduate	Summer Session Undergrad. & Grad.
Full	12 or more	9 or more	Must be
Three-fourths	9-11	6-8	arranged
Half	6-8	4-5	
Fees and tuition only	fewer than 6	fewer than 4	

ment will then be made part of the catalog description and indicated in the Time Schedule. Unless the university faculty has approved a different system for a particular course, priority for admission to classes for which preregistration is required will be the same as for university registration in that semester, except as O-5-c applies.

O-5-c. Preference for enrollment in courses with limitations on class size is given to students enrolling in them for the first time. At the option of the department, students repeating courses for any reason may be placed on standby status. Students in that status are allowed to register for the course, if there is available space, by permission of the department offering the course. In no case shall a student be held in standby status for any one course for more than two consecutive semesters.

O-5-d. Any student denied admission to a class may appeal in writing to the vice president for academic affairs and research for a review of the circumstances involved.

0-6. Students' Right to Change Course Sections. Students have the right to change from one section of a course for which they are qualified to another section of the same course during the first two weeks of classes so long as the section into which they wish to transfer has not reached the maximum number of students that may be accommodated. (See appeal procedure in O-5.)

O-7. Availability of Instructors' Names. As a matter of principle, students and their academic advisers and deans have the right to know the names of the instructors who will teach course sections to be offered during the immediately ensuing semester or summer session. Departments are required to submit the names of instructors for all course sections for publication in the Time Schedule. Where it is impossible to determine the teaching assignments of individual members of the instructional staff before the deadline for the Time Schedule, departments are responsible for making information concerning adjustments in teaching assignments generally available to students, advisers, and deans at such time as they occur.

O-8. Confidentiality of Academic and Counseling Records. See the student records policy in the Time Schedule.

O-9. Rights Reserved to the University.

O-9-a. Catalogs, bulletins, and course or fee schedules shall not be considered as binding contracts between UI and students. UI reserves the right at any time, without advance notice, to: **(1)** withdraw or cancel classes, courses, and programs; **(2)** change fee schedules; **(3)** change the academic calendar; **(4)** change admission and registration requirements; **(5)** change the regulations and requirements governing instruction in and graduation from UI and its various divisions; and **(6)** change any other regulations affecting students. Changes shall go into effect whenever the proper authorities so determine and shall apply not only to prospective students but also to those who are matriculated in UI. When economic and other conditions permit, UI tries to provide advance notice of such changes. In particular, when an instructional program is to be withdrawn, UI will make every reasonable effort to ensure that students who are within two years of completing graduation requirements, and who are making normal progress toward completion of those requirements, will have the opportunity to complete the program that is to be withdrawn.

O-9-b. UI also reserves the right, when a student has failed to discharge any obligation to UI, to deny that student the privilege of reregistering or to withhold the student's records or information based on the records. Students may verify the status of their accounts and be informed of any financial obligation to UI by inquiring at the cashier's window of the Controller's Office in the Administration Office Building.

O-10. Deviations from Established Class Schedules.

O-10-a. The vice president for academic affairs and research periodically reminds deans and departmental administrators of their responsibility to ensure that classes meet in conformity with the course descriptions and Time Schedule. (It is the responsibility of the University Curriculum Committee to see that the time-requirements stated in new or revised course descriptions satisfy general regulation D-1, "Credit Defined"; it is the responsibility of the registrar to see that listings in the Time Schedule conform to the respective course descriptions.)

O-10-b. The cancellation of a particular class session or sessions on an occasional basis, normally due to unusual circumstances affecting the instructor of or the students in the class, is a matter for the instructor's discretion. Nonetheless, instructors should keep such cancellations to a minimum, be satisfied that the grounds for cancellation are defensible, give as much advance notice of the cancellation as is possible, and, if time permits, obtain the concurrence of the departmental administrator in advance. Frequent failure of an instructor to meet classes, except for reasons clearly recognizable as adequate, may be grounds for disciplinary action.

O-10-c. The scheduling of required class meetings at times other than those specified in the Time Schedule or authorized in the course descriptions (e.g., field trips) requires approval by the vice president for academic affairs and research. In addition to securing the vice president's approval, the instructor must give the students at least two weeks' notice, provide alternative means of completing class requirements for students who have irreconcilable conflicts with the irregular meetings, and, normally, cancel regularly scheduled class meetings equivalent to the irregular meetings. (If it is proposed that such irregular meetings be made a continuing practice, they are to be incorporated in the course description and the revised description submitted to the University Curriculum Committee for routine faculty approval.)

O-10-d. Authorized class meetings at times other than those shown in the Time Schedule is one of the topics that instructors are to discuss at the first or second class session.

General Studies Program

William B. McCroskey, Director (112 Admin. Bldg.).

The General Studies Program, in which students at any level of competence may enroll, serves students in two ways. General studies is elected by many students in order to explore various academic areas before deciding in which degree program they would enroll. Students who wish to major in general studies may develop, in consultation with their adviser, a coherent program of studies and work toward the degree of Bachelor of General Studies, as outlined below. Also, credits and grade points earned while a student is enrolled in the program may be applied toward any other degree for which they are applicable.

Admission to the Program

New students wishing to enroll in the General Studies Program may indicate their choice on the application form for admission to the university. Students who are undecided between two majors offered by any of the unversity's colleges should enroll as "undeclared" students in that college rather than in general studies. Students currently enrolled in one of the colleges of the university may transfer to the program by applying to the director.

General Regulations

So that students may have the greatest opportunity to explore various types of subject-matter areas, as well as different types of student programs, there are no requirements during the advisory phase. However, to graduate, a student must either declare as a candidate for the degree of Bachelor of General Studies or transfer to one of the colleges of the university. In either case, the student must fulfill all of the requirements for the degree, including achieving an overall grade point average of 2.00 (C). Whether in the advisory phase or in the degree program, a student ineligible to be in or to continue in the College of Business and Economics may take no more than 16 credits of lower-division work and, except for real estate and insurance courses, no more than 9 credits of upper-division work in that college. Furthermore, students may not transfer from general studies to some of the university's colleges unless they have a grade point average of at least 2.00.

Bachelor of General Studies Curriculum

The curriculum leading to the degree of Bachelor of General Studies is designed to provide maximum flexibility for undergraduates while planning their program of studies. Since the only specific subject requirements are the general university requirements, students can plan their programs to the best advantage of their particular educational objectives. This means that students must bear the major responsibility for their choice of courses. Those who plan wisely have the opportunity to obtain an excellent education. The key admonition is: Plan your program carefully.

The major thrust of the B.G.S. degree program is nonspecialized education. Although a student could take his or her work in a limited number of departments, the intent of this program is to permit great latitude in the choice of subjects so that students may satisfy their particular objectives. No student may become a candidate for the B.G.S. degree who has already earned a baccalaureate degree or who is a candidate for another degree offered by the university.

Major. No major other than "general studies" will be certified on the student's diploma or official transcript. Students who wish to have a designated major should pursue a departmental baccalaureate degree (B.A., B.S., etc.). Naturally, a student may select a combination of courses that will be the equivalent of a major, but this will not be officially recognized by the university as a major.

Degree Requirements. In addition to the general university requirements for the baccalaureate degree (see regulation J-3), sufficient electives must be taken to total 128 credits. *A minimum of 48 credits must be earned in courses numbered 300 and above.* Not more than 40 credits in any one subject field may be counted in the 128 credits. Candidates for the B.G.S. degree must register for and complete at least the last 16 credits applicable toward the degree after enrolling in the General Studies Program.

Suggestions to Students. Students are advised not to make a firm decision with respect to the B.G.S. degree before the end of the freshman year. During the freshman year, and probably during the sophomore year, students should consider following one of the curricula leading to a departmental baccalaureate degree, deviating from the departmental requirements only where it appears educationally advisable to do so.

It is very important that the student working toward the B.G.S. "look ahead" to see in which departments he or she wishes to accumulate the required 48 credits in upper-division courses (those numbered 300 and above). Many of these courses have prerequisites that must be completed during the early semesters of the student's undergraduate career. If planning is delayed, it may be that some courses will be "unavailable" because the student has not taken the prerequisites.

College of Agriculture

A. Larry Branen, Dean (53 Iddings Wing, Ag. Sc. Bldg.); A. J. Lingg, Associate Dean and Director of Resident Instruction; Harold R. Guenthner, Associate Dean and Director of Cooperative Extension Service; Gary A. Lee, Associate Dean and Director of the Agricultural Experiment Station.

The College of Agriculture is a part of the land-grant college system. Pursuant to federal and state legislation, the College of Agriculture was established as a division of the university to provide resident instruction in agriculture, to conduct research in all fields of agriculture that promise to assist in the development of state resources, and to carry the results of research and service to all parts of the state.

Standing and Advantages

The Residence Instruction Section of the Division of Agriculture of the National Association of State Universities and Land-Grant Colleges, through its Committee on Organization and Policy, maintains close liaison with all colleges of agriculture in the land-grant college system. In annual national and regional meetings and summer workshops, efforts are coordinated to meet the changing needs of agriculture and maintain high professional standards in educating students for the profession of agriculture.

Students in the College of Agriculture are encouraged to pursue a broad education. In each curriculum, minimum requirements are specified in agriculture, in the life, physical, and social sciences, and in humanities to qualify the graduate to enter professional fields in agriculture. At the same time, each curriculum permits students to choose elective courses that will assist in personal growth, help in understanding the environment, and develop communication skills.

Facilities of the College

The facilities for agricultural instruction consist of the Agricultural Science Building, used as a central office, classroom, and laboratory building; Food Research Center; the Home Economics Building and adjacent Management House; Dairy Science Center; laboratories in the Life Science Building, Janssen Engineering Building, Buchanan Engineering Building, Agricultural Engineering Building, Veterinary Science Building, and Disease

Research Barn; greenhouses; H. C. Manis Entomology Research Unit; dairy cattle, beef cattle, sheep, and swine barns, Meats Laboratory, Judging Pavilion, and plant science farm and research plots. Dairy cattle, beef cattle, and sheep representing several breeds are maintained for instructional and research purposes.

The College of Agriculture and the Agricultural Experiment Station at Moscow operate more than 1,100 acres of land. Additional acreages of land, including 1,380 acres in other parts of the state, are used for instructional purposes in breeding, production, and applying scientific principles to all fields of agriculture.

Agricultural Experiment Station

The Idaho Agricultural Experiment Station was established in 1892 as a division of the College of Agriculture and has the responsibility to conduct research in all areas of food production and related businesses. The experiment station is the research division of the college and is administratively coordinated with the teaching and extension divisions of the college.

The Agricultural Experiment Station is composed of all departments of the college. Thus, most of the teaching faculty in the college also have partial research appointments in the experiment station. Some faculty members have extension and research appointments and some are assigned to full-time research.

The Idaho agricultural research program is statewide. Research activities are conducted in basic sciences related to agriculture and with all major agricultural commodities and resources and in most livestock- and crop-producing areas. The headquarters for the research program is on the campus. In addition, there are six research and extension centers in strategic agricultural areas around the state where resident research personnel are located.

The Idaho Agricultural Experiment Station shares the responsibility of developing and training future scientists through graduate fellowship programs. Currently there are approximately 100 graduate students enrolled in the College of Agriculture of which about one-half hold graduate assistantships. These appointments are generally for two years at the Master of Science level and for three years in Ph.D. programs during which time the students conduct research as a part of their graduate training.

Cooperative Extension Service

The Cooperative Extension Service was first financed by the Smith-Lever Act, approved May 8, 1914, to help the people of the United States improve their farms, homes, and communities. The Idaho legislature approved the cooperative extension service concept in 1915. In 1917, additional state legislation brought the county boards of commissioners into the three-way partnership of financing and cooperation.

The Cooperative Extension Service is an integral part of the College of Agriculture and is administratively coordinated with the teaching and research functions of the college. The extension function of the College of Agriculture is to extend the knowledge created through research to the people of the state of Idaho so that they can apply the findings to their particular problems, thereby improving their way of life.

The headquarters of the Cooperative Extension Service is at Moscow. District offices are located at Caldwell, Twin Falls, Idaho Falls, and Moscow.

Agricultural agents and home economists work in 42 of Idaho's 44 counties and on the Fort Hall Indian Reservation. Area agents and/or specialists, those who work in several adjoining counties with farmers and ranchers who produce specific crops and livestock, are headquartered in Idaho Falls, Caldwell, Soda Springs, Twin Falls, and Coeur d'Alene.

Agents live and work in the areas to which they are assigned by mutual agreement of the university and the counties involved. They are backed by a corps of resource people. They receive training in subject matter from state extension specialists located throughout the state. These specialists, in turn, are kept up to date by research scientists of the College of Agriculture and the U.S. Department of Agriculture.

Educational programs in cooperative extension work are conducted in three broad areas. These are: (1) agriculture and natural resources, (2) home economics, and (3) 4-H, youth development.

The primary objective of the Idaho Cooperative Extension Service is to make Idaho a satisfying and desirable state in which to live, work, raise families, and enjoy a high quality of life. To accomplish this objective, the extension service works under the basic philosophy that programs planned with people will achieve greater success than those planned for them. Extension takes the resources and philosophy of the land-grant university out into the state so that Idaho's citizens can benefit from their university.

Degrees and Curricula Offered

Undergraduate. Baccalaureate degrees and curricula offered by this college are the Bachelor of Science in General Agriculture, Bachelor of Science in Agricultural Education, Bachelor of Science in Agricultural Economics (majors in agribusiness, agricultural economics, and natural resources and rural development), Bachelor of Science in Agricultural Mechanization, Bachelor of Science in Animal Sciences (majors in agribusiness, animal science, poultry science, and range-livestock management), Bachelor of Science in Bacteriology, Bachelor of Science in Entomology, Bachelor of Science in Home Economics (majors in child development and family relations; clothing, textiles, and home design; food and nutrition; general home economics; and home economics education), Bachelor of Science in Plant Protection, Bachelor of Science in Plant Science (majors in crop management, crop science, horticultural science, and landscape horticulture), Bachelor of Science in Soil Science, and Bachelor of Science in Veterinary Science. Also, programs in food science are offered in cooperation with Oregon State University and Washington State University (the degree is granted by those institutions). See part 5 for the programs ot study leading to these degrees.

Graduate. Graduate study leading to the degree of Master of Science is offered in agricultural economics, agricultural education, animal sciences, bacteriology, biochemistry, entomology, home economics, plant science, soil science, and veterinary science. Graduate study leading to the degree of Doctor of Philosophy is offered in bacteriology, biochemistry, entomology, plant science, and soil science. Students must fulfill the requirements of the Graduate College and the departments in which they study. Consult the Graduate Bulletin for further information.

General Requirements for Graduation

University Requirements. See regulation J in part 3 for requirements that all students in the university must meet.

College Requirements. See part 5 for specific degree requirements within each department.

Major Curricula

The specific requirements for the several undergraduate majors are listed in part 5. Each student is assigned an adviser who assists in the planning of his or her program; however, the student has the final responsibility for the completion of all university, college, and departmental requirements.

College of Art and Architecture

Paul L. Blanton, Dean (Art and Arch, Library Bldg.); Ronald D. Bevans, Associate Dean.

The College of Art and Architecture was established in 1981 to bring together disciplines that deal with creation of the visual and physical human environment. Art has been taught at UI since it was founded in 1889 and architectural degrees have been offered since 1923. Interior design has been offered since 1923, and the landscape architecture curriculum was added in 1969. This combination not only increases the resources available to the students, but also brings together a community of creative scholars with a common dedication to the arts.

The objective of the College of Art and Architecture is to provide an educational experience for qualified students in the design-related disciplines. Upon completion of a program in one of these disciplines, a person should develop into a professionally competent citizen, capable of making useful and valuable contributions to society. The range of these contributions varies greatly, as do the fields contained within the college.

The specific disciplines are art, architecture, landscape architecture, and interior planning and design. The quality of these programs has earned the college an excellent and widespread reputation.

Aptitudes

Students likely to succeed in the design fields are those with a serious purpose, willing to consistently work hard. Equally important are: (1) ability to visualize in three dimensions; (2) ability to be creative and inquisitive; (3) facility in the use of written and spoken English; and (4) possession of personal attributes that enable one to inspire associates and assistants to work together effectively. Without these qualifications, the chances for a successful career are small.

Faculty

The faculty is the key to the quality of the educational experience obtained through the college programs. A distinguishing feature of the faculty is a blend of academic and practical experience. Many faculty members have extensive experience in practice that they bring into the classroom. This is valuable in preserving a balance between the theoretical and the practical aspects of each program.

Facilities

The College of Art and Architecture is housed in several buildings totaling over 70,000 square feet of usable space. Specialized laboratories for computer-aided design, white printing, photo processing, printmaking, graphics, ceramics, sculpture, and jewelry making are contained within the facilities. A reference and slide library and a complete shop are housed in the complex.

Departments

There are three departments in the college: Architecture (which includes interior design), Art, and Landscape Architecture. Although these departments are separate entities, the teaching, research, and service missions of all the departments are integrated and coordinated at the college level. The program of a student whose major is in one of the departments will include courses in the other departments.

Fees

Students in the College of Art and Architecture pay a general fee and special fees for certain courses. See "Fees and Expenses" in part 2 of this catalog.

Preparation and Admission

A statement of admission requirements is included in part 2. A student may be admitted with less than the requirements listed, but the deficiency must be made up before he or she can progress very far in the College of Art and Architecture courses of study.

Students who contemplate entering the College of Art and Architecture with advanced standing from a junior college or other institution should complete as many of the freshman and sophomore requirements listed in the curricula as possible. Certain courses are prerequisites to many advanced courses, and their omission will delay graduation. Certain grade point averages and other conditions are required for entering into particular programs in the college. See the preface to each curriculum.

Degrees

Curricula leading to the following degrees are offered by the college: Bachelor of Architecture (B.Arch.), Bachelor of Fine Arts (B.F.A.), Bachelor of Science in Art Education (B.S.Art Ed.), and Bachelor of Landscape Architecture (B.L.Arch.). In addition, a Bachelor of Arts degree (B.A.), with a major in art, is available through the College of Letters and Science. The majority of courses taken in the B.A. curriculum are housed within the College of Art and Architecture. Both the B.A. and B.F.A. degrees in art are available with seven areas of emphasis: drawing, painting, ceramics, sculpture, printmaking, graphics, and jewelry. Graduate degrees are offered in the following areas: Master of Architecture (M.Arch.), Master of Fine Arts (M.F.A.), Master of Fine Arts with a major in interior design, Master of Arts (M.A.) with a major in art, and Master of Arts with a major in architecture.

Undergraduate Program

The undergraduate curricula are designed to provide both a general and a professional education. All curricula within the college include a first-year basic design core as well as foundation courses unique to each discipline. The design core consists of Art 101, 111-112, and 121-122. The curricular options in each department offer many courses in common with other college departments. Flexibility and individuality in each student's program are provided by curriculum choice, by options within curricula, and by elective credits.

Graduate Programs

Programs leading to advanced degrees are offered in three of the four fields represented by the undergraduate curricula of the college. In all cases, the master's degree is the final level of academic work that can be pursued within the college and is accepted as the terminal degree in all three fields. Emphasis in graduate study in the college is directed to the goals of the candidate through programs of study related to his or her needs and interests. It is intended that graduate study serve as a transition from undergraduate apprenticeship to the student's emergence as a fully independent, creative artist or designer. Assistantships are available to help highly qualified students in their graduate program. More complete information on graduate studies may be obtained by writing the dean of the Graduate College and requesting a copy of the Graduate Bulletin. Specific information on curricula available may be obtained by writing the dean, College of Art and Architecture.

Scholarships and Awards

Scholarships and awards are available to students and prospective students. See "Financial Aid" and "Special Awards" in the Student Services section of part 2. Also, get in touch with specific program administrators.

Additional Information

Additional information about the college and its programs is available from the college's office. Prospective students are encouraged to correspond directly with the College of Art and Architecture — Attention: Admissions Secretary.

General Requirements for Graduation

University Requirements. See regulation J in part 3 for the all-university requirements for graduation.

College Requirements. See part 5 for specific degree requirements within each department. The college may permit substitutions or grant waivers of specific requirements on recommendation of the department chairman.

On registering for a studio course offered in this college, the student agrees that the department offering the course may retain work completed by the student. The department will make retained work available to the student for photographing.

College of Business and Economics

Raymond Dacey, Dean (211-A Admin. Bldg.); Dolores A. Sanchez, Secretary of the College Faculty.

The college was established as a professional division of the university in 1925. Long known as the College of Business Administration, it became the College of Business and Economics (CBE) in 1969. Its principal objective is to provide education for careers in business, government, and other organizations. Through curriculum changes, the college responds to developments in the business world, including increased awareness of human factors in productivity and the need to plan all economic activities; adapt to rapid technological change, including computerization; and be flexible and adaptable in careers.

The College of Business and Economics provides a sound background in the basic business principles that will help graduates as they advance into positions of responsibility. As part of a state-supported land grant university, the CBE also aims to give its students an appreciation of the social importance and responsibilities of businessmen and businesswomen, and both the values and the knowledge to discharge those responsibilities.

A university education should prepare the student for a career, not just a job. Accordingly, CBE curricula provide a broad, liberal education comparable to other university studies. Highly specialized instruction in job-specific business practices is avoided. The curriculum emphasizes knowledge and understanding of the fundamental disciplines, concepts, and ethics involved in making decisions in private enterprise and public service.

Through the Center for Business Development and Research, the college is also able to contribute to business development and to the advancement of knowledge about our state's economy and its business activities. The center conducts management development programs for business and governmental organizations, a business publications program to provide data on the Idaho economy, and funded research projects that involve CBE and other UI faculty members and students in solving practical problems in the Idaho and Northwest economies.

Curricula and Degrees Offered

Undergraduate. The degree of Bachelor of Science in Business is offered with seven majors through three departments as follows: Department of Accounting — accounting; Department of Business — finance, human resources management, information systems, marketing, and production/operations management; Department of Economics — economics.

Specific requirements for each major are described in part five, "Departments of Instruction," under the appropriate department. The program of study includes three principal components: the general university requirements, the business and economics core, and the requirements for the selected CBE major field. Detailed statements of college requirements are under "General Requirements for Graduation."

Graduate. The Graduate School offers work toward the degrees of Master of Science (M.S.) in economics and Master of Business Administration (M.B.A.). The M.B.A. program stresses the breadth of areas encountered in the business world and is especially well suited to students with technical undergraduate programs. The M.B.A. program is available in Moscow and in Coeur d'Alene. Graduate students must fulfill the requirements of the Graduate College and the department in which they study. Consult the Graduate Bulletin for further information.

Standing of the College

Fully accredited by the Northwest Association of Schools and Colleges, the College of Business and Economics keeps apace of developments in business through membership in various professional organizations and by consultation with Idaho business leaders, including the CBE Advisory Board. The outstanding achievements of CBE graduates in business and government and in professional certification examinations such as the CPA exam, attest to the quality of the program.

General Requirements for Graduation

University Requirements. See regulation J-3 in part 3 for requirements that all students in the university must meet.

College Requirements. Before proceeding to upper-division work, students registered in the College of Business and Economics must: (1) complete at least 58 semester credit hours with a minimum cumulative grade-point average of 2.00 and (2) earn at least a 2.40 grade-point average in the "predictor" courses —Econ 151 and 152, Principles of Economics; Acctg 201 and 202, Principles of Accounting; and Stat 251, Principles of Statistics.

Before pursuing upper-division course work, a student must have completed no fewer than 58 credits of course work applicable to the degree. A student who satisfies the 2.40 minimum grade-point average requirement in the five courses above, but fails to earn at least a 2.00 cumulative grade-point average for the first two academic years, may not register for more than one upper-division course (those numbered 300 and above) in the College of Business and Economics in any one semester until his or her cumulative grade-point average is raised to the required minimum level. A student who fails to achieve the 2.40 grade-point average in the five courses above will be precluded from pursuing upper-division course work within the college.

A student must achieve a grade of "C" or better in each upper-division College of Business and Economics course listed in the core requirements in business and economics (section A, below) and in each course used to satisfy major requirements (section C, below) before becoming eligible to graduate. A student is required to have at least 40 percent of the required credits in College of Business and Economics courses and at least 40 percent of the required credits in non-College of Business and Economics courses.

Courses completed at a two-year college for transfer into the CBE core or major must be validated before they will be accepted for upper-division course requirements. Validation procedures are established by the faculty members of the CBE department offering these courses. Validation techniques include a proficiency examination, CLEP testing, or successful completion of an additional advanced course in the given field.

Candidates for the degree of Bachelor of Science in Business must complete at least 128 credits, except that the major in accounting requires 136 credits. The required program of study

includes: (1) at least 52 credits in required and elective nonbusiness courses, (2) 36 credits in the business and economics core, and (3) at least 18 credits in the selected CBE major field. Additional undesignated electives are included in the 128 or 136 required credits. Candidates must demonstrate an acceptable level of proficiency in written business communication. This may require successful completion of a CBE writing proficiency exam, in addition to the required writing courses.

A. *UNIVERSITY/CBE GENERAL CORE REQUIREMENTS:*

Course	Credits
Communication:	
CommG 131 Fundamentals of Public Speaking	2
Eng 103, 104 Basic Skills and Essay Writing	6
Eng 205 Adv Expository Writing or Eng 313 Bus Writing or Eng 317 Tech & Engr Report Writing	3
Mathematics:	
Math 111 Finite Mathematics	4
Math 160 Survey of Calculus or 180 Analytic Geom & Calc	4
Stat 251 Principles of Statistics	3
Social Sciences:	
Econ 151, 152 Principles of Economics	6
Social science elective*	3
Humanities:	
Phil 101 Ethics	3
Humanities elective*	3
Literature elective	3
Natural and Applied Sciences:	
Natural and applied sciences electives*	8
Other courses:	
Acctg 201, 202 Prin of Acctg and Managerial Acctg	6
Bus 265 Legal Environment of Business	3
CS 100 Intro to Computers & Programming or CS 112 Intro to Problem Solving & Programming	3
Nonbusiness elective (acctg majors take 4 credits)	1

B. *CBE COMMON PROGRAM REQUIREMENTS:*

Course	Credits
Bus 301 Financial Management	3
Bus 311 Intro to Management	3
Bus 321 Marketing	3
Bus 332 Quantitative Methods in Business	3
Bus 350 Management Information Systems	3
Bus 370 Production/Operations Management	3
Bus 474 International Bus or Econ 474 International Econ	3
Bus 480 Business Policy	3
Upper-division economics electives	3

*To be chosen from courses that will satisfy regulation J-3.

C. *REQUIREMENTS IN MAJOR* (at least 18 credits).

D. *ELECTIVES* (8-23 credits). Chosen in consultation with the student's adviser.

Undeclared Status

A student may enter CBE as a freshman in an "undeclared" status. Because the first two years are equivalent programs in all CBE majors, he or she may remain in the undeclared status until reaching junior level (completion of 58 credits). At that time, a major in the college should be selected. The "undeclared" status allows a student time to become acquainted with the majors within the college and to solidify career objectives before choosing a major.

College of Education

N. Dale Gentry, Dean (301 Educ. Bldg.; Michael W. Heikkinen, Assistant Dean; Barbara Hopkins, Secretary of the College Faculty.

The College of Education was organized as an independent unit of the university in 1920. It is the principal teacher-education division and consists of the Division of Health, Physical Education, Recreation and Dance, the Division of Teacher Education, the Division of Vocational Teacher and Adult Education, the Department of Counseling and Special Education, and the Department of Educational Administration. Undergraduate programs leading to degrees in teaching fields are offered in business education, dance (teaching option), distributive education, elementary education, industrial education, office occupations education, physical education, secondary education, special education, and trade and industrial/technical education (teaching option). Programs leading to nonteaching degrees include: dance, industrial technology, office administration, physical education, recreation, and trade and industrial/technical education.

The education of professional personnel for the public schools constitutes a service to the state and its people and to the education profession. One of the first duties of the college is that of ensuring that anyone who applies for admission to a program leading to educational service is qualified by preparation and personal attributes for this important work. Once admitted, the student undertakes a program that has as its objective assurance that the candidate has laid the foundation for a broad, general education, has completed a basic study of the professional functions of the teacher, and has gained substantial competence in the subjects to be taught or in the area in which he or she will serve.

Besides preparing personnel for the schools, the college provides educational leadership for the people of Idaho, to the state's education system, and to the teaching profession through consulting services, participation in organizational activities, and research. Preparation is provided in all of the major areas of professional education.

Standing of the College

The College of Education is fully accredited by the National Council for the Accreditation of Teacher Education and the National Association of State Directors of Teacher Education and Certification. The programs of study in education are planned to meet certification requirements in Idaho, those of most other states, and the requirements of the various accrediting agencies, such as the Northwest Association of Schools and Colleges.

Center for Educational Research and Service

The Center for Educational Research and Service was established to conduct research, to facilitate research by College of Education faculty members and graduate students, and to be of assistance to local school districts and to other educational institutions. Research, study, and statistical facilities are made available to students and faculty through the center. The Upward-Bound Program, designed to help youth from low-income families achieve a college education, is housed in the center.

Center personnel have cooperated with local school districts and with the Idaho State Department of Education in such activities as school district surveys, the development and implementation of programs under federal acts, school district reorganization studies, and certification studies. Research reports or monographs on these and other activities are published through the center.

The center is financed in part through cost-reimbursement funds from state and federal sources.

Admission Requirements

Admission to the University. For a statement of general admission requirements, see part 2.

Transfer Students. Students who have attended college, whether at another institution or in another division of the university, before matriculation in the College of Education, must have a grade-point average of 2.00 (C) or better. The approval of the dean of the College of Education is necessary for the admission of transfer students.

Degrees and Programs Offered

Undergraduate. Baccalaureate degrees offered by this college are the Bachelor of Science in Education, Bachelor of Science in Business Education, Bachelor of Science in Office Administration, Bachelor of Physical Education, Bachelor of Science in Recreation, Bachelor of Dance, and Bachelor of Technology. See part 4 for the programs of studies leading to these degrees.

Graduate. The Graduate College offers work toward advanced degrees in several disciplines of the college. Students must fulfill the requirements of the Graduate College and of the department in which they intend to study. Consult the Graduate Bulletiin for further information.

In the College of Education, graduate programs include a planned fifth year in teacher education and advanced degrees. Upon the completion of the appropriate programs of study, the following degrees are conferred: Master of Science, Master of Education, Master of Arts in Teaching, Specialist in Counseling and Human Services, Specialist in Education, Specialist in Educational Administration, Specialist in School Psychology, Specialist in Special Education, Specialist in Vocational Education, Doctor of Education, and Doctor of Philosophy.

Studies at the master's level are offered in education, business education, counseling and human services, distributive education, educational administration, elementary education, industrial education, physical education, secondary education, special education, and vocational education.

Sixth-year specialist degrees are offered in counseling and human services, education, educational administration, school psychology, special education, and vocational education.

Doctoral candidates majoring in education may concentrate in counseling and human services, education, educational administration, elementary education, physical education, secondary education, special education, or vacational education.

Teacher Education Program

At the University of Idaho, the preparation of teachers is a cooperative enterprise between the College of Education and other colleges. Coordination is achieved through the Teacher Education Coordinating Committee, which is made up of representatives from the professional and academic areas involved. However, the screening of all applicants for admission to or continuance in the Teacher Education Program is the responsibility of the College of Education, and the dean of the College of Education is the recommending authority for certification.

Students preparing for a career in secondary teaching have the option of completing their bachelor's degrees in the College of Education (except for agricultural education, home economics education, and music education) or in the department of their subject major.

Secondary teacher education students have an adviser from the College of Education who is the primary adviser on teacher education requirements. When a student identifies teacher education as his or her objective (this could be as early as the freshman year and certainly no later than admission to the Teacher Education Program), the adviser is designated. As long as the approved teaching major and minor program is followed, only the student's college adviser is required to sign the registration cards. Changes in the academic program require the written approval of the academic department. Students majoring in agricultural education, home economics education, music education, and subject-matter areas in the College of Education have advisers in their subject-matter areas only.

Admission to the Teacher Education Program. The following regulation is effective beginning fall 1988 for all UI students who apply for admission to the Teacher Education Program regardless of the date of their entry into the university. Upon completion of the first semester of the sophomore year, or 40 semester credits, all students in the College of Education and all students majoring in other colleges who plan to enter the Teacher Education Program must make application for admission to or continuance in the program. A standing committee of the college reviews each applicant's total record and presents its recommendations to the dean. Criteria for admission to the Teacher Education Program include the following: (1) completion of at least 40 semester hours with a 2.5 cumulative GPA including any transfer credits and/or credits earned in a prior degree program; (2) achievement of minimum cut-off scores on the NTE Test of Communication Skills and the Test of General Knowledge (values are available in the dean's office); (3) completion of Eng 104 with a P grade (transfer students must pass the UI Writing Proficiency Test); (4) completion of the university core requirement in math/computer science/statistics; (5) completion of Ed 201, Introduction to Teaching; (6) signature of an authorized education faculty adviser; and (7) approval of the Education Admissions Review Committee. The approval of the dean of the College of Education is required for admission to or continuance in the program. Admission to the Teacher Education Program does not carry with it permission to enroll in senior practicum courses. Additional procedures and requirements apply as noted elsewhere in this section and as noted in the prerequisites to the specific courses in senior practicum.

Clinical Experience in Teacher Education

The clinical study of teaching and learning theory is given practical application through laboratory experience in both campus and field settings. Teacher trainees have early involvement with school pupils and experienced teachers through semester laboratory components for all students in Ed 201, Introduction to Teaching, and semester campus or field laboratory components for special education majors. Additional clinical experience is provided students as they continue professional studies through similated teaching situations on campus and through field laboratory components for students of methodology. Culminating clinical teaching experience is provided in the senior practicum or graduate internship.

Senior Practicum

Admission. For admission to senior practicum courses (AgEd 460, Ed 430, 431, 432, 435, HEc 457, SpEd 480), the student must have satisfied the following requirements: (1) have been admitted to or continued in the Teacher Education Program; (2) have a grade-point average of at least 2.25; (3) have satisfied the other prerequisites stated in the description of the particular practicum course for which he or she wishes to register; and (4) have applied for admission to senior practicum by December 1 of the school year before enrolling for the field experience. Consult the director of clinical experiences in teacher education for more specific information.

The Program. The senior practicum is carried out in cooperating public schools so that students may obtain experience under typical school conditions. Normally it is scheduled for half of a semester of full-time teaching in centers designated by the College of Education. Students should plan their schedules for the senior year so that half of a semester will be free for full-time enrollment in the practicum and the other half of the semester for enrollment in accelerated courses. An option is provided for both elementary and secondary majors to pursue a full semester of senior practicum combined with professional courses in selected centers.

Graduate Practicum and Internship in School Positions

Admission. Admission to the practicum and internship courses

is conditioned upon acceptance in a graduate program and approval of the major professor and/or student's committee. Application for placement in the practicum or internship should be submitted by December 1 of the school year before enrolling in the field experience.

The Program. Graduate students are provided clinical experience in the study of teaching and learning and in the performance of other school positions through graduate practica and internships (see courses 597 and 598 in the various subject fields in the college).

Teacher Certification

Students who complete the four-year Teacher Education Program at the university and who achieve the state's minimum cut-off scores in the NTE Tests of Professional Knowledge, Communication Skills, and General Knowledge are eligible to receive the Idaho Standard Elementary School Certificate, the Standard Secondary School Certificate, the Exceptional Child Certificate, or the Standard Vocational Certificate. Those who complete an approved, planned fifth-year program in teacher education or an approved master's degree program are eligible to receive the Advanced Elementary School Certificate or the Advanced Secondary School Certificate. Students who complete the professional certificate program in guidance and counseling qualify for the Idaho Pupil Personnel Services Certificate. Students completing a master's degree, specialist degree, or doctorate in educational administration may qualify for an administrator's certificate.

Secondary School Teaching Certification for Majors Outside the College of Education

Students admitted to the Teacher Education Program who are enrolled in a department or college not offering major studies in teacher education normally satisfy the requirements for the Idaho Standard Secondary-School Certificate by including the 26-credit core listed below as electives in their program for the baccalaureate degree and by completing one of the following options: (1) one 60-credit teaching major; (2) one 40-credit teaching major and one 20-credit teaching minor; (3) one 30-credit teaching major and one 20-credit teaching minor; or (4) two 30-credit teaching majors. (See "Teaching Majors and Minors" at the conclusion of the College of Education section.)

26-Credit Core. Introduction to Teaching, 2 cr (Ed 201); Educational Psychology, 3 cr (Ed 415); Strategies for Teaching, 3 cr (Ed 314); Special Methods, 2-3 cr (Ed 315, 316, 317, 318, 319, 341, or another approved special methods course); Methods of Teaching Content Reading, 3 cr (Ed 440); Proseminar in Teaching, 1 cr (Ed 445); Practicum, 9 cr (Ed 431 or another approved practicum course); Contemporary Education, 3 cr (Ed 468). Note: Psych 100, Intro to Psychology, is the prerequisite to Ed 415.

Exceptions. Teacher education students majoring in the College of Education, the Department of Agricultural and Extension Education, the Ritchie School of Home Economics, or the Hampton School of Music have slightly different requirements. See the curricula for these fields in the corresponding appropriate departmental sections.

Procedures. The student initiates the certification process by obtaining an application for teacher certification from the College of Education. The application is completed and signed by the student's adviser and is then forwarded to the dean of the College of Education who works with the registrar to get the necessary supporting credentials and forwards the materials to the State Department of Education's Certification Division. The College of Education maintains a record of all students recommended for teacher certification, and it is understood that recommendations concerning a student's competence are made by the department in which the skills and concepts are taught.

The College of Education reserves recommendations for certification to students who have completed the teacher preparation program, hold a bachelor's degree, and achieve the state's minimum cut-off scores on the NTE Tests of Professional Knowledge, Communication Skills, and General Knowledge.

General Requirements for Graduation

University Requirements. See regulation J in part 3 for requirements that all students in the university must meet.

College Requirements. All candidates for a baccalaureate degree in the College of Education must complete 128 semester credits, of which at least 36 must be in upper-division courses. The following course requirements apply to all undergraduate teacher education students in the college (see the major curriculum in recreation for the special requirements applicable to that program):

A. *GENERAL STUDIES REQUIREMENTS FOR ELEMENTARY SCHOOL TEACHING (57 credits minimum).* In order to apply toward this requirement, courses must be other than education and be selected from among the humanities, social sciences, and natural sciences. Credits earned in these fields to satisfy the teaching minor may apply if they do not deal primarily with the methodology, procedures, or materials of teaching. Each of the following areas must be represented as indicated.

1. *Communications (8 credits)* (prerequisite basic skills for writing), including essay writing (Eng 104), composition, and speech. The UI core curriculum requires Eng 104 and 2-4 credits from the core list.

2. *Humanities (10 credits),* including 6 credits of literature, 2 credits of art, and 2 credits of music selected from nonmethods courses. Six to eight credits should be selected from the core curriculum humanities list.

3. *Psychology (6 credits),* including introductory psychology (Psych 100) and developmental psychology (Psych 205).

4. *Social Science (12 credits),* including one course in American history (Hist 111 or 112), one course in American government (PolSc 101), and 6 other credits from social sciences (other than psychology). Three to five credits must be from the UI core curriculum list.

A total of 14 credits must be from the humanities and social science core list categories.

5. *Science (12 credits),* including biological, earth, and physical science courses requiring laboratory work. Select 4 credits each from the areas of (a) life science, (b) earth sciences, and (c) physical sciences. At least 8 credits must be from the UI core curriculum list in natural and applied sciences.

6. *Mathematics (9 credits):* Math 135-136, Math for Elementary Teachers, and 3 credits from the UI core curriculum list in mathematical, statistical, and computer science.

B. *GENERAL STUDIES REQUIREMENTS FOR SECONDARY SCHOOL TEACHING (37 credit minimum).* In order to apply toward this requirement, courses must be other than education and be selected from among the humanities, social sciences, and natural sciences. Credits earned in these fields to satisfy the teaching major or teaching minor may apply if they do not deal primarily with the methodology, procedures, or materials of teaching. Each of the following areas must be represented as indicated:

1. *Communications (8 credits)* (prerequisite basic skills for writing), including essay writing (Eng 104), composition, and speech. The UI core curriculum requires Eng 104 and 2-4 credits from the core list.

2. *Humanities (6 credits),* including at least 3 credits of literature. The UI core curriculum requires that 6 to 8 credits be selected from the humanities category.

3. *Psychology (3 credits):* Psych 100, Introduction to Psychology.

4. *Social Science (9 credits),* including at least one course in American history (Hist 111 or 112) or American government (PolSc 101). Three to five credits must be selected from the UI core list in this category.

The UI core curriculum requires 14 credits in the combined categories of humanities and social sciences. The core social science list includes Psych 100.

5. *Science-Mathematics (11 credits),* including biological, earth, or physical science courses requiring laboratory work. The UI core curriculum requires 8 credits from natural and applied sciences and 3 credits from mathematical, statistical, and computer sciences.

C. UNIFORM REQUIREMENTS FOR ELEMENTARY AND SECONDARY TEACHING (22 credits).

Course	Credits
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	3
Ed 328 Audiovisual Aids	1
Ed 415 Educational Psychology	3
*Ed 430 or 431 or 432 or Sp Ed 480 Practicum	9
Ed 445 Proseminar in Teaching	1
Ed 468 Contemporary Education	3

Note: Secondary education majors must take Ed 440, Methods of Teaching Content Reading, and the appropriate special methods course.

*Students preparing to teach art or physical education in secondary schools may substitute 3 credits in Ed 435 for 3 of the 9 credits in Ed 431.

Major Curricula

Students in the College of Education must complete a major curriculum that leads to a degree granted by the college (B.Dan., B.S.Ed., B.S.Bus.Ed., B.S.P.E., B.S. Rec., B. Tech, or B.S.O.Ad.). These major curricula (with the degree goal identified) are listed in part 5.

Careful distinction should be made between a student's "major curriculum" and any additional "teaching majors" or "teaching minors" required.

Teaching Majors and Minors in the College of Education

The various teaching majors and teaching minors required to accompany several of the curricula listed in part 5 are outlined below. Because the College of Education reserves the right to approve or disapprove the content of all proposed teaching majors and minors, students should confer closely with their college advisers and with advisers in the academic departments concerned in the selection of these courses.

AGRICULTURAL EDUCATION

The major in agricultural education is offered only in the major curriculum leading to the degree of B.S.Ag.Ed. (see part 5). A teaching minor in agricultural education is not offered.

AMERICAN STUDIES

Students who complete this 60-credit teaching major in American studies will *in the process* also have completed *either* a 30-credit teaching major in English (option A, below) *or both* a 30-credit teaching major in history (option B) *and* a 40-credit teaching major in social science (option C). Completing two or three teaching majors is possible because of extensive credit overlap: many of the 60 credits can be applied to more than one teaching major.

For any of these options, the student completes the 54-credit program required for the American studies major in the College of Letters and Science. If his or her "primary area" is American literature, the student takes six more credits in English to be certified both in English (option A) and in American studies. If his or her "primary area" is American history, the student takes six more credits to be certified in both history and social sciences (options B and C), as well as in American studies.

A. ENGLISH OPTION

In addition to Eng 103 and 104, required course work includes:

Course	Credits
Eng 342 Survey of British Literature	3
Eng 343-344 Survey of American Literature	6
Eng 345 Shakespeare	3
Eng 401 Writing Workshop for Teachers or 402 Composition & Criticism	3
Eng 442 Intro to Transformational Grammar or 443 Language Variation	3
Electives in American Eng (incl at least 9 cr at the 400 level and Eng 441, Intro to Study of Language)	12

B. HISTORY OPTION

Course	Credits
Hist 111-112 Intro to U.S. History	6
Electives in American history (400-level)	12
English or continental history electives	6
History electives (non-American)	6

C. SOCIAL SCIENCE OPTION

Note: Courses must include 3 credits in American government and at least one course from two of the following: world history, geography, sociology, and economics.

Course	Credits
Hist 111-112 Intro to U.S. History	6
Electives in American history (400-level)	12
English or continental history electives	6
Electives in American govt, econ, geog, and soc/anthro	12
Additional courses in history or areas listed above	4

ART

A. 40-CREDIT ART TEACHING MAJOR

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
Art 211 Drawing II	3
Art 241 Sculpture I	3
Art 301-302 History of Art	6
Arch 155 Intro to Design Disciplines	1
Courses selected from the following Art 221 Graphic Design (3 cr) Art 231 Painting I (2 cr) Art 251 Printmaking I (3 cr) Art 261 Ceramics I (2 cr) Art 271 Jewelry I (2 cr) Art 281 Water Color I (3 cr)	12
One art studio course (Art 311, 321, 331, 341, 351, 361, 371, or 381)	3

B. 20-CREDIT ART TEACHING MINOR

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
Courses selected from Art 211, 221, 231, 241, 251, 261, 271, 281 or Art 311, 321, 331, 341, 351, 361, 371, 381	7

ATHLETIC TRAINING

A teaching major in athletic training is not offered.

20-CREDIT ATHLETIC TRAINING TEACHING MINOR

Students electing this minor must include an anatomy and physiology course such as Zool 119.

Course	Credits
Chem 103 Intro to Chemistry	4
H&S 245 Intro to Athletic Injuries	3
H&S 349 Advanced Athletic Injuries	3
H&S 410 Athletic Rehab & Admin	1
H&S 498 Practicum in Tutoring	2
HEc 205 Concepts in Human Nutrition	3
PE 300 Human Kinesiology	2
PE418 Physiology of Exercise	3

BIOLOGICAL SCIENCES

Note: Organic chemistry is a prerequisite to required botany and zoology courses; Math 140 is a prerequisite to required physics courses.

A. 60-CREDIT COMPOSITE TEACHING MAJOR

Course	Credits
Bact 250 General Microbiology	4
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
Biol 352 Experimental Genetics	1
Biol 361 Biological Literature	1

Bot 241 Systematic Botany 3
Bot 311, 312 Plant Physiology & Lab 5
Bot 425 Developmental Plant Anatomy 4
Geog 100, 101, Man's Physical Environment & Lab
or Geol 101, 102 Physical Geol & Lab 4
Phys 113-114-115-116 General Physics & Lab 8
Zool 324, Comparative Vertebrate Anatomy
or 472, 473 Developmental Biol and Lab 4
Zool 423 Comparative Vertebrate Physiology 4
Approved electives from bacteriology, biology,
botany, entomology, or zoology 4

B. 25- OR 26-CREDIT COMPOSITE TEACHING MINOR

Note: One course in college chemistry is a prerequisite to Biol 201; organic chemistry is a prerequisite to Bot 311 and Zool 423.

Course	Credits
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
Bot 241 Systematic Botany or Bot 311 Plant Physiology or Bot 425 Developmental Plant Anatomy	3-4
Zool 324 Comparative Vertebrate Anatomy or Zool 423 Comparative Vertebrate Physiology	4

BUSINESS EDUCATION

The major in business education is offered only in the major curriculum leading to the degree of B.S.Bus.Ed. (see part 5).

20-CREDIT BOOKKEEPING TEACHING MINOR

Course	Credits
BusEd 103 Typewriting III	2
BusEd 491 Teaching Business Ed I	3
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 265 Legal Environment of Business	3
Econ 151, 152 Principles of Economics	6

CHEMISTRY

Note: See the physics and mathematics prerequisites for the chemistry courses listed below.

A. 42-CREDIT CHEMISTRY TEACHING MAJOR

Course	Credits
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 275 Carbon Compounds and 278 Organic Chem I: Lab and Biochem 380, 382 Intro Biochem & Lab or Chem 277, 278 Organic Chem I & Lab and Chem 372, 376 Organic Chem II & Lab	8-9
Chem 302, 303 Prin of Physical Chem & Lab	4
Biol 201 Intro to Life Sciences	4
Math 180 Analytic Geom & Calculus I	4
Phys 113-114-115-116 General Physics & Lab	8

B. 20-CREDIT CHEMISTRY TEACHING MINOR

Course	Credits
Chem 111 Prin of Chem or 103 Intro to Chem	4
Chem 112, Inorganic Chem & Qual Analysis	5
Chem 275, 276 Carbon Compounds & Lab	4
Chem 302, 303 Prin of Physical Chem & Lab	4
Biochem 380 Introductory Biochemistry	3

COACHING

A teaching major in coaching is not offered.

20-CREDIT TEACHING MINOR IN COACHING

Students majoring or having a teaching major in an academic field *outside* the Division of Health, Physical Education, Recreation and Dance may elect this coaching minor. Students who elect this minor must include in their background a course in anatomy and physiology such as Zool 119.

Course	Credits
H&S 245 Intro to Athletic Injuries	3
H&S 349 Advanced Athletic Injuries	3
PE 204 Special Topics: Coaching	4
PE 300 Human Kinesiology	2
PE 310 Cultural & Philosophical Aspects of Sport	2
PE 418 Physiology of Exercise	3
PE 497 Sports & Athletic Problems	3
PE 498 Practicum in Tutoring	1

COMMUNICATION

40-CREDIT COMMUNICATION TEACHING MAJOR

Course	Credits
CommG 131 Fundamentals of Public Speaking	2
CommG 233 Interpersonal Communication	2
CommG 331 Conflict Management	3
CommG 332 Communication & the Small Group	3
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 222 Reporting	3
Comm 278 Intro to Radio/TV Production	3
Comm 281 Understanding Photography	3
Comm 325 News Editing	3
Comm 362 Print Media Advertising	3
Comm 374 Radio Production	3
Comm 378 Television Production	3
Comm 431 Professional Presentation Tech	3
Comm 441 Ethics in Mass Comm	3

CONSUMER ECONOMICS

A teaching major in consumer economics is not offered.

20-CREDIT TEACHING MINOR IN CONSUMER ECONOMICS

Course	Credits
Bus 265 Legal Environment of Business	3
BusEd 418 Teaching Consumer Economics	2
Econ 151, 152 Prin of Econ or 100 Contemporary Econ and 272 Foundations of Econ Analysis	6-7
HEc 448 Consumer Education	3
Electives chosen from the following:	5-6
Acctg 201 Principles of Accounting	
Bus 321 Marketing	
Bus 403 Insurance	
Econ 403 Money & Banking	
HEc 123 Textiles	
HEc 346 Family Resource Management	
HEc 428 Family Housing	
HEc 478 Recent Advances in Foods	

COUNSELING AND HUMAN SERVICES

An undergraduate major is not offered in counseling and human services. Students who wish to qualify for counseling and human services may qualify as teachers in any subject area and enroll in counseling programs later in graduate school. Those definitely planning to become counselors should seek advice from the counseling faculty. Those who do not wish to qualify as teachers may arrange for a special one-semester counseling internship in addition to the graduate program in counseling and human services.

DANCE

The major in dance is offered only in the major curriculum leading to the degree of B.Dan. (see part 5).

20-CREDIT DANCE TEACHING MINOR

The dance minor provides broad experiences in techniques, composition, production, and teaching.

Course	Credits
Dan 105 Dance Theatre	2
Dan 105 Dance	4
Dan 112 Social & Creative Dance Forms	3
Dan 113 Problems in Dance Composition	2
Dan 220 Children's Dance or 421 Dance Pedagogy	2-3
Dan 320 Labanotation	3
Dan 325 Dance Production	2
Dan 420 Dance Acompaniment	3

DISTRIBUTIVE EDUCATION

The major in distributive education is offered only in the major curriculum leading to the degree of B.S.Bus.Ed. (see part 5). A teaching minor in distributive education is not offered.

EARTH SCIENCE

45-CREDIT COMPOSITE TEACHING MAJOR

Course	Credits
Biol 27 Intro to Oceanography	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
Geog 100, 101 Man's Physical Environment & Lab or Geol 101, 102 Physical Geol & Lab	4
Geog 180-181-182 Spatial Graphics	3
Geog 360 Population Dynamics & Distribution	3
Geog 380 Cartography & Graphic Communication	4
Geog 401 Atmospheric Environment	3
Geol 106, 107 Historical Geology & Lab	4

Geol 212 Principles of Paleontology	4
Geol 253, 257 Minerals & Rocks I, II	4
Geol 335 Geomorphology	3
Math 140 Pre-calculus Algebra & Analytic Geom	3
Phys 103 General Astronomy	3

ECONOMICS

A teaching major in economics is not offered.

20-CREDIT ECONOMICS TEACHING MINOR

Course	Credits
Econ 151, 152 Prin of Econ or equivalent, or 100 Contemporary Econ and 272 Foundations of Econ Analysis	6-7
Econ 321 Intermediate Microeconomic Analysis	3
Econ 372 Intermediate Macroeconomic Analysis	3
Additional upper-div cr in economics	7-8

EDUCATIONAL ADMINISTRATION

No undergraduate major or minor is offered in educational administration. Students who are planning to go into this field must first complete an undergraduate program, preferably with a teaching major in social science, obtain a bachelor's degree and teaching experience, then enter the Graduate School to pursue a program leading to an advanced degree in educational administration.

ENGLISH

A. 42-CREDIT ENGLISH TEACHING MAJOR

Course	Credits
Eng 111 or 112 Lit of Western Civilization	3
Eng 211 Analysis of Poetry & Early Drama	3
Eng 212 Analysis of Fiction & Modern Drama	3
Eng 309 Advanced Prose Writing	3
Eng 341-342 Survey of British Literature	6
Eng 343-344 Survey of American Literature	6
Eng 345 Shakespeare	3
Eng 401 Writing Workshop for Teachers	3
Eng 441 Intro to Study of Language	3
Eng 442 or 443 or 496 Linguistics	3
Eng 445 Literature for Young People	3
One 400-level area literature course	3

B. 33-CREDIT ENGLISH TEACHING MAJOR

Course	Credits
Eng 211 Analysis of Poetry & Early Drama	3
Eng 212 Analysis of Fiction & Modern Drama	3
Eng 309 Advanced Prose Writing	3
Eng 341-342 Survey of British Literature	6
Eng 343-344 Survey of American Literature	6
Eng 401 Writing Workshop for Teachers	3
Eng 441 Intro to Study of Language	3
Eng 442 or 443 or 496 Linguistics	3
Eng 445 Literature for Young People	3

C. 24-CREDIT ENGLISH TEACHING MINOR

Course	Credits
Eng 211 Analysis of Poetry & Early Drama	3
Eng 212 Analysis of Fiction & Modern Drama	3
Eng 341 Survey of British Literature	3
Eng 343 Survey of American Literature	3
Eng 342 or 344 British or American Lit	3
Eng 401 Writing Workshop for Teachers	3
Eng 441 Intro to Study of Language	3
Eng 445 Literature for Young People	3

EXERCISE SPECIALIST

A teaching major in exercise specialist is not offered.

20-CREDIT EXERCISE SPECIALIST TEACHING MINOR

Students electing this minor must include an anatomy and physiology course such as Zool 119.

Course	Credits
H&S 150 Health Sciences	3
H&S 288 First Aid or 245 Intro to Athletic Injuries	2-3
H&S 404 Special Topics Stress Management	2
HEc 205 Concepts in Human Nutrition	3
PE 105 Dance Aerobics	1
PE 106 Weight Training	1
PE 108 Aqua Fitness	1
PE 201 Weight Training & Conditioning	1
PE 418 Physiology of Exercise	3
PE 498 Practicum in Tutoring	2
Rec 365 Recreation for the Elderly	3

FRENCH

Basic language courses taken in high school or elsewhere may be evaluated for college equivalencies as part of this teaching major and minor. Consult the Department of Foreign Languages and Literatures for policies on advanced placement

A. 40-CREDIT FRENCH TEACHING MAJOR

Course	Credits
FL/FR 101-102 Elementary French	8
FL/FR 201-202 Intermediate French	8
FL/FR 301-302 Adv French Grammar & Composition	6
FL/FR 303-304 French Culture & Institutions	6
FL/FR 309 French Language Lab or 409 French Phonetics	1-3
FL/FR 449 Practicum in Tutoring	1-2
Electives chosen from the following	7-10
Eng 441 Intro to Study of Language	
FL/EN 243 English Word Origins	
Approved upper-div course in lit	
Approved upper-div French electives	

B. 20-CREDIT FRENCH TEACHING MINOR

Course	Credits
FL/FR 101-102 Elementary French	8
FL/FR 201-202 Intermediate French	8
Approved French electives (FL/FR 301-302 is especially recommended)	4

Note: A minor in French of less than 20 credits is not acceptable.

GEOGRAPHY

A. 30-CREDIT GEOGRAPHY TEACHING MAJOR

Course	Credits
Geog 100-101 Man's Physical Environment & Lab	4
Geog 180-181-182 Spatial Graphics	3
Geog 240 Economic Geography	3
Geog 250 World Regional Geography	3
Geog 330 Urban Geog or 447 Rec & Tourism	3-4
Geog 362 United States & Canada	3
Geog 364 Idaho & the Pacific Northwest	3
Geog 401 Atmospheric Environment or 420 Land & Resource Reg or 427 Decision-Making in Resource Mgt	3
Additional courses from the above to total 30 cr.	

B. 20-CREDIT GEOGRAPHY TEACHING MINOR

Course	Credits
Geog 100-101 Man's Physical Environment & Lab	4
Geog 180-181-182 Spatial Graphics	3
Geog 240 Economic Geography	3
Geog 250 World Regional Geography	3
Geog 362 United States & Canada	3
Geog 401 Atmospheric Environment or 420 Land & Resource Reg or 427 Decision-Making in Resource Mgt	3
Approved elective in geog to total 20 cr.	

GEOLOGY

A teaching major in geology is not offered.

20-CREDIT GEOLOGY TEACHING MINOR

Course	Credits
Geol 101, 102 Physical Geology & Lab	4
Geol 106, 107 Historical Geology & Lab	4
Geol 212 Principles of Paleontology	4
Geol 253, 257 Minerals & Rocks I, II	4
And four credits from the following	4
Geol 301 Field Geol & Report Writing	
Geol 335 Geomorphology	
Geol 345 Structural Geology	

GERMAN

Basic language courses taken in high school or elsewhere may be evaluated for college equivalencies as part of this teaching major and minor. Consult the Department of Foreign Languages and literatures for policies on advanced placement.

A. 40-CREDIT GERMAN TEACHING MAJOR

Course	Credits
FL/GN 121-122 Elementary German	8
FL/GN 221-222 Intermediate German	8
FL/GN 321-322 Adv German Grammar & Composition	6
FL/GN 325-326 German Culture & Institutions	6
FL/GN 329 German Language Lab or 429 German Phonetics	1-2
FL/GN 449 Practicum in Tutoring	1-2
Electives chosen from the following	6-8
Eng 441 Intro to Study of Language	
FL/EN 243 English Word Origins	
Approved upper-div German electives	

B. 20-CREDIT GERMAN TEACHING MINOR

Course	Credits
FL/GN 121-122 Elementary German	8
FL/GN 221-222 Intermediate German	8
Approved German electives (FL/GN 321-322 is especially recommended)	4

Note: A minor in German of less than 20 credits is not acceptable.

HEALTH AND DRIVER EDUCATION

A teaching major in health and driver education is not offered.

20-CREDIT HEALTH AND DRIVER EDUCATION TEACHING MINOR

This minor leads to teaching certification in health and driver education.

Course	Credits
H&S 150 Health Sciences	3
H&S 288 First Aid	2
H&S 289 Drugs in Society or 404 Special Topics	2
H&S 316 School Health Services	2
H&S 323 Health Education Methods	3
H&S 440, 449 Driver Education I, II	6
HEc 205 Concepts in Human Nutrition	3

HEALTH EDUCATION

A teaching major in health education is not offered.

20-CREDIT HEALTH EDUCATION TEACHING MINOR

Students minoring in health education who plan to apply for teacher certification must include a course in anatomy and physiology or general biology among the courses they select to meet the general studies requirements.

Course	Credits
H&S 150 Health Sciences	3
H&S 288 First Aid	2
H&S 289 Drugs in Society	2
H&S 316 School Health Services	2
H&S 323 Health Education Methods	3
H&S 404 Special Topics	2
HEc 205 Concepts in Human Nutrition	3
HEc 340 Parent-Child Relationships or RelSt 204 Death & Dying or Bact 154 Elem Microbiology & Public Health	3

HISTORY

A. 30-CREDIT HISTORY TEACHING MAJOR

Course	Credits
Hist 101-102 History of Civilization	6
Hist 111-112 Intro to U.S. History	6
American government	3
Additional history courses	15

Note: In selecting the 15 credits in courses offered by the Department of History, balance them as closely as feasible, with equal numbers of credits in the history of the old world and the history of the new world. Students who will also have a teaching minor in English are urged to take at least 6 credits in English history as a part of this teaching major.

B. HISTORY TEACHING MINORS

The teaching minor in history must include a minimum of 20 credits in history plus one course in American government. Follow the history teaching major (above) in selecting courses. Students who will also have a teaching major in English are urged to take at least 6 credits in English history as a part of the 20 credits required in the history minor.

HOME ECONOMICS EDUCATION

The major in home economics education is offered only in the major curriculum leading to the degree of B.S.H.Ec. (see part 5). A teaching minor in home economics education is not offered.

INDUSTRIAL EDUCATION

The major in industrial education is offered only under the major curriculum leading to the degree of B.S.Ed. (see part 5).

20-CREDIT TEACHING MINOR IN INDUSTRIAL EDUCATION

For certification to teach industrial education, a teaching minor must contain at least 20 credits, including not less than 15 credits distributed among and including each of the areas of metals, wood, drafting, and electricity-electronics. The remainder may be in allied or related areas. No substitution will be permitted for any of the courses required below.

Course	Credits
IEd 130 Basic Electronics I	3
IEd 140 Wood Technics	3
IEd 250 General Metals	3
IEd 310 Maintenance of Tools & Equipment	3
IEd 420 Industrial Ed Curriculum & Evaluation	3
IEd 472 Industrial Ed Methods	3
Engr 101 Engineering Graphics	2

JOURNALISM

A teaching major in journalism is not offered.

20-CREDIT JOURNALISM TEACHING MINOR

Course	Credits
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 222 Reporting	3
Comm 325 News Editing	3
Comm 354 Publications Editing	3
Comm 445 Hist of Mass Communication	3
Journalism electives	2

LATIN

Basic language courses taken in high school or elsewhere may be evaluated for college equivalencies as part of this teaching major or minor. Consult the Department of Foreign Languages and Literatures for policies on advanced placement.

A. 40-CREDIT LATIN TEACHING MAJOR

Course	Credits
FL/EN 211-212 Classical Mythology	4
FL/EN 243 English Word Origins	2
FL/EN 364 Literature of Rome	3
FL/LA 161-162 Elementary Latin or FL/LA 261-262 Intensive Latin	8
FL/LA 369 (s) Adv Latin Lab	1-3
A methods course approved by adviser and classics section or FL/LA 449 Practicum in Tutoring	2
Upper-division Latin lit courses (minimum)	9
Electives chosen from the following	9-11
Eng 441 Intro to Study of Language	
FL/EN 363 Lit of Ancient Greece	
FL/GK 341, 342 Elementary Greek	
Hist 441 Greek History	
Hist 442 Roman History	
Hist 446 Medieval Europe	

B 20-CREDIT LATIN TEACHING MINOR

Course	Credits
FL/LA 161-162 Elementary Latin or FL/LA 261-262 Intensive Latin	8
FL/LA 369 Adv Latin Lab (minimum)	1
FL/EN 243 English Word Origins	2
FL/EN 364 Literature of Rome	3
Upper-division Latin lit courses	6

Note: A minor in Latin of less than 20 credits is not acceptable.

LIBRARY SCIENCE

A teaching major in library science is not offered.

LIBRARY SCIENCE TEACHING MINOR

The teaching minor in library science must total 24 credits. At least 12 of these must be in the areas of selection, organization, and administration of library materials. This teaching minor will qualify the student for the Idaho K-12 Education Media Generalist endorsement. Because library science is not a teaching field, the teacher-librarian must also qualify for a standard Idaho elementary or secondary teacher's certificate.

Note: Departmental approval and approval of site are required for the practicum; it is approved after the majority of the required course work has been completed.

Course	Credits
LibSc 420 Classification & Cataloging	4
LibSc 421 Acquisitions & Collection Development in Libraries	3
LibSc 425 Organization & Mgt of Small Libraries	4
LibSc 427 Library & Media Center Practicum	1-6
Audiovisual aids and computer electives (minimum)	2
LibSc 422 Use of the School Library and/or LibSc 423 Intro to Reference Work (to complete 18 cr)	0-4
Courses selected from the following	0-6
Ed 434 Children's Lit (3 cr)	
Eng 445 Lit for Young People (3 cr)	
Communication/graphic arts (6 cr)	

MATHEMATICS

Note: Students who plan to apply for teacher certification with a mathematics teaching major must take Ed 318 and Ed 418.

Math 140 and 179 may be necessary prerequisites for students with weak backgrounds.

A. 40-CREDIT MATHEMATICS TEACHING MAJOR

Course	Credits
Math 176 Discrete Math	4
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers	3
Math 215 Seminar in Topology of the Plane	3
Math 330 Linear Algebra or 326 Linear Programming	3
Math 390 Postulational Geometry	3
CS 112 Intro to Problem Solving & Programming	3
Stat 251 Prin of Stat or Stat 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3
Math 200 or math courses numbered above 300	3
Three of the following courses (chosen from courses not already taken — one must be above 400)	9
Math 326 Linear Programming	
Math 330 Linear Algebra	
Math 346 Applied Combinatorics	
Math 376 Discrete Math II	
Math 411 Elementary Topology	
Math 426 Optimization	
Math 461 Abstract Algebra	
Math 462 Abstract Algebra	
Math 471 Advanced Calculus	
Math 472 Advanced Calculus	

B. 30-CREDIT MATH TEACHING MAJOR

Course	Credits
Math 176 Discrete Math	4
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers or 215 Seminar in Topology of the Plane	3
Math 326 Linear Programming or 330 Linear Algebra	3
Math 390 Postulational Geometry	3
Math 200 or math courses numbered above 300	3
CS 112 Intro to Problem Solving & Programming	3
Stat 251 Prin of Stat or Stat 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3
One of the following courses	3
Math 376 Discrete Math II	
Math 411 Elementary Topology	
Math 461 Abstract Algebra	
Math 471 Advanced Calculus	

C 20-CREDIT MATH TEACHING MINOR

Course	Credits
Math 176 Discrete Math	4
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers	3
Math 390 Postulational Geometry	3
Stat 251 Prin of Stat or Stat 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3

Note: Students who plan to apply for teacher certification with a mathematics teaching minor must take Ed 318 (Ed 418 is highly recommended).

MUSIC EDUCATION

Majors in music education are offered only in the major curricula leading to the degree of B.Mus. (see part 5).

20-CREDIT MUSIC TEACHING MINOR

Course	Credits
MusA 145 Piano Class	1
MusA 387 Conducting I	2
MusC 141, 142 Theory of Music I, II	6
MusH 321, 322 Music in Western Civilization or two courses from the following: MusH 416, 417, 418, 419	4-6
MusT 381 Elementary School Music Methods I or 385 Choral Music in the Secondary School or 386 Instrumental Music in the Secondary School	2-3
Applied performance electives	1
Electives to total 20 cr for the teaching minor selected from the following: MusA 145-146 147-148, 365, 487; MusT 251, 252, 253, 254, 383	--

OFFICE OCCUPATIONS EDUCATION

The major in office occupations education is offered only in the major curriculum leading to the degree of B.S.Bus. Ed. (see in part 5).

21-CREDIT OFFICE OCCUPATIONS EDUCATION TEACHING MINOR

Course	Credits
BusEd 103 Typewriting III	2
BusEd 185 Machine Calculation	2
BusEd 271 Shorthand III	3
BusEd 313 Office Management	2
BusEd 395 Administrative Office Procedures	3
BusEd 491 Teaching Business Ed I	3
Eng 313 Business Writing	3

OFFICER EDUCATION

20-CREDIT OFFICER EDUCATION TEACHING MINOR

This teaching minor consists of 20 cr in approved courses from aerospace studies, military science, or naval science.

PHYSICAL EDUCATION

Also see: athletic training, coaching, dance, exercise specialist, health and driver education, health education, and recreation.

The major in physical education is offered only under the major curriculum leading to the degree of B.S.Ed (see part 5).

TEACHING MINORS IN PHYSICAL EDUCATION

A. 20-CREDIT MINOR FOR SECONDARY PHYSICAL EDUCATION

Students who plan to apply for teacher certification must take first aid and anatomy or physiology. These requirements may be met by taking H&S 288 and Zool 119.

Course	Credits
PE 112, 113, 115, 117, 118, or 120 Skill & Analysis	1
PE 114, 116, or 119 Skill & Analysis	1
PE 121 Group Play	1
PE 201 Weight Training & Conditioning	1
PE 280 Tests & Measurements	2
PE 300 Human Kinesiology or 418 Physiology of Exercise	2-3
PE 320 Methods & Materials in Phys Ed	3
PE 321 Phys Ed Teaching Lab	1
PE 424 Adapted Physical Education	2
PE 440 Program Planning & Management	3
Dan 112 Social & Creative Dance Forms or PE 202 Skill & Analysis: Gymnastics	2-3
H&S 150 Health Sciences	3

B. 20-CREDIT MINOR FOR ELEMENTARY PHYSICAL EDUCATION

Students who plan to apply for teacher certification must take anatomy and physiology. This requirement may be met by taking Zool 119.

Course	Credits
PE 106 Tumbling & Rhythmic Gymnastics	1
PE 111 Fundamentals of Movement	1
PE 114, 116 or 119 Skill & Analysis	1
PE 121 Group Play or Rec 243 Play & Game Theory	1-2
PE 250 Elem Physical & Health Education	3
PE 260 Motor Learning	3
PE 280 Tests & Measurements	2
PE 424 Adapted Physical Education	2
PE 440 Program Planning & Management	3
Dan 220 Children's Dance	2
H&S 288 First Aid	2
Rec 264 Recreational Music	1

PHYSICAL SCIENCES

40-CREDIT COMPOSITE TEACHING MAJOR

This is a 40-credit composite teaching major consisting of courses in chemistry, geology, and physics. It must include at least 18 credits in chemistry or physics and a minimum of 8 credits in each of these two fields. A teaching minor in mathematics is recommended to accompany this teaching major.

Course	Credits
Biol 100 Intro to Biology or Biol 201 Intro to the Life Sc or Geog 100 Man's Physical Environment or Geog 401 Atmospheric Environment	3-4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 275 Carbon Compounds	3
Geol 101-102 Physical Geology & Lab	4
Phys 103 General Astronomy	3
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Introductory Physics Lab	1
Phys 411 Physical Instrumentation I	3
Additional courses in chem, geol, or physics to complete distribution required above	--

Recommended electives:

Chem 302 Principles of Physical Chem
Biochem 380 Introductory Biochemistry

PHYSICAL SCIENCE-LIFE SCIENCE FOR JUNIOR HIGH

60-CREDIT COMPOSITE TEACHING MAJOR

Course	Credits
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Anal	5
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Introductory Physics Lab	1
Phys 411 Physical Instrumentation I	3
Zool 119 Human Anatomy & Physiology	5
Courses in biology, chemistry, or physics	8
Electives chosen from the following	11
Bact 250 General Microbiology	
Biol 207 Intro to Oceanography	
Biol 331 General Ecology	
Geog 100, 101 Man's Physical Environment & Lab	
Geog 401 Atmospheric Environment	
Inter 394 Tech & Societal Decisions	
Inter 490 Tech & Human Values	
Phys 103 General Astronomy	

PHYSICS

A. 40-CREDIT PHYSICS TEACHING MAJOR

Course	Credits
Phys 103 General Astronomy	3
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Introductory Physics Lab	1
Phys 360 Intro to Modern Physics	3
Phys 411 Physical Instrumentation I	3
Biol 201 Intro to the Life Sciences	4
Chem 103 Intro to Chem or 111 Prin of Chem	4
Math 180, 190, 200 Analytic Geom & Calculus	11

B. 20-CREDIT PHYSICS TEACHING MINOR

Course	Credits
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Introductory Physics Lab	1
Phys 360 Intro to Modern Physics	3
Electives in physics (approved by adviser in Dept of Physics), incl at least 2 cr of lab work	5

POLITICAL SCIENCE

A. 30-CREDIT POLITICAL SCIENCE TEACHING MAJOR

The distribution of credits among the five fields below must be as follows: (1) 12-15 credits in U.S. government and political process, including PolSc 101, U.S. Govt: Structures & Functions; and (2) 15-18 credits in the other four fields, including at least 3 credits in each field. Courses listed in more than one field may be counted in only one of those fields. Substitutions in specific courses may be made with the consent of the adviser. All 30 credits must be in political science courses; however, note that 6 additional credits in history are also required for certification in this field.

U.S. Government and Political Process

PolSc 101, U.S. Govt: Structures & Functions
And 9-12 cr from the following: PolSc 105, 275, 276, 428, 431, 432, 433, 437, 452, 467, 469

Comparative Government and Politics

At least 3 credits from the following:
PolSc 381, 382, 447, 483, 484

International Relations

At least 3 credits from the following:
PolSc 237, 438, 440, 449

Public Administration and Public Law

At least 3 credits from the following:
PolSc 439, 451, 452, 454, 467, 469

Political Thought

At least 3 credits from the following:
PolSc 425, 426, 428

B. TEACHING MINOR IN POLITICAL SCIENCE

The teaching minor in political science is a minimum of 20 credits. Six additional credits of U.S. history are also required for certification in this field.

Course	Credits
PolSc 101 U.S. Govt: Structures & Functions	3
Three additional cr in U.S. govt (see the list of courses in U.S. govt and political process under the teaching major above)	3
Three cr in comparative govt (see the list of courses in comparative govt and politics under the teaching major above)	3
Other political sc courses selected from those listed under the teaching major	11

PSYCHOLOGY

A. 30-CREDIT PSYCHOLOGY TEACHING MAJOR

The basic objective of this teaching major is to provide the undergraduate student with preparation that leads to teaching psychology in secondary schools, and/or to undertake graduate work in several related areas. Though psychology is certifiable, it is desirable to present two teaching minors in standard secondary-school subjects. At least a teaching minor in sociology/anthropology is recommended for those anticipating graduate work in guidance and counseling and school psych. A second teaching major in lieu of two teaching minors is acceptable preparation. The composite teaching majors (e.g., social science or physical science), if elected as a second teaching major, should meet the 40-credit requirement.

Course	Credits
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Psych 218 Intro to Research in Behavioral Sc	4
Psych 310 Psych of Personality or 455 Psych of Motivation	3
Psych 311 Abnormal Psychology	3
Psych 320 Intro to Social Psychology	3
Psych 400 Seminar	2-3
Psych 441 Physiological Psych or 444 Sensation & Perception	3
Psych 490 Psych of Learning or 325 Cognitive Psych	3
Stat 251 Principles of Statistics	3

B. 20-CREDIT PSYCHOLOGY TEACHING MINOR

Course	Credits
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Psych 218 Intro to Research in Behavioral Sc	4
Psych 490 Psychology of Learning	3
Stat 251 Principles of Statistics	3
Approved psychology electives	4

RECREATION

The major and minor in recreation are outlined in part 5.

SOCIAL SCIENCE

45-CREDIT COMPOSITE TEACHING MAJOR

This 45-credit composite teaching major requires a minimum of 15 approved credits in history and at least 6 approved credits each in economics, geography, political science, and sociology or anthropology (all 6 credits in *either* sociology or anthropology). The remaining 6 credits are to be distributed among any two of these areas (excluding history and treating sociology and anthropology as one area). Required and other approved courses include:

History — 101, 102, 111, 112, and one or more courses in modern U.S. or European history.

Economics — 151 and 152, then 435 or 490.

Geography — 165, 250, 330 (choose two or more).

Political Science — 101 and choose one or more from 275, 276, 381, 382.

Sociology — 110 and any other sociology course (excluding courses on social welfare and services).

Anthropology — 100 and any other anthropology course.

SOCIOLOGY/ANTHROPOLOGY

A teaching major in sociology/anthropology is not offered.

20-CREDIT SOCIOLOGY/ANTHROPOLOGY TEACHING MINOR

Course	Credits
Anthr 100 Intro to Anthorpology	3
Anthr 225 North American Indians or 325 Indians of Idaho	3
Soc 110 Intro to Sociology	3
Soc 230 Social Problems	3
Approved electives in anthropology and sociology	8

SPANISH

Basic language courses taken in high school or elsewhere may be evaluated for college equivalencies as part of this teaching major and minor. Consult the Department of Foreign Languages and Literatures for policies on advanced placement.

A. 40-CREDIT SPANISH TEACHING MAJOR

Course	Credits
FL/SP 181-182 Elementary Spanish	8
FL/SP 281-282 Intermediate Spanish	8
FL/SP 381-382 Adv Spanish Grammar & Composition	6
FL/SP 383-384 Hispanic Culture & Institutions	6
FL/SP 389 Spanish Language Lab or 400 Seminar in Phonetics	1-3
FL/SP 449 Practicum in Tutoring	1-2
FL/SP 493 Spanish for Teachers	2
Electives chosen from the following	5-8
Eng 441 Intro to Study of Language	
FL/EN 243 English Word Origins	
Approved upper-div Spanish electives	

B. 20-CREDIT SPANISH TEACHING MINOR

Course	Credits
FL/SP 181-182 Elementary Spanish	8
FL/SP 281-282 Intermediate Spanish	8
Approved Spanish electives (FL/SP 381-382 is especially recommended)	4

Note: A minor in Spanish of less than 20 credits is not acceptable.

SPECIAL EDUCATION

The major in special education is offered only in the major curriculum leading to the degree of B.S.Ed. (see part 5).

20-CREDIT SPECIAL EDUCATION TEACHING MINOR

Course	Credits
SpEd 190, 290, or 390 Special Education Lab	2
SpEd 275 Ed of Exceptional Individuals	3
Approved special education electives (may incl SpEd 323, 377, 378, 425)	15

Note: This minor is designed for individuals preparing to work in fields ancillary to special education. It is not intended for those who are interested in teaching the exceptional child. It is not a subject area minor for secondary certification purposes.

SPEECH

A. 30-CREDIT SPEECH TEACHING MAJOR

Course	Credits
CommG 131 Fundamentals of Public Speaking	2
CommG 132 Oral Interpretation	2
CommG 134 Nonverbal Communication	2
CommG 232 Parliamentary Law & Procedure	1
CommG 233 Interpersonal Communication	2
CommG 331 Conflict Management	3
CommG 332 Communication & the Small Group	3
CommG 333 Interviewing	3
CommG 335 Organizational Communication	3
Comm 140 Mass Media & Society	3
Comm 431 Professional Presentation Tech	3
Comm 441 Ethics in Mass Comm	3

B 20-CREDIT SPEECH TEACHING MINOR

Course	Credits
CommG 131 Fundamentals of Public Speaking	2
CommG 132 Oral Interpretation	2
CommG 232 Parliamentary Law & Procedure	1
CommG 233 Interpersonal Communication	2
CommG 331 Conflict Management	3
CommG 332 Communication & the Small Group	3
Courses selected from those specified for the speech teaching major	7

THEATRE ARTS

A. 30-CREDIT THEATRE ARTS TEACHING MAJOR

Course	Credits
ThA 102 Theatrical Makeup	2
ThA 105 Basics of Performance	2
ThA 271 Play Analysis	3
ThA 272 Intermediate Acting	3
ThA 361 Technical Production	3
ThA 362 Costume for the Stage	3
ThA 471-472 Directing	6
Approved theatre arts electives	8

B. 20-CREDIT THEATRE ARTS TEACHING MINOR

Course	Credits
ThA 102 Theatrical Makeup	2
ThA 105 Basics of Performance	2
ThA 271 Play Analysis	3
ThA 361 Technical Production	3
ThA 362 Costume for the Stage	3
ThA 471 Directing	3
Approved theatre arts electives	4

THEATRE ARTS-SPEECH

40-CREDIT COMPOSITE TEACHING MAJOR

Course	Credits
CommG 131 Fundamentals of Public Speaking	2
CommG 132 Oral Interpretation	2
CommG 134 Nonverbal Communication	2
CommG 232 Parliamentary Law & Procedure	1
CommG 233 Interpersonal Communication	2
CommG 331 Conflict Management	3
CommG 332 Communication & the Small Group	3
Comm 431 Professional Presentation Tech	3
ThA 102 Theatrical Makeup	2
ThA 105 Basics of Performance	2
ThA 361 Technical Production	3
ThA 362 Costume for the Stage	3
ThA 471-472 Directing	6
Approved electives in theatre arts and speech	6

TRADE AND INDUSTRIAL/TECHNICAL EDUCATION

Trade and industrial/technical education are offered only in the major curriculum leading to the degree of B.S.Ed. (see part 5). Teaching minors in trade and industrial/-technical education are not offered.

College of Engineering

William E. Saul, Dean (125 Jenssen Engr. Bldg.); Richard T Jacobsen, Associate Dean and Secretary of the College Faculty; Weldon R. Tovey, Associate Dean; Wayne R. Hager, Assistant Dean.

The purpose of the College of Engineering is to provide an educational experience that will afford maximum opportunity for qualified students to develop into well-educated professionals. To this end, the facilities of the entire university are available to students of the College of Engineering.

The Engineering Profession

Members of the engineering profession create useful and economical works for the benefit of mankind through the practical application of mathematics and science. The engineer's talents are used in many ways: design, construction, and operation of public works and utilities systems; planning, construction, and operation of industrial processes and equipment; application of technical products; and planning and execution of systems needed for the support of all human activity such as food production, transportation, and control of the environment. Many engineers hold responsible management positions; others are key members of the interdisciplinary teams that solve the complex technical, economic, and social problems of the world.

The engineering profession recognizes that social, economic, political, and cultural, as well as technical considerations are involved in most of the works in which the modern engineer is engaged. A part of an engineer's education is devoted to the humanities and the social sciences to help him or her relate the technical preparation received to the world today and enhance the engineer's role as an educated, responsible citizen.

To qualify as an engineer, one usually undertakes a four-year college program leading to a Bachelor of Science (B.S.) degree in one of the major branches of engineering practice. Bachelor of Science graduates may either go directly into engineering employment or proceed to graduate study to pursue a given area of interest in depth. As the technology of engineering includes a wide range of subject matter that can be explored only to a limited extent in an undergraduate program, more and more students undertake graduate study for better preparation in a specific field before seeking employment as practicing engineers.

All states require that engineers engaged in work affecting public health and welfare be licensed or registered. This requires a qualifying examination in fundamentals of engineering, usually taken upon completion of undergraduate study, and a period of practical experience followed by a second qualifying examination in the practice of engineering. Many industries, while not legally required to use registered engineers, encourage registration as evidence of professional stature of their engineering employees.

Engineering Aptitudes

Those likely to succeed in engineering are students of serious purpose, willing to do consistently hard work, and with high-school records that show marked ability in mathematics, physics, and chemistry. Equally important are: (1) ability to visualize in three dimensions the parts of a structure or the operation of a machine or device; (2) facility in the use of written and spoken English; and (3) possession of those personal attributes that enable one to inspire associates and assistants to work together effectively. Without these qualifications, the chances for a successful career are poor.

If the above qualifications and aptitudes are lacking, it is not advisable to undertake the study of engineering. A desire or ability to tinker with machines, to make things with one's hands, or to operate machinery is helpful but not enough. Students with only this desire or ability should consider vocational or technical institute training in preference to professional engineering.

Although engineering has been traditionally practiced by men, there are many opportunities for women. An increasing number of women are entering the profession.

Preparation and Admission

A statement of admission requirements is included in part 2. A student may be admitted with less than the requirements listed, but the deficiency must be made up before he or she can progress very far in a college engineering course of study.

Students who contemplate entering the College of Engineering with advanced standing from junior college or other institutions should complete as many of the freshman and sophomore requirements listed in the curricula as possible. Calculus and the various engineering science courses are prerequisites to many advanced courses, and their omission will delay graduation.

Students from out-of-state institutions who wish to transfer to a degree program offered by the College of Engineering are invited to apply. Those whose cumulative GPA is below 2.8 for all previous college-level courses, including any courses taken at UI, may be admitted on approval of the College of Engineering Admissions Committee.

Admission to Classes

As a prerequisite to any upper-division course normally taken in the junior or senior year and offered by the College of Engineering, students in the College of Engineering must have completed selected courses from the required courses in chemistry, computer science, engineering, mathematics, and physics that are normally to be taken by them during their first two years and must have attained a grade of C or better in each of those courses.

Scholarships and Awards

Many scholarships and awards are available to engineering students and prospective students. See "Financial Aid" and "Special Awards" in the student services section of part 2.

Courses of Study and Degrees

The College of Engineering includes the degree-granting Departments of Agricultural, Chemical, Civil, Electrical, and Mechanical Engineering, and of Computer Science. Careful attention is given to curriculum content and educational philosophy to keep all programs attuned to rapidly changing technology. All engineering curricula are accredited by the Accreditation Board for Engineering and Technology (ABET).

First-degree, four-year programs lead to the Bachelor of Science in all departments, i.e., Bachelor of Science in Agricultural Engineering, Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Mechanical Engineering, and Bachelor of Science in Computer Science.

The Bachelor of Science programs in engineering disciplines are designed to prepare the student either for immediate entry into the profession as an engineer-in-training or for graduate study. Most of the courses taken by freshmen and sophomores are the same in all curricula. The student may postpone a final decision on a branch of study until as late as the beginning of the junior year with little, if any, consequence, thus allowing ample opportunity for professional orientation. The junior and senior years are devoted to application of basic principles in the various fields of practice. Interdepartmental activities are designed to lead the student to an awareness of the interrelationships among all fields of engineering practice.

Technological development in recent years has resulted in an increasing interaction between society and engineering. Recognition of this fact has led to emphasis on subjects in the humanities and social sciences. A program leading concurrently to a Bachelor of Arts degree in the College of Letters and Science and a Bachelor of Science degree in one of the engineering branches can be arranged by extending the humanities and social science studies. Such double degree programs normally require five years to complete and are subject to the provisions of regulation J-7 in part 3.

Courses of study leading to the degrees of Master of Science (M.S.), Master of Engineering (M.Engr.), and Doctor of Philosophy (Ph.D.) are offered in agricultural, chemical, civil, electrical, and mechanical engineering. The M.S. and M.Engr. degrees are also offered in nuclear engineering through the facilities at the UI/Idaho Falls Center for Higher Education. The M.S. degree is available in computer science. The requirements for graduate degrees are outlined in the Graduate Bulletin.

Faculty

The faculty is the key to the quality of the engineering program. With few exceptions, faculty members in this college hold advanced engineering degrees; more than 60 percent hold the Ph.D. degree. Recognition in such publications as *Who's Who in America, Who's Who in the West, Who's Who in Engineering,* and *American Men of Science* is common.

A distinguishing feature of the faculty is a blend of academic and practical experience. Many faculty members have extensive experience in practice that they bring into the classroom. This is valuable in preserving a balance between theoretical and practical aspects of engineering.

Facilities

The facilities of the College of Engineering are among the finest in the country. Work is centered in the block-square engineering complex, which includes the Allen S. Janssen Engineering Classroom Building and the J. E. Buchanan, J. Hugo Johnson, and Henry F. Gauss Engineering Laboratories. These facilities are supplemented by the agricultural engineering and isotope laboratories at other locations on the campus. In total, more than 175,000 square feet of floor space is available for the special use of the College of Engineering. The laboratories include the latest equipment for teaching and research. Some of

the equipment is of advanced design found in only a few institutional laboratories.

Experience in working with computers is required of all engineering students. The university's IBM 4341 digital computer is used for classroom and research problems. Various types of smaller computers are available in the engineering laboratories.

Standing and Advantages

The University of Idaho College of Engineering is a fully accredited center for undergraduate and graduate engineering education. Since 1896, when it granted its first degrees, its graduates have spread throughout the world. The large number of firms and agencies from throughout the country that send interviewers to the campus each year seeking to hire Idaho engineering graduates attests to the reputation of the university's engineering program.

The size of the college is near the median of engineering colleges in the country. It is not so large that the importance of the student as an individual is lost; it is large enough to support the faculty and facilities needed for top quality education.

Attention is given to both undergraduate and graduate programs. New concepts and knowledge resulting from the graduate program feed into the undergraduate program to keep it up to date. Undergraduate students have an opportunity to observe graduate projects to help them ascertain their interest in graduate work so that the student is better prepared and more soundly motivated if he or she does proceed to graduate work.

Engineering Experiment Station

The function of the Engineering Experiment Station is to encourage and coordinate the College of Engineering's research and extension programs that are integral parts of the college's academic and service efforts.

The research program in engineering is conducted by the regular faculty and students of the college. There is no separate research facility or a separate research staff. The College of Engineering requires that any research it undertakes have academic significance. This precludes work that is limited to applying already available knowledge or methods to given problems in previously demonstrated ways. However, a large part of the college's research program deals with developing new knowledge needed to attack Idaho's problems or devising new methods or applications for using existing knowledge to the benefit of the state. Most of the funds in support of research come from sources other than legislative university appropriations. These funds are the result of research contracts and grants with various local, state, and federal agencies and private industry. Information regarding research capabilities is available upon request.

Believing that education is a never-ending need of man, the College of Engineering, through the means of short courses, workshops, seminars and forums, and pertinent publications, attempts to ascertain and meet the specific continuing education needs of Idaho's graduate engineers and technicians. Staff members also endeavor to provide information to the entire population of Idaho that may contribute to the successful solving of societal problems.

General Requirements for Graduation

University Requirements. See regulation J in part 3 for requirements that all students in the university must meet.

College Requirements. Each of the six degree curricula requires a total of 128 semester credits.

NOTE: In calculating the 128-credit total for engineering degrees, the College of Engineering does not include credits that a student may have been required to earn in Eng 103, Math 140, and any courses taken to remove deficiencies.

FIRST AND SECOND YEAR COURSES COMMON TO ENGINEERING CURRICULA (EXCEPT COMPUTER SCIENCE)

Courses	Credits
Chem 111 Principles of Chemistry	4
Chem 114 General Chemistry	4
CS 105 FORTRAN Programming for Engineers (majors in elec engr may substitute CS 112)	2
Eng 104 Essay Writing	3
Engr 101 Engineering Graphics	2
ES 210 Engineering Statics	3
Math 180, 190, 200 Analytic Geom & Calculus I, II, III	11
Math 310 Ordinary Differential Equations	3
Phys 210, 211 Engineering Physics I, II	6

Major Curricula

The curriculum for each major, beyond the freshman and sophomore courses common to engineering curricula, is listed in part 5. Each curriculum provides for electives to be arranged in consultation with the student's adviser in accordance with the student's interest and consistent with current department and college policies. The electives are intended to provide flexibility in the student's program. Undesignated electives will usually be taken outside of the student's major field of study.

College of Forestry, Wildlife and Range Sciences

John C. Hendee, Dean (202 Forestry, Wildlife and Range Sciences Bldg.); James R. Fazio, Associate Dean; Leon F. Neuenschwander, Associate Dean; Charles W. McKetta, Secretary of the College Faculty.

Professional education leading to a degree in forestry was instituted at the University of Idaho in 1909. To the initial curriculum in forest resources have been added those in forest products (1914); range resource (1917), wildlife resources (1942), fishery resources (1951), and wildland recreation management (1974).

The academic objective of the college is to provide its students with opportunities to become better prepared for lives of responsibility and fulfillment and to acquire competence for entry into professional careers in natural resource science and management. Each of the curricula offered by the college, therefore, assures the student an acquaintance with the physical, biological, and social sciences and with the humanities. This establishes a broad basis of general education and prepares the student for the scientific-professional courses dealing with the use of forest and range lands and related resources.

Advantages of Location

The university is ideally located for preparing students in the professional fields of renewable natural resources. Forest and range lands comprise 90 percent of the state's area. Forested areas extend from the ponderosa pine type in southern Idaho to the mixed coniferous and famous white pine types of northern Idaho. Range lands vary from spring-fall and winter ranges in the sagebrush-grass and bunchgrass zones to summer ranges in several of the forested zones. Also within the forest and range lands are found hundreds of lakes and streams and extensive wilderness areas, which provide habitat for fish and wildlife and attractive opportunities for wildland recreation.

The values derived from these resources include wood products of all types; cattle and sheep in great numbers; abundant wildlife of many species; game fishes of world renown; water for domestic use, power, and irrigation; and recreational activities. These natural study areas and resources are available to the student in preparing for his or her profession.

Facilities

The college moved into a new three-story, 90,000-square-foot

building in 1971. The Forestry, Wildlife and Range Sciences Building brings together the faculty, classrooms, laboratories, scientific equipment, and plant and animal collections necessary for the highest quality instruction.

A tract of some 7,200 acres of forest land located about 25 miles from the campus is used as a demonstration and experimental area. It includes a 200-acre developed recreation area and adjoins a 33-acre privately owned nature preserve, which are managed by the Department of Wildland Recreation Management. A forest nursery of 40 acres and a greenhouse are maintained for the production of planting stock and for student training and research purposes. Shattuck Arboretum, with over 60 species of trees, is maintained on campus for studies in dendrology and silvics. Other field facilities include the McCall Field Campus located on the shore of Payette Lake in the mountains of west-central Idaho, the Clark Fork Field Campus in northern Idaho, the Taylor Ranch Wilderness Field Station in the heart of the River-of-No-Return Wilderness, and the Lee A. Sharp Experimental Area for range research near the Nevada border. In addition, Idaho's forest and range lands constitute a vast natural laboratory for students in all of the college's curricula.

Standing of the College

To promote high professional standards in forestry education, the Society of American Foresters periodically evaluations all forestry schools and rates them as accredited or not accredited. Forestry education at UI has always received accredited status, and this accreditation assures the student that high quality education is provided. Similarly, in 1985 the major in range resources became one of the first in the nation to be accredited by the Society for Range Management.

Departments

There are five departments in the college: Fish and Wildlife Resources, Forest Products, Forest Resources, Range Resources, and Wildland Recreation Management. Although these departments are separate administrative entities, they share a common philosophy of integrated resource management. Many of the faculty members hold joint appointments in more than one department; the program of a student whose major is in one of the departments will include courses in other departments; and the teaching, research, and service missions of all the departments are integrated and coordinated at the college level. This integration is enhanced by the Forest, Wildlife and Range Experiment Station, which is described below.

Degrees

Curricula leading to the following degrees are offered by the college: Bachelor of Science in Fishery Resources (B.S. Fish.-Res.) with options in management and aquaculture; Bachelor of Science in Forest Products (B.S.For.Prod.) with options in forest business management, harvesting technology, pulp and paper technology, wood science and engineering; Bachelor of Science in Forest Resources (B.S.For.Res.) with options in management, administration, and science; Bachelor of Science in Range Resources (B.S. Range Res.) with emphasis areas in management and science; Bachelor of Science in Wildland Recreation Management (B.S.Wildland Rec.Mgmt.) with specialty areas in management/planning, interpretation/communication, wilderness management, natural resource tourism, and outdoor recreation leadership; and Bachelor of Science in Wildlife Resources (B.S.Wildl.Res.) with options in quantitative, habitat, aquatic, communications, policy, law and administration, and biology; Master of Science (thesis and nonthesis options); and Master of Forestry, with majors in several of the areas represented by bachelor's degrees; and Doctor of Philosophy, with dissertation topics in any of the five departments.

Admission Requirements

General. For a statement of admission requirements, see part 2.

Transfer Students. Students who propose to complete a portion of their undergraduate studies at a junior college, or elsewhere, before entering UI, should follow as closely as possible one of the curricula for the first two years set forth in part 5. A student whose program does not closely approximate one of these will not be able to graduate in a total of four years. Transfer to UI before the end of the sophomore year is usually to the student's advantage. Correspondence with the dean of the college should be initiated at least three months before the date on which the student plans to enroll.

Total time to graduation will also be extended if field ecology, in those curricula that require it, is not completed during the summer at the end of the sophomore year. Students planning to elect one of these curricula may report directly to the field campus for their initial registration in the university if prerequisites have been met.

Undergraduate Program

The undergraduate curricula are designed to provide both a general and a professional education. The objective in the first two years is to provide students with a good foundation in the biological, physical, and social sciences and in writing and speaking skills. The basic philosophy of the college is to educate according to the principles of integrated resource management while providing specialization in the student's major area of interest.

The curricula and options in each department offer as many courses in common with those in other departments as possible, while ensuring that specific professional education requirements are met. Flexibility and individuality in each student's program are provided by curriculum choice, by options within curricula, and by elective credits. Provision is also made for advanced training leading to a military commission.

Graduate Program

Programs leading to advanced degrees are offered in each of the fields represented by the undergraduate curricula of the college. Both the master's and the doctor's degree, with emphasis on the conduct of a research project and the preparation of a thesis or dissertation, are available. A nonthesis master's degree may also be obtained.

Excellent facilities and opportunities are afforded for graduate study and research in the subject-matter areas. Research in the college is organized through the Forest, Wildlife and Range Experiment Station. Research is also supported by the Cooperative Wildlife Research Unit, the Cooperative Fishery Unit, the Cooperative Park Studies Unit, the Wilderness Research Center, and by various state, federal, and private organizations.

Assistantships and fellowships are available to assist highly qualified students in their graduate programs.

More complete information on graduate studies may be obtained by writing the dean of the Graduate College and requesting a copy of the Graduate Bulletin. Specific information on specializations available and projects under way may be obtained by writing the director of graduate programs, College of Forestry, Wildlife and Range Sciences.

Requirements for Graduation

University Requirements. See regulation J in part 3 for general university requirements for degrees.

College Requirements. A total of 136 semester credits is required for the baccalaureate degree. A minimum cumulative

grade-point average of 2.00 in all courses taken in this college is required for graduation. Courses in the college numbered above 299 are not open to any student who is on academic probation.

Students who are admitted without the required unit of high school physics (see the admission requirements listed in part 2) must take either Phys 101 or 113, regardless of whether physics is listed as a requirement in the chosen curriculum. Courses taken to make up high-school deficiencies will not count toward the 136 semester hours required for the bachelor's degree.

The college may permit substitutions or grant waivers of specified requirements. Thus, for a student with special aptitudes or interests, a program can be devised that will provide a foundation for advanced study or research or meet other acceptable and well-defined career objectives.

All electives are subject to the approval of the faculty adviser and the dean.

Summer Camp or Summer Employment Requirements. Students who elect the forest resources or range resources curriculum are required to complete a four-credit summer field course. They must complete this requirement before beginning the professional course work of their upper-division programs. Wildland recreation management students may choose the summer course or a two-course ecology sequence during the regular school year.

Students who elect the fishery or wildlife resources curriculum must complete at least one summer of experience in employment deemed by the faculty to be appropriate to their professional career objectives.

Forest, Wildlife and Range Experiment Station

All members of the college faculty are on the staff of the experiment station. Other members of the station staff include full-time research associates and technicians, as well as graduate-student appointees.

The program of the experiment station is closely connected with the graduate training program of the college. Most of the graduate students enrolled in the college are on assistantships associated with station projects.

The station staff conducts research on a wide variety of renewable natural resource management problems in the areas of forestry, forest products, range, wildland recreation, wildlife, and fisheries. A sizable number of projects are interdisciplinary in nature. Funds for the station are provided by the university, by several departments of the state of Idaho, and by grants from federal, other state, and private sources. Currently over 60 percent of these funds come from non-university sources. More information on station activities may be obtained by writing to the associate director, Forest, Wildlife and Range Experiment Station.

College of Law

Sheldon A. Vincenti, Dean (101 Law Bldg.); Arthur D. Smith, Jr., Associate Dean.

The College of Law was organized in 1909 and is the only school devoted to the study of law in the state of Idaho. The college is a member of the Association of American Law Schools and is approved by the Council of the Section of Legal Education and Admissions to the Bar of the American Bar Association.

Purpose of the College

The role of the College of Law is to educate students for the legal profession with its many facets and its involvement in the whole range of society. The curriculum is designed to provide instruction over three academic years in principles generally applicable in the United States. The responsibilities assumed by the professional man or woman are emphasized, as are solutions to ethical problems. The study of law is also an asset to those who wish to hold positions of leadership in government or business.

Methods of instruction are adapted to the development of each student's highest potential and vary with the professor and the course. Basic instruction is accomplished primarily by way of the case system, a study of the actual decisions of appellate courts, supplemented by selected readings that provide insight into the nature of judicial and legislative processes. Problem and simulation methods are used in advanced courses. Techniques that encourage individual initiative and develop perception and communication abilities are emphasized in the third year, clinical training provides contact with clients. Because law changes rapidly, mere accumulation of information is subordinated to the more important ends of individual development and training in critical habits of thought.

Admission to the Bar

The College of Law is fully accredited by the American Bar Association and the Association of American Law Schools, and its degree is accepted by all state bar associations. Educational prerequisites vary among states, and inquiry should be made of the secretary of the bar examiners in the state in which the applicant intends to practice to determine the existence of special requirements.

Prelegal Work

The subject matter of prelegal education is less important than the quality of work performed. Students preparing to enter law school should avoid courses that are not demanding and take those that will develop their powers of analytical thought. Intensive work will enable them to acquire the intellectual discipline and experience necessary for success in law school. Students should aspire to a critical appreciation of values and of political, economic, and social institutions; they should stress understanding, not just knowledge, in their studies. Words are the tools of the lawyer, and a major undergraduate objective in the selection both of courses and of activities outside the classroom should be development of the ability to communicate orally and in writing.

The most common undergraduate majors for law students are the social sciences or business administration. However, a degree in one of these fields is not required and many students with other backgrounds ranging from agriculture to engineering or physics are also accepted. While study of accounting is not a prerequisite for admission to the College of Law, it is highly recommended that prelaw students gain some understanding of the fundamentals of this area. As a rule, the inroductory course on a college level is sufficient. Another useful skill is the ability to operate a typewriter with reasonable speed and accuracy.

Within the particular college or university, prelaw advisers are available to guide students in selecting courses that will meet these objectives. The faculty of the College of Law is also available to assist in program planning.

Requirements for Admission

An applicant for admission must have a bachelor's degree from an accredited four-year college or university. Because admission to law school is competitive and because records of applicants are individually evaluated, generalizations about minimum standards are difficult. However, successful applicants ordinarily have grade point averages that place them in the upper one-half of their graduating class and Law School Admission Test (LSAT) scores that are above the national median.

The LSAT is also required of all applicants and is given by the Law School Admission Services throughout the United States in October, December, February, and June. The exact dates, places, and cost of the test, application blanks, and a bulletin of informa-

tion about the test may be obtained by writing directly to Law School Admission Services, Box 2000, Newtown, Pennsylvania 18940, or to the College of Law, University of Idaho. Applicants cannot be assured of consideration unless they take the test no later than the December administration preceding the fall semester in which they desire admission.

Registration with the Law School Data Assembly Service (LSDAS) of the Law School Admission Services is required of all applicants. Instructions concerning registration and an application blank for this purpose are contained in the same bulletin that describes the LSAT (or may be secured separately from the College of Law or the Law School Admission Services).

Procedure for Admission. All applicants must: (1) secure from the College of Law a personnel form and an application form, complete and return them to the College of Law, together with a $15 application fee; (2) take the LSAT; and (3) register with the LSDAS and send to the College of Law an Application Matching Form. Transcripts required by the instructions on the registration blank of the LSDAS should be forwarded to that service promptly.

A decision concerning admission will be made after receipt of the College of Law personnel and application forms, the application fee, the LSAT score from the Law School Admission services, and the file, with a transcript analysis, from the LSDAS. Applications should be initiated no later than early December before the fall term in which the student intends to register, and all information necessary to the admission decision should be on file at the College of Law by February 1 of the year in which admission is desired.

Admission to Advanced Standing

Students who have previously studied law in a law school that is either a member of the Association of American Law Schools or is approved by the American Bar Association may be admitted only if they are in good standing and eligible to continue in the school in which previously registered and if, in the opinion of the Law School Committee on Admissions, academic performance at that institution warrants such action. Usually the committee requires substantially above a 2.50 grade point average on all law courses undertaken. There must also be space available to accommodate the student. When space is available, priority is accorded transfer applicants who are residents of Idaho. If entrance by transfer is granted, the number of credits to be recognized from the previous institution is determined by the dean of the College of Law in each case. The last 26 semester credits of law must be completed in residence at the University of Idaho.

Nondegree Candidates

Students who are not degree candidates in the College of Law but are enrolled elsewhere in UI are permitted to register for a course offered by the College of Law if the permission of the dean of the College of Law and the instructor of the course are both granted. Such courses cannot be credited toward a law degree even if the student is later admitted to the College of Law. In addition, the law college offers a small number of courses especially designed for graduate students in non-law graduate programs at UI and WSU.

Combined Degree Programs

A very limited exception to the requirement of a degree before admission exists for highly capable students enrolled in a regular combined degree program who will experience exceptional hardship if not accepted after 98 hours of college work. Admission of these students is discretionary with the College of Law Admissions Committee and permission is rarely granted.

The conditions that must be met for a combined degree student to receive serious consideration are: (1) demonstration of outstanding ability by a cumulative pre-law average to the time of application of at least 3.50; (2) demonstration of excellent aptitude for law study by a score on the LSAT well above average; (3) submission of a certificate from an appropriate officer of the undergraduate institution attesting to the fact that the applicant will receive the bachelor's degree from his or her college or university after the successful completion of one year of law study; and (4) demonstration of some compelling reason for accelerating his or her law school admission, such as extreme personal or family hardship.

Fees

Students in the College of Law pay $167 per semester in addition to the fees paid by students in other divisions of the university. (See "Fees and Expenses" in part 2 of this catalog.)

Grading System

1. Grades for courses taken in the College of Law shall be awarded on the basis of A, A-, B+, B, B-, C+, C, C-, D+, D, D-, and F; provided, however, that by resolution the law faculty may designate any course, or courses, to be graded on the basis of P or F.

2. Grade-point averages of students in the College of Law shall be computed by assigning the following numerical point values per semester hours: A = 4.00; A- = 3.67; B+ = 3.33; B = 3.00; B- = 2.67; C+ = 2.33; C = 2.00; C- = 1.67; D+ = 1.33; D = 1.00; D- = 0.67; F (or "fail" under the pass-fail basis) = 0.00. The cumulative grade-point average is the quotient of total points assigned, divided by total hours undertaken, except that courses in which marks of I, W or P (pass) have been given shall be disregarded in the computation. All other courses shall be included even if they have been repeated.

3. The grading system described above became effective in 1971. It applies in determining: (a) eligibility for continuing study in the College of Law; (b) compliance with requirements for the Juris Doctor degree; and (c) class ranking within the College of Law. It is also used on any grade reports issued by the College of Law. Plus or minus grades do not appear on transcripts issued by the registrar.

4. Grades in most courses offered by the College of Law are awarded on the basis of performance in a single written examination conducted at the end of the semester. In courses where it is so announced, grades on written projects or classroom participation may be included.

Additional Information

For more detailed information about the College of Law, including descriptions of the honor system, academic requirements, requirements for graduation, and curriculum, see the annual announcement of the College of Law.

College of Letters and Science

Galen O. Rowe, Dean (112 Admin. Bldg.); William B. McCroskey, Associate Dean; Doyle E. Anderegg, Assistant Dean.

Established in 1900, the College of Letters and Science (L & S) is the oldest division of the university. The objectives of the college are to provide a liberal and professional education in the arts and sciences, to advance knowledge through research and scholarship, and to perform service to the university at large, the state, and the nation.

Departments and Programs of Instruction

Included within L & S are the Departments of Biological Sciences, Chemistry, English, Foreign Languages and Literatures, His-

tory, Mathematics and Statistics, Philosophy, Physics, Political Science and Public Affairs Research, Psychology, Sociology/Anthropology, and Theatre Arts. The School of Communication and the Lionel Hampton School of Music also function as departments of the college. Cooperating departments from other divisions include the Departments of Art, Bacteriology and Biochemistry, Economics, Geography, and Naval Science, and the Margaret Ritchie School of Home Economics. The departments and schools in L & S offer nearly 100 curricula and curricular options leading to baccalaureate degrees, as well as graduate study leading to master's and doctor's degrees.

Undergraduate. See departmental sections in part 5.

Graduate. The Graduate College offers work toward advanced degrees in many disciplines of the college. Currently work leading to a master's degree is available in the fields of anthropology, biological sciences, botany, chemistry, English, French, German, history, mathematics, music, physics, political science, psychology, social sciences, Spanish, statistics, theatre arts, and zoology. The degree of Doctor of Philosophy is available in botany, chemistry, history, mathematics, physics, political science, and zoology. For the specific degrees available, see the list of programs offered in part 1.

Nondegree. A nondegree program is offered in which each student's course of study is worked out to meet his or her special needs. The program is intended primarily for students who (1) do not plan to obtain degrees at the University of Idaho, (2) plan to transfer to other institutions, or (3) have objectives that are not provided for by any of the established curricula in the college.

Interdisciplinary Studies. Students who have broad educational goals that necessitate work in several disciplines or departments may present an interdisciplinary curriculum for the B.A. or B.S. degree. For details, see the program in interdisciplinary studies in part 5.

Preparatory Programs in Medicine and Dentistry. Premedical and predental programs are administered by the L & S Health Studies Committee.

Environmental Sciences. The University does not offer a separate degree program in environmental sciences; however, students who wish to prepare for careers in this field should consult the L & S dean's office about the possibility of developing an appropriate plan of studies under the program in interdisciplinary studies.

Admission to the College

Students who expect to enter L & S should plan their high school electives carefully, both to lay the foundation for their general education, which will be continued in the university, and to ensure that they are adequately prepared to begin their study at the college level. Students should select subjects in English, foreign language, social sciences, natural sciences, mathematics, and fine arts that will provide a well-rounded preparation for further study. For a statement of general admission requirements, see part 2. Graduates of four-year, accredited high schools ordinarily are eligible for admission to L & S.

Regular Enrollment in a Program of Studies

Students in L & S must enroll in regular programs unless they are attending on a part-time basis (seven-credit maximum), or they are admitted to nondegree programs. Except for the two-year programs in predental studies and prenursing studies, a regular program is one that leads to a degree that the college offers. However, it is not necessary to select a major curriculum until the beginning of the junior year. This permits the undecided student to take courses in a wide range of fields in order to choose a major more wisely.

Teacher Education Program

Students in L & S who are preparing for secondary-school teaching should consult the section on the College of Education in this part 4.

Laboratory of Anthropology

The Alfred W. Bowers Laboratory of Anthropology, established in 1968, serves as the research arm of the College of Letters and Science for investigations in archaeology, ethnohistory, linguistics, and physical anthropology. Major contractual research has been concentrated in historical and prehistoric archaeology for the National Park Service, Bureau of Reclamation, and the U.S. Army Corps of Engineers, burial relocation for several Northwest American Indian tribes, and archaeological surveys for the U.S. Forest Service and the Bureau of Land Management. The laboratory serves as the main clearinghouse and repository for all northern Idaho archaeological collections and records. Much of the day-to-day work consists of providing public service information on archaeological sites and artifacts for interested citizens as well as environmental impact statements for industry and government.

Modern and well equipped facilities for the cleaning, preservation, and analysis of both historic and prehistoric artifacts are contained in the laboratory. The metal artifact cleaning facilities are among the largest and best equipped in the country. The laboratory also provides space and facilities for research associates, graduate student research, teaching and comparative collections, and a regionally oriented library.

Osteological analysis of human skeletal populations is a major concentration of the laboratory. As a matter of policy, no American Indian skeletal collections are maintained. Before any such material passes through the laboratory for analysis before reburial, the project must have the approval of the tribal authorities concerned.

General Requirements for Graduation

Each student working toward a baccalaureate degree from the college must satisfactorily complete 128 semester credits (unless a higher number is specified in the particular curriculum), including at least 36 credits in courses numbered 300 and above, the all-university requirements (see regulation J-3 in part 3), and the college and departmental requirements for the degree sought. The college requirements applicable to the B.A. and B.S. degrees are listed below. The requirements for the various professional degrees (i.e., B.F.A., B.Mus., B.N.S., B.Appl.Phys., and B.Tech.) are listed by academic unit in part 5. The college B.A. and B.S. requirements do not apply to these professional degrees.

College Requirements for the B.A. and B.S. Degrees

Objectives. The college requirements for the B.A. and B.S. degrees are designed to ensure a broad, liberal education through the attainment of the following objectives: (1) proficiency in written and spoken English; (2) appreciation of great literature, music, and art; (3) knowledge of human development, the growth of social and economic institutions, and an understanding of the rights and responsibilities of the individual citizen; (4) perspective of American culture in the world at large; (5) sense of historical perspective; (6) acquaintance with moral, ethical, and aesthetic values; (7) familiarity with scientific thought and method; (8) ability to use and interpret basic mathematical concepts; (9) understanding of ecology; and (10) a continuing attitude of intellectual curiosity.

Requirements for the B.A. Degree

Humanities (12 credits minimum). At least four courses, including two from each of the following categories: (1) literature,

philosophy, and courses that treat theatre arts or speech as literature; and (2) courses that deal with the history or appreciation of art, architecture, music, speech, or theatre arts.

Science (9 credits minimum). At least three courses (including one or more laboratory courses) to be taken in two or more of the following areas, one of which is to be in either of the first two categories: (1) life sciences, (2) physical sciences, (3) mathematics, excluding Math 050, and (4) approved courses dealing with science.

Social Sciences (9 credits minimum). At least three courses to be taken in two or more of the following fields: (1) anthropology, (2) economics, (3) geography, excluding physical geography and cartography, (4) history, (5) political science, (6) psychology, excluding Psych 205 and the more physiologically oriented courses, (7) social science, (8) sociology, and other approved courses.

Foreign Language (0 to 16 credits). The basic requirement is proficiency in foreign language equivalent to that gained by the completion of four semesters of college courses (through the intermediate level). This requirement may be satisfied by the completion of either of the following options: (a) 16 credits or four high-school units in one foreign language, or (b) 12 credits in one foreign language, and one three-credit course in literature translated from the same language. The 12 credits may be satisfied by three high-school units in one foreign language.

Requirements for the B.S. Degree

Humanities (9 credits minimum). At least three courses, including one course in literature or philosophy, or courses that treat theatre arts or speech as literature, and one course that deals with the history or appreciation of art, architecture, music, speech, or theatre arts.

Science (same as the science requirement for the B.A. degree).

Social Sciences (same as the social science requirement for the B.A. degree).

Progress in Satisfying These Requirements. Students who wish to graduate by the end of four years of college work should take a program that results in substantial progress toward the fulfillment of the preceding requirements by the end of the sophomore year. In particular, students seeking the B.A. degree should take courses in fulfillment of the foreign-language requirement as early as possible. If they cannot do this during the first semester, they should immediately take a course that can be used in partial fulfillment of the science-mathematics requirement.

Major Curricula

Selection of a Major. Each student should select a major curriculum no later than the beginning of the junior year. Lower-division students who have not decided on a major may remain in a "general" classification, which permits them to explore a variety of possible major fields of study.

Major Requirements. The departmental requirements are stated under the respective curricula in part 5.

College of Mines and Earth Resources

Robert W. Bartlett, Dean (206 Mines Bldg.); Sam M. W. Scripter, Associate Dean; John H. Bush, Jr., Secretary of the College Faculty.

The College of Mines and Earth Resources (then called "School of Mines") was established in 1917 as an administrative unit of the university. There are three academic departments in the college, the Departments of Geography, of Geology and Geological Engineering, and of Metallurgical and Mining Engineering, and four other administrative divisions, the Glaciological and Arctic Sciences Institute, the Bureau of Mining Research, the Cart-O-Graphics Laboratory, and the Idaho Mining and Mineral Resources Research Institute. In affiliate special program status of the university is the Idaho Geological Survey, the director of which also serves as the dean of the college.

The college is concerned with all aspects of earth science and technology, and the course and curricular offerings have expanded considerably since the college was founded. Following is a list of the academic degrees that have been conferred in the various disciplines; the date following each is the year in which this degree was first conferred. Cartography (B.S. 1980); mining engineering (B.S. 1918, M.S. 1918, Ph.D., 1972); metallurgy, until 1934 (B.S. 1922, M.S. 1920); metallurgical engineering (B.S. 1935, M.S. 1936, Ph.D. 1973); geology (B.S. 1912, M.S. 1922, Ph.D. 1964); geological engineering (B.S. 1935, M.S. 1940); geography (B.S. 1958, M.S. 1968); hydrology (M.S. 1970).

In addition to the advanced degrees listed above, the Graduate College offers work leading to these degrees: Master of Arts in Teaching with majors in geography and earth science and Master of Natural Science with a major in earth science.

Equipment and Facilities

Mining Engineering. Facilities and equipment include a rock mechanics and geophysical laboratory equipped with polariscope, strain recorder, electrical resistivity and magnetic units, a universal testing machine, a shear test machine, and other instruments for stress-strain studies of rock structure. Mine surveying instruments, ventilation apparatus, and other mining engineering tools are available. Illustrative material includes maps, drawings, films, slide collections, and video tapes that show mining methods and practices. There is video taping equipment for recording at mine sites and playback in the lab. The greatest assets for laboratory or graduate studies in mining engineering, however, are the deep mines in the Coeur d'Alene district, the small operations around the state, and the open pit mines of southern Idaho. Mining students who are interested in practical investigations or basic research can usually arrange to gather necessary data at the best source — an operating mine.

Metallurgical Engineering. The extractive metallurgy laboratories are equipped for class instruction and research in ore dressing and process metallurgy. Equipment includes crushers, ball mills, pulverizers, screens and screen shakers, flotation machines, leaching equipment, and various other concentrating machines including a Carpco induced-roll magnetic separator and a high-intensity electrostatic separator. Equipment is available for modern instrumental analysis as well as wet chemical and fire assaying. Computer facilities allow training in data logging, on-line optimization, and process control techniques.

Physical metallurgy includes the metallography laboratory with facilities for polishing and etching metals, alloys, minerals, and ceramic materials for macroscopic and microscopic examination, a variety of microscopes for visual examination of specimens, and a metallograph, cameras, and darkroom for photographic work and corrosion studies. The x-ray diffraction laboratory is equipped to handle a large variety of problems in metallurgy, ceramics, and mineralogy, such as identification of alloy phases and minerals, texture studies, and phase diagram determinations. Other equipment includes melting furnaces, forging hammer, and rolling mill for specimen preparation, heat treating and thermal analysis furnaces, physical and mechanical test instruments, and ceramics fabrication equipment.

Geology and Geological Engineering. Laboratories are maintained for work in all of the basic courses, with large study collections of fossils, rocks, minerals, crystal models, ore suites, thin sections, polished sections, and topographic and geologic maps.

Equipment used in advanced courses include rock sawing and

polishing facilities, binocular microscopes, reflection and polarizing microscopes, photomicrographic apparatus, x-ray diffraction and flourescent equipment, and an atomic absorption spectrophotometer. The electron microprobe of the Idaho Geological Survey is available to advanced students. Also available are computers, proton magnetometers, resistivity survey equipment, a 12-channel seismograph, a gravity meter, an EDM survey unit, soil drilling and sample kits, water-level recorders, and other geophysical and hydrological equipment. Geological engineering also shares strain testing and other apparatus with mining engineering in the Geological Engineering/Mining Engineering Rock Mechanics Laboratory.

Research laboratories are equipped for work in applied geochemistry, economic geology, paleontology, photogeologic analysis, remote sensing, engineering geology, and soil testing. Facilities for research in hydrology are also available in other divisions of the university.

Through the Glaciological and Arctic Sciences Institute, cooperative facilities for field training and research in British Columbia and Alaska are available in the disciplines of mining and exploration geology, geophysics, terrestrial photogrammetry, field surveys and mappings, geomorphology, and glaciology.

Geography. The department's main laboratories are the surrounding regions, in sequence of increasing size: The Palouse, The Inland Empire, and The Pacific Northwest. There are now about 124,000 maps, numerous atlases, and 40,000 aerial photographs of Idaho in the University Library's collection. The library is a regional depository for federal documents including products of the Defense Mapping Agency. The department maintains a modern cartographic laboratory with a process camera and darkroom, a plate maker, word processor-driven phototypesetter, and numerous pieces of supplemental equipment. A digitizer-graphics calculator and two ISC-8052 color graphic computers are department hardware, while digital plotting and mainframe computing are provided through the University's Computer Services facilities.

Cart-O-Graphics, the Department of Geography's graphics laboratory, offers design, drafting, and reproduction services for maps and other graphics to illustrate research reports and other publications while providing work experience for students. Although this laboratory primarily serves the university's needs, it also serves other agencies in the state and region.

Peschel Collection. The college has a unique art mining history collection on permanent loan from the heirs of William M. Peschel who lived for many years at Lewiston, Idaho. This collection contains prints and water colors illustrating parade uniforms worn by mining officials and workers in Germany about the seventeenth century. In addition to the illustrations, the collection includes ceremonial axes and canes that were carried by these officials. The college also owns a collection of old prints of medieval mining techniques provided by other bequests and acquisitions.

Scholarship and Loan Funds

Students having a high academic standing in high school or college should refer to the "Financial Aid" section in part 2 of this catalog. The Hecla-Bunker Hill Scholarships are available to students in the college, but not exclusively to them. The following are exclusively for students in the College of Mines and Earth Resources: Mineral Industries Education Foundation — five scholarships that pay $500 each year for four years (open only to entering freshmen in mining engineering or metallurgical engineering); ASARCO Foundation — one $750 scholarship (open to a currently enrolled sophomore or junior); Idaho Mining Memorial Scholarship (open to entering students); A. E. Larson Scholarship (open to currently enrolled students); W. W. Staley Scholarship (open to currently enrolled students in mining engineering); out-of-state tuition waivers (open to new students who are not residents of Idaho); Albert Hall Featherstone Scholarships and the Carl Savage Memorial Award (open to currently enrolled graduate students). Also available are other scholarships in the name of Harold and Claudia Stearns for geology students and the Norman Smith and J. Magnuson scholarships for undergraduate COMER students. The Laney and J. J. Day loan funds are also available to students enrolled in the college. Several scholarships are also available for support of summer students in the geology field camp and the Glaciological and Arctic Sciences Institute. For further information, write to the scholarship chairman, College of Mines and Earth Resources, and to the Office of Student Financial Aid, University of Idaho.

Out-of-state tuition waivers are available on a limited basis and Oregon residents can enter mining, metallurgical, and geological engineering paying resident fees.

Idaho Geological Survey

Robert W. Bartlett, Director and State Geologist (332 Morrill Hall); Earl M. Bennett, Associate Director (228 Morrill Hall).

The Idaho Geological Survey, by its statutory mission, is the state of Idaho's lead agency for the collection, interpretation, and dissemination of all scientific information on the geologic and mineral resources of the state. Administratively it operates in special program status at the University of Idaho with its director also serving as dean of the College of Mines and Earth Resources. As such it performs applied field and laboratory research and serves the university, the mineral and other industries, and the general public by publishing the results of its many programs and by answering correspondence and offering consultation. Analytical work with sophisticated instrumentation is a major part of all services offered.

Cooperative work between the survey and the educational programs of the College of Mines and Earth Resources and with other state and federal agencies, particularly the U.S. Survey of Mines and the U.S. Geological Survey, enhances the overall work of the college and the survey. The staff and that of the College of Mines and Earth Resources share equipment, as well as the specialized expertise of both groups. Survey personnel, who are experienced in both applied and academic areas, are available to any department of the university for advice, consultation, and occasional lecturing. Whenever possible, students in the College of Mines and Earth Resources are offered part-time or summer work as assistants to survey professionals, frequently on projects that are funded by grant monies available for some programs. High quality graduate student dissertations, when in accord with the survey's mission and with proper permission, are often published in one of the several survey formats.

Although equipment used by the survey is housed both in the Mines Building and Morrill Hall, the principal business office of the survey and most survey personnel are located in Morrill Hall. Here, also, the survey maintains a publication sales service, including the sale of topographic maps published by the U.S. Geological Survey; this is a service used extensively by the academic community and the general public. The University Library is a repository for the many valuable American and worldwide publications received through the bureau's publication exchange program.

The survey has been housed at the university since it was originally established in 1919 under the name Idaho Bureau of Mines and Geology. Its name was changed to the Idaho Geological Survey by an act of the legislature in 1984.

Idaho Mining Research Bureau

Robert W. Bartlett, Director (206 Mines Bldg.).

Staff members of the Idaho Mining Research Bureau conduct applied mining research and perform specialized teaching in both undergraduate and graduate courses in the College of

Mines and Earth Resources. Industry problems that require special capabilities and interdisciplinary study not usually available in most industrial organizations are referred to this bureau for investigation. Facilities, such as detailed ventilation and environmental laboratories, are provided for special research projects; these later become available for graduate student research and for teaching. Funds and projects are derived from government and private sources that wish to promote work on specific problems. Where appropriate, this research is coordinated with the mission and objectives of individual departments in the college and the Idaho Mining and Minerals Resources Research Institute.

Idaho Mining and Minerals Resources Research Institute

George A. Williams, Director (206 Mines Bldg.).

The institute was established in August 1977 under title III of Public Law 95-87, which provides for an annual appropriation by the secretary of the interior via the U.S. Office of Surface Mining to assist the various states in maintaining minerals resource research centers. These centers are usually located at land-grant institutions that have schools of mines.

As a division under the university, the Idaho Mining and Minerals Resources Research Institute (IMMRRI) has its headquarters in the office of the dean of the College of Mines and Earth Resources. The institute has a teaching research, and service mission aimed at the solution of a variety of mineral-related problems affecting the state and the nation today and in the future. Its aim is to work cooperatively with the Rocky Mountain Minerals Consortium and with federal, state, and other agencies particularly in Idaho, Oregon, and Washington.

The work of IMMRRI often involves problems that are too complex to be solved by one person; a team approach is taken that combines the knowledge and skills of specialists from several disciplines including metallurgy, mining engineering, geology, geophysics, hydrology, and minerals geography, and involves consulting scientists and engineers from other disciplines. The scientific data and information derived by the institute will lead to the recovery and use of diverse and valuable mineral resources of the state of Idaho and the nation.

Glaciological and Arctic Sciences Institute

Maynard M. Miller, Director (206 Mines Bldg.); George A. Williams, Student Participant Coordinator.

The institute was established at the university in 1975 by the board of regents to promote field involvement learning and research participation of undergraduate and graduate students. Both formal and directed study field courses are given on the Juneau Icefield on the Alaska-B.C.-Yukon border, operating out of a series of field stations provided by the Foundation for Glacier and Environmental Research at the Pacific Science Center, Seattle, Washington. The academic program is cooperative with the University of Alaska-Juneau. The field training is interdisciplinary in nature and involves field and exploration geology, exploration geophysics, Pleistocene stragigraphy, remote sensing, and allied areas of the atmospheric sciences and survey and mapping. The summer session runs for eight consecutive weeks during July and August. Opportunities for graduate thesis work are available with a faculty/student ratio of one to one.

Teacher Education Program

Students in the College of Mines and Earth Resources who are preparing for secondary-school teaching should consult the College of Education section in this part 4.

General Requirements and Undergraduate Curricula

University Requirements. See regulation J in part 3 for the all-university requirements for graduation.

Electives. A list of acceptable electives may be consulted in the office of each head of department and adviser in the college Electives must be approved by the head of department or the adviser involved.

Major Curricula. As specified in part 5, the programs of study in this college require from 128 to 136 credits. The curricula include the departmental and general requirements as set forth above.

University Honors Program

Marvin Henberg, Director (102 Psych. Bldg.).

The University Honors Program is open to students from all undergraduate colleges and majors. A majority of students will be able to participate in the program without adding to the total number of credits for graduation. For the most part, students admitted to the University Honors Program simply substitute honors credits for credits already required of them.

The program director acts as a supplemental academic adviser to all students qualifying for honors study. Honors students can anticipate a more challenging general education experience than would otherwise be available to them. Most honors classes are small, and honors students thus profit from close intellectual contact with their instructors and fellow students. Honors students are expected to write more, think more, and discuss more than their counterparts in nonhonors courses. An attractive Honors Center facility is available for use on both a formal and an informal basis.

Eligibility

On the basis of their high school record and standardized test scores (ACT or SAT), qualified incoming freshmen are invited to participate in the program. Admission is competitive and limited to approximately 50 active students per undergraduate class. students who do not qualify for admission as incoming freshmen may apply for admission on the basis of demonstrated superior performance at UI. Transfer students are considered for admission on a case-by-case basis; students who have attained junior standing or above are not eligible.

General Requirements

All honors students work toward completing a minimum of 30 credits in honors courses. They must further satisfy distribution requirements among specific subjects. Full information on distribution requirements is available from the office of the program director.

Honors Certificate

The Honors Certificate is awarded to all students who (1) complete the prescribed 30 credits in honors courses, (2) satisfy all other university and departmental requirements for graduation, and (3) achieve a minimum GPA for all honors credits taken. For a certificate "with honors," the minimum GPA in honors credits is 3.3; for a certificate "with distinguished honors," the minimum is 3.7. It should be emphasized that this GPA requirement is distinct from the cumulative GPA requirements for graduation *cum laude, magna cum laude,* or *summa cum laude.* Only students participating in the University Honors Program qualify for the Honors Certificate, and only credits taken in the

program count toward the certificate. Students in the program will have all honors credits indicated as such on their permanent transcripts.

Academic Major

Students participating in the University Honors Program must satisfy all requirements for their respective majors. Because a prime emphasis of the program is to provide intensive and broad exposure to a variety of academic fields, students can expect that the majority of honors courses will not count directly toward their majors. Students can, however, expect that in most cases honors courses will satisfy the various categories in UI's general education requirements.

Suggestion to Prospective Students

Most prospective honors students are contacted during their senior year in high school and invited to apply to the program. Nevertheless, it is always possible that highly qualified students, especially those who apply to the university late in the academic year, will be overlooked. Any student who is interested in honors study and who thinks he or she would qualify for admission is urged to write the program director.

Cooperative Programs

The university participates in a number of cooperative arrangements in the state and region to extend resources and take advantage of special facilities.

Washington State University

Located only eight miles apart, the University of Idaho and Washington State University, in order to take advantage of unique strengths of each institution, have for some time operated a cooperative graduate and undergraduate course program. Courses available on either campus are identified in departmental listings, and offerings are listed in the Time Schedule. In addition, the two schools cooperate in programs in medicine, veterinary medicine, and food science and technology.

Medical Education (WAMI Program)

Michael B. Laskowski, Director, Idaho WAMI Medical Education Program (301 Student Health Serv.).

In the WAMI Medical Education Program, offered by the University of Washington School of Medicine (UWSM) and selected universities and communities in Washington, Alaska, Montana, and Idaho (WAMI), medical students from Idaho (special residency requirements apply) receive the first year of their medical training at the University of Idaho. Students attend classes at the University of Idaho and Washington State University, thus benefiting from a large group of instructors and varied selection of elective courses; laboratories and other facilities for individual work are available at both institutions. First-year students also have the opportunity to work with local physician-preceptors. After completing the second year of the basic curriculum at the UWSM, the student continues in a program of clinical pathway electives during the third and fourth years that may be taken entirely at the UWSM or that may include participation in any of 23 UWSM WAMI community clinics in the four participating states. Six-week clerkships in these community clinics under the auspices of the UWSM, supervised by local physicians at the office and in the hospital, offer the student a realilstic approach to the problems of medical practice.

Veterinary Medical Education (WOI)

Robert B. Wilson, Director, WOI Regional Program in Veterinary Medical Education (22 Veterinary Science Bldg.).

The University of Idaho cooperatives with Washington State University and Oregon State University in a program of veterinary medical education, research, and service. In the WOI program, students from Idaho take the first three years of professional training in veterinary medicine at Washington State University; faculty members from UI and WSU offer instruction in the professional and academic curricula. In the fourth year of the program, students may elect to receive part of their clinical training at a veterinary medical facility at Caldwell, Idaho, where they can specialize in preventive food-animal medicine. Cooperative graduate programs leading to M.S. and Ph.D. degrees are also available. Idaho students seeking to enter the professional program must complete a Washington State University Uniform Undergraduate Application Form as well as a WOI Program application. Both may be obtained from and returned to the Office of Student Services, College of Veterinary Medicine, Washington State University, Pullman, Washington 99164. In addition, Idaho applicants must secure certification of Idaho residency status by completing and submitting the appropriate residency certification forms available through the University of Idaho Admissions Office.

Idaho Falls Center for Higher Education

In cooperation with other universities in the state and region, with the U.S. Department of Energy, and with others, the University of Idaho administers graduate and undergraduate programs at the University of Idaho/Idaho Falls Center for Higher Education. For more information, see "Special Programs" further on in this part 4 of the catalog.

AWU Program

The university is a member of Associated Western Universities, which is a cooperative venture of certain institutions to make use of national laboratories located in the west. Financial support is available from the U.S. Department of Energy for graduate students and faculty to spend periods of time, up to one year, pursuing research projects at a number of these laboratories.

Interuniversity Program in Public Administration

Florence A. Heffron, Department of Political Science and Public Affairs Research (201A Admin. Bldg.).

The University of Idaho, with Idaho State University and Boise State University, offers a cooperative graduate program leading to the M.P.A. degree to provide present and prospective public administrators with a professional education and to prepare them to understand and adjust to a changing and challenging environment. Courses in core areas and in optional areas of emphasis, such as general public administration, natural resources administration, public works administration, and public finance, management, and budgeting, may be taken at any of the participating institutions without restriction. For further information, consult the Department of Political Science and Public Affairs Research.

College of Graduate Studies

Jean'ne M. Shreeve, Dean (112 Morrill Hall); Roger P. Wallins, Assistant Dean.

The College of Graduate Studies was formally organized in 1925, but the university has offered advanced degrees for more than 90 years, awarding the first master's degree in 1897. The Graduate College encompasses all divisions of the university, but does not supervise programs in the College of Law. This coverage of all regular disciplines and professional fields provides a wide variety

of academic programs. Enrollments are large enough to make possible the vital interchange of ideas among students and between students and faculty that is necessary for graduate programs, and yet enrollments are sufficiently small to permit close faculty-student relationships. Interdepartmental cooperation is an important factor on the Idaho campus. The university is the chief research center for the state and as such operates active graduate programs in most areas providing a broad research base upon which graduate programs have been built.

Degree programs are offered in 67 areas for master's degrees, 6 for professional degrees, and 21 for doctoral degrees. Specific degree offerings are listed in the Graduate Bulletin, which also provides detailed information about the Graduate College, appointments, financial aid, library, research facilities, and procedures.

Undergraduate Enrollment in Graduate Studies (Partial Enrollment).

A senior who must complete no more than 12 credits to earn a baccalaureate degree and who has a cumulative grade point average of 2.80 or higher may apply for partial enrollment in the Graduate College. Seniors desiring partial enrollment must submit to the Graduate College a "Partial Enrollment Application" form that contains a registration plan designating undergraduate and graduate courses. Capable students who are in their last year and who receive departmental approval for such enrollment can thus begin limited graduate work at an earlier date than would otherwise be possible. Partial enrollment does not admit or guarantee subsequent admission of such students to the Graduate College. Students who have been granted partial enrollment and who later wish to be admitted to the Graduate College for work on a degree must apply for admission to the Graduate College following usual procedures.

Seniors in 500s Courses

A senior may enroll in one 500s course a semester provided that the student has (1) a cumulative grade point average of 2.80 or higher; (2) obtained the written approval of the instructor of the course, his or her adviser, and the dean of the Graduate College, and (3) filed a "Senior in 500s Course" form with the Graduate College. Failure to file the form with all requisite approvals, including that of the graduate dean, before enrollment in the course will constitute a registration error, and no such registration is complete until the form has been accepted by the Graduate College. Credits earned under this regulation are recorded on the student's undergraduate record.

Continuing Education

Continuing Education Programs

Continuing education programs at UI are divided into several classifications, each separately administered: credit courses, correspondence study, video outreach, noncredit classes, and workshops, shortcourses, and conferences. Each college is responsible for the development of continuing education programs based on the needs that are identified.

Credit Courses. These courses offer University of Idaho credit and are available throughout the state within the limitations indicated above. Usually a minimum of 13 students is required to offer a course, and more may be needed if instructor travel is required. In northern Idaho, courses are more commonly taught by members of the resident faculty commuting from the Moscow campus. In locations distant from the home campus, local instructors who are fully qualified may be employed subject to approval of the respective college in which the course is offered.

Generally, no single catalog of continuing education courses is available before the beginning of a semester. Instead, it is simply noted that nearly any course in the university catalog may be offered provided that an adequate number of students, a qualified instructor, and appropriate facilities are available. The schedule of courses in any geographic area is developed near the beginning of each semester and summer session. Each college is responsible for identifying and developing the courses needed, registration of students, and the administration of these programs. Individuals interested in taking courses for credit should directly contact the respective college to determine the courses available in their geographic area.

Admission procedures for enrolling in continuing education courses are streamlined. Generally, it is possible to register for a course at the time of the initial class session. In some cases to guarantee in advance the offering of a course, advance registrations may be requested. Standards for admission to these courses are usually the same as for admission to credit courses on campus. Students in residence must have approval of their college before enrolling in additional credit courses.

Correspondence Study. Many UI courses are also offered through correspondence study. Each course parallels its campus counterpart in content and credits and may be started at any time, with one year allowed for completion. Most institutions limit the amount of correspondence study applicable toward a degree. For UI limitations, see regulation J-5 in part 3. A student currently enrolled at an institution of higher learning should receive permission from his or her dean before registering for a correspondence study course. Correspondence grades are not computed in the student's grade point average at UI.

For a bulletin that contains further information on procedures, registration blanks, and a complete listing of college, high school, and noncredit courses, write or call the Correspondence Study Office (telephone 885-6641).

Video Outreach Program. The Video Outreach Program delivers course work by videotape leading to master's degrees in electrical engineering, mechanical engineering, and computer science. Many other courses in mathematics, statistics, civil engineering, agricultural mechanization, engineering science, business, and physics are also available as well as a few noncredit shortcourses.

Lectures for regular on-campus classes are videotaped in special studio classrooms. Copies of these tapes and the related instructors' handout materials are sent to students or to industrial sites once a week. A choice of ½-inch VHS or ¾-inch U-matic color format is available.

For further information, write or call the Engineering Video Outreach Program, University of Idaho, Moscow, Idaho 83843 (208/885-6373).

Noncredit. The Conferences and Enrichment Program office (CEP) develops and administers the noncredit courses for the UI campus, Moscow, and the surrounding communities. During the fall, spring, and summer terms, over 100 classes are offered to the community with total enrollments each year of approximately 4,000 participants. The program consists of classes in art, music, leisure skills, spoken languages, physical activities, and career improvement. Programs are developed with consideration given to the needs and desires of the general public, as well as to the economic times. Each class and instructor is independent in content, teaching style, duration, and fees; however, all have the common bond of extending the opportunities and resources of UI to the surrounding area. These evening and late afternoon classes are scheduled to complement the average daytime work schedule.

Conferences, Workshops, and Shortcourses. These offerings usually originate in the academic departments. University personnel develop the substantive parts of the workshop on a higher

education level, and CEP arranges all logistics and handles all details throughout the course. The length of the programs, the format of the conference or seminar/workshop, and the fees charged the participants vary greatly and are determined by the departments or groups sponsoring the event. Some workshops continue for three weeks while other professional conferences convene for one day only. Continuing education units (CEU's) may be available for conferences, workshops, and short courses. For information about CEU's, contact the department or college sponsoring the activity.

CEP is able to assist UI faculty with workshops or professional conferences by (1) making all logistical arrangements and reservations, (2) handling the bills and incoming fees, (3) preparing materials for participants, (4) registering participants at the opening of the event, and (5) presenting a complete financial statement to the department or sponsor.

There is no overhead charge for the services of CEP. Any surplus money after the bills are paid is returned to the department and/or the sponsor of the event. If the program is unable to cover the costs, the department and/or sponsor is expected to reimburse CEP.

Elderhostel. Each summer UI offers one Elderhostel week in Moscow, one week in the forestry facility at Clark Fork, Idaho, and another week in the forestry facility at McCall, Idaho, where Elderhostelers combine educational classes and recreation. Inspired by youth hostels and folk schools of Europe and guided by the needs of older citizens for intellectual stimulation and physical adventure, Elderhostel is for elder citizens on the move — not just in terms of travel, but in the sense of reaching out to new experiences. Elderhostel is based on the belief that retirement does not have to mean withdrawal, but rather that one's later years are an opportunity to enjoy new experiences.

Elderhostel programs are available at 1,000 colleges, universities, independent schools, and other educational institutions in the U.S. and abroad. Those 60 and over are eligible for this program, which costs approximately $225 per week for classes, room, board, field trips, and entertainment.

For a catalog of schools and classes, write: Elderhostel, 80 Boylston Street, Suite 400, Boston, MA 02116. For more information about UI Elderhostel, call the Conferences and Enrichment office (208/885-6486).

Resident Instructional Centers

Boise Center for Higher Education

Roger L. Reynoldson, Director, UI/Boise Center for Higher Education (401 Broadway, Boise, Idaho 83702-7644).

The University of Idaho Boise Center was established to serve certification and graduate program needs for persons involved in elementary, secondary, and higher education within Boise and the adjacent areas. Certification programs are available in vocational teacher education, educational administration, and special education administration. A baccalaureate degree may also be earned in vocational teacher education.

Graduate programs in education include the master's and doctorate with an emphasis in vocational teacher education, educational administration, and adult education. Sixth year professional programs may be completed in educational administration, special education, and vocational teacher education.

The Boise Center serves as an outreach site for the Video Outreach engineering program. Upper-division courses are offered for students pursuing a baccalaureate degree in engineering. Persons interested in master's level engineering courses may enroll in the Video Outreach program.

College of Agriculture communication specialists, an agriculture education supervisor, and a professional staff development program for school administrators, Project LEAD, are also housed in the Boise Center.

Coeur d'Alene Center for Higher Education

Jack Dawson, Director, University of Idaho/Coeur d'Alene Center for Higher Education (800 W. Garden Ave., Coeur d'Alene, Idaho 83814).

The University of Idaho/Coeur d'Alene Center started in 1963 with one course from the College of Education. The number of courses and programs offered through the center continued to expand, and in 1980 a full-time director was appointed and a new location developed.

Today this center is located on the campus of North Idaho College, 85 miles north of Moscow. The shores of beautiful Lake Coeur d'Alene are a mere three-minute walk away. North Idaho College students receive advice on transferring to UI, as do many Coeur d'Alene area residents who take advantage of pursuing a degree while still at home. Recently the Coeur d'Alene Center, in an effort to provide services to the more northern reaches of the state, has been offering teacher certification classes in Sandpoint, Idaho. Also available to North Idaho students are graduate degree programs in education, educational administration, counseling and human services, vocational teacher and adult education, business administration, and sport and recreation management. An undergraduate elementary education program is being offered in conjunction with North Idaho College, as are teacher certification programs in both elementary and secondary areas.

The Coeur d'Alene Center is also an off-campus location for the Video Outreach Program. With a microcomputer laboratory linked to UI, students have access to many on-campus services.

The center offers over 100 courses and enrolls approximately 1,800 students each academic year including an eight-week summer session.

Idaho Falls Center for Higher Education

Fred H. Tingey, Director, UI/Idaho Falls Center for Higher Education (P.O. Box 778, Idaho Falls, Idaho 83401).

The University of Idaho/Idaho Falls Center for Higher Education, which began evolving in the early 1950s in support of the atomic energy operation at the Idaho National Engineering Laboratory, has developed into a general education center administered by the University of Idaho. Supported in part by funds provided by the U.S. Department of Energy, the center provides undergraduate and graduate education to INEL professionals and to the general public in the Idaho Falls area. The program is administered by a resident director who reports to the vice president for academic affairs and research. Through the center students holding undergraduate degrees may earn UI master's degrees in engineering and the engineering sciences. Also through the center, Ph.D. degrees in electrical, mechanical, civil, chemical, and metallurgical engineering, physics, and chemistry may be obtained.

In addition to the graduate degrees, students may earn bachelor's degrees in technology, computer sciences, applied math, and general studies. Certificates of General Proficiency are also offered in many different areas. These certificates recognize the successful completion of approximately 30 semester credits in a particular discipline. The center offers 60 courses and enrolls approximately 750 students each semester.

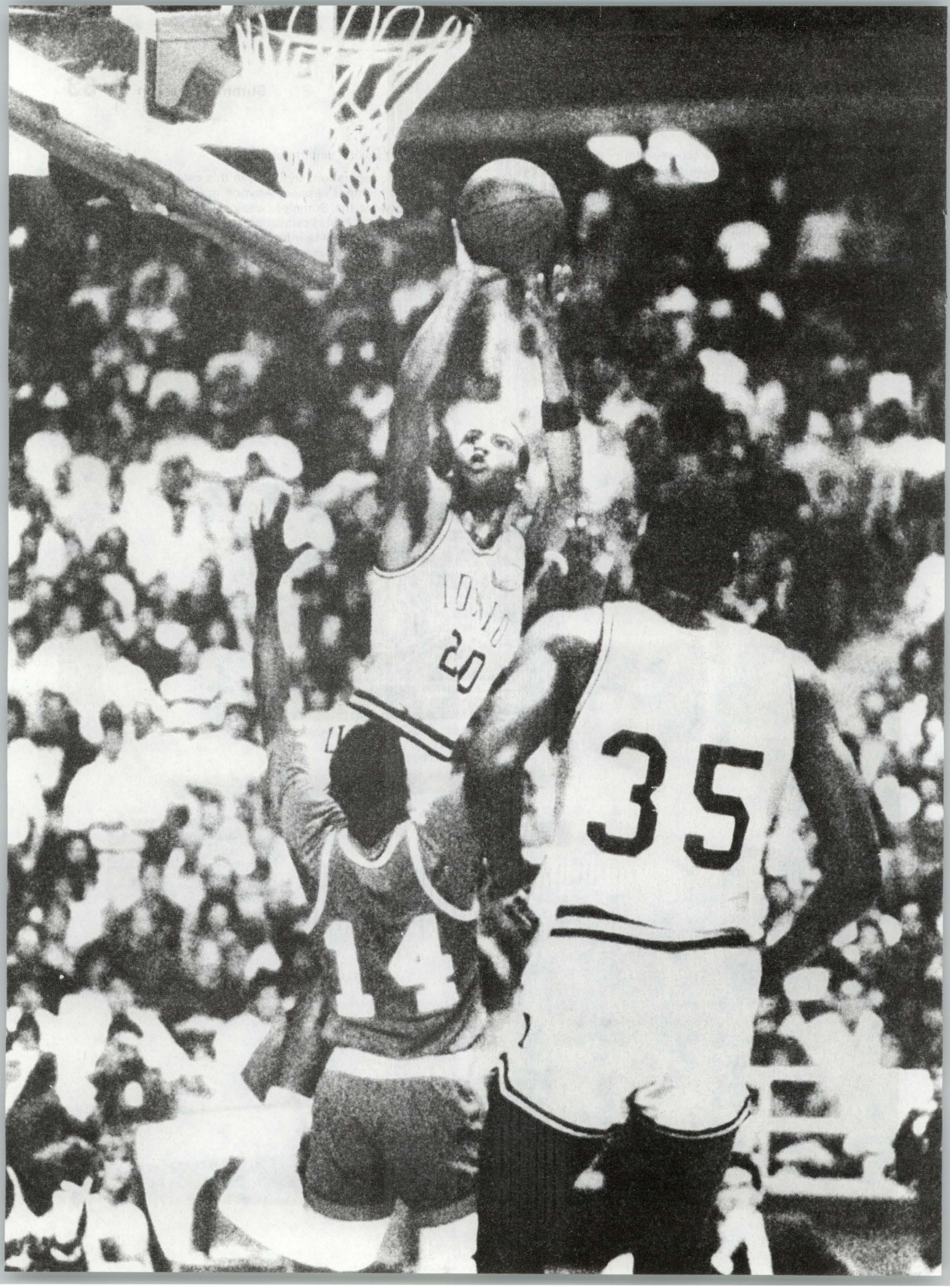
Summer Session

Sid Eder, Director of Summer Session (507 Education Bldg.).

A fourteen-week summer session begins about the third week in May. The flexible summer schedule includes a three-week early

session, two four-week terms, a six-week term, an eight-week term, and a three-week post-session. During any of the terms, many courses are accelerated into one-, two-, or three-week concentrated sessions. Many recreational and cultural activities are scheduled through the Summer Recreation Office, as well as programs presented through the Hampton School of Music and the Department of Theatre Arts. Special pre-college programs for elementary, junior, and senior high school students are also available in several departments.

Academic regulations included in this catalog are applicable during the summer session. Anyone interested in enrolling is invited to write the Summer Session Office for a copy of the summer bulletin that is published each year in March. The bulletin contains complete information needed to register for the summer session. For more information, call (208) 885-6237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Course Numbering System and Key to Abbreviations and Symbols

Departments and programs in this section are listed in alphabetical order. Courses are listed by subject field with the departments and programs in which they are offered. For example, under the Division of Teacher Education, the following groups appear: education and library science.

Numbering System

Courses numbered 010-099 are remedial-level courses carrying no credit; those numbered 100-299 are lower-division courses primarily for undergraduates; 300-499 are upper-division courses primarily for advanced undergraduates, fifth-year students, and graduates; courses numbered 500-600 are intended for and are restricted to students enrolled in the Graduate College (see regulation B-8 in part 3 for the exception to this rule); courses numbered 800-999 are intended for and are restricted to students enrolled in the College of Law.

Letter Designations with Numbers

Certain course numbers also include letters preceding the arabic number — R101, C100, etc.:

C; (C) — when included as part of the course number, offered by correspondence study only; when shown in parentheses following the number of credits, also offered by correspondence study.

H — offered only in University Honors Program.

ID — cooperative couse with Washington State University offered at the University of Idaho and available to WSU students.

J — courses conducted jointly, e.g., MusA J365/J565 (Chamber Ensemble) and Hist J441/J541 (Greek History), in which students' assignments and expected levels of performance reflect the levels for which they are enrolled.

LC — cooperative course with Lewis-Clark State College and available to University of Idaho students.

R — offered only at the UI/Idaho Falls Center for Higher Education.

WS — cooperative course with Washington State University offered at WSU and available to University of Idaho students. For complete description, consult the WSU catalog.

Subtitled Courses

An "s" in parentheses between the number and title of a course indicates that the course may be offered under the main title and/or with an appended subtitle, e.g., "Seminar" and/or "Seminar in the History of the Pacific Northwest." The specific area normally will be listed in the Time Schedule as a separate section of the main course.

Credit Designations

Immediately following each course title, the number of credits authorized is shown in parentheses. Typical designations are:

(3 cr) — three semester credits (for courses with more than one number, e.g., 101-102-103, the three credits apply to each number).

(1-3 cr) — one to three semester credits.

(3 cr; 2 cr) — three credits fall semester; two credits spring semester.

(1-3 cr, max 3) — one to three credits during any academic session and the course may be repeated until the maximum of three credits has been earned.

(3 cr, max 12) — three credits during any academic session and the course may be repeated until the maximum of twelve credits has been earned (for a course with more than one number, e.g., 301-302, the maximum is overall and applies to the combined numbers).

(cr arr) — credits to be arranged (may be repeated for credit without restriction as to maximum).

(1-3 cr, max arr) — one to three credits during any academic session, and the course may be repeated without restriction as to maximum.

Other Abbreviations

a/c — air conditioning
acctg — accounting
admin — administration(-tive)
adv — advanced
ag — agriculture(-al)
alt/yrs — offered in alternate years
analyt — analytical
anthro — anthropology(-ical)
appl — application(-s)
approx — approximate
arch — architecture(-al)
AV — audiovisual
bact — bacteriology
biochem — biochemistry(-ical)
biol — biology(-ical)
bldg(s) — building(s)
bot — botany(-ical)
bus — business
chem — chemistry(-ical)
civ — civilization(-s)
comm — communication
constr — construction
coreq — corequisite
cr — credit
dem — demonstration
dev — development(-s)
disc — discussion
div — division
econ — economic(-s)
ed — education(-al)
elec — electric(-al)
elem — elementary
engr — engineering
ent — entomology
equiv — equivalent
eval — evaluation
exam — examination
geog — geography(-ical)
geol — geology(-ical)
govt(s) — government(-s, -al)
GPA — grade-point average
grad — graduate
guid — guidance
hist — history(-ical)
hr — hour
ident — identification
incl — includes(-ing)
indiv — individual
info — information
interm — intermediate
interp — interpreting(-tation)
intro — introduction(-tory)
jr — junior
lab(s) — laboratory(-ies)

lec — lecture(-s)
lit — literature
math — mathematics(-ical)
max — maximum
mech — mechanical
met — metallurgy(-ical)
mgt — management
mgr — manager
perm — permission of instructor
perm of dept — permission of the department or subject-field chair
P/F — (graded) on the basis of pass or fail
phil — philosophy(-ical)
prep — preparation
prereq — prerequisite
prin — principles
prog — program(-s)
psych — psychology(-ical)
qual — qualitative
rec — recreation(-al)
reqd — required
rpt — report
sc — science(-s)
sem — semester
soc — sociology(-ical)
soph — sophomore
sr — senior
stat — statistics(-ical)
specs — specifications
tech — technical(niques)
vet med — veterinary medicine
voc — vocational
vocab — vocabulary
vo-tech — vocational-technical
wk — week
wrtg — writing
yr — year
zool — zoology

Department of Accounting

Jeffrey L. Harkins, Dept. Head (209-G Admin. Bldg.). Faculty: Robert W. Clark, Teresa P. Gordon, Jeffrey L. Harkins, Melvin G. Jolly, David S. Murphy, Michael R. Ruble, Vickie H. Ruble, Glen G. Utzman.

The objective of the accounting program is to prepare students to achieve their full potential in their professional careers. The program is designed to develop and enhance a student's critical thinking, judgment, and communication skills. Students are provided the opportunity to study in a full spectrum of accounting areas including financial and managerial accounting, information systems, the public sector and not-for-profit organizations, auditing, business law, and tax.

Because the demands on today's accounting professional require that individuals entering the field have a complete understanding of their professional, ethical, and social responsibilities, the program stresses the development of the individual's professional intellect, insight, and conduct. Each student will be challenged by a wide variety of teaching techniques — the traditional lecture and examination method, the case method, seminars, and directed study. The curriculum is organized to provide for the extensive use of comprehensive oral and written assignments, analytical practice sets, and the exercise of professional judgment and decision-making. Computer resources are fully integrated into the learning process, especially as a tool for analysis and problem-solving.

The curriculum is designed to accommodate students seeking careers in public accounting, industry, and the public sector. Students are required to complete a comprehensive 136-hour program of studies. The program provides for a minimum of 55 hours of course work in communications, mathematics, social sciences, humanities, and natural sciences; 36 hours of study in the common body of knowledge in business administration and economics; 35 hours of accounting and business law; and 10 hours of free electives.

No advanced degrees in accounting are offered at UI. An M.B.A. degree is offered that requires Acctg 520, Accounting for Managers and Investors. Acctg 395, Fundamentals of Accounting, is an accelerated course for those MBA students who have not previously taken Acctg 201-202, Principles of Accounting. A limited number of upper-division undergraduate accounting courses may be taken as M.B.A. elective courses.

Accounting Courses

NOTE: Enrollment in 300- and 400-level accounting courses is restricted to students who have completed at least 58 credits. Enrollment for CBE students is further restricted to include at least a 2.4 GPA in the CBE predictor courses.

Acctg 200 (s) **Seminar** (cr arr). Prereq: perm.

Acctg 201 Prin of Acctg (3 cr) (C). Description and derivation of the primary financial statements prepared by accounts; acctg rationale; reports to stockholders and other investors. May involve some evening exams.

Acctg 202 Managerial Acctg (3 cr) (C). Intro to cost behavior and managerial use of acctg information for planning, control, and performance evaluation. May involve some evening exams. Prereq: 201.

Acctg 203 (s) **Workshop** (cr arr). Prereq: perm.

Acctg 204 (s) **Special Topics** (cr arr).

Acctg 299 (s) **Directed Study** (cr arr). Indiv sections may be graded P/F. Prereq: perm.

Acctg 300 Acctg Concepts and Systems (3 cr) Carries no cr after 301. Foundations of acctg concepts and theories; conceptual framework of acctg; intro to acctg information systems; incl computer applications reinforced by practice cases; wordprocessing and spreadsheet software proficiency reqd. May involve some evening exams. Prereq: 201, 202; coreq: Bus 350.

Acctg 301 Financial Acctg and Reporting I (3 cr). Financial reporting issues related to assets, liabilities, and stockholders' equity; emphasis on general purpose financial statements for external users. May involve some evening exams. Prereq: 300.

Acctg 302 Financial Acctg and Reporting II (3 cr). Financial reporting issues on special areas incl leases, pensions, deferred taxes, earnings per share, changing prices, and acctg changes. May involve some evening exams. Prereq: 301.

Acctg 330 Acctg for Public Sector Organizations (3 cr). Conceptual and procedural issues involving acctg, reporting, and auditing public sector organizations incl state and local govts, universities, hospitals, and health and welfare organizations. May involve some evening exams. Prereq: 300.

Acctg 366 Commercial Law: Business Organizations (3 cr). Same as Bus 366. Law of agency, partnerships; and corporations. May involve some evening exams. Prereq: Bus 265 or perm.

Acctg 381 Financial and Admin Acctg (3 cr). Not open for cr to acctg majors. Mgt acctg concepts with emphasis on planning control and decision tech; topics incl budgeting, cost concepts, control systems. May involve some evening exams. Prereq: 202 and Bus 350.

Acctg 385 Cost and Mgt Acctg (3 cr). Accumulation of product and activity costs for various types of entities through use of mgt information system; appropriate use of cost data in decision making. May involve some evening exams. Prereq: 300; coreq: Bus 332.

Acctg 395 Fundamentals of Acctg (2-4 cr, max 4). Primarily for students in the M.B.A. program. Financial statements, limitation of data, partnership and corporate acctg. financial and cost analysis, and interp. May involve some evening exams. Prereq: perm.

Acctg 399 Acctg Internship Program (1-3 cr, max 3). Graded P/F. Provided career-relevant learning experience in actual work setting and expose employers to students. Prereq: accounting major and perm.

Acctg 400 (s) **Seminar** (cr arr). Prereq: perm.

401 Financial Acctg and Reporting III (3 cr). Acctg and reporting issues for complex organizations; consolidations, partnerships, foreign currency, and interim/segment reporting. May involve some evening exams. Prereq: 301.

Acctg 403 (s) **Workshop** (cr arr). Prereq: perm.

Acctg 404 (s) **Special Topics** (cr arr).

Acctg 405 Acctg Info Systems (3 cr). Acctg info systems as collector, effective control of orgs; system analysis, design, implementation, and eval as they relate to major transaction cycles; sales, purchases, production, payroll, cash receipts, and disbursements. May involve some evening exams. Prereq: 301 or 385 and Bus 350.

Acctg 466 Commercial Law: The Uniform Commercial Code (3 cr). Same as Bus 466. Law of sales, bailments, bulk sales, commercial paper, and security interests in personal property. May involve some evening exams. Prereq: 366 or perm.

Acctg 483 Federal and State Taxes I (3 cr). Income determination, deductions, accounting methods, sales of property, deferral of tax, taxation of the individual, tax research, with primary emphasis on tax planning; the case method is used. Prereq: 202 (366, 466, and senior standing recommended).

Acctg 484 Federal and State Taxes II (3 cr). Taxation of corporations and partnerships with emphasis on tax planning, tax research; the case method is used. Prereq: 202 (366, 466, 483, and senior standing recommended).

Acctg 485 Federal Gift and Estate Taxation and Personal Financial Planning (3 cr). Gift and estate tax consequences on property transfer during life and at death, tax research, and estate planning and personal financial planning. May involve some evening exams. Prereq: 483-484 or perm.

Acctg 486 Adv Cost and Mgt Acctg (3 cr). Special applications of mgt acctg techniques for mgt planning and conrol; current developments in mgt acctg. May involve some evening exams. Prereq: 385; coreq: Bus 370.

Acctg 491 Acctg Theory (3 cr). Acctg theory and contemporary issues in financial acctg. May involve some evening exams. Prereq: 301.

Acctg 493 Auditing Theory (3 cr). Concepts, standards, and methods in audit judgment formulation; independent auditor's role, legal responsibilities, and codes of ethical conduct. May involve some evening exams. Prereq: 301, 405.

Acctg 494 Auditing Procedures (3 cr). Application of auditing prin and standards in internal control eval, audit program dev, statistical sampling, EDP auditing and SEC Practice; exploration of important topical issues in acctg profession. May involve some evening exams. Prereq: 493.

Acctg 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Acctg 499 (s) **Directed Study** (cr arr). Indiv sections may be graded P/F. Prereq: perm.

Acctg 501 (s) **Seminar** (cr arr). Prereq: perm.

Acctg 502 (s) **Directed Study** (cr arr). Indiv sections may be graded P/F. Prereq: perm.

Acctg 504 (s) **Special Topics** (cr arr).

Acctg 520 Acctg for Managers and Investors (3 cr). Dev of skills in use of acctg info to enhance mgt and/or investment decision-making; survey of fundamentals of financial and managerial acctg issues, procedures, and practices. Prereq: 395 or equiv.

Acctg 586 Costs: Relevance, Measurement, and Appl (3 cr). Dev of cost control. Prereq: perm.

Curricular Requirements

ACCOUNTING (B.S. Bus.)

This curriculum is designed to provide a broad range of accounting-oriented career opportunities and includes a well-defined body of knowledge and rigorous, comprehensive examinations to test such knowledge. Due to the magnitude of knowledge required, most accounting students will need more than eight semesters to obtain their undergraduate degree. Accounting students may want to consider the Accounting Internship Program that enables students to gain practical experience. Normally these internships involve three to six months away from the campus. Accounting professors are available as advisers to tailor the curriculum and the Internship Program to meet the needs of individual students.

Required course work includes the university requirements (see regulation J-3), the general requirements for graduation from the College of Business and Economics (see part 4), and:

Course	Credits
Acctg 300 Accounting Concepts & Systems	3
Acctg 301 Financial Accounting & Reporting I	3
Acctg 330 Acctg for Public Sector Organizations	3
Acctg 366 Commercial Law: Business Organizations	3
Acctg 385 Costs & Mgt Accounting	3
Acctg 405 Accounting Information Systems	3
Acctg 483 Federal & State Taxes	3
Acctg 493 Auditing Theory	3
Upper-division accounting electives	11

The minimum number of credits for the degree is 136.

Aerospace Studies

Gary L. Thompson, Head (Student Union Annex). Faculty: Derek S. Antonelli, George H. Bentley, James C. Hatfield, Gary L. Thompson, Thomas J. Whitacre.

The Air Force Officer Education Program (OEP) offers to eligible students education and training that leads to a commission as a second lieutenant in the U.S. Air Force. Air Force OEP students may major in any degree program offered at UI; they supplement their major curricula with the specialized aerospace studies courses to prepare for active commissioned service.

Four-Year Program (General Military Course and Professional Officer Course). A formal application is not required for students entering the four-year program. They may register for the program at the same time and in the same manner as they enroll in their other college courses. During their freshman and sophomore years, students enroll in the General Military Course (GMC), and there is NO MILITARY OBLIGATION. They then may compete for entry into the Professional Officer Course (POC), which is normally taken during the last two years of college. Selection into the POC is highly competitive and is based on qualification on an Air Force medical examination, scores achieved on the Scholastic Aptitude Test (SAT) or American College Test (ACT), scores achieved on the Air Force Officer Qualifying Test (AFOQT), successful completion of a paid four-week field training course at an Air Force base, and the recommendation of the professor of aerospace studies.

Two-Year Program (Professional Officer Course). The two-year program consists of the Professional Officer Course (POC), the last two years of the four-year program. It is designed to provide greater flexibility to meet the needs of the students desiring Air Force opportunities. The basic requirement is that applicants have two academic years remaining at either the undergraduate or graduate level, or a combination of both.

After being nominated by the professor of aerospace studies, applicants seeking enrollment in the two-year program are evaluated on scores achieved on the SAT or ACT, scores achieved on the AFOQT, the Air Force medical examination, and a personal interview. Because the processing procedure must be completed approximately six months in advance of intended enrollment, interested students should apply early in the fall preceding the fall term in which they plan to enter the program. Application should be made in writing or by a personal visit to the professor of aerospace studies, Room 109, Continuing Education Building. After successfully completing a paid six-week field training course at an Air Force base during the summer, applicants meeting all requirements may then enroll in the Professional Officer Course.

Air Force OEP also offers financial assistance to selected students in the form of scholarships and subsistence allowances. The students compete for the scholarships through a national screening process. The Air Force offers 3½-, 3-, 2½-, and 2-year scholarships that cover student fees and the cost of required labs, include a textbook allowance, and provide a $100-a-month subsistence allowance for each school year a student is on scholarship. Students interested in applying for scholarships should get in touch with this department. Nonscholarship students receive the $100-a-month subsistence allowance during their last two years in the program.

Field Training. Air Force OEP field training is offered during the summer months at selected Air Force bases throughout the U.S. Students in the four-year program participate in four weeks of field training, usually between their sophomore and junior years. Students applying for entry into the two-year program must successfully complete six weeks of field training before enrollment in the Professional Officer Course. The major areas of study in the four-week field training program include junior officer training, aircraft and aircrew orientation, career orientation, survival training, base functions and Air Force environment, and physical training. The major areas of study included in the six-week field training program are essentially the same as those conducted at four-week field training and in the General Military Course including Leadership Laboratory.

Leadership Laboratory. Leadership Laboratory is taken an average of one hour a week throughout the student's enrollment in Air Force OEP. Instruction is conducted within the framework of an organized cadet corps with a progression of experiences

designed to develop each student's leadership potential. Leadership Laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities in the Air Force, and the life and work of an Air Force junior officer. Students develop their leadership potential in a practical, supervised laboratory, which typically includes field trips to Air Force installations throughout the U.S.

Aerospace Studies Courses

Aero 101-102 U.S. Aerospace Forces (2 cr). Aero 101: structure and capabilities of the U.S. aerospace strategic and defensive air forces; relationship of the indiv to the Air Force. Aero 102: structure and capabilities of the U.S. aerospace general purpose and support forces; responsibilities and opportunities of the Air Force officer. One lec and 2 hrs of lab a wk.

Aero 201-202 Evolution of Aerospace Power (2 cr). Aero 201: growth and dev of airpower doctrine and concepts from the origins of manned flight through WWII. Aero 202; dev of airpower doctrine and concepts from the Berlin Airlift to today; peaceful employment of airpower as a force for stability. One lec and 2 hrs of lab a wk. Prereq: perm of dept.

Aero 291 Four-Week Field Training Course (2 cr). Successful completion of this unit meets the prereq for the Professional Officer Course. Four weeks of orientation in military skills, career fields, military operations, and leadership training, conducted during the summer at an active Air Force installation. Reqd for AFROTC cadets before being commissioned. Graded P/F. Prereq: two yrs' college work and perm of dept.

Aero 292 Six-Week Field Training Course (6 cr). Cr. will not be allowed in Aero 292 and Aero 101-102-201-202-291. Application must be made at least six months before attendance date. Successful completion of this coure meets the prereq for the Professional Officer course. Six wks of academics and orientation in military skills, career fields, military operations, and leadership training, conducted during the summer at an active Air Force installation. Reqd for two-year AFROTC cadets before entering Aero 311. Graded P/F. Prereq: two yrs' college work and perm of dept.

Aero 311 Air Force Leadership (4 cr). Professional leadership and mgt. responsibilities, Air Force communications, and functions reqd of career Air Force officers. Three lec and 2 hrs of lab a wk. Prereq: 291 or 292, or perm of dept.

Aero 312 Air Force Management (4 cr). Mgt prin and functions pertaining to command and supervision. Three lec and 2 hrs of lab a wk.

Aero 411 The Professional Military Officer (4 cr). Military officership as a profession; role of national security forces in the U.S. civil-military interactions and relations. Three lec and 2 hrs of lab a wk.

Aero 412 National Security Forces in Contemporary American Society (4 cr). Defense strategy and conflict mgt; formulation and implementation of U.S. defense policy; intro to the military justice system. Three lec and 2 hrs of lab a wk; one 1-day field trip.

Aero 499 Directed Study (cr arr). Prereq: perm of dept.

Programs

The following programs are designed to provide students with a good military and leadership foundation so students completing them can serve as effective Air Force officers. They are not designed to be academic majors and thus no bachelor's degree is offered.

For a student to receive an Air Force commission, he or she must have completed either the Four-Year Program or the Two-Year Program. Prior-service students should consult the department to find out what course of study will be required for them. In addition to the courses in aerospace studies, students must take a course in mathematical reasoning. Scholarship students must take one semester of a foreign language.

Four-Year Program

Course	Credits
Aero 101-102 U.S. Aerospace Forces	4
Aero 201-202 Evolution of Aierospace Power	4
Aero 291 Four-Week Field Training Course	2
Aero 311 Air Force Leadership	4
Aero 312 Air Force Management	4
Aero 411 The Professional Military Officer	4
Aero 412 National Security Forces	4

Two-Year Program

Course	Credits
Aero 292 Six-Week Field Training Course	6
Aero 311 Air Force Leadership	4
Aero 312 Air Force Management	4
Aero 411 The Professional Military Officer	4
Aero 412 National Security Forces	4

Department of Agricultural and Extension Education

Louis E. Risenberg, Dept. Head (224 Morrill Hall). Faculty: Richard L. Ledington, John P. Mundt, Douglas A. Pals, Louis E. Reisenberg. Affiliate Faculty: Michael G. Rush.

Students in agricultural and extension education may pursue a diversified program to prepare for teaching vocational agriculture or being a county extension agent. Courses in animal science, agricultural economics, agricultural mechanics, plant science, and soil science will prepare them to teach these areas as vocational agriculture instructors and develop educational programs as county extension agents. This curriculum is approved by the State Board for Vocational Education. Graduates who have completed a minimum of 26 credits in agricultural education and who meet the state certification requirements for a standard secondary teaching certificate are qualified to teach vocational agriculture. In addition, government and agribusiness agencies that seek persons with training in agriculture and education provide employment opportunities for graduates of this curriculum. Courses provide students an opportunity to develop employment opportunities in teaching agriculture, cooperative extension, and agribusiness occupations.

The mission of the Department of Agricultural and Extension Education includes teaching, research, and service. The specific objectives of the department are: (1) to prepare educators for employment in teaching agriculture and extension programs; (2) to provide service and direction to FFA in Idaho; (3) to provide an opportunity for graduate study in the areas of agricultural and extension education; (4) to assist in providing inservice education for agricultural educators in Idaho; (5) to provide service to related agencies and organizations for the support of education and the development of human resources; (6) to conduct quality research in agricultural and extension education; (7) to assist in maintaining viable vocational agriculture programs; and (8) to assist in the development of necessary information and instructional materials for the support of agricultural educators and extension personnel.

The department provides opportunities for professional growth and development to agricultural educators through a planned program of graduate study. The pursuit of an M.S. degree allows for the development of problem-solving skills through scientific investigation of appropriate research topics. Graduate work in agricultural education is offered with the opportunity for students to elect options in agricultural sciences, extension education, vocational teacher education, or other areas that parallel their career goals. Because of the diversity of research efforts by departmental faculty members, a graduate student has a wide variety of specializations from which to choose a thesis topic. Students with this degree are well prepared to move into a job market or to pursue a Ph.D. program at another institution.

The department welcomes inquiries about its programs and suggests that anyone interested in possible pursuit of a degree in agricultural and extension education should contact the department head (telephone 208/885-6358).

Courses

AGRICULTURAL EDUCATION

AgEd 180 Intro to Ag Ed (1 cr). Overview of purposes and career opportunities in ag ed; role of voc ag instructor in secondary school systems. Accelerated; first quarter of fall semester.

AgEd 181 Intro to Extension Ed (1 cr). Overview of purpose and career opportunities available in extension ed profession; role of coop extension faculty; basic prin and practices of Cooperative Extension Service incl related legislation. Accelerated; second quarter of fall semester.

AgEd 200 (s) **Seminar** (cr arr). Prereq: perm.

AgEd 211 Ag Ed Skills (1 cr). Alt/yrs. Technical ag skills applicable to teaching ag.

AgEd 299 (s) **Directed Study** (cr arr). Prereq: perm.

AgEd 351 Prin of Voc Ed (2 cr) (C). See Voc Ed J351/J551.

AgEd 356 Experiential and Leadership Programs (1 cr). Prin and practices in planning, developing, conducting, supervising, and evaluating experiential and leadership programs for ag ed, home ec ed, and cooperative extension youth. Coreq: 358 or 359 or HEc 357.

AgEd 358 Supervising FFA and SOE Programs (2 cr). Role of voc ag instructor in supervising FFA and SOE programs. Coreq: 356.

AgEd 359 Developing 4-H Youth Programs (1 cr). Application of leadership and mgt prin to 4-H/youth program planning and dev; role of 4-H/youth agent and volunteer leader. Coreq: 356.

AgEd 400 (s) **Seminar** (cr arr). Prereq: perm.

AgEd J409/J509 Adult Ed Training and Dev in Ag and Home Ec (3 cr). Same as HEc J409/J509. Alt/yrs. Social and psych factors affecting adult motivation and learning, dev of leadership and group dynamics; nature, phil, and concepts of adult life-long learning related to voc ag and extension ed, inservice training and retraining in agribus; human resource dev in ag and home ec within federal and state agencies, bus, commerce, and industry. Cr earned in 509 by completion of in-depth paper on some aspect of adult ed. Prereq for 509: perm of dept.

AgEd J448/J548 Prin and Practices of Extension Ed (3 cr). Alt/yrs. Phil and prin, social and econ significance of extension ed in ag, home ec, and 4-H youth dev; exam of behavioral sc concepts in organization, dev, and mgt of extension programs. Cr earned in 548 by completion of in-depth paper on some aspect of extension ed. Prereq for 548: perm of dept.

AgEd 452 Methods of Teaching Voc Ag (3 cr). Procedures of ident and selecting instructional methods and materials, planning, and student eval criteria to effectively teach voc ag. Five lec and one 3-hr lab a wk for 8 wks.

AgEd 453 Prog Planning in Voc Ag (2 cr). Planning, organizing, and implementing voc ag progs; dev of annual course of study.

AgEd 454 Methods of Teaching Ag Mechanics (2 cr). Appl of efficient planning, organizing, and teaching ag mechanics and presentation of lessons. Three lec and one 3-yr lab a wk for 8 wks.

AgEd 459 Cooperative Extension Practicum (1-9 cr, max 9). Observation, participation, and supervised teaching exper with an extension agent in a selected county. Prereq: jr or sr standing and perm.

AgEd 460 Student Teaching in Voc Ag (9 cr). Nine weeks of supervised teaching in secondary voc ag prog.

AgEd 470 Proseminar in Ag Ed (1 cr). Issues and problems in ag ed.

AgEd 499 (s) **Directed Study** (cr arr). Prereq: perm.

AgEd 500 Master's Research and Thesis (cr arr).

AgEd 501 (s) **Seminar** (cr arr). Prereq: perm.

AgEd 502 (s) **Directed Study** (cr arr). Prereq: perm.

AgEd 503 (s) **Workshop** (cr arr). Prereq: perm.

AgEd 509 Adult Ed Training and Dev in Ag and Home Ec (3 cr). See J409/J509.

AgEd 548 Prin and Practices of Extension Ed (3 cr). See J448/J548.

AgEd 557 Problems in Teaching Voc Ag (1-3 cr, max 9). Methods and new dev. Prereq: perm.

AgEd 562 Instructional Methods in Ag Ed (3 cr). Innovations and advanced prin in teaching methods and materials.

AgEd 583 Program Eval and Planning in Ag and Extension Ed (3 cr). Alt/yrs. Criteria and procedures for eval of programs in ag and extension ed; selection and construction of eval devices; use of results in program planning and implementation.

AgEd 598 (s) **Internship** (cr arr). Prereq: perm.

AgEd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

AGRICULTURE (GENERAL)

PREREQUISITE: Enrollment in courses in this subject field requires perm of the department.

Ag 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm.

Ag 404 (s) **Special Topics** (cr arr).

Ag 499 (s) **Directed Study** (cr arr). Prereq: perm.

Ag 502 (s) **Directed Study** (cr arr). Prereq: perm.

Ag 503 (s) **Workshop** (cr arr). Prereq: perm.

Ag 510 Professional Problems (1-4 cr, max 4). Primarily for students in the nonthesis M.S. prog. Professional paper required.

Ag 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

AGRICULTURAL EDUCATION (B.S.Ag.Ed.)

This curriculum is approved by the State Board of Vocational Education for the preparation of high school vocational agriculture instructors. Graduates who have completed at least 26 credits in agricultural education, and who meet the state certification requirements for a Standard Secondary Teaching Certificate, are eligible to teach vocational agriculture in Idaho. In addition, government and business agencies and the Cooperative Extension Service that seek persons with training in agriculture and education provide employment opportunities for graduates of this curriculum.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
AgEd 180 Intro to Agricultural Education	1
AgEd 351 Principles of Vocational Ed	2
AgEd 356 Experiential & Leadership Programs	1
AgEd 358 Supervising FFA & SOE Programs	2
AgEd 409 Adult Ed Training & Development	3
AgEd 452 Methods of Teaching Voc Ag	3
AgEd 453 Program Planning in Voc Ag	2
AgEd 454 Methods of Teaching Ag Mechanics	2
AgEd 460 Student Teaching in Voc Ag	9
AgEd 470 Proseminar in Ag Ed	1
AgMech 101 Oxy-acetylene Welding	2
AgMech 107 Arc Welding	2
AgMech 201 Ag Building Construction	2
AgMech 202 Ag Shop Practices	2
AgMech 305 Ag Machinery & Equipment	3
AgMech 310 Small Engines	2
AgMech 312 Elec Power Applications	3
CommG 131 Fundamentals of Public Speaking	2
Ed 201 Intro to Teaching	2
Ed 415 Educational Psychology	3
Ed 440 Methods of Teaching Content Reading	3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg or 205 Adv Expository Writing	3
Math 140 Pre-calculus Algebra & Analytic Geom or 111 Finite Math	3-4
Ag electives, incl a minimum of 7 cr in ag econ, 6 cr in animal sc, 6 cr in plant sc, and 4 cr in soils	34
Chemistry electives	4
Life sciences electives (incl Biol 201)	8
Humanities and social sciences electives (incl Econ 152 and Psych 100)	14
Electives to total 132 cr for the degree	--

GENERAL AGRICULTURE (B.S.Gen.Ag.)

Designed for students interested in a broad education with emphasis on agriculture. The flexibility permitted enables students to get the education needed in a general farming operation and/or prepare to work as a generalist within extension settings. Students who have not decided on a major in agriculture may enroll in this curriculum and take courses in a number of departments to decide on a departmental major. Those who start in this curriculum should be informed of the requirements in other majors and plan course selections to avoid loss of time if they transfer to another major. **Note:** No student may become a candidate for the B.S.Gen.Ag. degree who has already earned a degree in the College of Agriculture or who is a candidate for another degree offered by the college.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Advanced writing electives	3
Ag electives (incl courses in at least four depts)	50
Biology (incl Biol 201, Intro to Life Sciences)	8
Chemistry electives	8
CommG 131 Fundamentals of Public Speaking	2
Electives in ag econ, business, and acctg	15
Mathematics electives	4
Humanities and social sciences electives	14
Electives to total 132 cr for the degree	--

Academic Minor Requirements

AGRICULTURAL EXTENSION EDUCATION MINOR

Course	Credits
AgEd 181 Intro to Extension Ed	1
AgEd 356 Experiential & Leadership Programs	1
AgEd 359 Developing 4-H Youth Programs	1

AgEd 409 Adult Ed Training & Development 3
AgEd 448 Prin & Practices of Extension Ed 3
AgEd 452 Methods of Teaching Voc Ag 3
AgEd 459 Cooperative Extension Practicum 9

Department of Agricultural Economics and Rural Sociology

Richard W. Schermerhorn, Dept. Head (39A Iddings Wing, Ag. Sc. Bldg.). Faculty: Ahmed A. Araji, John E. Carlson, Stephen C. Cooke, Richard D. Gibb, C. Wilson Gray, Joel R. Hamilton, James R. Jones, Bling-Hwan Lin, Roger B. Long, Larry D. Makus, Gerald E. Marousek, Neil L. Meyer, Edgar L. Michalson, Paul E. Patterson, Anthony A. Prato, Neil R. Rimbey, Corinne M. Rowe, Richard W. Schermerhorn, David J. Walker, Russell V. Withers.

Agricultural economics is an applied branch of economics. It is a social science that deals with economic problems in agriculture, the food industry, rural communities, and the use and conservation of our natural resources. Economic principles and theories are used to analyze and solve problems associated with allocating resources to obtain maximum efficiency in the production and marketing of agricultural commodities and in the use of natural resources in rural areas.

The agricultural economics program at UI prepares students to use economic and business concepts and analytical tools to solve problems faced by farmers and ranchers, agricultural marketing and supply companies, natural resource agencies, and rural communities. The department offers the degree of Bachelor of Science in Agricultural Economics with majors in agribusiness, agricultural economics, and natural resources and rural development. Areas of study within the majors include agricultural finance, agricultural policy, marketing, farm and resource management, rural community development, international trade and development and management of agribusiness firms.

The agribusiness major prepares students to be managers of farms, ranches, and agribusinesses involved with the production and marketing of farm commodities and farm production inputs. The agricultural economics major prepares students to become professional economists in marketing and supply firms and governmental agencies — many students pursue advanced degrees in this field before entering the profession. Students completing the natural resources and rural development major are prepared to enter private industry and governmental agencies that deal with economic analysis of natural resource use and rural development problems. The employment market for graduates of all three options has been growing and consistently is greater than the number of graduates annually.

The department also offers the degree of Master of Science with a major in agricultural economics. Because of the diversity of research efforts by departmental faculty, a graduate student has a wide variety of specializations from which to choose a thesis project. Students with this degree are well prepared to move into a job market or to continue to pursue a Ph.D. program at another institution.

The department welcomes inquiries about its program and suggests that anyone interested in possible pursuit of a degree in agricultural economics should get in touch with the department head (telephone 208/885-6262).

Agricultural Economic Courses

AgEc 101 Ag Economics and Agribusiness (3 cr). Appl of economic and business prin to ag industry; factors affecting production and marketing of ag products.

AgEc 278 Prin of Farm and Ranch Mgt (4 cr) (C). Decision making and profit maximization using econ prin, records, enterprise analysis, and comparison of alternative farming practices. Three lec and one 2-hr lab a wk. Prereq: 101 or Econ 152 or perm.

AgEc 289 Ag Markets and Prices (3 cr). Econ of ag markets and pricing institutions; analysis of supply, demand, elasticity, futures markets; effect on ag markets and prices. Prereq or coreq: Econ. 152.

AgEc 332 Econ of Ag Dev (3 cr). Problems associated with the econ of dev of major ag areas of the world. Prereq: prin of econ.

AgEc 356 Ag Programs and Policies (3 cr). Goals, methods, results of econ prog and policies in ag, incl role of govt and farm orgs. One 1-day field trip. Prereq: Econ 151, 152.

AgEc ID361 Farm and Natural Resource Appraisal (3 cr) Same as For 361. Methods; factors affecting the value of land and related resources; valuations for loans, sale, assessment, condemnation, and other purposes; procedures used by govt and commercial agencies. One 1-day field trip. Prereq: 278 or 383 or Bus 311 or perm.

AgEc 383 Econ for Natural Resource Managers (3 cr). See For 383.

AgEc 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

AgEc 391 Agribus Mgt (3 cr). Econ theory of bus; appl to mgt of ag processing and service firms; acctg, stat, and efficiency studies for problem-solving. Prereq: Econ 152 and 3 cr in acctg.

AgEc 404 (s) **Special Topics** (cr arr).

AgEc 414 Analyt Tech in Agribus and Econ (3 cr). Linear equations, linear programming, marginal analysis, and stat methods applied to problem solving in agribus and econ. Prereq: Econ 321 and Math 160 or equiv.

AgEc WS430 Financial Arrangements in Ag (3 cr). Prereq: Econ 152 and Acctg 201.

AgEc 451 Land and Natural Resource Econ (3 cr). Ag, forest, and mineral land use and classification; factors affecting land use; ownership, tenure, taxation, values, credit, and govt policies. Prereq: Econ 321.

AgEc 453 Ag Price Analysis (3 cr). Analyt tools for explaining and predicting price behavior of ag products; appl of econ and stat to price analysis. Prereq: 289 and Stat 251 or equiv.

AgEc 467 Econ of Rural Community Dev (3 cr). Econ theory, analyt methods, and lit relevant to study of dev of rural areas. Prereq: Econ 151, 152.

AgEc 477 Econ of Developing Countries (3 cr). See Econ 477.

AgEc 481 Ag Market Analysis (3 cr). Structure, competition, and econ performance of ag product and input markets. Prereq: Econ 321, 372, or perm.

AgEc 493 Ag Production Econ (3 cr). Econ theory related to ag production at the enterprise, firm and industry levels. Prereq: 278 and Econ 321.

AgEc 499 (s) **Directed Study** (cr arr). Prereq: perm.

AgEc 500 Master's Research and Thesis (cr arr).

AgEc 501 (s) **Seminar** (cr arr). Prereq: perm.

AgEc 502 (s) **Directed Study** (cr arr). Prereq: perm.

AgEc 507 Research Methodology (3 cr). Same as Econ, HEc, and Soc 507. Theoretical background of the scientific method applied to social science research; organization, procedures, reporting, and eval of research. Prereq: grad standing and perm.

AgEc 508 Problems in Production Econ Research (3 cr). Objectives and tech; appl of probability models and their eval employing a number of econometric tech. Prereq: 493 and Stat 401.

AgEc 509 Adv Microecon Theory I (3 cr). See Econ 509.

AgEc 510 Adv Microecon Theory II (3 cr). See Econ 510.

AgEc 522 Adv Aggregate Econ (3 cr). See Econ 522.

AgEc 524 Ag Trade and Dev (3 cr). Econ of international ag trade and dev, with emphasis on policy and research issues that arise from interaction of econ events in the world food economy. Prereq: Econ 474 or perm.

AgEc 525 Econometrics (3 cr). Same as Econ 525. Math formulation of theoretical econ models that serve as the basis for empirical investigations of econ behavior. Prereq: Econ 321 and 6 cr in stat.

AgEc 551 Econ of Natural Resource Dev (3 cr). Allocation of natural resources over time and among uses; welfare econ; project evaluation and benefit cost analysis; valuation of extramarket goods; problems for public policy. Prereq: 451 or equiv and Econ 509 or perm.

AgEc 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

The agricultural economics area has three programs designed to prepare students for professional careers in the agricultural economics profession. The agribusiness major is designed to prepare students for employment as managers, administrators, or for managerial-related positions in agribusiness. The agricultural economics major is designed to provide students with the theory behind decisions concerning agricultural production, marketing, resource use, pricing, and policy. The natural resource and rural development major is designed to provide understanding of the economics of pricing, public policy, and management of natural resources and community and human resources in rural society. Students in this major may elect courses in supporting fields for a focus in natural resource economics or in rural development economics.

CORE COURSES FOR B.S.AG.ECON

Course	Credits
AgEc 101 Economics & Agribusiness	3

AgEc 278 Prin of Farm & Ranch Mgt 4
AgEc 356 Ag Programs & Policies 3
Biol 100 Intro to Biol or Biol 201 Intro to Life Sc or
Bact 250 General Microbiology 4
Chem 103 Intro to Chem or 111 Prin of Chem 4
CommG 131 Fundamentals of Public Speaking 2
CS 100 Intro to Computer & Prog or CS 112 Intro to
Problem Solving & Programming 3
Econ 151, 152 Principles of Economics 6
Econ 321 Interm Microecon Analysis 3
Eng 317 Tech & Engr Report Wrtg 3
Stat 251 Principles of Statistics 3
Humanities and social sciences (at least 5 cr of each) 14

AGRICULTURAL ECONOMICS (B.S.Ag.Econ.)

Required course work includes the university requirements (see regulation J-3), the agricultural economics core, and:

Course	Credits
AgEc 289 Ag Markets & Prices	3
AgEc 453 Ag Price Analysis	3
AgEc 481 Ag Market Analysis	3
AgEc 493 Ag Production Economics	3
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Econ 372 Intermediate Macroecon Analysis	3
Math 160, 161 Survey of Calc I, II or Math 180, 190 Analy Geom & Calc I, II	7-8
Agricultural economics electives	3
Economics electives	6
College of Agriculture electives	12
Electives to total 132 cr for the degree	--

AGRIBUSINESS (B.S.Ag.Econ.)

Required course work includes the university requirements (see regulation J-3), the agricultural economics core, and:

Course	Credits
AgEc 289 Ag Markets & Prices	3
AgEc 391 Agribusiness Mgt	3
AgEc 414 Analytical Techniques in Agribusiness & Econ	3
Two of the following courses	6
AgEc 453 Ag Price Analysis	
AgEc 481 Ag Market Analysis	
AgEc 493 Ag Production Econ	
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Acctg 301 Financial Acctg & Reporting I or 381 Financial & Administrative Accounting or 385 Costs & Mgt Acctg	3
Bus 265 Legal Environment of Business	3
Bus 413 Human Relations in Business	3
One of the following	7-8
Math 160, 161 Survey of Calc I, II	
Math 180, 190 Analy Geom & Calc I, II	
Math 160 or 180 and an additional natural and applied science course from core list or dept life sc list	
Agricultural economics electives	3
Ag economics, econ, bus, or acctg electives	3
College of Agriculture electives	12
Electives to total 132 cr for the degree	--

NATURAL RESOURCES AND RURAL DEVELOPMENT (B.S.Ag.Econ.)

Required course work includes the university requirements (see regulation J-3), the agricultural economics core, and:

Course	Credits
AgEc 493 Ag Production Economics	3
Econ 372 Intermediate Macroecon Analysis	3
Econ 430 Regional/Urban Economics	3
Econ 485 Environmental Economics	3
Math 160, 161 Survey of Calc I, II or Math 180, 190 Analy Geom & Calc I, II	7-8
PolSc 276 American Local Government	3
Soc 310 Rural Sociology	3
Agricultural econ electives (select from AgEc 289, 332, 361, 414, 451, and 467)	9
Supporting field electives (see list in dept office)	18
Electives to total 132 cr for the degree	--

Academic Minor Requirements

AGRICULTURAL ECONOMICS MINOR

Course	Credits
AgEc 101 Ag Economics & Agribusiness	3
AgEc 278 Prin of Farm & Ranch Management	4
AgEc 289 Ag Markets & Prices	3
AgEc 332 Econ of Ag Dev or AgEc 356 Ag Programs & Policies	3
Two of the following courses	6
AgEc 453 Ag Price Analysis	
AgEc 481 Ag Market Analysis	
AgEc 493 Ag Production Econ	

AGRIBUSINESS MINOR

Course	Credits
AgEc 101 Ag Economics & Agribusiness	3
AgEc 278 Prin of Farm & Ranch Management	4
AgEc 289 Ag Markets & Prices	3
AgEc 414 Analyt Tech in Agribusiness & Econ or AgEc 453 Ag Price Analysis or AgEc 481 Ag Market Analysis	3
Two of the following courses	6
AgEc 356 Ag Programs & Policies	
AgEc 361 Farm & Natural Resource Appraisal	
AgEc 391 Agribusiness Mgt	

NATURAL RESOURCE ECONOMICS AND COMMUNITY DEVELOPMENT MINOR

Course	Credits
AgEc 101 Ag Economics & Agribusiness	3
AgEc 278 Prin of Farm & Ranch Management	4
AgEc 356 Ag Programs & Policies	3
AgEc 451 Land & Natural Resource Econ or AgEc 467 Econ of Rural Community Dev	3
Two of the following courses	6
AgEc 332 Econ of Ag Dev	
AgEc 361 Farm & Natural Resource Appraisal	
AgEc 383 Econ for Natural Resource Managers	

Department of Agricultural Engineering

John R. Busch, Dept. Head (326 Buchanan Engr. Lab.). Faculty: George L. Bloomsburg, Charles E. Brockway, John R. Busch, John E. Dixon, Edwin A, Dowdling, Delbert W. Fitzsimmons, James L. Halderson, Bradley A. King, Jack M. McHargue, Walter L. Moden, Myron P. Molnau, Charles L. Peterson, Larry G. Williams.

Agricultural engineering is the profession that bridges the area between two fields of applied science — engineering and agriculture. It is the engineering discipline oriented to the design of equipment and systems for the production, processing, and transportation of food, feed, natural raw fiber, and forest products and the efficient use of natural resources. Agricultural engineers have the education and interests that make them uniquely capable to develop engineering solutions for problems in agricultural and biological systems. They are involved in every phase of agriculture from the efficient use of natural resources to the production of plants and animals on farms and ranches to the final processing of food, feed, and fiber products.

In contrast to agricultural engineering, which emphasizes the design of systems and equipment, agricultural mechanization emphasizes the use of tools and equipment based on an understanding of their design. The agricultural mechanization courses are designed to provide students with basic competences in agricultural power and machinery, agricultural electrification, soil and water management, agricultural buildings, and basic shop skills.

The agricultural engineering program at UI is designed to prepare students for a variety of interesting and rewarding engineering careers. Many graduates are employed as design or development engineers by farm equipment manufacturers, irrigation companies, trade associations, consulting engineering firms, and governmental agencies. Others are self-employed in their own consulting firms, farming, farm equipment manufacturing, and other agriculturally oriented enterprises.

The curriculum leading to the B.S.Ag.E. is accredited by the Accrediting Board for Engineering and Technology. Students in this program are eligible to take the Engineer-in-Training (EIT) Examination just before they graduate and to become registered professional engineers after graduating and completing an experience requirement.

The undergraduate degree program in agricultural mechaniza-

tion (B.S.Ag.Mech.) is designed to prepare students to apply biological, physical, mechanical, and business knowledge to the production, service, sales, and application of the mechanical tools, equipment, and machinery used in agriculture. The curriculum stresses courses in agriculture, agricultural mechanization, and basic and applied sciences, and includes a strong background in agricultural economics, accounting, and business. It prepares students for a variety of important and rewarding career opportunities. Many graduates return to farming. Others pursue careers as farm managers or are employed by agriculturally oriented businesses, banking firms, educational institutions, or governmental agencies. This curriculum is approved by the American Society of Agricultural Engineers.

The agricultural mechanization courses are available to nonmajors interested in obtaining an understanding of the technology used in modern agricultural production systems. A minor in agricultural mechanization can be used to support degree programs in other departments.

Graduate study is offered in agricultural engineering with specialization in irrigation and drainage, hydrology, and soil and water conservation; energy sources, use, and conservation; harvesting, handling, and processing agricultural crops; equipment design and development; and environmental systems and animal waste management. The degrees offered are the Master of Science, the Master of Engineering, and the Doctor of Philosophy.

Courses

AGRICULTURAL ENGINEERING

AgE 241 Intro to Ag Engr (1 cr). Appl of engr prin to ag problems. One 2-hr lab a wk.

AgE 242 Ag Engr Analysis (2 cr). Methods of analyzing and solving engr problems; use of computers in solving selected problems. Prereq: CS 105, Math 190.

AgE 299 (s) **Directed Study** (cr arr). Prereq: perm.

AgE ID351 Hydrology (3 cr). Same as CE 321. WSU Ag E 341. Analysis of precipitation and runoff events; prin of climatology, evaporation, infiltration, and snowmelt. Prereq: one semester of calculus.

AgE ID352 Soil and Water Engr (3 cr). Plant-soil-water relationships, applied hydraulics, soil erosion prin and control, drainage, and legal aspects of water resources. Two lec and one 3-hr lab a wk. Prereq: ES 320 and AgE 351.

AgE ID&WS372 Ag Power and Machinery (4 cr). WSU 362. Performance, operation, and testing of ag power units and machinery; functional requirements, force analysis, power transmission, safety, and econ. Three lec and one 3-hr lab a wk; one 1-day field trip.

AgE WS385 Prin of Environmental Control (3 cr).

AgE WS390 Intro to Soil and Water Engr (3 cr).

AgE ID&WS-J441/ID&WS-J541 Instrumentation and Measurements (3 cr). WSU 584. SAensing elements, signal conditioning, data output and control. Two lec and one 3-hr. lab a wk. Additional effort reqd for grad cr. Prereq for 541: perm.

AgE ID449 Design of Ag Structure (4 cr). Design of timber, steel, and reinforced concrete members and connections for ag structures. Three lec and one 3-hr lab a wk. Prereq: ES 340.

AgE ID451 Engr Hydrology (3 cr). Same as CE 421. Hydrologic cycle as applied to engr projects; hydrograph routing; design hydrographs; intro to hydrologic simulation. Prereq: 351.

AgE ID-J454/ID-J554 Drainage System Design (2 cr). Theory and design of subsurface drainage systems in ag, waste mgt, and construction; intro to unsaturated flow. Additional effort reqd for grad cr. Prereq: ES 320; prereq for 554: perm.

AgE ID-J456/J556 Irrigation System Design (3 cr). Crop water requirements, irrigation scheduling and water mgt, selection and design of irrigation systems, pump selection. Two lec and one 3-hr lab a wk. Additional projects/assignments reqd for grad cr. Prereq: 352.

AgE 458 Open Channel Hydraulics (3 cr). Same as CE 426. Hydraulics of uniform and varied flow in open channels with fixed and movable beds. Prereq: 352 or CE 322.

AgE ID461 Ag Processing and Environment (4 cr). Analysis and design of processing and environmental systems for animal production, crop processing, and storage facilities. Three lec and one 3-hr lab a wk. Prereq: ES 321.

AgE ID&WS462 Electric Power and Controls (3 cr). WSU 380. Design and on-farm use of elec equipment and systems; design of electronic control systems for ag applications. Two lec and one 3-hr lab a wk; one 1-day field trip. Prereq: EE 207.

AgE WS471 Farm Structures Design (3 cr).

AgE ID-J474/ID-J574 Fluid Power and Control Systems (3 cr). Circuit components; circuit design and testing; sequential and feedback control applications. Two lec and one 3-hr lab a wk. Additional projects/assignments reqd for grad cr. Prereq for 574: perm.

AgE 478 Ag Engr Design I (1 cr). Intro to design process, CAD/CAM facility, product liability, and project scheduling; formulation of a design problem.

AgE 479 Ag Engr Design II (2 cr). Individual or team design of an ag related problem; incl synthesis, analysis, construction, and testing; final report reqd. Two 3-hr labs a wk. Prereq: AgE 478.

AgE WS-J482/WS-J582 Microcomputer Controls in Ag (3 cr).

AgE WS-J487/WS-J587 Food Process Engr (3 cr).

AgE 491 Seminar (1 cr). Professional aspects of the field, employment opportunities and prep of occupational inventories. Graded P/F. Prereq: sr standing.

AgE 492 Seminar (0 cr). Professional aspects of the field. Graded P/F. Prereq: sr standing.

AgE WS-J495/WS-J595 Irrigation Engr (3 cr). WSU 491.

AgE WS-J496/WS-J596 Conservation Engr (3 cr).

AgE 499 (s) **Directed Study** (cr arr). Prereq: perm.

AgE 500 Master's Research and Thesis (cr arr).

AgE 501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

AgE 502 (s) **Directed Study** (cr arr). Prereq: perm.

AgE ID&WS541 Instrumentation and Measurements (3 cr). See J441/J541.

AgE ID551 Adv Hydrology (3 cr). Prin of the hydrologic cycle in mountainous areas, incl precipitation, snowmelt, and systems simulation.

AgE WS552 Adv Theory of Irrigation Water Requirements (3 cr). Alt/yrs. WSU 590.

AgE WS553 Adv Theory and Design of Irrigation Systems (3 cr). Alt/yrs. WSU 592. Prereq: 456.

AgE 554 Drainage System Design (2 cr). See J454/J554.

AgE ID555 Natural Channel Flow (3 cr). Hydraulics of nonuniform flow in irregular channels, unsteady flow, and flow routing.

AgE ID558 Fluid Mechanics of Porous Materials (3 cr). Statics and dynamics of multiflow systems in porous materials; properties of porous materials, steady and unsteady flow.

AgE WS561 Adv Ag Engr Topics (1-4 cr, max 6). WSU 551.

AgE ID574 Fluid Power and Control Systems (2 cr). See J474/J574.

AgE WS582 Microcomputer Controls in Ag (3 cr). See J482/J582.

AgE WS587 Food Process Engr (3 cr). See J487/J587.

AgE 589 Water Resources Seminar (1 cr). See Inter 589.

AgE WS593 Drainage Engr (3 cr).

AgE WS595 Irrigation Engr (3 cr). See J495/J595.

AgE WS596 Conservation Engr (3 cr). See J496/J596.

AgE 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

AgE 600 Doctoral Research and Dissertation (cr arr).

AGRICULTURAL MECHANIZATION

AgMech ID101 Oxy-acetylene Welding (2 cr). Prin of operation, use, and care of welding and cutting equipment. One lec, one 2-hr lab, and two hrs individual practice a wk. Enrollment limited to 12 per section.

AgMech ID107 Arc Welding (2 cr). Prin of operation, use, and care of equipment. One lec, one 2-hr lab, and two hrs of individual practice a wk. Enrollment limited to 12 per section.

AgMech ID112 Intro to Ag Mech (3 cr). Appl of basic engr prin to solving problems dealing with farm machinery, bldgs, processing, irrigation, and energy use.

AgMech 115 Graphical Representation (2 cr). Drafting procedures, lettering, orthographic projection, pictorial drawings, sketching, graphs, and computer drafting. One lec and one 2-hr lab a wk.

AgMech 200 (s) **Seminar** (cr arr). Prereq: perm.

AgMech 201 Ag Bldg Constr (2 cr). Farm bldg constr prin and practices incl carpentry; concrete work and experience with tools and materials. Two 2-hr labs a wk; one 1-day nonscheduled class time.

AgMech ID202 Ag Shop Practices (2 cr). Primarily for ag mech and ag ed students. Operation, use, and care of shop tools and equipment. One lec and one 3-hr lab a wk.

AgMech 204 (s) **Special Topics** (cr arr).

AgMech ID207 Metal Fabrication Processes (2 cr). Prin of joining ferrous and nonferrous metals, MIG and TIG welding, and metal fabricating projects. One lec and one 2-hr lab a wk. Prereq: 107 and 202, or perm.

AgMech WS211 Agricultural Machinery (3 cr).

AgMech ID240 Computer Applications in Ag (3 cr). Application of computers in production ag; review of programming languages and operating systems; spread sheets, data base management, and other application programs. Prereq: 4 cr of college math and CS 100, or perm.

AgMech ID305 Ag Machinery and Equipment (3 cr). Appl, mgt, adjustment, and care of farm equipment; machinery fabrication, power transmission, and hydraulic systems. Two lec and one 3-hr lab a wk.

AgMech ID306 Ag Structures and Environmental Systems (3 cr). Planning farm bldgs, constr materials, beam and column design, insulation and ventilation for environmental control. Two lec and one 3-hr lab a wk.

AgMech ID&WS309 Ag and Automotive Engines (3 cr). WSU 312. Constr, service, and repair; fuels and combustion; ignition, cooling, lubrication, and fuel systems; engine testing. Two lec and one three-hr lab a wk.

AgMech ID310 Small Engines (2 cr). Prin of engine operation, tune-up, and maintenance; repair and overhaul of small engines. One lec, one 2-hr lab, and two hrs of individual practice a wk. Enrollment limited to 12 per section.

AgMech ID&WS312 Elec Power Appl (3 cr). WSU 331. Basic circuits; wiring and the code; motors and controls; heating, lighting, and power. Two lec and one 3-hr lab a wk.

AgMech ID&WS315 Irrigation and Drainage (2 cr). WSU 344. Irrigation methods, irrigation mgt, water rights, conveyance and measurement, pumps, soil-water-plant relationships, and drainage.

AgMech ID&WS316 Irrigation and Drainage Lab (1 cr). WSU 345. Irrigation system layout and design, irrigation scheduling, land grading, pump test, water measurement, and drainage design. Prereq or coreq: 315.

AgMech WS346 Turf Irrigation Systems (1 cr).

AgMech 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

AgMech 400 (s) **Seminar** (cr arr). Prereq: perm.

AgMech ID&WS405 Ag Processing (3 cr). WSU 433. Grain cleaning, mixing, and drying; materials handling, heat transfer, pumps, fans, refrigeration, and instrumentation. Two lec and one 3-hr lab a wk; one 1-day field trip.

AgMech ID409 Ag Tractors and Hydraulics (2 cr). Selection, operation, adjustment, service, and testing of farm tractors; engines, hydraulics, power trains, hitching, traction, stability, and safety. One lec and one 3-hr lab a wk. Prereq: 309.

AgMech WS416 Mobile Hydraulics (3 cr).

AgMech WS421 Ag Bldg Design (3 cr).

AgMech 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

AGRICULTURAL ENGINEERING (B.S.Ag.E.)

Designed to prepare students for professional careers in agricultural engineering. The curriculum is administered under the College of Engineering and is accredited by the Accreditation Board of Engineering and Technology.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Courses common to engineering curricula (see part 4)	38
AgE 241 Intro to Agricultural Engr	1
AgE 242 Agricultural Engineering Analysis	2
AgE 351 Hydrology	3
AgE 352 Soil & Water Engineering	3
AgE 372 Agricultural Power & Machinery	4
AgE 449 Design of Ag Structures	4
AgE 456 Irrigation System Design	2
AgE 461 Ag Processing & Environment	4
AgE 462 Electric Power & Controls	3
AgE 478 Agricultural Engr Design I	1
AgE 479 Agricultural Engr Design II	2
AgE 491-492 Seminar	1
CE 211 Engr Measurements	3
EE 207 Intro to Electrical Engineering	3
ES 220 Engineering Dynamics	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
ES 340 Mechanics of Materials	3
Soils 205 General Soils	3
Stat 301 Probability & Statistics	3
Agriculture or biological science electives	3
Communications electives	2
Humanities and social sciences electives (incl at least one upper-div course that is the second course completed in a subject, or that has another humanities/social sc course as a prereq)	16
Technical electives (may incl 3 cr of ag or biol sc; must incl at least 5 cr from AgE 441, 451, 454, 458, 474)	11
Undesignated electives	3

AGRICULTURAL MECHANIZATION (B.S.Ag.Mech.)

Designed to prepare students for careers in agriculture and agriculturally related businesses that require a knowledge of engineering methods. Emphasis is placed on the practical application of technology to agriculture. This curriculum is administered by the Department of Agricultural Engineering.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
AgMech 112 Intro to Ag Mechanization	3
AgMech 115 Graphical Representation	2
AgMech 200 Seminar	1
AgMech 202 Agricultural Shop Practices	2
AgMech 240 Computer Applications in Ag	3
AgMech 305 Ag Machinery & Equipment	3
AgMech 306 Ag Structures & Environmental Systems	3
AgMech 309 Ag & Automotive Engines	3
AgMech 310 Small Engines	2
AgMech 312 Electric Power Applications	3
AgMech 315, 316 Irrigation & Drainage and Lab	3
AgMech 405 Ag Processing	3
AgMech 409 Agricultural Tractors & Hydraulics	2
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
AgEc 278 Prin of Farm & Ranch Mgt.	4
AgEc 391 Agribusiness Management	3
Biol 100 Intro to Biology	4
Bus 265 Legal Environment of Business	3
CE 218 Elementary Surveying	2
Chem 103 Intro to Chem or Chem 111 Prin of Chem	4
CommG 131 Fundamentals of Public Speaking	2
Econ 152 Principles of Economics	3
Phys 101 Fundamentals of Physics	4
PISc 102 Introduction to Plant Science	3
Soils 205, 206 General Soils and Lab	4
Advanced writing electives	3
Agricultural electives	12
Business electives	3
Humanities and social sciences electives	14
Life sciences electives	3
Math electives (approved by dept head)	7
Major field electives	5
Electives to total 132 cr for the degree	--

Academic Minor Requirements

AGRICULTURAL MECHANIZATION MINOR

Course	Credits
AgMech 202 Ag Shop Practices	2

At least four credits from the following skill courses:
- AgMech 101 Oxy-acetylene Welding (2 cr).
- AgMech 107 Arc Welding (2 cr).
- AgMech 115 Graphical Representation (2 cr).
- AgMech 201 Ag Building Construction (2 cr).
- AgMech 310 Small Engines (2 cr).

At least ten credits from the following application courses:
- AgMech 305 Ag Machinery & Equipment (3 cr).
- AgMech 306 Ag Structures & Env Systems (3 cr).
- AgMech 309 Ag and Auto Engines (3 cr).
- AgMech 312 Electrical Power Application (3 cr).
- AgMech 315 Irrigation & Drainage (2 cr).
- AgMech 405 Ag Processing (3 cr).
- AgMech 409 Agricultural Tractors & Hydraulics (2 cr).

The minimum number of credits in agricultural mechanization courses for the minor is 19.

Program in American Studies

Donald W. Crowley, Coordinator (205-I Admin. Bldg.). Faculty: David S. Barber, G. Ellis Burcaw, Frederick L. Chapman, Donald W. Crowley, Jack L. Davis, Mary H. DuPree, Sid Eder, Shaikh M. Ghazanfar, Peter A. Haggart, Walter A. Hesford, Dolores Janiewski, Harley E. Johansen, Barbara R. Meldrum, Roderick Sprague, William R. Swagerty, Stanley W. Thomas, J. Gary Williams.

American Studies Courses

AmSt 200; 400 (s) **Seminar** (cr arr). Prereq: perm.

AmSt 203; 403 (s) **Workshop** (cr arr). Prereq: perm.

AmSt 204; 403 (s) **Special Topics** (cr arr).

AmSt 299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

AMERICAN STUDIES (B.A.)

Required course work includes the university requirements (see regulation J-3), general requirements for the B.A. degree and:

1. Nine credits in courses offered specifically for students in the American Studies program (normally, one course each semester will be offered — see adviser); and

2. Completion of one of the following major areas of emphasis:

A. Literature Emphasis

Course	Credits
AmSt 499 Directed Study: Research in American Lit	3
Eng 343-344 Survey of American Literature	6
Two courses in English literature	6
Four courses (selected from the following list)	12
Eng 327 Black Literature	
Eng 300 American Indian Literature	
Eng 427 American Fiction, 1914-1945	
Eng 439 Modern English & American Drama	
Eng 441 Intro to the Study of Language	
Eng 470 American Literature to 1830	
Eng 471 Poe, Hawthorne, and Melville	
Eng 472 Emerson, Thoreau, and Whitman	
Eng 473 Literature of the American West	
Eng 474 American Literature, 1865-1914	
Courses in history and social science, incl at least 6 cr in each (selected from courses listed under the social sc emphasis and from upper-div hist courses listed under the hist emphasis)	18

B. History Emphasis

Course	Credits
Hist 101-102 History of Civilization	6
Hist 111-112 Intro to U.S. History	6
Five courses (selected from the following list)	15
Hist 411 American Colonial Hist to 1763	
Hist 412 The American Revolution, 1763-1789	
Hist 413 U.S.: Early National Period	
Hist 414 Jacksonian America	
Hist 415 Civil War & Reconstruction, 1865-1896	
Hist 417 Rise of Modern America	
Hist 418 Recent America	
Hist 420 History of Women in American Society	
Hist 423 Idaho & the Pacific Northwest	
Hist 428 History of the American West	
Hist 431 History of Indian-White Relations	
Hist 433-434 Social & Cultural History of the U.S.	
Courses in literature and social science, incl at least 6 cr in each (selected from courses listed under the social sc emphasis and the following lit courses)	18
Eng 327 Black Literature	
Eng 330 American Indian Literature	
Eng 343-344 Survey of American Literature	
Eng 427 American Fiction, 1914-1945	
Eng 470 American Literature to 1830	
Eng 471 Poe, Hawthorne, and Melville	
Eng 472 Emerson, Thoreau, and Whitman	
Eng 473 Literature of the American West	
Eng 474 American Literature, 1865-1914	

C. Social Science Emphasis

Course	Credits
Anthr 225 North American Indians or 325 Indians of Idaho	3
Econ 151, 152 Principles of Econ or 272 Foundations of Econ Analysis and 435 Amer Econ Development	6-7
Geog 362 U.S. & Canada	3
Soc 230 Social Problems	3
Soc 322 Racial & Ethnic Relations	3
Soc 414 Modern Social Theory	3
One of the following courses: Anthr 413, Hist 496, PolSc 435, or Soc 410	14
Courses (selected from the following list)	14
Anthr 100 Intro to Anthropology	
Arch 483 Intro to City Planning	
Arch 484 City Planning	
CommG 384 Hist of American Film	
Comm 140 Mass Media & Society	
Comm 386 American Documentary Film	
Comm 444 Communication & Public Opinion	
Comm 445 History of Mass Communication	
Econ 410 State & Local Government Finance	
Econ 441 Labor Economics	
Geog 165 Human Geography	
Geog 330 Urban Geography	
Geog 360 Population Dynamics & Distribution	
Geog 364 Idaho & Pacific Northwest	
MusH 440 Studies in American Music	
Phil 411 Social Philosophy	
PolSc 275 American State Government	
PolSc 276 American Local Government	
PolSc 431 American Political Parties & Elections	
PolSc 432 American Congress	
PolSc 433 American Political Culture	
PolSc 438 Conduct of American Foreign Policy	
PolSc 467 Constitutional Law	
Soc 220 Marriage & the Family	
Soc 310 Rural Sociology	
Soc 313 Collective Behavior	
Four courses in literature and history, incl at least 3 cr in each (selected from the following list)	12
Eng 327 Black Literature	
Eng 330 American Indian Literature	
Eng 343-344 Survey of American Literature	
Eng 427 American Fiction, 1914-1945	
Eng 470 American Literature to 1830	
Eng 471 Poe, Hawthorne, and Melville	
Eng 472 Emerson, Thoreau, and Whitman	
Eng 473 Literature of the American West	
Eng 474 American Literature, 1865-1914	
Hist 417 Rise of Modern America	
Hist 418 Recent America	
Hist 433-434 Social & Cultural History of the U.S.	

Department of Animal Science

Dan D. Hinman, Acting Dept. Head (213 Ag Science Bldg.) Faculty: Richard C. Bull, James E. Butler, David Casebolt, Dennis G. Falk, Dan D. Hinman, Carl W. Hunt, John C. Miller, Ronald P. Richard, Richard A. Roeder, Robert E. Roffler, R. Garth Sasser, Curtis R. Youngs.

Animal agriculture has a major role in the supply of high quality food, not only for the people of the United States, but also for those of other nations. Food and fiber obtained from animals include meats, milk, eggs, wool, and many byproducts. Knowledge and skills resulting from a college education in this field will permit the graduate to contribute to improved production and health of the nation's livestock including beef, sheep, dairy, swine, poultry, horses, and companion animals.

In addition to classrooms and laboratories located in the Agricultural Science Building, the department's facilities include centers for dairy, beef, sheep, and poultry, as well as a meats laboratory and livestock judging pavilion. Several breeds of poultry, dairy cattle, beef cattle, sheep, and swine are maintained for instructional and research purposes. The academic program is designed to prepare students for a variety of important and rewarding career opportunities. For more specific information, get in touch with the department head (208/885-6345).

The B.S. curricula offer four programs designed to prepare students for professional careers in animal agriculture. The agribusiness major with its dual emphasis on animal science and business is designed for students who want to enter management positions in livestock-related industries. The animal science major prepares students to pursue a career in livestock production, for graduate study in any of the varied disciplines in animal science, or for employment that requires intensive training in animal biology. The major in range-livestock management provides training in animal science with a sound background in the relationship between animals and plants and is intended for students interested in the management of range and pasture related to beef cattle or sheep operations.

Under the major in animal science, graduate study leading to an M.S. degree is offered in animal breeding and genetics, nutrition, physiology, endocrinology, and meat science. Prospective students should have an undergraduate degree (B.S.) in animal, dairy, or poultry science, or a closely related field. For more detailed information, see the Graduate Bulletin.

Courses

ANIMAL SCIENCE

AnSc 109 The Sc of Animals that Serve Mankind (3 cr). Role of animal ag in providing

food, work, and pleasure for mankind; intro to animal genetics, physiology, endocrinology, nutrition and other disciplines essential for an understanding of the contributions of animals in the expanding human population. Coreq for majors in the Animal Sc Dept: 110.

AnSc 110 Animal Sc Lab (1 cr). Lab exercises demonstrating the importance of domestic animals to human welfare. One 2-hr lab a wk. Coreq: 109.

AnSc 152 Livestock Mgt Practices (2-3 cr). Mgt practices in the production, exhibition, and marketing of livestock and poultry. Two or three 2-hr labs a wk; one 1/2-day field trip. Graded P/F.

AnSc WS176 Sheep Mgt Lab (1 cr).

AnSc 203 Live and Carcass Eval (3 cr). Eval and selection of cattle, sheep, and swine for herd replacements; eval of market animals; carcass eval and grading, and factors that affect quality and quantity of meat; visual and objective appraisals. One lec and two 3-hr labs a wk; four 1-day and four 1/2-day field trips or equiv time.

AnSc 205 Intro to Animal Nutrition (3 cr). May not be used for major cr by majors in animal sc or range-livestock mgt. Functions, metabolism, and requirements of nutrients with appl to the diets of animals and birds.

AnSc WS212 Dairy Cattle Traits (2 cr). WSU AS 272.

AnSc 222 Animal Reproduction and Breeding (3 cr). May not be used for major cr by majors in animal sc or range-livestock mgt. Appl of prin of genetics and reproductive physiology in domestic animal improvement, fertility, systems of mating, and selection of tech.

AnSc ID263 Intro to Meat Sc (3 cr). Duplicate cr not allowed in 263 and 264. The meat industry, sanitation, slaughtering, processing, and factors that affect the quality and palatability of meat. Two lec and one 3-hr lab a wk.

AnSc 264 Consumer Meats (3 cr). Duplicate cr not allowed in 263 and 264. Meat as a food; meat inspection, pricing, selection, processing, storage, and cookery. Two lec and one 3-hr lab a wk.

AnSc 265 Abattoir Skills (1 cr). Practical exper in meat animal slaughter. Prereq: 263 or 264.

AnSc 299 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm of dept.

AnSc 304 Adv Animal Evaluation (3 cr). Emphasis on use of records in selection and use of carcass value in pricing live market animals; factors that affect the econ value of meat animals. Students participate in live animal-carcass eval contests. One lec and two 3-hr labs a wk; four 1-day and four 1/2-day field trips in addition to contests or equiv time. Prereq: 303.

AnSc 305 Animal Nutrition (3 cr). Proteins, carbohydrates, fats, minerals, and vitamins; physiology of digestion, absorption and metabolism of nutrients, and the relationship of enzymes and hormones in these phenomena. Prereq: Biochem 380.

AnSc 306 Feeds and Ration Formulation (4 cr). Appl of prin of nutrition to ration formulation for poultry and livestock; eval feedstuffs for use in ration formulation. Three lec and one 2-hr lab a wk. Prereq: 205 or 305.

AnSc 320 Animal Breeding (3 cr). Same as Genet 320. Appl of genetic prin to the improvement of farm animals; effects of inbreeding, outbreeding, assortative, and disassortative mating on animal populations, selection for economically important traits; heritability; genetic correlations; use of selection indexes. Prereq: Genet 314 and Stat 251.

AnSc 321 Beef Cattle Sc (3 cr). Breeding, feeding, and mgt; commercial and purebred enterprises; mgt of beef cattle on ranges, pasture, and in the feedlot. One 1-day field trip. Prereq: 205 and 222 or equiv.

AnSc ID&WS322 Sheep Sc (3 cr). WSU AS 476. Appl of prin of genetics, reproduction, nutrition, health, and marketing to the mgt of commercial and purebred sheep; new dev related to sheep industry; production, eval, and use of wool. Two lec and one 2-hr lab a wk; one 1-day field trip or equiv time. Prereq: 205 and 222 or equiv.

AnSc ID&WS323 Dairy Cattle Mgt (3 cr). WSU AS 472. Establishing a dairy farm, housing and managing large dairy herds, selection of breeding cattle, and marketing quality milk. One 4-day field trip. Prereq: 205 and 222 or equiv.

AnSc ID&WS326 Swine Sc (3 cr). WSU AS 478. Prin of breeding, feeding, mgt, and marketing of swine. Two 2-hr lec-labs a wk; two 1-day field trips or equiv time. Prereq: 205 and 222 or equiv.

AnSc WS388 Horse Production (3 cr). WSU AS 466. Enrollment limited to 10. Prereq: 205, 222, 288.

AnSc 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

AnSc 403 (s) **Workshop** (cr. arr). Normally offered in nutrition, breeding, products, and mgt. Graded P/F. Prereq: perm.

AnSc 410 Production and Processing Practices (1 cr, max 2). Livestock, dairy, and poultry production; processing practices and facilities. One 7-day field trip or equiv time. Graded P/F.

AnSc WS413 Physiology of Lactation (3 cr). Alt/yrs. WSU AS 452. Prereq: VS 371.

AnSc ID&WS-J415/ID&WS-J515 Lab Methodology (1 cr). Research methodology used in experimental nutrition and physiology. Additional projects/assignments reqd for grad cr. One lec and two 2-hr labs a wk. Prereq for 515: grad status and perm.

AnSc 421 Population Genetics (3 cr). Same as Genet 421. Gene frequency analysis; effects of natural and artificial selection on the genetic composition of populations; inheritance of quantitative characters; concepts of heritability; effects of inbreeding and outbreeding on populations. Prereq: Genet 314 and Stat 251.

AnSc 450 Proseminar (1 cr, max 2). Special topics in animal sc.

AnSc J451/J551 Endocrine Physiology (3 cr). Same as Zool J417/J517. Structure and physiology of glands of internal secretion and their hormonal effects on processes of growth, dev, metabolism, and production of vertebrates; minor emphasis on invertebrates. Cr earned in 551 by completion of term paper. Prereq: Biol 202 and Biochem 380.

AnSc 452 Physiology of Reproduction and Lactation (3 cr) (352). Physiology of reproduction of animals; structure, growth dev, and physiology of the mammary gland. Prereq: 222, Biol 202; coreq: 453.

AnSc 453 Physiology of Reproduction and Lactation Lab (1 cr) (353). Lab in reproduction and the structure, growth, dev, and physiology in the mammary gland. One 2-hr lab a wk. Coreq: 452.

AnSc 454 Artificial Insemination and Pregnancy Detection (2 cr). Anatomy and physiology of pregnant and nonpregnant reproductive systems; artificial insemination; male reproduction; pregnancy detection in domestic livestock. Two 2-hr lec-labs a wk. Enrollment limited to 20 students. Preregistration required; consult dept administrator. Prereq: 222 or Zool 411 (may be concurrent) and perm.

AnSc WS464 Poultry Production (3 cr). Prereq: 205, 222.

AnSc ID&WS472 Meat Sc (3 cr). Alt/yrs. WSU AS 360. Growth and dev of meat animals; factors affecting quantity and quality of meat. Prereq: 263 and biochem.

AnSc 499 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm of dept.

AnSc 500 Master's Research and Thesis (cr arr). Graded PF.

AnSc 501 (s) **Seminar** (cr arr). Prereq: perm.

AnSc 502 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

AnSc 503 (s) **Workshop** (cr arr). Prereq: perm.

AnSc 504 (s) **Special Topics** (cr arr).

AnSc 511 Animal Nutrition (3 cr). Alt/yrs. Biochem and physiological aspects of nutrition of higher animals and man; function and metabolism of nutrients. Prereq: perm.

AnSc WS512 Energy Metabolism (3 cr). Alt/yrs. WSU AS 514. Prereq: 305, 306, Biochem 380.

AnSc 513 Microbiol and Physiology of Ruminant Nutrition (3 cr). Alt/yrs. Physiology and microbiol aspects of ruminant digestion and their influence on the metabolism of extraruminal tissues; interp of nutritive requirements in terms of rumen microbiol activities; eval of research tech. Prereq: perm.

AnSc 514 Physiology of Nonruminant Nutrition (3 cr). Alt/yrs. Physiology of digestion, absorption, and metabolism of nutrients in monogastric animals and birds; biol eval of nutrients and nutritional interrelationships. Prereq: perm.

AnSc ID&WS520 Seminar in Animal Physiology (1 cr, max arr). WSU AS 540. Current topics in animal physiology.

AnSc 522 Stat Genetics (3 cr). Same as Stat and Genet 522. Statistical tech used in population genetics research; methods of estimating heritability, genetic correlations, and phenotypic correlation, constr of selection indexes; mating systems; genetic homeostasis. Prereq: perm.

AnSc WS526 Adv Reproduction (4 cr). Alt/yrs. WSU AS 550. Prereq: 452 or equiv.

AnSc 551 Endocrine Physiology (3 cr). See J451/J551.

AnSc 552 Adv Endocrine Physiology (3 cr). Biochem and physiological properties of hormones; lab tech in experimental endocrinology. Two lec and one 2-hr lab a wk. Prereq: J451/J551, Chem J482/J542.

AnSc ID&WS560 Domestic Animal Growth and Dev (3 cr). Dev, differentiation, growth, and endocrine regulation of major organ systems in domestic animals. Prereq: 513, Biochem 380, and perm.

AnSc WS596 Adv Topics in Animal Sc (1-2 cr, max arr). WSU AS 598.

AnSc 597 (s) **Practicum** (cr arr). Prereq: perm.

AnSc 598 (s) **Internship** (cr arr). Prereq: perm.

Curricular Requirements

Animal Science

Three programs are designed to prepare students for professional careers in animal agriculture. The agribusiness major with its dual emphasis on animal science and business is designed for students who want to enter management positions in livestock-related industries. The animal science major prepares students to pursue a career in livestock production, for graduate study in any of the varied disciplines in animal science, or for employment that requires intensive training in animal biology. The major in range-livestock management provides training in animal science with a sound background in the relationship between animals and plants and is intended for students interested in the management or operation of range and pasture beef cattle or sheep courses.

CORE COURSES FOR B.S.AN.SC.

Course	Credits
AnSc 109 The Sc of Animals that Serve Mankind	3
AnSc 222 Animal Reproduction & Breeding	2
AnSc 263 Intro to Meat Science	3
AnSc 305 Animal Nutrition	3
AnSc 306 Feeds & Ration Formulation	4
AnSc 320 Animal Breeding	3
AnSc 450 Proseminar	1
Two of the following courses	6
AnSc 321 Beef Cattle	
AnSc 322 Sheep Science	
AnSc 323 Dairy Cattle Mgt	
AnSc 326 Swine Science	
AnSc 388 Horse Production	
Biol 201 Intro to the Life Sciences	4
Chem 111 Principles of Chemistry	4
Chem 275 Carbon Compounds	3
CommG 131 Fundamentals of Public Speaking	2
Stat 251 Principles of Statistics	3
Computer science elective	2-3

AGRIBUSINESS (B.S.An.Sc.)

Required course work includes the university requirements (see regulation J-3), the animal science core, and:

Course	Credits
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
AgEc 278 Prin of Farm & Range Management	4
AgEc 289 Ag Markets & Prices	3
AgEc 391 Agribusiness Management or Bus 311 Intro to Management	3
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing	3
Math 140 Pre-calculus Algebra & Analytic Geom	3
Ag economics or accounting electives	6
Business electives	9
Electives to total 132 cr for the degree	--

ANIMAL SCIENCE (B.S.An.Sc.)

Required course work includes the university requirements (see regulation J-3), the animal science core, and:

Course	Credits
AnSc 452, 453 Physiology of Repro & Lactation and Lab or AnSc 451 Endocrine Physiology	3-4
Biochem 380, 382 Introductory Biochem and Lab	4
Biol 202 General Zoology	4
Chem 276 Carbon Compounds Lab	1
Eng 317 Technical & Engr Report Writing	3
Genet 314 General Genetics	3
Math 160 Survey of Calculus	4
VS 371 Anatomy & Physiology	4
Life science electives	4
Electives to total 132 cr for the degree	--

POULTRY SCIENCE (B.S.An.Sc.)

This program is offered in cooperation with Oregon State University, Idaho resident students will *not* be charged out-of-state tuition by OSU. Two options are listed below. If a student is interested in obtaining additional instruction in poultry science but wants a degree in animal science from UI, option A should be chosen. If a student wants a degree in poultry science from OSU, option B should be chosen.

OPTION A — B.S.An.Sc.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years	Credits
AnSc 263 Intro to Meat Science	3
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Anal	5
Chem 227, 278 Organic Chem I & Lab	4
CommG 131 Fundamentals of Public Speaking	2
Genet 314 General Genetics	3
Math electives	8
Humanities and social sciences electives	9
Electives	6

Third Year — 45 quarter cr taken at OSU, chosen from a list of courses available from the Dept of Animal and Veterinary Sciences.

Fourth Year	Credits
AnSc 305 Animal Nutrition	3
AnSc 451 Endocrine Physiology or 452 Physiology of Reproduction & Lactation	3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Stat 251 Principles of Statistics	3
Humanities and social sciences electives	6
Electives	14

OPTION B — B.S. In Poultry Sc from OSU

First and Second Years	Course
All courses listed under first and second years in option A (taken at UI)	60

Third and Fourth Years — 90 quarter cr taken at OSU, chosen from a list of courses available from the Depts of Poultry and Animal Sciences.

RANGE-LIVESTOCK MANAGEMENT (B.S.An.Sc.)

Required course work includes the university requirements (see regulation J-3), the animal science core, and:

Course	Credits
AnSc 203 Live & Carcass Evaluation	3
AnSc 452, 453 Physiology of Repro & Lactation and Lab	4
Biochem 380 Introductory Biochemistry	3
Biol 202 General Zoology	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 276 Carbon Compounds Lab	1
Eng 317 Technical & Engr Report Writing	3
Genet 315 General Genetics	3
Math 160 Survey of Calculus	3
PlSc 308 Forage Crops	3
Range 351 Elements of Range Management	3
Range 452 Range Communities	3
Range 453 Range Inventory & Analysis	3
Soils 205, 206 General Soils and Lab	4
Electives to total 132 cr for the degree	--

Department of Architecture

Gifford Pierce, Dept. Chair (207 Art and Arch. South). Faculty: Robert M. Baron, Ronald D. Bevans, Paul L. Blanton, Cynthia D. Blue-Blanton, William B. Bowler, Jr., Kenneth D. Carper, Jill Dacey, Larry G. Fisher, Bruce T. Haglund, Wendy R. McClure, William B. McCroskey, R. G. Nelson, M. Joseph Numbers, John L. Pulliam, Gifford Pierce, D. Nels Reese, Brian F. Sumption.

The Department of Architecture offers two undergraduate options that contain the fundamentals for the design of the human environment. Linked together by a common core experience in design and allied fields, these options allow the undergraduate to pursue specialized programs leading to either the five-year degree of Bachelor of Architecture (B.Arch.) or the four-year degree of Bachelor of Fine Arts in interior planning and design (B.F.A.). Both are professional programs that combine a specialized core curriculum with a breadth of opportunities in electives and general education.

In the department, the studio method of learning emphasizes the development of individual creativity and technical competence in the student's chosen field of concentration. The department's objective is the achievement of a sense of involvement, integrity, and social responsibility by the student. Architects and interior designers are dedicated to the creation of a more effective and responsive human environment.

The facilities of the Department of Architecture are housed in four buildings totaling over 35,000 square feet of usable space. Specialized laboratories for white printing, photo processing, printmaking, and graphics are contained within the facilities. A reference and slide library as well as a complete shop are housed within the complex.

Students who are interested in continuing their education at the graduate level in architecture will find two programs available. The Master of Arts in architecture is a program that provides an opportunity for persons with nonarchitectural undergraduate backgrounds to prepare themselves for participation in the team approach to the solution of environmental problems, involving an individualized program of study and a written thesis. The Master of Architecture is a professional degree program in architecture

in which the thesis is a comprehensive architecturally oriented project or projects in written and visual form. Admission to this latter program requires the five-year professional B.Arch. degree.

Courses

Note: On registering for a studio course offered in this department, the student agrees that the department may retain work completed by the student. The department will make retained work available to the student for photographing.

ARCHITECTURE

Arch 155 Intro to the Design Disciplines (1 cr). Intro and overview of design professions: art, arch, landscape arch, and interior design; promotion, understanding, and appreciation of design integration. Studio and jury visitation with 3 minimum guest lec series participation; use of audiovisual presentations and lec one hour a wk.

Arch 156 Graphic Comm (2 cr). Intro to the process of graphic comm; studio projects to explore graphics through projects, lec, and readings. Two 2-hr studios a wk and assigned work.

Arch 200 (s) **Seminar** (cr arr). Prereq: perm.

Arch 203 (s) **Workshop** (cr arr). Prereq: perm.

Arch 204 (s) **Special Topics** (cr arr).

Arch 255 Adv Arch Graphics (2 cr). Two- and three-dimensional drawing applying various delineation tech; preliminary presentation tech and use of color in graphics. Two 2-hr studios a wk and assigned work. Prereq: 156 or perm.

Arch 256 Basic Arch Design (3 cr). Intro to design process, space and space relationships, character of design, and form; dev of sketch presentation tech. Two 3-hr studios a wk and assigned work.

Arch 266 Materials and Methods (3 cr). Materials characteristics from manufacture to constr; production info and resource lit investigation.

Arch 299 (s) **Directed Study** (cr arr). Prereq: perm.

Arch 353-354 Arch Design I (5 cr). Expansion of student vocab of arch forms and their means of generation; a broad-scope and nonrestrictive (though directed) class covering aspects of form generation from human to climatic conservations; influences of hist, research, and materials of constr related to arch design; encouragement of student experimentation and creativity. Three 3-hr studios a wk and assigned work; field trips will be reqd at student expense; some class jury sessions will meet outside of scheduled hours.

Arch 365-366 Bldg Technology I (3 cr). Arch 365: basic structural design incl elem statics and prin and technology of wood structural design. Arch 366: prin and technology of structural reinforced concrete bldg design problems by integrating solutions with Arch Design studio. Prereq: Phys 113, Arch 365 for 366, or perm.

Arch 383 Environmental Analysis (3 cr). Ident and analysis of the natural and human environmental form determinants as the basis of the programming and design of the built environment; emphasis on perception, site and analysis, landscape/place planning, and programming and design methodology.

Arch ID384 Computer Applications in Architecture (2 cr). Computer appl in arch; current tech for using the computer as a tool in the design process and potential future dev; practical appl in graphics, scheduling, structures, estimating, office mgt, and other areas of design; prep of input data for existing prog and analysis of output info. Prereq: CS 100 or perm.

Arch 385-386 Hist of Arch (3 cr). Arch 385: hist of ancient and medieval arch — prehistoric, Egyptian, West Asian, Aegean, Greek, Roman, Early Christian, Byzantine, Islamic, Romanesque, and Gothic periods. Arch 386: hist of Renaissance and Baroque periods in Europe from 1400 to 1800 and arch from the 17th to 20th centuries.

Arch 388 Arch Hist of Ancient Civ (2 cr). Prehistoric, Egyptian, West Asiatic, Aegean, and Etruscan arch and town dev.

Arch 400 (s) **Seminar** (cr arr). Prereq: perm.

Arch 403 (s) **Workshop** (cr arr). Prereq: perm.

Arch 404 (s) **Special Topics** (cr arr).

Arch 453-454 Arch Design II (5 cr). Study directed at specifics of bldg design synthesizing related course work into a comprehensive problem solution from multiple-bldg planning to working drawings on a single bldg. Three 3-hr studios a wk and assigned work; field trips will be reqd at student expense; some class jury sessions will meet outside of scheduled hours.

Arch 455-456 Arch Design III (5 cr). Expansion to the urban scale of the student's design awareness and ability; to acquaint the student with the multiplicity of considerations involved as project scope increases beyond a single site; to encourage creative and broad-scope thought and action on the future configuration of our cities. In 455, a common project is done with the Department of Landscape Architecture. In 456, the student undertakes a self-directed arch design study with faculty consultation. Three 3-hr studios a wk and assigned work; field trips will be reqd at student expense; some class jury sessions will meet outside of scheduled hours.

Arch 463-464 Environmental Control Systems (4 cr). Prin and design of solar and mechanical heating and cooling systems, natural and artificial lighting, water and waste systems, and acoustics. Three one-hr lec and one 2-hr lab a wk.

Arch 465-466 Bldg Technology II (3 cr). Arch 465: structural design with steel in bldgs; prin and technology of steel design applied to practical bldg problems by integrating solutions with Arch Design studio. Arch 466: structural design of bldgs with seismic analysis; prin and technology of masonry design. Prereq: 365 or perm.

Arch 473 Arch Programming (2 cr). Research and eval for arch thesis program; research methods and their appl.

Arch 475-476 Professional Practice I-II (3 cr). The architect's duties and responsibilities in practice (constr documents and contracts), project supervision, office admin, and comprehensive services; specification writing, unit costs, and bldg estimation.

Arch 483 Intro to City Planning (3 cr). Hist and theory of city planning and problems associated with urban growth.

Arch 484 City Planning (2 cr). Analysis of 20th-century planning in the U.S. and Europe; group housing and urban dev patterns. Prereq: 483.

Arch 497 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Arch 499 (s) **Directed Study** (cr arr). Prereq: perm.

Arch 500 Master's Research and Thesis (cr arr).

Arch 501 (s) **Seminar** (cr arr). Prereq: perm.

Arch 502 (s) **Directed Study** (cr arr). Prereq: perm.

Arch 503 (s) **Workshop** (cr arr). Prereq: perm.

Arch 504 (s) **Special Topics** (cr arr).

Arch 597 (s) **Practicum** (cr arr). Prereq: perm.

Arch 598 (s) **Internship** (cr arr). Prereq: perm.

Arch 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

INTERIOR PLANNING AND DESIGN

IntPD 101 Intro to Interior Planning and Design (1 cr). Intro to interior planning and design problems; issues in the industry, professional organizations, and career opportunities in the field. One 1-hr lec a wk; outside readings.

IntPD 200 (s) **Seminar** (cr arr). Prereq: perm.

IntPD 203 (s) **Workshop** (cr arr). Prereq: perm.

IntPD 204 (s) **Special Topics** (cr arr).

IntPD 299 (s) **Directed Study** (cr arr). Prereq: perm.

IntPD 261 Materials and Components of Interior Design (2 cr). Design, function, construction, installation, maintenance, and relative cost of products and materials of interiors.

IntPD 262 Residential Design and Housing (4 cr). Social/psych aspects of housing and appl of theories to space planning, materials, and components of interiors; dev of sketch presentation tech.

IntPD 351-352 Interior Design I (4 cr). Intro to residential and small scale commercial interior design theory and problem solving; emphasis on formation of interior spaces to correspond to function and flow patterns. Three 3-hr studios a wk; seven days of field trips during yr. Prereq: Arch 256 or perm.

IntPD 400 (s) **Seminar** (cr arr). Prereq: perm.

IntPD 403 (s) **Workshop** (cr arr). Prereq: perm.

IntPD 404 (s) **Special Topics** (cr arr).

IntPD 451-452 Interior Design II (4 cr). Adv problems in commercial interior design; elec, mech, and plumbing systems for interior designers; interior constr; working drawings. Three 3-hr studios a wk; seven days of field trips during yr.

IntPD 461 Hist of Interior Design: Antiquity to 1900 (3 cr). Hist furnishings, furniture, interior arch, and decorative arts from antiquity to beginning of the 20th century. Two 1½-hr lecs a wk.

IntPD 462 20th Century Furniture Design and Hist (3 cr). International in scope; social and aesthetic theories incl Arts and Crafts Movement, Art Nouveau, De Stijl, Bauhaus, International Style, Scandinavian furniture, modern classics manufactured in America by Knoll and Miller, and recent Italian innovations; wood furniture design with integration of various new materials; models and shop drawings. One lec and one 4-hr studio a wk. Prereq: 461 or perm.

IntPD 472 Professional Practice of Interior Design (2 cr). Interior designer's duties and responsibilities in professional practice; services, estimating, specs, and contracts.

IntPD 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

ARCHITECTURE (B.Arch.)

A five-year professional curriculum divided into two parts: preprofessional (first two years) and professional (remaining three years). Due to a limited enrollment capacity,

admission to the program is highly competitive; prospective students should write to the department chair early to learn admission procedures. A cumulative GPA of 2.50 in all required courses in the two preprofessional years and the approval of a faculty review committee are required for admission to the professional program. Grades are subject to faculty review and any probation, if granted, shall be at the discretion of the faculty. The 2.50 average must be maintained in all required courses in order to remain in good standing in the department. The program is accredited by the National Architectural Accrediting Board (NAAB).

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Arch 155 Intro to the Design Disciplines	1
Arch 156 Graphic Comm	2
Arch 255 Adv Arch Graphics	2
Arch 256 Basic Architectural Design	3
Arch 266 Materials & Methods	3
Arch 353-354 Architectural Design I	10
Arch 365-366 Building Technology I	6
Arch 383 Environmental Analysis	3
Arch 385-386 History of Architecture	6
Arch 453-454 Architectural Design II	10
Arch 455-456 Architectural Design III	10
Arch 463-464 Environmental Control Systems	8
Arch 465-466 Building Technology II	6
Arch 473 Architectural Programming	2
Arch 475-476 Professional Practice I-II	6
Arch 483 Intro to City Planning	3
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & the Design Process	6
CE 218 Elementary Surveying	2
Math 140 Pre-calculus Algebra & Analytic Geom	3
Math 160 Survey of Calculus or Phil 211 Logic or Stat 251 Principles of Statistics	3-4
Phys 113-114 General Physics	6
Electives to total 160 cr for the degree (at least 4 cr from art; 12 cr from at least two of the following fields: anthro, econ, geog, hist, phil, political sc, psych, and soc; and 10 cr chosen from an adviser-approved list of electives)	--

INTERIOR PLANNING AND DESIGN (B.F.A.)

A four-year professional curriculum divided into two parts: preprofessional (first two years) and professional (remaining two years). A cumulative grade point average of 2.00 in all required courses in the two preprofessional years and the approval of a faculty review committee are required for admission to the professional program. Grades are subject to faculty review and any probation, if granted, shall be at the discretion of the faculty. The 2.00 average must be maintained in all required courses in order to remain in good standing in the department.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
IntPD 101 Intro to Interior Planning & Design	1
Int PD 261 Materials & Components of Interior Design	2
IntPD 262 Residential Design & Housing	4
IntPD 351-352 Interior Design I	8
IntPD 451-452 Interior Design II	8
IntPD 462 20th Century Furniture Design & History	3
IntPD 472 Professional Practice of Interior Design	2
IntPD 472 Professional Practice of Interior Design	2
Arch 155 Intro to the Design Disciplines	1
Arch 156 Graphic Communication	2
Arch 255 Adv Arch Graphics	2
Arch 256 Basic Architectural Design	3
Arch 266 Materials & Methods	3
Arch 383 Environmental Analysis	3
Arch 384 Computer Applications in Arch	2
Arch 385-386 History of Architecture	6
Arch 464 Environmental Control Systems	4
Arch 499 Directed Study	2
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & the Design Process	6
Art 221 Graphic Design	3
HEc 123 Textiles	3
HEc 314 Weaving	3
Math 111 Finite Mathematics	4
Psych 100 Intro to Psychology	3
Art electives	11
Electives to total 128 cr for the degree (incl 8 cr from a list of adviser-directed electives)	--

Department of Art

Frank A. Cronk, Dept. Chair (Art and Arch. Library Bldg.). Faculty: Frank A. Cronk, Nelson S. Curtis, James A. Engelhardt, David F. Giese, H. Lynne Haagensen, J. Willard L'Hote, George H. Roberts, George T. Wray.

The purpose of the program in art is twofold: (1) to meet the needs of all who have an interest in the visual arts and desire to gain experience in them, and (2) to provide a program designed for the development of persons who intend to practice art seriously as a professional or who plan to pursue advanced study in art. The department has a faculty, studios, and other facilities enabling the student to concentrate in one of eight specific areas, each structured to foster the development of the student in his or her chosen direction.

Graduate study is directed toward full professional competence, regardless of the degree objective. Study is based on over-all artistic ability, as well as the development of a substantive personal direction. Faculty specialties and facilities are available to appropriately assist each student in attaining these goals.

Art Courses

Note: On registering for a studio course offered in this department, the student agrees that the department may retain work completed by the student. The department will make retained work available to the student for photographing.

Art 101 Visual Art (3 cr). Satisfies core requirement J-3-d. Introductory hist overview of important visual arts to promote an understanding and appreciation of artistic output with primary emphasis on painting, sculpture, and architecture. Two 1½-hr lec and one 1-hr quiz/recitation a wk.

Art 102 Survey of Art (2 cr). Hist overview of man's artistic production to promote an understanding and appreciation of the various arts with emphasis on painting, sculpture, and arch.

Art 111-112 Drawing I (2 cr). Freehand drawing; emphasis on expressive use of materials.

Art 121-122 Visual Communication and the Design Process (3 cr). Intro to visual comm and design process; studio problems to familiarize students with basic design process, elements of design and individual design criteria as related to traditional and experimental concepts of visual comm; studio problems explore basic design through the two- and three-dimensional production, experiences, readings, and written analysis. One lec and two 2-hr studios a wk and assigned work; attendance at outside events (lectures, symposiums, Prichard and Univ Gallery openings).

Art 200 (s) **Seminar** (cr arr). Prereq: perm.

Art H201 Art Studio (3 cr). Emphasis on free hand drawing using a wide range of drawing and rendering tech; intro to artistic media and concepts; guest lec and slide presentations by members of art faculty and art grad prog; in-class discussion of area gallery shows and college guest lec series. Two 2-hr studios a wk and assigned work. Prereq: perm of dir of Univ Honors Prog.

Art 203 (s) **Workshop** (cr arr). Prereq: perm.

Art 204 (s) **Special Tpics** (cr arr). Prereq: perm.

Art 211 Drawing II (3 cr). Life drawing; work with various media to develop an understanding of the human figure. Prereq: 111-112 or perm.

Art 214 Textile Design I (3 cr). Intro to basic textile design tech incl woven, non-woven, resist, and direct application. Two lec and 4 hrs of lab a wk; one 1-day field trip.

Art 221 Graphic Design (3 cr). Basic phil and working processes of commercial art with stress on diverse approaches to solving basic design and comm problems; also emphasizes contemporary use of typography.

Art 225 Comm Graphics (2 cr). Intro to graphic comm using elem tech emphasizing typography and advertising layout. Two 2-hr studios a wk and assignments. Not for graphics majors. Class limited to 35.

Art 231 Painting I (3 cr). Intro to basic fundamentals of painting.

Art 241 Sculpture I (3 cr). Studio work in basic spatial design concepts; creation of expressive order in space with attention to form, space, arrangement, movement, proportion, volume, unity, and contrast.

Art 251 Printmaking I (3 cr). Intro to basic printmaking techniques, relief, intaglio, and serigraphy; emphasis on sensitivity to materials and indiv dev.

Art 261 Ceramics I (3 cr). Intro to clay-forming tech, wheel-thrown and hand-built forming methods, ceramic design concepts, dev of indiv design criteria, glaze experimentation; fundamental types of ceramic ware; kiln procedures.

Art 271 Jewelry I (3 cr). Intro to basic jewelry materials and tech; basic jewelry design concepts; dev of indiv design criteria.

Art 281 Water Color I (3 cr). Intro to tech of water color painting by indiv instruction and group criticism.

Art 299 (s) **Directed Study** (cr arr). Prereq: perm.

Art 301-302 Hist of Art (3 cr). Art 301: 19th century. Art 302: 20th century.

Art 311 Drawing III (3 cr). Adv drawing from the model, nature, and abstract form; emphasis on indiv dev. Prereq: 211 or perm.

Art 314 Textile Design II (3 cr). Continuation of basic textile design techniques with emphasis on individual dev; printed textiles; croquis. Two lec and 4 hrs of lab a wk; one field trip may be reqd.

Art 321 Graphic Design II (3 cr). Study of design representative of contemporary graphic design; tech aspects of commercial design; prep of art for the print medium; projects deal with design for print, TV, and various 3-D media. Prereq: 221.

Art 331 Painting II (3 cr). Interm painting from the model, nature, and abstract form. Prereq: 231 or perm.

Art 341 Sculpture II (3 cr). Studio investigation of various sculptural concepts, materials, and tech. A common project is done with the Department of Landscape Architecture. Prereq: 241 or perm.

Art 351 Printmaking II (3 cr). Continuation of basic printmaking techniques, emphasis on indiv dev. Prereq: 251 or perm.

Art 361 Ceramics II (3 cr). Continuation of basic clay-forming and glazing tech; emphasis on expressive use of materials, design criteria, and dev of indiv concepts. Prereq: 261 or perm.

Art 371 Jewelry II (3 cr). Adv. jewelry tech: casting, etching, enameling, metalsmithing, and related areas, processes, and materials; emphasis on both tech and design. Prereq: 271 or perm.

Art 381 Water Color II (3 cr). Tech of water color painting; sketching from still life and nature. Prereq: 281 or perm.

Art 400 (s) **Seminar** (cr arr). Prereq: perm.

Art 403 (s) **Workshop** (cr arr). Prereq: upper-div standing and perm.

Art 404 (s) **Special Topics** (cr arr). Prereq: perm.

Art 411 Drawing IV (3 cr, max 12). Adv drawing with emphasis on individual dev. Prereq: 331 or perm.

Art 414 Textile Design III (3 cr, max 12). Adv textile design problems; emphasis on individual dev; designing for industry. One lec and 4 hrs of lab a wk.

Art 421 Graphic Design III (3 cr, max 12). Adv design problems; projects are actual design problems drawn from campus community. One 5-day field trip spring sem. Prereq: 321 or perm.

Art 431 Painting III (3 cr, max 12). Adv painting with emphasis on indiv dev. Prereq: 331 or perm.

Art 441 Sculpture III (3 cr, max 12). Studio investigation of adv sculptural concepts, materials, and tech. A common project is done with the Department of Landscape Architecture. Prereq: 341 or perm.

Art 451 Printmaking III (3 cr, max 12). Advanced printmaking techniques; intro to lithography; emphasis on indiv dev. Prereq: 351 or perm.

Art 461 Ceramics III (3 cr, max 12). Adv work in clay-forming tech, glaze experimentation, and kiln procedures; continuation of indiv studio work. Prereq: 361 or perm.

Art 471 Jewelry III (3 cr, max 12). Adv jewelry tech with emphasis on design. Prereq: 371 or perm.

Art 481 Water Color III (3 cr, max 12). Adv. water color painting; sketching from still-life and nature, emphasizing individual dev. Prereq: 381 or perm.

Art 488 Faculty Directed Internship (1-3 cr, max 9). Exper in professional practices under art faculty supervision. Graded P/F. Prereq: upper-div standing.

Art 491 Gallery (1 cr, max 4). Descriptive analysis of gallery functions; hands-on student participation installing, packaging art works for shipping, lighting, promotions, advertising, and marketing; speakers series of professionals in the field and in allied areas, e.g., gallery directors, artists as presenters/installers, professional art movers. Prereq: adv standing or perm.

Art 495 Senior Thesis Show (1 cr). Preparation of BFA thesis show. Graded P/F. Prereq: sr standing.

Art 496 Graphics Proseminar (1 cr). Seminar in professional art practices; exposure to areas, processes, and problems of professional practice; contact with area professionals; emphasis on dev of portfolio. Graded P/F. Prereq: upper-div standing.

Art 497 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Art 498 (s) **Internship** (1-12 cr, max 12). Supervised exper in professional practice. Graded P/F. Prereq: perm of dept chair.

Art 499 (s) **Directed Study** (1-4 cr, max 12). Indiv study areas selected by the student and approved by the faculty; it is the student's responsibility to select a study area and prepare a sem study program; the student contacts one of the art faculty who agrees to direct the study; it is the student's responsibility to initiate the study program and to maintain regular contact with the faculty member who has agreed to direct the study. Prereq: upper-div standing and perm.

Art 500 Master's Research and Thesis (cr arr).

Art 501 (s) **Grad Seminar** (3 cr, max 6). Seminar in professional art concerns; College Guest Art Programs and University Gallery activities incl; field trips. Prereq: grad standing.

Art 502 (s) **Directed Study** (cr arr). Prereq: perm.

Art 503 (s) **Workshop** (cr arr). Prereq: perm.

Art 504 (s) **Studio Problems** (cr arr).

Art 505 (s) **Special Topics** (cr arr). Prereq: perm.

Art 597 (s) **Practicum** (cr arr). Prereq: perm of art grad coordinator.

Art 598 (s) **Internship** (cr arr). Prereq: perm.

Art 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

ART (B.F.A.)

Required course work includes the university requirements (see regulation J-3) and a studio emphasis in one of the following areas: graphic design; painting; sculpture; printmaking; ceramics; jewelry; and watercolor.

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & the Design Process	6
Art 211 Drawing II	3
Art 241 Sculpture I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Art 490 Gallery	2
Art 495 Senior Thesis Show	1
Arch 155 Intro to the Design Disciplines	1
Courses selected from the following	7-9
Art 221 Graphic Design	
Art 231 Painting I	
Art 251 Printmaking I	
Art 261 Ceramics I	
Art 271 Jewelry I	
Art 281 Water Color I	
Courses selected from the following	6
Arch 385 Hist of Architecture	
Arch 386 Hist of Architecture	
CommG 382 Hist of Photography	
CommG 384 Hist of American Film	
Comm 445 Hist of Mass Comm	
Art studio electives: three courses selected from Art 321, 331, 341, 351, 361, 371, 381	9
Art studio emphasis: three semesters in 400-level studio	9
Art studio electives: two courses in addition to the art studio emphasis above, selected from Art 411, 421, 431, 441, 451, 461, 471, 481	6
Electives to total 128 cr for the degree	--

Students who wish to gain an area emphasis in graphic design must include Art 496, Graphics Proseminar, in their programs.

ART (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & the Design Process	6
Art 211 Drawing II	3
Art 241 Sculpture I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Arch 155 Intro to the Design Disciplines	1
Courses selected from the following	7-9
Art 221 Graphic Design	
Art 231 Painting I	
Art 251 Printmaking I	
Art 261 Ceramics I	
Art 271 Jewelry I	
Art 281 Water Color I	
Courses selected from the following	6
Arch 385 History of Architecture	
Arch 386 History of Architecture	
CommG 382 History of Photography	
CommG 384 History of American Film	
Three art studio electives selected from Art 321, 331, 341, 351, 361, 371, or 381	9

One art studio elective selected from Art 411, 421, 431, 441, 451, 461, 471, or 481 . . . 3
Electives to total 128 cr for the degree . . . --

ART EDUCATION (B.S.Art Ed.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
Art 211 Drawing II	3
Art 241 Sculpture I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Courses selected from the following: Art 221 Graphic Design; Art 231 Painting I; Art 251 Printmaking I; Art 261 Ceramics I; Art 271 Jewelry I; Art 281 Water Color I	7-9
Courses selected from the following: Arch 385 History of Architecture; Arch 386 History of Architecture; CommG 382 History of Photography; CommG 384 History of American Film	6
Three art studio electives selected from Art 321, 331, 341, 351, 361, 371, or 381	9
Two art studio electives selected from Art 411, 421, 431, 441, 451, 461, 471, or 481	6
Arch 155 Intro to the Design Disciplines	1
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	3
Ed 319 Secondary School Art Methods	2
Ed 328 Audiovisual Aids	1
Ed 431 or 431 and 435 Practicum	9
Ed 440 Methods of Teaching Content Reading	3
Ed 445 Proseminar in Teaching	1
Ed 468 Contemporary Education	3
Psych 205 or Ed 415 Developmental or Ed Psych	3
Electives to total 128 cr for the degree	--

PHOTOGRAPHY (B.F.A.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Arch 155 Intro to the Design Disciplines	1
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
Art 211 Drawing II	3
Art 241 Sculpture I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Art 404 Special Topics: Pinhole	3
Art 404 Special Topics: Airbrush	3
Art 490 Gallery	2
Art 495 Senior Thesis Show	1
Courses selected from the following: Art 221 Graphic Design; Art 231 Painting I; Art 251 Printmaking I; Art 261 Ceramics I; Art 271 Jewelry I; Art 281 Water Color I	7-9
Two art studio electives selected from Art 321, 331, 341, 351, 361, 371, 381	6
One art studio elective selected from Art 411, 421, 431, 441, 451, 461, 471, 481	3
Comm 281 Understanding Photography	3
Comm 381 Photographic Materials & Tech	3
Comm 385 Color Photography	3
Comm 404 Special Topics: Portfolio	3
Comm 481 Adv Black & White Photography	3
Comm 485 Adv Color Photography	3
CommG 382 History of Photography	3
CommG 384 History of American Film	3
Inter 126 Film & International Culture	3

Academic Minor Requirements

ART MINOR

Course	Credits
Art 101 Visual Art	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
And one of the following areas: 200- and 300-level art studio classes (9 cr); Art 211, 311, 411 Drawing (9 cr); Art 221, 321, 421 Graphic Design (12 cr); Art 231, 331, 431 Painting (9 cr); Art 241, 341, 441 Sculpture (9 cr); Art 251, 351, 451 Printmaking (12 cr); Art 261, 361, 461 Ceramics (9 cr); Art 271, 371, 471 Jewelry (9 cr); Art 281, 381, 481 Water Color (9 cr)	9-12

Department of Bacteriology and Biochemistry

Ronald L. Crawford, Dept. Head (142 Life Sc. Bldg.).

Bacteriology Faculty: Donald L. Crawford, Ronald L. Crawford, Richard C. Helmsch, Al J. Lingg, Bruce L. Miller, Cindy S. Orser, George W. Teresa.

Biochemistry Faculty: Jorg A. L. Augustin, Paul D. Friesen, Duane J. LeTourneau, David J. Oliver, William R. Trumble.

Food Science Faculty: Jorg A. L. Augustin, A. Larry Branen, John E. Montoure, Paul Muneta.

Bacteriology is concerned with the study of microscopic forms of life, their distribution, importance, and role in such diverse areas as control and diagnosis of diseases, agricultural and food technology, environmental and pollution control, and genetic engineering.

Biochemistry is the study of the molecular basis of life, the chemical and physical properties of living things, and their metabolic processes.

Food science is the application of science and technology to the procurement, processing, preservation, and distribution of foods and food products.

The Department of Bacteriology and Biochemistry offers the degree of Bachelor of Science in Bacteriology in both the College of Agriculture and the College of Letters and Science. In addition, the department offers the degree of Bachelor of Science in Medical Technology for students who have earned the Bachelor of Science in Bacteriology at UI and have completed medical technology training in an accredited hospital school. Because of the interdisciplinary nature of biochemistry, preparation in both chemistry and biology, in addition to biochemistry, is required. Students interested in biochemistry are advised by members of the biochemistry faculty, but should enroll in the general chemistry (B.S.) or professional chemistry (B.S.) curriculum. Students interested in food sciences have the opportunity to participate in a cooperative program with Oregon State University during the final two years of their training or at Washington State University during the final year of their training. In each case, the curriculum emphasizes the need for a broad cultural base and specific training in biology, chemistry, mathematics, and physics, in addition to courses in the specialty area. Well equipped laboratories are available and advanced students are encouraged to undertake research problems with the faculty. The department also provides courses for students who are majoring in other areas of the university and wish to obtain increased understanding of the sciences. Students are invited to inquire about academic minors in the department.

The department offers the M.S. and Ph.D. degrees in both bacteriology and biochemistry. Excellent facilities are available for graduate studies and research. Research interests of the faculty include aquatic microbiology, food microbiology, food sciences, immunology and immunoregulation, membrane biochemistry, microbial ecology, microbial physiology, molecular genetics, molecular virology, nucleic acids (including recombinant DNA), and plant biochemistry. Students should contact the department or individual faculty members and consult the Graduate Bulletin for additional details and information concerning graduate assistantships.

Courses

BACTERIOLOGY

Bact 101 Food and Life (3 cr). World food problems; concepts of nutritional adequacy; processing, microbiology, preservation, and packaging of foods; additives and regulations.

Bact 154 Elem Microbiology and Public Health (3 cr) (C). Microorganisms and their role in health, disease, and human welfare.

Bact 250 General Microbiology (4 cr). Satisfies core requirement J-3-b. Intro to nature and activity of bacteria and other microorganisms; their importance in all life systems. Three lec and one 3-hr lab a wk. Prereq: Chem 103 or 111.

Bact 304 Pathogenic Bact (3 cr). Epidemiology, host-parasite relationships, pathology, host response to injury; treatment, prevention, and control of pathogenic bacteria and chlamydiae. Prereq: 250.

Bact 305 Pathogenic Bact Lab (2 cr). Isolation, cultivation; morphological, biochem, and serological ident of pathogenic bacteria. Two 2-hr labs a wk. Prereq or coreq: 304.

Bact 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

Bact 400 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Bact ID402 Food and Applied Microbiology (4 cr). Microorganisms important in foods; spoilage; preservation; food-borne disease. Two lec and two 3-hr labs a wk. Prereq: 250.

Bact 404 (s) **Special Topics** (cr arr).

Bact 409 Immunology (3 cr). Theory and mechanisms of cellular basis of immune response; antibody structure, function, and synthesis; cell-mediated immunity; complement; hypersensitivity; immunologic diseases; transplantation; tumor immunity. Prereq: 250.

Bact 410 Immunology Lab (2 cr). Serologic reactions; analytical tech such as immunodiffusion, immunoelectrophoresis, immunofluorescence, and enzyme-linked antibody tech. Two 2-hr labs a wk. Prereq or coreq: 409.

Bact 414 Adv Lab Methods (4 cr). Clinical and research procedures in theory and practice. Two lec and two 3-hr labs a wk. Prereq: 250, 304, Chem 253.

Bact 421 Clinical Diagnosis: Internship (1-32 cr, max 32). Successful completion of a clinical lab program in an accredited hospital or public health lab. Prereq: 414 and perm of dept.

Bact 425 Soil and Aquatic Microbiology (3 cr). Same as Soils 425. Biogeochem activities and relationships of microorganisms in soil and aquatic environments. Two lec and one 3-hr lab a wk. Prereq: 250.

Bact J431/J531 Recombinant DNA Lab (3 cr). Same as Biochem J431/J531. Tech incl isolation of bacteriophage, transposon mutagenesis, auxotroph ident, isolation of plasmid DNA, transformation of bacteria, DNA cloning, analysis of recombinant DNA clones, isolation of eukaryotic DNA and RNA, construction of gene fusions. Term paper or other additional effort reqd for grad cr. Prereq: J485/J585 and perm.

Bact ID460 Microbial Physiology (5 cr). Concepts of microbial growth, metabolism, regulation, variation, structural-functional relationships. Three lec and two 2-hr labs a wk. Prereq: 250.

Bact 481 Virology (3 cr). Alt/yrs. Same as VS 481. Biochem of replication and structure of animal, plant, and bacterial viruses. Prereq: Biochem 380 or 481 and Genet 314.

Bact 483 Virology Lab (1 cr). See VS 483.

Bact ID-J485/J585 Molecular Genetics I (3 cr). Same as Biochem and Genet J485/J585. Molecular basis of genetics in prokaryotes; bacterial genetics; DNA, RNA, protein biosynthesis; genetic engineering. Term paper or other additional effort reqd for grad cr. Prereq: Biochem 380, Genet 314.

Bact ID-J487/J587 Molecular Genetics II (3 cr). Same as Biochem ID-J487/J587. Molecular basis of genetics in eukaryotes. Term paper or other additional effort reqd for grad cr. Prereq: J485/J585 or perm.

Bact 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Bact 499 (s) **Directed Study** (cr arr). Prereq: perm.

Bact 500 Master's Research and Thesis (cr arr).

Bact 501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Bact 502 (s) **Directed Study** (cr arr). Areas normally offered are: aquatic, food, immunology, medical, microbial ecology, physiology, and soils. Prereq: perm.

Bact 503 Adv Microbial Physiology (2-4 cr). Use of current lit to study recent advances in the physiology of selected microorganisms. Registration for 4 cr requires an additional project. Prereq: 460 or perm.

Bact 504 (s) **Special Topics** (cr arr).

Bact ID505 Microbial Biotechnology (2-4 cr). Alt/yrs. Industrial microbial processes and lab methods. Two lec, or two lec with labs, a wk. Prereq: 250, Chem 372, or perm.

Bact 507 Bacterial Taxonomy (2 cr). Determination of and differentiation between taxonomic groups of bacteria. Prereq: 250, 304.

Bact WS529 Research Techniques in Microbiology (3 cr). WSU Micro 529.

Bact 531 Recombinant DNA Lab (3 cr). See J431/J531.

Bact 540 Molecular Virology (3 cr). Alt/yrs. Same as Biochem 540. Recent advances on molecular aspects of virus replication and mechanisms of genome expression. Prereq: J485/J585.

Bact 585 Molecular Genetics I (3 cr). See J485/J585.

Bact 587 Molecular Genetics II (3 cr). See J487/J587.

Bact 597 (s) **Practicum** (cr arr). Prereq: perm.

Bact 598 (s) **Internship** (cr arr). Prereq: perm.

Bact 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Bact 600 Doctoral Research and Dissertation (cr arr).

BIOCHEMISTRY

Biochem 380 Intro Biochem (3 cr). Max 7 cr in any combination of 380 or J481/J541 and J482/J542. Survey of structure, function, and metabolism of major constituents of living systems. Prereq: Chem 103 and Chem 275.

Biochem 382 Intro Biochem Lab (1 cr). Lab training in modern methods. One 3-hr lab a wk. Prereq: Chem 103, Chem 278; prereq or coreq: 380 or equiv.

Biochem 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

Biochem 400 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Biochem 401 Undergrad Research (1-2 cr, max 4). Indiv study. Prereq: sr standing and perm.

Biochem 404 (s) **Special Topics** (cr arr).

Biochem J431/J531 Recombinant DNA Lab (3 cr). See Bact J431/J531.

Biochem ID-J481-ID-J482/ID-J541-ID-J542 Biochem (3 cr). Same as Chem J481-J482/J541-J542. Max 7 cr in any combination of 380, J481/J541, and J482/J542. Intermediate biochem; intro to metabolism and the chem and physical properties of biomolecules. Prereq: Chem 372; coreq: Chem 302 or Chem 306 or perm.

Biochem 483-484 Biochem Lab (2 cr). Same as Chem 483-484. Biochem tech for the study of proteins, lipids, nucleic acids, enzymes, and intermediary metabolism. Two 3-hr labs a wk. For 483, prereq: Chem 253; coreq: 481. For 484, prereq: 483; coreq: 482.

Biochem ID-J485/J585 Molecular Genetics I (3 cr).

Biochem 486 Plant Biochem (3 cr). Alt/yrs. Same as Chem 486. Composition and metabolism of higher plants with emphasis on secondary plant products. Prereq: 380.

Biochem ID-J487/J587 Molecular Genetics II (3 cr). See Bact ID-J487/J587.

Biochem 499 (s) **Directed Study** (cr arr). Prereq: perm.

Biochem 500 Master's Research and Thesis (cr arr).

Biochem 501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Biochem 502 (s) **Directed Study** (cr arr). Prereq: perm.

Biochem 531 Recombinant DNA Lab (3 cr). See J431/J531.

Biochem 540 Molecular Virology (3 cr). See Bact 540.

Biochem ID541-ID542 Biochem (3 cr). See J481-J482/J541-J542.

Biochem 581 Carbohydrates (3 cr). Alt/yrs. Same as Chem 581. Structure, function, and metabolism of carbohydrates. Prereq: 482 or perm.

Biochem 582 Proteins and Enzymes (3 cr). Alt/yrs. Same as Chem 582. Protein structure and function; mechanisms of enzyme action. Prereq: 481.

Biochem 583 Lipids and Membranes (3 cr). Alt/yrs. Same as Chem 583. Biosynthesis and metabolism of major classes of complex lipids and sterols; structure, function, and properties of biomembranes and membrane models. Prereq: 482.

Biochem 584 Nucleic Acids (3 cr). Alt/yrs. Same as Chem 584. Structure, function, and metabolism of nucleic acids. Prereq: 482.

Biochem 585 Molecular Genetics I (3 cr). See J485/J585.

Biochem 587 Molecular Genetics II (3 cr). See J487/J587.

Biochem 589 Adv Topics in Biochem (1-9 cr, max 9). Same as Chem 589. Recent research in enzymes, hormones, complex lipids, vitamins, nucleic acids, antibiotics, viruses, and biochem genetics. Prereq: perm.

Biochem 600 Doctoral Research and Dissertation (cr arr).

FOOD SCIENCE

FS 101 Food and Life (3 cr) World food problems; concepts of nutritional adequacy; processing, microbiology, preservation, and packaging of foods; additives and regulations.

FS WS301 Dairy Products (2 cr). Prereq: microbiology and organic chem.

FS WS303 Fruit and Vegetable Products (3 cr). Prereq: general microbiology and organic chem.

FS WS-J422/WS-J522 Food Quality Eval (3 cr). Alt/yrs.

FS WS-J450/WS-J550 Food Fermentations (3 cr). Alt/yrs. Prereq: microbiology and organic chem.

FS WS460 Food Chem (3 cr). Prereq: organic chem and biochem.

FS WS461 Food Chem Lab (1 cr).

FS WS522 Food Quality Eval (3 cr). See J422/J522.

FS WS550 Food Fermentations (3 cr). See J450/J550.

Curricular Requirements

BACTERIOLOGY

The undergraduate curricula in bacteriology prepare students for obtaining interesting and challenging careers in biotechnology, public health, medical technology, industrial, and agricultural research laboratories. The major is suitable for those intending to apply to graduate schools or professional programs of dentistry, medicine, or veterinary science.

BACTERIOLOGY (B.S.Bact.)

This program is offered through the College of Agriculture and is designed for students who desire professional careers in basic and applied aspects of microbiology (terrestrial, aquatic, food, industrial) related to agriculture. This curriculum stresses microbial ecology of natural systems, aspects of disease and pollution control, and basic mechanisms of microbial growth and metabolism.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Bact 250 General Microbiology	4
Bact 304, 305 Pathogenic Bacteriology & Lab	5
Bact 400 Seminar	1
Bact 402 Food & Applied Microbiology or 425 Soil & Aquatic Microbiology	3-4
Bact 409, 410 Immunology & Lab or 460 Microbial Physiology	5
Biochem 380, 382 Introductory Biochem & Lab	4
Biol 201 Intro to Life Sciences	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 372 Organic Chem II	3
CommG 131 Fund of Public Speaking or CommG 233 Interpersonal Comm	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Math 111, 160 Finite Math & Survey of Calculus or 180 Analyt Geom & Calculus	4-8
Phys 113-114-115-116 General Physics & Lab	8
Stat 251 Principles of Statistics	3
Science electives (incl at least 3-4 cr in bact)	16
Humanities and social sciences electives	14
Electives to total 128 cr for the degree	--

Strongly recommended science electives:
Bact 425 Soil & Aquatic Microbiol or 402 Food & Applied Microbiol
Bact 460 Microbial Physiology or 409, 410 Immunology & Lab
Bact 481, 483 Virology & Lab
Bact 485 Molecular Genetics
Bact 499 Directed Study
AnSc 305 Animal Nutrition
AnSc 451 Endocrine Physiology
Biol 202 General Zool or PlSc 102 Intro to Plant Sc
Biol 331, 332 General Ecology and Methods in Ecology
Biol 351, 352 General Genetics and Exper Genetics
Chem 302 Prin of Physical Chem
Chem 376 Organic Chem II Lab
VS 371 Anatomy & Physiology
VS 474 Animal Disease

Note: For students who wish to enter a school of veterinary medicine, it is possible to obtain the B.S.Bact. degree by substituting VS 474 for Bact 402/425. Under this plan VS 371 is reqd, Chem 253 is optional, and AnSc 305, 451, 452, and VS/Bact 481 are strongly recommended. This option may not be used in double majors.

BACTERIOLOGY (B.S.)

This program is offered through the College of Letters and Science and is designed for students who desire professional careers or who are preparing for graduate study in areas of microbiology related to public health, medical technology, industrial microbiology, basic microbiology, immunology, or virology.

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
Bact 250 General Microbiology	4
Bact 304, 305 Pathogenic Bacteriology & Lab	5
Bact 400 Seminar	1
Bact 409, 410 Immunology & Lab	5
Bact 460 Microbial Physiology	5
Biochem 380, 382 Introductory Biochemistry & Lab	4
Biol 201 Intro to the Life Sciences	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 372 Organic Chem II	3
CommG 131 Fund of Public Speaking or CommG 233 Interpersonal Comm	2
Math 111, 160 Finite Math and Survey of Calculus or 180 Analyt Geom & Calculus	4-8
Phys 113-114-115-116 General Physics & Lab	8
Science electives (incl at least 3 cr in bact)	16
Electives to total 128 cr for the degree	--

Strongly recommended science electives:
Bact 402 Food & Applied Microbiol
Bact 414 Adv Lab Methods
Bact 425 Soil & Aquatic Microbiol
Bact 481, 483 Virology & Lab
Bact 485 Molecular Genetics
Bact 499 Directed Study
Biol 202 General Zool or 203 General Bot
Biol 331, 332 General Ecology and Methods in Ecology
Biol 351, 352 General Genetics and Exper Genetics
Chem 302 Prin of Physical Chem
Chem 376 Organic Chem II Lab
Zool 119 Human Anatomy & Physiology
Zool 414, 415 Cell Physiology & Lab
Zool 418 Parasitology

MEDICAL TECHNOLOGY OPTION

The medical technologist performs critical laboratory tests and analytical procedures that aid physicians in the diagnosis and treatment of disease. The curriculum is of interest to students desiring professional careers in hospital and clinical laboratories, public health and research laboratories, and pharmaceutical laboratories.

Students who wish to apply for clinical training in medical technology at an accredited hospital will be required to take Bact 414, Zool 119, and Zool 418. Upon completion of the B.S. degree in bacteriology (medical technology option), those students who successfully complete 32 credits (Bact 421) in a 12-month training course at an accredited hospital school of medical technology with a curriculum including clinical bacteriology, medical mycology, parasitology, clinical chemistry, toxicology, urinalysis, hematology, immunology-serology, immunohematology, and clinical correlations will be awarded the B.S. degree with major in medical technology. This second degree option is open only to students who have earned the B.S. in bacteriology at UI.

BIOCHEMISTRY

Because of the interdisciplinary nature of biochemistry, preparation in both chemistry and biology, in addition to biochemistry, is required. The student may prepare for career opportunities in medical, biological, and agricultural fields, and the curriculum provides an excellent background for those intending to apply to graduate or professional schools. Students interested in majoring in biochemistry are advised by members of the biochemistry faculty, but should enroll in the general chemistry (B.S.) or professional chemistry (B.S.) curriculum in the College of Letters and Science. In addition to courses indicated in the chemistry curriculum, students, in consultation with their advisers, will select courses that may include any of the following:

Biochem 481-482, 483-484 Biochem Lab
Biochem 485 Molecular Genetics
Biochem 486 Plant Biochem
Biochem 499 Directed Study
Bact 250 General Microbiology
Bact 460 Microbial Physiology
Bact 481 Virology
Biol 201 Intro to the Life Sciences
Biol 202 General Zool or 203 General Bot
Biol 351, 352 General and Exper Genetics
Zool 414, 415 Cell Physiology & Lab

FOOD SCIENCE

Emphasis in this program is placed on providing a sound background to prepare students for positions in the food industry, governmental agencies, and research laboratories. Programs are offered in cooperation with Oregon State University and Washington State University, the degree-granting institutions. Under the OSU program, the Idaho student spends the first two years at UI and the second two years in the OSU Department of Food Science and Technology. Idaho resident students are not charged out-of-state tuition by OSU. Students pursuing the WSU option spend three years in the UI Department of Bacteriology and Biochemistry and the fourth year in the WSU Department of Food Science and Technology. Courses are available at UI and WSU during the entire four-year program.

Under a third program, UI is the degree-granting institution. Students taking this option major in bacteriology with special emphasis in food microbiology including fermentations. The student has the opportunity to take cross-listed food science courses at WSU.

Required course work for the cooperative program with WSU includes WSU requirements for graduation, advanced food science courses, and

Course	Credits
AgEc 278 Principles of Farm & Ranch Management	4
AgEc 289 Ag Markets & Prices	3
AgMech 405 Agricultural Processing	3
AnSc 263 Introduction to Meat Science	3
AnSc 305 Animal Nutrition	3
Bact 250 General Microbiology	4
Bact 402 Food & Applied Microbiology	4
Biochem 380 Introductory Biochemistry	3
Biol 201 Intro to the Life Sciences	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I and Lab	4
CommG 131 Fundamentals of Public Speaking	2
Econ 152 Principles of Economics	3
Eng 317 Technical & Engr Report Writing	3
FS 101 Food & Life	3
Math 111 Finite Math	4
Math 160 Survey of Calculus	4
Phys 113-114-115-116 General Physics and Lab	8
Stat 301 Probability & Statistics	3

The following required courses taught at Washington State University may be taken while enrolled at UI:

FS 301 Dairy Products	2
FS 303 Fruit & Vegetable Products	3
FS 450 Food Fermentations	3
FS 460, 461 Food Chemistry & Lab	4
FS 422 Food Quality Evaluation	3

Academic Minor Requirements

BACTERIOLOGY MINOR

Course	Credits
Bact 250 General Microbiology	4
Bact 304, 305 Pathogenic Bact and Lab	5
Bact 409, 410 Immunology and Lab	5
Bact 460 Microbial Physiology	5

BIOCHEMISTRY MINOR

Course	Credits
Biochem 481-482 Biochemistry	6
Courses selected from the following	12
Biochem 382 Intro Biochem Lab or Biochem 483-484 Biochem Lab (1 or 4 cr)	
Biochem 400 Seminar (2 cr)	
Biochem 401 Undergrad Research (1-4 cr).	
Biochem 485 Molecular Genetics (2-4 cr).	
Biochem 486 Plant Biochemistry (3 cr)	
Chem 302, 303 Prin of Physical Chem & Lab (or equiv) (4 cr)	

Department of Biological Sciences

Arthur W. Rourke, Dept. Chair (252 Life Sc. Bldg.). Faculty: Doyle E. Anderegg, John A. Byers, Joseph G. Cloud, Henry Daniell, Mark E. DeSantis, Victor P. Eroschenko, O. Clifford Forbes, Douglass M. Henderson, Rolf Ingermann, Donald R. Johnson, Thomas A. McKean, Rodney A. Mead, Fred W. Rabe, Lorin W. Roberts, Arthur W. Rourke, George G. Spomer, Edmund E. Tylutki, Richard L. Wallace.

The biological sciences deal with the basic biological principles of all living things with major emphasis on both plant and animal forms.

The Department of Biological Sciences offers several undergraduate curricular options in botany, zoology, and biology. Though all curricula involve exposure to concepts fundamental to plants and animals, degrees in zoology and botany allow students to emphasize course work dealing with animals and plants, respectively. All curricula are designed to introduce the undergraduate to modern molecular approaches to the life sciences as well as more classical approaches.

The department offers both B.A. and B.S. degrees in biology, botany, and zoology. Graduates from the department traditionally enter a variety of fields and many continue their education. Recent graduates have entered allied health professions, agribusiness, medical school, veterinary school, graduate school, state and national agencies that deal with biology (e.g., fish and game departments, EPA), as well as a variety of consulting agencies.

Faculty and facilities are available to teach and conduct research in animal and plant ecology, reproductive biology, comparative, cellular, and organ physiology, plant physiology, aquatic biology, natural history of fishes, amphibians, reptiles, birds, and mammals, mycology and mushroom taxonomy, systematic botany, plant anatomy, vertebrate behavior, and genetics.

The department offers a nonthesis graduate degree, the M.Nat.Sc., which is designed to increase the breadth and depth of understanding of biology and is designed primarily for secondary teachers. The M.S. and Ph.D. degrees in botany and zoology are also offered.

Students with any questions should call the department chair at (208) 885-6280.

Courses

Note: Enrollment in lab sections of departmental courses will be limited to the number of stations available in that section.

BIOLOGY

Biol 100 Intro to Biology (4 cr). Satisfies core requirement J-3-b. Not open to majors or for minor cr. Biol prin that relate to everyday living, incl ecosystems, pollution, reproduction, and disease. Three lec and one 2-hr lab a wk.

Biol 101 Perspectives in Biol (1 cr). Intro to the disciplines in the fields of biol; current research topics. Graded P/F.

Biol 150 Heredity and Man (2 cr). Same as Genet 106. Not open for cr to majors, minors, or students who have previous cr in genetics. Inheritance with emphasis on man.

Biol 190 Natural Hist of Pacific Northwest (3 cr). Intro to vegetation, fleshy fungi, and vertebrate faunas of Pacific Northwest, emphasizing their distribution and ecology as influenced by geol and climate. One 1-day field trip.

Biol 201 Intro to the Life Sc (4 cr). Satisfies core requirement J-3-b. Biol prin important in understanding animals, plants, and microorganisms; cytology; ecology; evolution; genetics; growth; molecular biol; physiology. Three lec, one 3-hr lab, and one 1-hr recitation a wk. Prereq: one sem college chem recommended.

Biol 202 General Zool (4 cr). Anatomy, embryology, histology, and physiology of vertebrate and invertebrate animals; the animal kingdom. Three lec and two 2-hr labs a wk. Prereq: 201.

Biol 203 General Bot (4 cr). Growth, dev, and econ of angiosperms in relation to heredity and environment; comparisons of angiosperms with other plant-kingdom div. Three lec and two 2-hr labs a wk. Prereq: 201.

Biol 207 Intro to Oceanography (3 cr). Geological, physical, chem, and biol features of oceans; biol emphasized. Prereq: course in biol and soph standing.

Biol 331 General Ecology (3 cr). Basic ecologic prin and processes affecting the nature and occurrence of populations, communities, and biomes. Prereq: one yr of biol.

Biol 332 Methods in Ecology and Field Biol (2 cr). Intro to basic tech used in ecology and other biol field investigations. One recitation and one 3-hr lab a wk; two 1-day field trips. Prereq or coreq: 331.

Biol 351 General Genetics (3 cr) (C) Same as Genet 314. Genetic mechanisms in animals, plants, and microorganisms. Prereq: 201.

Biol 352 Experimental Genetics (1 cr). Same as Genet 315. One 3-hr lab a wk. Prereq or coreq: 351 or Genet 314.

Biol 361 Biol Lit (1 cr). Botanical and zoological lit. Prereq: 201 or equiv.

Biol 405 Biol Lab Procedures (1 or 2 cr). Org, prep, and assisting in lab experiments or demonstrations under faculty supervision. Graded P/F. Prereq: perm.

Biol 442 Biol Evolution (3 cr). Genetic, ecological, and paleontological aspects of evolution, incl that of man. Prereq: 202 and 351, or perm.

Biol 451 Cytology (3 cr). Structure and function of the nucleus and cytoplasm in animal and plant cells. Two lec and one 3-hr lab a wk. Prereq: 351.

Biol 499 (s) **Directed Study** (cr arr). Prereq: perm.

Biol 501 (s) **Seminar** (cr arr). Prereq: perm.

Biol 502 (s) **Directed Study** (cr arr). Prereq: perm.

Biol 503 (s) **Workshop** (cr arr). Prereq: perm.

Biol 504 (s) **Special Topics** (cr arr). Prereq: perm.

Biol 505 Colloquium (1 cr, max 2). Oral presentation reqd for cr. Graded P/F. Prereq: perm.

Biol 555 Physiological and Molecular Genetics (2-3 cr). Same as Genet 537. Prereq: 351 or Genet 314.

BOTANY

Bot 241 Systematic Bot (3 cr). Classification and ident of flowering plants; local flora. Two 1-hr lec and two 2-hr labs a wk; four 1-day field trips. Prereq: Biol 203 or perm.

Bot 311 Plant Physiology (3 cr). Functions of plant growth and dev. Prereq: Biol 203 and organic chem.

Bot 312 Plant Physiology Lab (2 cr). Two 3-hr labs a wk. Prereq or coreq: 311.

Bot 325 Morphology of Lower Plants (4 cr). Structures, life hist, classification, and phylogeny of fungi and algae. Two lec and two 3-hr labs a wk. Prereq: Biol 203.

Bot 364 Bot Microtech (3 cr). Methods of treating plant tissues for microscopic exam or histochem tests. Two 3-hr labs a wk. Prereq: Biol 203 or perm.

Bot 381 Mushroom Ident (1 cr). Methods of mushroom study; emphasis on the natural hist of higher basidiomycetes and ascomycetes of the Northwest. Two 2-hr lec-labs a wk for the first 8 wks; one 1-day field trip. Prereq: course in biol.

Bot 382 Mold Ident (1 cr). Methods and procedures for identifying filamentous fungi (phycomycetes, ascomycetes, fungi imperfecti) commonly found in soil, water, air, and decomposing organic matter. Two 2-hr lec-labs a wk for second 8 wks; two field trips. Prereq: course in biol.

Bot J401/510 Tech of Plant-Tissue Culture (2 cr). Isolation and culture of higher plant cells, tissues, and organs. Two 3-hr labs a wk. Cr earned in 510 by completion of special project and term paper. Prereq: perm.

Bot J413/J515 Mineral Nutrition (3 cr). Alt/yrs. 413 same as Soils 448. Uptake and metabolism of mineral elements in higher plants. Two lec and one 2-hr disc a wk. Cr earned in 515 by completion of term paper on mineral metabolism in higher plants. Prereq: 311 and organic chem.

Bot ID-J420/ID-J520 Aquatic Macrophytes (1 cr). Classification, structure, and habits of predominant aquatic macrophytes of Pacific NW. Cr earned in 520 by completion of analyt term paper. Accelerated course with six hrs of lab a wk for first 8 wks; one 1-day field trip. Prereq: Biol 203; Bot 241 recommended.

Bot ID-J421/ID-J521 Biol of Fungi (2 cr). Life activity of fungi; structure, life hist, and classification. Two lec and two 3-hr labs a wk. Cr earned in 521 by exam of current lit and prep of term paper. Prereq: Biol 203 or perm.

Bot ID-J422/ID-J522 Fungi in the Lab (1 cr). Culture, experimentation, isolation, and morphology of fungi. Cr earned in 522 by directing open-ended lab experiment.

Bot J425/J525 Developmental Plant Anatomy (4 cr). Origin and dev of tissues and organs of vascular plants in relation to heredity, environment, and physiology. Eight hrs a wk. Cr earned in 525 by completion of analyt term paper. Prereq: Biol 203.

Bot ID-J426/ID-J526 Morphology of the Embryophytes (4 cr). Structure, life hist, classification, and phylogeny of liverworts, mosses, clubmosses, horsetails, quillworts, ferns, and gymnosperms. Eight hrs a wk; one 1-day field trip. Cr earned in 526 by completion of analyt term paper. Prereq: Biol 203.

Bot J432/J530 Plant Ecology (3 cr). General ecologic concepts and theory applied to plant populations and communities; intro to methods in plant ecology. Two lec and one 3-hr lab a wk; three 1-day field trips. Cr earned in 530 by prep of critical review of specific ecologic problem. Prereq: Biol 203, 331; Bot 241 recommended.

Bot WS437 Field Ecology (2 cr). WSU Bot 463.

Bot J440/J540 Adv Plant Taxonomy (3 cr). Major classification systems, emphasis on flowering plants of world, their relationships, evolutionary trends, and morphological specializations. Two 3-hr lec-labs a wk; one weekend field trip. Prereq: 241 or equiv.

Bot 441 Agrostology (3 cr). Classification, distribution, and structure of grasses. One lec and two 3-hr labs a wk; field labs and two 1-day field trips. Prereq: 241 and Biol 203.

Bot 474 Phycology (4 cr). Morphology and ecology of fresh water and marine algae; prin of classification; collection, ident, and making of permanent microscopic prep. Prereq: Biol 203.

Bot 499 (s) **Directed Study** (cr arr). Prereq: perm.

Bot 500 Master's Research and Thesis (cr arr).

Bot 501 (s) **Seminar** (cr arr). Prereq: perm.

Bot 502 (s) **Directed Study** (cr arr). Prereq: perm.

Bot 503 (s) **Workshop** (cr arr). Prereq: perm.

Bot 504 Special Topics (cr arr). Prereq: perm.

Bot 510 Tech of Plant-Tissue Culture (2 cr). See J401/J510.

Bot 512 Plant Growth Substances (3 cr.) Alt/yrs. Hormonal regulation of physiological processes. Two lec and one 2-hr disc a wk. Prereq: 311 and organic chem.

Bot 515 Mineral Nutrition (3 cr). See J413/J515.

Bot ID520 Aquatic Macrophytes (1 cr). See J420/J520.

Bot ID521 Biol of Fungi (2 cr). See J421/J521.

Bot ID522 Fungi in the Lab (1 cr). See J422/J522.

Bot 525 Developmental Plant Anatomy (4 cr). See J425/J525.

Bot ID526 Morphology of the Embryophytes (4 cr). See J426/J526.

Bot 530 Plant Ecology (3 cr). See J432/J530.

Bot 532 Plant Environmental Biophysics (2 cr). Macroenvironments of living plants, heat and mass transfer from plants to the environment, plant energy budgets. Prereq: J432/J530.

Bot 533 Plant Environmental Biophysics Lab (1 cr). Measurement of environmental variables such as temperature, moisture, wind, radiation, heat and mass fluxes, and energy budgets. One 3-hr lab a wk. Prereq or coreq: 532.

Bot 535 Plant Geog (3 cr). Alt/yrs. Same as Geog 525. Spatial relations of plants and plant communities as determined by intrinsic factors such as genetics and evolution, and extrinsic factors such as physiography, geol, climate, and climatic change; mechanisms of distribution; discontinuity patterns. One 3-day field trip. Prereq: J432/J530 or perm.

Bot 539 Physiological Ecology (3 cr). Physiological adaptations to various environmental and habitat conditions and their ecologic consequences. Two lec and one 3-hr lab a wk. Prereq: J432/J530, 311 recommended.

Bot 540 Adv Plant Taxonomy (3 cr). See J440/J540.

Bot WS575 Basidiomycetes (3 cr). WSU Pl P 522.

Bot WS576, Ascomycetes and Fungi Imperfecti (2 cr). WSU Pl P 523.

Bot WS577 Lower Fungi (2 cr). WSU Pl P 524.

Bot 600 Doctoral Research and Dissertation (cr arr).

ZOOLOGY

Zool 119 Human Anatomy and Physiology (5 cr). Three lec and two 2-hr recitation-labs a wk.

Zool 324 Comparative Vertebrate Anatomy (4 cr). General vertebrate anatomy and evolutionary changes in organ systems. Two lec and two 3-hr labs a wk. Prereq: Biol 202.

Zool 366 Histological Technique (2 cr). Methods of fixing, sectioning, staining, and mounting. Two 3-hr labs a wk. Prereq: Biol 202.

Zool 384 Bird Ident (2 cr). Field and lab ident of birds. One 3-hr lec-lab a wk for second 8 wks; six 1-day field trips. Prereq: course in biol.

Zool ID-J411/ID-J511 Comparative Vertebrate Reproduction (3 cr). Physiology of major events in reproductive cycles of vertebrates with emphasis on mammals. Cr earned in 511 by completion of additional reading in journals, take-home exam with each hr exam, and term paper. Prereq: Biol 202.

Zool 412 Comparative Vertebrate Reproduction Lab (2 cr). Lab study of the estrous cycle, pregnancy, and hormonal control of these events in rats. One 3-hr lab a wk. Prereq or coreq: 411 or AnSc 452.

Zool J414/J514 Cell Physiology (3 cr). Experimental investigation of cells. Cr earned in 514 by completion of research proposal. Prereq: organic chem, Biochem 380, and Biol 201; Biol 202 recommended.

Zool 415 Cell Physiology Lab (2 cr). Current methodology to investigate a variety of functions in several eukaryotic cell types. Two 3-hr labs a wk.

Zool 416 Mammalian Physiology (4 cr). Organs and organ systems of vertebrates; emphasis on mammals. Three lec and one 3-hr lab a wk. Prereq: Biol 202 and organic chem.

Zool J417/J517 Endocrine Physiology (3 cr). See AnSc J451/J551.

Zool WS418 Parasitology (4 cr). WSU Zool 417. Prereq: Biol 202.

Zool J423/J523 Comparative Vertebrate Physiology (4 cr). Comparative physiology of the major organ systems found in vertebrates. Prereq: Biol 202 and organic chem.

Zool 427 Vertebrate Histology and Organology (4 cr). Microscopic anatomy of tissues and major mammalian organs. Two lec and two 3-hr labs a wk. Prereq: Biol 202.

Zool J432/J532 Raptor Ecology (2 cr). Ident, population dynamics, migration and food habits, energetics of North American birds of prey. Cr earned in 532 by completion of additional work. Prereq: perm.

Zool 435 Limnology (5 cr). See Fish 415.

Zool J438/J538 Animal Geog (2 cr). 538 same as Geog 526. Dynamics of the distribution of animals in time and space. Cr earned in 538 by completion of analyt term paper. Prereq: perm.

Zool J472/J572 Developmental Biology (3 cr). Analysis of dev and regulatory mechanisms at cellular and molecular level during embryogenesis. Cr earned in 572 by completion of additional reading, take-home exam, and term paper. Prereq: Biol 202.

Zool 473 Comparative Embryology Lab (1 cr). Descriptive embryology of a number of organisms with emphasis on amphibian, bird, and mammal. One 3-hr lab a wk. Prereq or coreq: J472/J572.

Zool 478 Animal Behavior (3 cr). Evolution, causation, dev, and function of behavior in vertebrates and invertebrates. Prereq: Biol 202.

Zool 481 Ichthyology (4 cr). Same as Fish 411. Anatomy, taxonomy, physiology, distribution, and ecological relationships of fishes. Three lec and one 3-hr lab a wk; one half-day field trip. Prereq: Biol 202.

Zool 482 Natural Hist of Birds (3 cr). Two lec and one 3-hr lab a wk; two 1-day field trips. Prereq: Biol 202 or perm.

Zool 483 Natural Hist of Mammals (3 cr). Two lec and one 3-hr lab a wk. Prereq: Biol 202 or perm.

Zool J484/J584 Invertebrate Zoology (4 cr). Morphology of freshwater, marine, and terrestrial invertebrates and phylogeny of major groups. Cr earned in 584 by completion of extra project requiring a report. Two lec and two 2-hr labs a wk; one 6-day or two 2-day field trips. Prereq: Biol 202.

Zool 485 Freshwater Invertebrates (2 cr). Collection, preserving, ident, slide preparation, and culturing of freshwater invertebrates not to incl insects, protozoans, or parasitic forms.

Zool ID486 Marine Invertebrate Communities (1 cr). Six-day field trip to coast to study natl hist of marine invertebrates on rocky coast, mud flats, boat docks, and subtidal areas. Prereq: Biol 202.

Zool 489 Herpetology (3 cr). Evolution, taxonomy, and biol of amphibians and reptiles. Two lec and one 3-hr lab a wk; one 4-day field trip and field labs. Prereq: Biol 202.

Zool ID494 Insect Anatomy and Physiology (4 cr). See Ent 484.

Zool ID-J496/ID-J596 Development Systems in Insects (3 cr). See Ent J496/J596.

Zool 499 (s) **Directed Study** (cr arr). Prereq: perm.

Zool 500 Master's Research and Thesis (cr arr).

Zool 501 (s) **Seminar** (cr arr). Prereq: perm.

Zool 502 (s) **Directed Study** (cr arr). Prereq: perm.

Zool 503 (s) **Workshop** (cr arr). Prereq: perm.

Zool 504 Special Topics (cr arr). Prereq: perm.

Zool WS505 Generation, Degeneration, and Regeneration in Nervous System (2 cr).

Zool ID511 Comparative Vertebrate Reproduction (3 cr). See J411/J511.

Zool 512 Environmental Physiology (3-4 cr). Physiological responses of animals to natural changes or extremes of the physical environment. One 3-hr lab a wk if taken for 4 cr. Prereq: 416.

Zool 513 Comparative Animal Physiology (3 cr). Alt/yrs. Physiology, morphology, evolution, and ecology of various animal groups. Prereq: 415 or 416.

Zool 514 Cell Physiology (3 cr). See J414/J514.

Zool 517 Endocrine Physiology (3 cr). See J417/J517.

Zool 523 Comparative Vertebrate Physiology (4 cr). See J423/J523.

Zool WS531 Theoretical Ecology (3 cr). Prereq: 4 courses in biol, one course in calculus, and perm.

Zool ID532 Raptor Ecology (2 cr). See J432/J532.

Zool 538 Animal Geog (2 cr). See J438/J538.

Zool 572 Developmental Biology (3 cr). See J472/J572.

Zool 584 Invertebrate Zoology (4 cr). See J484/J584.

Zool ID596 Developmental Systems in Insects (3 cr). See J496/J596.

Zool 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

BIOLOGY (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and the following (electives to be chosen in consultation with the departmental adviser).

Course	Credits
Biol 101 Perspectives in Biology	1
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
Biol 352 Experimental Genetics	1
Biol 361 Biological Literature	1
Biol 442 Biological Evolution	3
Bact 250 General Microbiology	4
Bot 311, 312 Plant Physiology & Lab	5
Bot 425 Developmental Plant Anatomy	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 275, 276 Carbon Compounds & Lab	4
Math 140 Pre-calculus Algebra & Analytic Geom	3
Phys 113-114-115-116 General Physics & Lab	8
Zool 324 Comparative Vertebrate Anatomy or Zool 472, 473 Developmental Biol and Lab	4
Zool 414, 415 Cell Physiology & Lab or 423 Comp Vertebrate Physiology	4-5
Zool 484 Invertebrate Zoology or Ent 211 General Entomology	4

BOTANY (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and the following (electives to be chosen in consultation with the departmental adviser).

Course	Credits
Bot 241 Systematic Botany	3
Bot 311, 312 Plant Physiology & Lab	5
Bot 421 Biology of Fungi	2
Bot 425 Developmental Plant Anatomy	4
Bot 426 Morphology of the Embryophytes	4
Bot 432 Plant Ecology	3
Biol 101 Perspectives in Biology	1
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
Biol 352 Experimental Genetics	1
Biol 361 Biological Literature	1
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Math 140 Pre-calculus Algebra & Analytic Geom	3

And completion of one of the two sections below:

A. FOR STUDENTS NOT PLANNING TO ATTEND GRADUATE SCHOOL

Chem 275, 276 Carbon Compounds and Lab	4
And at least one of the following	
Math 160 Survey of Calculus	
Math 180 Analytic Geom & Calculus I	
Stat 251 Principles of Statistics	

B. FOR STUDENTS PLANNING TO ENTER GRADUATE SCHOOL

Biochem 380 Introductory Biochemistry	3
Chem 277, 372 Organic Chemistry I, II	6
Chem 278 Organic Chem I: Lab	1
Math 180 Analytic Geom & Calculus I or Stat 251 Prin of Statistics	3-4
Phys 113-114-115-116 General Physics & Lab	8

ZOOLOGY (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and the following (electives to be chosen in consultation with the departmental adviser).

Course	Credits
Zool 324 Comparative Vertebrate Anatomy	4
Zool 414, 415 Cell Physiology & Lab or 423 Comp Vertebrate Physiology	4-5
Zool 481 Ichthyology or 482 Natural History of Birds or 483 Natural History of Mammals or 489 Herpetology	3-4
Zool 484 Invertebrate Zool or 418 Parasitology or Ent 211 General Entomology	3-4
Biol 101 Perspectives in Biology	1
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
Biol 352 Experimental Genetics	1
Biol 361 Biological Literature	1
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab or Chem 275, 276, Carbon Compounds & Lab	4
Chem 372 Organic Chem II or Biochem 380 Intro Biochem	3
Math 140 Pre-calculus Algebra & Analytic Geom	3
Math 160 Survey of Calculus or Math 180 Analytic Geom & Calculus I	4
Phys 113-114-115-116 General Physics & Lab	8
Stat 251 Principles of Statistics	3
Approved upper-div biol or zool electives	3-4

PRE-NURSING STUDIES

Admission to a school of nursing involves meeting satisfactorily its entrance requirements, acceptable scholastic records or a satisfactory score on the nursing admission test, and possession of personal qualifications essential for effective nursing. Requirements of the institution to which the student will transfer should be investigated by the student to ensure inclusion of courses that meet those requirements.

The following two-year program is suggested for students who plan to transfer to a school of nursing.

Course	Credits
Bact 250 General Microbiology or Bact 154 Elem Microbiol & Public Health	4
Biol 201 Intro to the Life Sciences	4
Chem 103 Intro to Chem or 111 Principles of Chem	4

Chem 114 General Chemistry or 275, 276 Carbon Compounds & Lab 4
HEc 205 Concepts in Human Nutrition 3
Psych 100 Intro to Psychology 3
Soc 110 Intro to Sociology 3
Stat 251 Principles of Statistics 3
Zool 119 Human Anatomy & Physiology 5
Humanities and social sciences electives (at least 6 cr in each field) 21
Communications electives (3 cr must be in written communication) 6
Electives 2

Strongly recommended elective:
Math 140 Pre-calculus Algebra & Analytic Geom 3

PRE-PHYSICAL THERAPY STUDIES

UI does not have a professional program in physical therapy and does not offer a degree program in pre-physical therapy. However, a two-year nondegree program in pre-physical therapy studies is offered. The physical therapy adviser in the Department of Biological Sciences advises students interested in preparing to transfer to a professional program at another institution. Two basic plans of study lead to professional qualifications in physical therapy: (1) two to three years of study in a pre-physical therapy program for high school graduates and transfer students and (2) a four-year program leading to graduation with a baccalaureate degree. After completing either program, students will be eligible to transfer to professional programs in physical therapy leading to a bachelor or master of science degree in physical therapy.

Recommended Preparation

The courses listed below include most of the essential course for transfer into a typical program.

Course	Credits
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Chem 111 Principles of Chemistry	4
Chem 114 General Chemistry	4
Eng 103, 104 Basic Skills and Essay Writing	6
Math 140 Pre-calculus Algebra & Analytic Geom	3
Phys 113-114-115-116 General Physics & Lab	8
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Psych 311 Abnormal Psychology	3
Soc 110 Intro to Sociology	3
Zool 119 Human Anatomy & Physiology	5
Humanities electives	3
Electives	14

Note: Students wishing to earn a bachelor's degree at UI before transferring into a certificate program in physical therapy may earn the degree in an allied area.

Academic Minor Requirements

BIOLOGY MINOR

Course	Credits
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3
One of the following	4-5
Bot 311, 312 Plant Physiology & Lab	
Zool 119 Human Anatomy & Physiology	
Zool 414, 415 Cell Physiology & Lab	
Zool 423 Comparative Vertebrate Physiology	

BOTANY MINOR

Course	Credits
Bot 241 Systematic Botany	3
Bot 311, 312 Plant Physiology & Lab	5
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351 General Genetics	3

ZOOLOGY MINOR

Course	Credits
Zool 324 Comparative Vertebrate Anatomy	4
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Course in animal physiology	3-4
One of the following	3-4
Biol 331 General Ecology	
Zool 481 Ichthology	
Zool 482 Natural Hist of Birds	
Zool 483 Natural Hist of Mammals	
Zool 484 Invertebrate Zoology	
Zool 489 Herpetology	

Department of Business

Norman C. Olson, Acting Dept. Head (338B Admin. Bldg.). Faculty: C. Randall Byers, Byron J. Dangerfield, Donald Del Mar, Eugene F. Golis, John H. Hallaq, Thomas J. Liesz, Bradley D. Lockeman, Lawrence H. Merk, John S. Morris, Linda J. Morris, David S. Murphy, Norman C. Olson, Philip D. Olson, William H. Parks, Norman Pendegraft, Kathy L. Pettit, Mario G. Reyes, David E. Terpstra, Richard A. Toelle, Jerry L. Wegman.

The five major fields (finance, human resources management, information systems, marketing, and production/operations management) within the department lead to the B.S.Bus. degree. These programs provide a solid foundation in the liberal arts, a broad professional preparation in business, and in-depth course work in a major field. They are designed to prepare the student for a lifetime of continuing liberal and professional education.

The finance major prepares students for careers in commercial lending, security analysis, portfolio management, and corporate finance.

The human resources management major prepares students for opportunities in the areas of personnel administration, labor relations, and general management.

The information systems major prepares students in the areas of systems analysis, data base management, and systems marketing.

The marketing major prepares students for opportunities in a broad range of areas, including management of retail and wholesale distribution, advertising, and market research.

The production/operations management major prepares students for management positions in operations planning and control and in purchasing.

Business Courses

Note: Enrollment in 300- and 400-level business courses is restricted to students who have completed at least 58 credits. Enrollment for CBE students is further restricted to include at least a 2.4 GPA in the CBE predictor courses.

Enrollment in 500-level business courses requires completion of listed prerequisites and permission of the graduate director of the College of Business and Economics.

Bus 101 Intro to Bus Enterprises (3 cr). Not open to upper-div majors in the College of Bus and Econ. Private enterprise system; marketing, mgt, finance, production; bus-govt relationships, organized labor, ethical and social responsibilities of bus orgs.

Bus 200 (s) **Seminar** (cr arr). Prereq: perm.

Bus 204 (s) **Special Topics** (cr arr).

Bus 250 Microcomputer Software (1 cr). Intro to microcomputers and to software packages useful in business applications such as word processing, data base mgt, and spreadsheet. Graded P/F. Prereq: CS 100 and perm.

Bus 265 Legal Environment of Bus (3 cr) (C). Law and its relationship to society; legal framework of bus enterprises; court org and operation; private property and contracts as basic concepts in a free enterprise system. May involve evening exams.

Bus 299 (s) **Directed Study** (cr arr). Prereq: perm.

Bus 301 Financial Mgt (3 cr). Policies and practices involved in acquisition, control, and allocation of financial resources in bus orgs. May involve evening exams. Prereq: Acctg 202; Stat 251 or 301.

Bus 302 Intermediate Financial Mgt (3 cr). Adv course in managerial finance that addresses more complex issues such as risk in capital budgeting, working capital mgt, mergers, business failure and reorganization, and lease financing. May involve evening exams. Prereq: 301, Acctg 300.

Bus 311 Intro to Management (3 cr). Org, planning, leadership, and control; evolution of philosophies of mgt, decision making, motivation, human relations, and comm; org behavior and theory; hist and present mgt practices, showing interrelationships between the needs and expectations of the indiv, the org, and society.

Bus 321 Marketing (3 cr) (C). Marketing institutions and relationships with econ, political, legal, and social environment; prin, functions, concepts, and issues of marketing within a firm and the relationship of marketing to other bus disciplines. May involve evening exams.

Bus 324 Consumer Behavior (3 cr). Behavioral sc theories, concepts, and methods applied to the understanding and prediction of consumer behavior; emphasis on structuring marketing policy to fulfill consumer requirements. May involve evening exams. Prereq: 321.

Bus 325 Retailing (3 cr). Location, capital, and physical requirements; store org,

personnel, merchandise, and pricing; buying and receiving; sales promotion; customer services; retail expense mgt. May involve evening exams. Prereq: 321.

Bus 326 Direct Marketing (3 cr). Systems of marketing using one or more advertising media (e.g., direct mail, telemarketing, electronic media) to effect measurable response/transmission at any location; topics incl list/data base marketing and segmentation. Prereq: 321.

Bus 327 Services Marketing (3 cr). Services marketing prin and how they are implemented in consumer and industrial sectors in design of marketing strategies; incl designing, communicating, pricing, and distributing the service offer. Prereq: 321.

Bus 332 Quantitative Methods in Business (3 cr). Sampling applications; forecasting techniques, time series analysis, exponential smoothing, multiple regression; decision theory; survey of mgt sc tech incl linear programming and simulation. May involve evening exams. Prereq: Stat 251, Math 111 or 176 or 330.

Bus 350 Mgt Info Systems (3 cr). Data processing appl for bus; intro to info systems; data base concepts; analysis, design, and implementation of computer-based info systems and consideration of associated problems. Prereq: CS 100 or CS 112 and Acctg 202, or perm.

Bus 352 Computer Hardware and Software Concepts (3 cr). Survey of technical topics related to computer systems; emphasis on relationship between hardware architecture, systems software, and application software; incl architecture of processors, storage systems, assemblers, loaders, compilers, and operating systems. Prereq: CS 112.

Bus 353 Intro to Data Base (3 cr). Intro to physical implementation of a data base under different logical data models; basic data structures, alternative file organizations, and models of data incl heirarchical, network, and relational; storage devices, data admin, and data analysis. Prereq: 350.

Bus 355 Systems Analysis (3 cr). Intro to prin of systems analysis and design of info systems; emphasis on Systems Development Life Cycle and modern tools of SAD. Prereq: 350 and CS 112.

Bus 361 Real Estate (3 cr). Listing, selling, leasing, financing, and brokerage; fundamentals of valuation and listing property mgt.

Bus 366 Commercial Law: Business Organizations (3 cr). See Acctg 366.

Bus 370 Production/Operations Mgt (3 cr). Intro to production/operations mgt, incl product design, process design, facility layout, facility location, job design, work measurement, project mgt, quality control, inventory mgt, maintenance, and operations scheduling and control. May involve evening exams. Prereq: 332 and either Math 160 or Math 180 (econ majors may substitute Econ 433 or Econ 436 for 332).

Bus 399 (s) **Internship** (1-3 cr, max 6). Open only to major in the Dept of Business. Graded P/F. Prereq: perm.

Bus 400 (s) **Seminar** (cr arr). Prereq: perm.

Bus 401 Investments (3 cr). Functioning of financial markets; types of securities and their suitability to various investment goals. Prereq: 301.

Bus 403 Insurance (3 cr). Major branches of insurance; prin and practices.

Bus 404 (s) **Special Topics** (cr arr).

Bus 405 Portfolio Mgt (3 cr). Security analysis and portfolio theory; financial futures; risk and return in investments. Prereq: 401.

Bus 406 Problems in Financial Mgt (3 cr). Analysis of selected topics in financial mgt problems; working capital mgt; capital budgeting and valuation; synthesis of financial mgt skills through case analysis; written and oral reports. May involve evening exams. Prereq: 302.

Bus 407 Financial Institutions (3 cr). Mgt and regulation of commercial and nonmonetary financial institutions incl savings and loan institutions. Prereq: 301 and Econ 403.

Bus 408 Security Analysis (3 cr). Emphasis on theory and practice of security analysis and investment timing. Prereq: 302, Acctg 301.

Bus 409 Financial Theory (3 cr). Theories and evidence for and against the six seminal and internally consistent theories on which modern finance is founded: utility theory; state-preference theory; mean-variance and capital asset pricing model; arbitrage pricing theory; option-pricing theory; and Modigliani and Miller theorems. Prereq: 302.

Bus 412 Personnel Mgt. (3 cr). Basic personnel mgt functions with heavy legal emphasis. Prereq: 265, 311.

Bus 413 Human Relations in Bus (3 cr). Microoriented treatment of areas incl comm, motivation, group process, conflict, leadership style. Prereq: 311.

Bus 414 Entrepreneurship (3 cr). Process of providing solutions to identified consumer needs; characteristics of individuals who succeed; sources of venture ideas; evaluating and developing ideas; business plans; franchising.

Bus 415 Small Business Mgt (3 cr). Study of problems encountered by small business organizations through case analysis of actual small business operations; topics incl location, staffing, financing, marketing, and growth. May involve field trips. Prereq: 301, 311, and 321 or perm.

Bus 416 Compensation Admin (3 cr). Dev and admin of monetary-nonmonetary reward programs; relationship between compensation, motivation, performance. Prereq: 311.

Bus 418 Organization Theory (3 cr). Macro organization behavior; study of organization structure and processes; how environment, technology, and size impact structure and processes. Prereq: 332, 413, Acctg 381.

Bus 420 Promotional Strategy (3 cr) (C). Marketing mgt point of view; objectives, methods, strategies, budgets, and measures of effectiveness; campaign mgt incl advertising, public relations, sales promotion, reseller support, personal selling. May involve evening exams. Prereq: 321; coreq: 324.

Bus 421 Marketing Research and Analysis (3 cr). Purposes, methods, and tech; market potential analysis; product analysis and adoption. Prereq: 321, 332.

Bus 422 Sales Force Mgt (3 cr). Selecting, training, compensating, stimulating, supervising, and directing the selling efforts of an outside sales force; organization and methods. May involve evening exams. Prereq: 311, 321.

Bus 428 Marketing Problems (3 cr). Theory and case studies of planning and problem solving in selecting target markets and integrating product, promotion, price, and channel decisions. Prereq: 321, 324, 420, 421.

Bus 436 Econ and Business Forecasting (3 cr). See Econ 436.

Bus 437 Stat for Business Decisions (2 cr). Same as Stat 437. Decision making under uncertainty; utility theory. Prereq: Stat 251.

Bus 439 Systems and Simulation (3 cr). Distribution theory, random numbers, modeling concepts and simulation of queuing and inventory systems. Prereq: 332 and CS 100 or CS 112.

Bus 441 Labor Relations (3 cr). Evolution, structure, and procedures of contemporary labor-mgt relations; unionization, other concerted activity and employment at will. Prereq: 311 or perm.

Bus 442 Govt Regulation of Bus (3 cr). Analysis and appraisal of major types of public policy towards bus activity; emphasis on antitrust laws.

Bus 453 Adv Data Base (3 cr). Intro to appl prog dev in a data-base environment; storage devices and logical data organization incl data administration and analysis, data design and data models with hierarchical network, relational; physical storage of data incl addressing tech, data structures, indexed and direct file organization, and secondary organization structures. Prereq: 355.

Bus 454 (s) **Current Issues in Information Systems** (3 cr, max arr). Discussion of major topics of current importance in information systems. Prereq: 353, 355.

Bus 455 Systems Design (3 cr). Intro to prin of information systems design; continuation of Systems Development Life Cycle begun in Bus 355 emphasizing modern methods of systems design; use of state of the art systems development software. Prereq: 353 and 355.

Bus 456 Quality Control (3 cr). Same as Stat 456. Quality control from a managerial perspective; designing of efficient and effective systems for the maintenance of quality. Prereq: Stat 251.

Bus 462 Real Property Appraisal (3 cr). Theories and prin in estimating value of natural resources and any attached improvements. Prereq: 361 and Econ 152 or perm.

Bus 466 Commercial Law: The Uniform Commercial Code (3 cr). See Acctg 466.

Bus 470 (s) **Contemporary Issues in Production/Operations Mgt** (1 cr, max arr). Topics of current interest in production/operations mgt to extend students' knowledge in particular areas of concentration and/or introduce them to recent trends and innovations. Prereq: 370.

Bus 472 Operations Planning and Scheduling (3 cr). In-depth study of planning and scheduling tech with emphasis on material requirements planning. May involve field trips. Prereq: 332, 370.

Bus 474 International Bus (3 cr). International trade and the nature of exchange among nations; socioecon environment of the multinational corporation.

Bus 475 International Marketing (3 cr). Alt/yrs. Foreign market operations; econ, cultural, and political aspects of international markets and how they interact with the marketing mix. Prereq: 321.

Bus 478 Problems in Operations Mgt (3 cr). Emphasis on case method as a vehicle for analyzing problems and situations faced by operations managers; draws on knowledge gained from course work or experience in such areas as personnel, quality control, finance, marketing econ, and acctg. Prereq: 370.

Bus 480 Business Policy (3 cr). Culminating program of study in bus admin; designed to integrate all area skills acquired during previous formal study; integration of skills through case analysis and other methods; written and oral reports. Prereq: 301, 311, 321, Eng 313, and sr standing.

Bus 499 (s) **Directed Study** (cr arr). Prereq: perm.

Bus 501 (s) **Seminar** (cr arr). Normally offered in real estate, investments, insurance, govt regulation, industrial mgt, industrial relations, and current problems. Prereq: perm.

Bus 502 (s) **Directed Study** (cr arr). Prereq: perm.

Bus 503 Financial Policy (3 cr). Social and econ implications of the financial process. Prereq: 301 and perm.

Bus 504 (s) **Special Topics** (cr arr).

Bus 505 (s) **Workshop** (cr arr). Prereq: perm.

Bus 510 Govt Regulation of Bus (3 cr). Econ and legal aspects of antitrust laws; phil and

econ basis of govt control of bus. Prereq: perm.

Bus 513 Human Behavior in Organizations (3 cr). Seminar concerned with worker and supervisor behavior and attitudes, work group behavior, leadership and motivation, comm and decision making. Prereq: 311 and perm.

Bus 521 Marketing Mgt (3 cr). Production dev, pricing, demand creation, physical distribution, and channel selection. Prereq: 321 and perm.

Bus 525 Industrial Mgt (3 cr). Tech of and decision making in production mgt; quantitative approaches of resource allocation to problems of production. Prereq: perm.

Bus 532 Quantitative Tech (3 cr). Appl of math decision-making tech to bus problems; topics incl decision theory, math modeling, linear programming, simulation tech. Prereq: Stat 251 and perm.

Bus 541 Labor Relations (3 cr). Structure and procedures of contemporary labor-mgt relations in presence and absence of unions. Prereq: 311 and perm.

Bus 572 Operations Planning and Scheduling (3 cr). See 472 for description.

Bus 580 Business Policy (3 cr). Integration of admin/mgt concepts, tech, and models for both line/staff (cases); organization goals, policies, strategies through case analysis. Prereq: perm.

Bus 597 (s) **Practicum** (cr arr). Prereq: perm.

Bus 598 (s) **Internship** (cr arr). Prereq: perm.

Bus 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

FINANCE (B.S.Bus.)

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Acctg 300 Accounting Concepts & Systems	3
Acctg 301 Financial Accounting & Reporting I	3
Bus 302 Intermediate Financial Mgt	3
Bus 401 Investments	3
Bus 406 Problems in Financial Mgt	3
Bus 407 Financial Institutions	3
Econ 403 Money & Banking (may be used to fulfill college core econ requirements)	3
Two courses selected from the following	6
Acctg 302 Financial Acctg & Reporting II	
Acctg 385 Costs & Mgt Accounting	
Acctg 401 Financial Acctg & Reporting III	
Bus 405 Porfolio Mgt.	
Bus 408 Security Analysis	
Bus 409 Financial Theory	
Econ 321 Intermediate Microeconomic Analysis	
Econ 409 Public Finance	

HUMAN RESOURCES MANAGEMENT (B.S.Bus.)

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 412 Personnel Management	3
Bus 413 Human Relations in Business	3
Bus 416 Compensation Administration	3
Bus 418 Organization Theory	3
Bus 441 Labor Relations	3
Econ 441 Labor Economics (may be used to fulfill college core econ requirements)	3
Psych 316 Industrial Psych or Psych 320 Intro to Social Psych or Psych 400 Seminar in Organizational Dev or CommG 331 Conflict Management	3

INFORMATION SYSTEMS (B.S.Bus.)

Required course work includes the university requirements (see regulation J-3), the college requirements (IS majors must take CS 150 rather than 100), and:

Course	Credits
Acctg 300 Accounting Concepts & Systems	3
Bus 352 Computer Hardware & Software Concepts	3
Bus 353 Intro to Data Base	3
Bus 355 Systems Analysis	3
Bus 453 Advanced Data Base	3
Bus 455 Systems Design	3
Courses selected from the following or other approved electives	9
Acctg 385 Costs & Mgt Accounting	
Acctg 405 Accounting Info Systems	
Bus 418 Organization Theory	
Bus 437 Statistics for Business Decisions	
Bus 439 Systems & Simulation	
Bus 454 Current Issues in Info Systems	
Bus 472 Operations Planning & Scheduling	
CS 310 Computing Languages	
CS 334 Advanced COBOL Programming	
Math 326 Linear Programming	

MARKETING (B.S.Bus.)

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Bus 324 Consumer Behavior	3
Bus 420 Promotional Strategy	3
Bus 421 Marketing Research & Analysis	3
Bus 428 Marketing Problems	3
Electives (at least one chosen from the following)	3
Bus 325 Retailing	
Bus 326 Direct Marketing	
Bus 327 Services Marketing	
Bus 422 Sales Force Management	
Bus 475 International Marketing	
Additional course chosen from the above list or the following	3
Bus 414 Entrepreneurship	
Bus 415 Small Business Management	
Comm 352 Prin of Public Relations	
Comm 431 Professional Presentation Tech	

PRODUCTION/OPERATIONS MANAGEMENT (B.S.Bus.)

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 413 Human Relations in Business	3
Bus 418 Organization Theory	3
Bus 441 Labor Relations	3
Bus 456 Quality Control	3
Bus 470 Contemp Issues in Production/Operations Mgt	3
Bus 472 Operations Planning & Scheduling	3
Bus 478 Problems in Operations Mgt	3
ME 253 Materials Processing	3

Department of Chemical Engineering

Roger A. Korus, Dept. Chair (312 Buchanan Engr. Lab.). Faculty: Thomas E. Carrleson, David C. Drown, Louis L. Edwards, Jr., Wayne R. Hager, Roger A. Korus, Terrence J. Morin, Jin Y. Park, Jay J. Scheldorf, George M. Simmons, Margrit von Braun.

Chemical engineering combines the science of chemistry with the discipline of engineering in order to solve problems and to increase process efficiency. One of the most attractive aspects of a chemical engineering future is the variety of work available. Chemical engineering is a blend of physics, chemistry, and mathematics; thus, a chemical engineer possesses a versatility that gives him or her many opportunities for employment in fields such as food products, nuclear power, petroleum and petrochemicals, semiconductors, synthetic fuels, radioisotope applications, plastics and polymers, water pollution control, pharmaceuticals, education, biomedical engineering, computer applications, alternate energy sources, steel, paper, and textiles. A chemical engineer can choose work in any of the following areas: research and development, design and construction, operations, management, teaching, or technical sales.

With the ever-increasing need for alternative energy sources and consumer products, coupled with environmental awareness and a decreasing supply of raw materials, the demand for chemical engineers will remain high.

The faculty of the Department of Chemical Engineering is dedicated to excellence in teaching. It is the faculty's goal to provide the students with a strong, well-rounded background for immediate entry into the industrial workforce or for graduate study. This background includes the theoretical aspects of chemical engineering as well as practical work experiences. Thus, most of the equipment that is installed in the Chemical Engineering Laboratory is on the scale of pilot plant equipment. Because much of the equipment is made of glass, students are able to see

at a glance what processes occur and where the streams are flowing. The department has a two-story distillation column, a gas absorber, two types of evaporators, a two-stage chemical reactor, and a spray dryer. All of this equipment is used by undergraduate students. Proof that the departmental goals are being achieved is in the job-placement statistics for chemical engineers from UI. Most receive numerous job offers and many graduates now hold high-level technical and management positions in industry, government, and academia.

The department has available a number of fellowships and assistantships for students. Support includes fellowships from the Potlatch Foundation, Weyerhaeuser Company, Crown Zellerbach, and Lamb Weston; UI graduate assistantships; and research assistantships.

The graduate program in chemical engineering also includes provisions for study leading to a master's degree in chemical engineering for students who have a B.S. degree in a related field. This program requires that the student enroll for at least one trial semester as an undergraduate student in chemical engineering.

Chemical Engineering Courses

ChE 204 (s) **Special Topics** (cr arr).

ChE 223 Material and Energy Balances (3 cr). Conservation of mass and energy calculations in chem process systems. Prereq: Chem 114, Math 190.

ChE 299 (s) **Directed Study** (cr arr). Prereq: perm.

ChE 323 Reactor Kinetics and Design (3 cr) (423). Chem reaction equilibria, rates, and kinetics; design of chem and catalytic reactors. Prereq: 223, Math 310.

ChE 330 Thermodynamics and Separation Processes (4 cr). Phase equilibria, separation processes incl distillation, extraction, and absorption. Coordinated lec-lab periods. Prereq: 223, ES 321, Chem 305.

ChE 393 Chem Engr Projects (1-3 cr, max 9). Problems of a research or exploratory nature. Prereq: perm of dept.

ChE 404 (s) **Special Topics** (cr arr).

ChE 410 Fundamentals of Polymer Science and Processing (3 cr). Structure and formation of polymers, polymerization and fabrication process and properties. Prereq: perm.

ChE 415 Integrated Circuit Fabrication (3 cr). Growth of semiconductor crystals, microlithography, and processing methods for integrated circuit fabrication. Prereq: 223.

ChE 430-431-432 Transport and Rate Processes I-II-III (3 cr; 2 cr; 2 cr). Transport phenomena involving momentum, energy, and mass with appl to process equipment design. Coordinated lec-lab periods. ChE 430-431-432 are to be taken in sequence. Prereq for 430; 223, ES 320, ES 321, Math 310.

ChE 433 Chem Engr Lab (2 cr). Lab experiments in chem engr. Prereq: 431, 432.

ChE 435 Energy Conversion Systems (3 cr). Energy sources and their conversion to useful power; incl conversion systems and association econ; nuclear fission, fusion, and radiation; geothermal; thermionic and fossil fuels.

ChE 444 Process Analysis and Control (3 cr). Process modeling, dynamics, and analysis. Prereq: 223, Math 310.

ChE 445 Digital Process Control (3 cr). Same as EE 477. Dynamic simulation of industrial processes and design of digital control systems. Two lec and one 3-hr lab a wk. Prereq: 444 (prereq for EE majors: EE 350).

ChE 453-454 Chem Process Analysis and Design (3 cr). Estimation of equipment and total plant costs, annual costs, indices of attractiveness, optimization; design of equipment, alternate process systems and econ, case studies of selected processes. One 1-wk field trip. Prereq: 330, Econ 151; coreq: 323, 431.

ChE 460 Biochemical Engr (3 cr). Appl of chem engr to biological systems incl fermentation processes, biochem reactor design, and biological separation processes.

ChE ID&WS-J475/ID&WS-J575 Air Pollution Control (2-3 cr). WSU 508. Analysis and design of physical and chem methods of air pollution control; particulate and gas emission control methods, standards for sources. Prereq: ES 320 or perm.

ChE 491-492 Seminar (0 cr). Recent dev and topics. Graded P/F. Prereq: sr standing.

ChE 499 (s) **Directed Study** (cr arr). Prereq: perm.

ChE 500 Master's Research and Thesis (cr arr).

ChE 501 (s) **Seminar** (cr arr). Prereq: perm.

ChE 502 (s) **Directed Study** (cr arr). Prereq: perm.

ChE 504 (s) **Special Topics** (cr arr).

ChE ID&WS515 Transport Phenomena (3 cr). Same as ME 515. WSU 510. Adv treatment of momentum, energy, and mass transport processes; solution tech. Prereq: perm.

ChE WS521 Special Topics in Air Pollution (1-3 cr, max 6). WSU CE 521.

ChE WS523 Basic Concepts in Catalysis (2 cr).

ChE WS524 Polymer Reactor Engr (3 cr). WSU 525.

ChE 525 Adv Heat Transfer (3 cr). Same as ME R525. Appl of fundamentals of heat conduction, radiation, and convection; relationships to fluid dynamics and mass transfer; econ and design appl. Prereq: perm.

ChE ID&WS527 Adv Chem Engr Thermodynamics (3 cr). Equilibria in physical and chem systems; generalized prediction of thermodynamic properties, incl nonideal systems. Prereq: perm.

ChE R528 Adv Thermodynamics (3 cr). See ME 528.

ChE ID&WS529 Chem Engr Kinetics (3 cr). Interp of kinetic data and design of reactors for heterogeneous chem reaction systems: heterogeneous catalysis, gas-solid reactions, gas-liquid reactions; packed bed reactors, fluidized bed reactors. Prereq: perm.

ChE WS532 Transport and Reactions in Multiphase Processing (3 cr).

ChE 537 Adv Fluid Mechanics (2-3 cr). Same as ME 537. Fluid systems used in industry; non-Newtonian behavior of particle and plastic systems; two-phase situations, incl fluidization and film flow. Prereq: perm.

ChE ID&WS541 Chem Engr Analysis I (3 cr). Same as ME 541. Math analysis of chem engr operations and processes; math modeling and computer appl. Prereq: perm.

ChE ID&WS542 Chem Engr Analysis II (3 cr). Numerical and analyt methods in the solution of chem engr problems; partial differential equations, appl of approx variational methods and integral transforms. Prereq: perm.

ChE 544 Adv Process Control (3 cr). Theory of process dynamics and systems engr. Two lec and one 3-hr lab a wk. Prereq: perm.

ChE ID&WS545-ID&WS546 Mass Transfer Operations I-II (3 cr). Diffusional and equilibrium operations. Prereq: perm.

ChE WS551 Discrete Digital Control (3 cr).

ChE ID&WS560 Biochem Engr (3 cr). Appl of chem engr to biol systems incl fermentation processes and biochem reactor design, transport phenomena in biol systems and biochem technology.,

ChE ID571 Adv Plant Design (3 cr). Design of process plants for optimum costs and econ return; scale-up of pilot plants. Prereq: perm.

ChE ID&WS575 Air Pollution Control (2-3 cr). See J475/J575.

ChE 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

CHEMICAL ENGINEERING (B.S.Ch.E.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Courses common to engineering curricula (see part 4)	38
ChE 223 Material & Energy Balances	3
ChE 323 Reactor Kinetics & Design	3
ChE 330 Thermodynamics & Separation Processes	4
ChE 430-431-432 Transport & Rate Processes I-II-III	7
ChE 433 Chemical Engr Lab	2
ChE 444 Process Analysis & Control	3
ChE 445 Digital Process Control	3
ChE 453-454 Chemical Process Analysis & Design	6
ChE 491-492 Seminar	0
Chem 277, 278 Organic Chem I and Lab	4
Chem 305, 307 Physical Chemistry and Lab	4
Chem 372, 374 Organic Chem II and Lab	4
Econ 151 Principles of Economics	3
EE 207 Intro to Electrical Engineering	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
Chemical engr electives	3
Chemical/bioscience electives	4
Engineering electives	3
Humanities and social sciences electives (incl at least one upper-div course that is the second course completed in a subject, or that has another humanities/social sc course as a prereq)	13
Communication elective	2
Mathematics electives	3
Technical electives	4
Undesignated electives	3

Department of Chemistry

James H. Cooley, Acting Dept. Head (116 Malcolm M. Renfrew Hall). Faculty: James H. Cooley, Leszek Czuchajowski, W. Daniel Edwards, Sherry O. Farwell, Kim E. Gilmore, Wesley R. Harris, Sharon G. Hutchison, Henrik D. Juve, Duane J. LeTourneau, Jeanne L. McHale, Nicholas R. Natale, Jean'ne M. Shreeve, Ray von Wandruszka, Chien M. Wai.

Chemistry is the central science — the foundation on which a variety of applied and nonapplied disciplines build. Chemistry deals with the composition, structure, and properties of substances and the changes they undergo. It is the study of the materials of which the entire universe is composed. Chemistry graduates will find an impressive array of options and exciting opportunities in fields such as basic research, environmental protection, instrumentation, new product and process development, technical marketing, market research, forensic chemistry, teaching at all levels, and information science. Moreover, an education in chemistry is valuable in health sciences such as medicine, pharmacology, clinical chemistry, and industrial hygiene. It can be useful as well in nontechnical areas such as advertising, journalism, patent law, banking, and investment counseling. The options are bounded only by the limits of one's imagination.

There are four distinct undergraduate curricula designed to meet a wide range of professional needs. The general chemistry curriculum leading to the B.S. degree provides a suitable foundation in chemistry for aspiring secondary-school teachers or for medicine. Even so, this is a subminimal curriculum for students who wish to become professional chemists. The professional curriculum (B.S.) is strongly recommended for students who are interested in practicing chemistry as a career, including graduate study for an advanced degree in chemistry or a related field. The degree is certifiable to the American Chemical Society. For those interested in information science, the technical literature curriculum (B.S.) provides adequate preparation. The combination of chemistry with marketing or business can be accomplished via the B.Tech. degree, which gives an excellent foundation for a successful career in sales or business.

Students majoring in chemistry at UI have the very good fortune to interact with an award-winning, distinguished teaching faculty. They have a unique opportunity to participate in undergraduate research in a nurturing environment where they work side by side with graduate students, postdoctoral fellows, and faculty members. Very often the research carried out by undergraduates results in publications in leading chemical journals. As a result of the strong research programs in the department, undergraduates have the opportunity in their courses to have hands-on experience with, or to acquire data from, modern sophisticated instrumentation such as FT nuclear magnetic resonance, and gas chromatograph interfaced mass spectrometers, and laser Raman, infrared and ultraviolet spectrometric gear, in addition to the more classical techniques. Considerable use of computers is made in laboratory courses and as an aid to instruction. Because our B.S. students receive first-class training, they are in demand by prospective employers and graduate schools.

The Department of Chemistry offers graduate study leading to the degrees of Master of Science (thesis and nonthesis options), Master of Arts in Teaching, and Doctor of Philosophy. Concentrations within the major in chemistry are permitted in analytical, inorganic, organic, and physical chemistry. Students who intend to work for a graduate degree in chemistry should prepare by completing the professional B.S. degree. Courses in mathematics, physics, German or Russian, computer science, and chemistry in addition to those required for that degree are strongly recommended. All students entering any of the graduate programs in chemistry are required to demonstrate proficiency in chemistry by taking a series of examinations in analytical, inorganic, organic, and physical chemistry that have questions at the advanced undergraduate level. Undergraduates are encouraged to discuss graduate school and career opportunities with the head of the department or with chemistry faculty members early in their residency at UI.

Chemistry Courses

RELATED FIELD: See biochemistry.

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content are: 111-112-253; 111-114; 103-275.

Chem 050 Chem Fundamentals (0 cr). Accelerated treatment of chem problem solving, incl SI unit conversion, mole concept, specific heat, specific gravity, chem stiochiometry, and solution concentration problems. Graded P/F.

Chem 101 Chem and the Citizen (4 cr). Satisfies core requirement J-3-b. Not acceptable as a substitute where 103, 111, or equiv is specified. Cr may be earned in only one of the following: 101, 103, 111. Nonmath descriptive treatment relating key dev of chem to modern living. Three lec, dem, and one 2-hr lab a wk.

Chem 103 Intro to Chem (4 cr). Satisfies core requirement J-3-b. Cr may be earned in only one of the following: 101, 103, 111. General treatment of the fundamentals of chem. Three lec, one recitation, and one 3-hr lab a wk. Does not satisfy the prereq for Chem 112 or 114. Prereq or coreq: 050 or adequate score on chem-fundamentals exam.

Chem 111 Prin of Chem (4 cr). Satisfies core requirement J-3-b. Cr may be earned in only one of the following: 101, 103, 111. Intensive treatment of prin and appl of chem. Three lec, one recitation, and one 3-hr lab a wk. Prereq or coreq: 050 or adequate score on chem-fundamentals exam.

Chem 112 Inorganic Chem and Qualitative Analysis (5 cr). Satisfies core requirement J-3-b. Elem theoretical chem and appl to analyt practice; lab work in the qual separation of cations and anions by semimicro methods. Max six cr in 112 and 114 combined. Three lec and two 3-hr labs a wk. Prereq: 111 or perm.

Chem 114 General Chem (4 cr). Satisfies core requirement J-3-b. Continuation of 111 for students who do not plan to take further professional chem courses. Some work in inorganic, organic, and biocem, electrochem, nuclear chem, and in qual inorganic analysis. Max six cr in 112 and 114 combined. Three lec, one recitation, and one 3-hr lab a wk. Prereq: 111 or perm.

Chem 121 Glassblowing (1 cr). Tech used in constr scientific apparatus and artistic objects from glass. Graded P/F. One 3-hr lab a wk.

Chem 200 (s) **Seminar** (cr arr). Prereq: perm.

Chem 204 (s) **Special Topics** (cr arr).

Chem 253 Quantitative Analysis (5 cr). Theory and practice of gravimetric and volumetric analysis; intro to modern analyt chem. Three lec and two 3-hr labs a wk. Prereq: 112 or 114.

Chem 275 Carbon Compounds (3 cr). Aspects of organic chem important to students in the life sc. Duplicate cr will not be allowed in first-year courses in organic chem. Prereq: 103 or perm.

Chem 276 Carbon Compounds Lab (1 cr). Lab to accompany 275; for students who need only 1 cr of lab. One 3-hr lab a wk. Prereq or coreq: 275 or 277.

Chem 277 Organic Chem I (3 cr). Prin and theories of organic chem; properties, prep, and reactions of organic compounds. Duplicate cr will not be allowed in first-year courses in organic chem. Prereq: 112 or 114.

Chem 278 Organic Chem I: Lab (1 cr). For students who need 1 hr of organic lab. One 3-hr lab a wk. Prereq or coreq: 277.

Chem 299 (s) **Directed Study** (cr arr). Prereq: perm.

Chem 302 Prin of Physical Chem (3 cr). Emphasis on topics important to biol and ag sc. Prereq: 112 or 114, Math 180, Phys 113, or perm.

Chem 303 Prin of Physical Chem Lab (1 cr). Lab to accompany 302. One 3-hr lab a wk. Prereq or coreq: 302.

Chem 305-306 Physical Chem (3 cr). Kinetic theory, thermodynamics, and the constitution of matter. Prereq: 112 or 114, Math 200; prereq or coreq: Phys 222.

Chem 307-308 Physical Chem Lab (1 cr). Lab to accompany 305-306. One 3-hr lab a wk. Prereq or coreq: 305-306.

Chem J318/J418 Environmental Chem (3 cr). Basic atmospheric and aquatic chem; factors that influence this chem; current global, national, and state environmental problems. Registration for 418 requires additional project. Two lec and one 3-hr lab a wk. Prereq: 253, 275 or 277, or perm.

Chem 372 Organic Chem II (3 cr). Continuation of 277. Prereq: 277.

Chem 374 Organic Chem Lab for Engineers (3 cr). For students in engr. Lab to accompany 372; incl synthesis, structure determination, and mechanisms. One 3-hr lab a wk. Prereq: 278; prereq or coreq: 372.

Chem 376 Organic Chem II: Lab (2 cr). Lab to accompany 372, incl qual analysis and modern instrumental tech. Two 3-hr labs a wk. Prereq: 278; prereq or coreq: 372.

Chem 400 (s) **Seminar** (cr arr). Prereq: perm.

Chem 404 (s) **Special Topics** (cr arr).

Chem 409 Proseminar (1 cr). Current publications in chem and chem engr with reports on typical scientific papers. Prereq: 372 and sr standing.

Chem R413 Radiochem for Engineers (2 cr). Primarily for engineers. Properties of nuclear particles, nuclear reactions, tech of producing reactions, interaction of radiation with matter, and radiochem tech. Prereq: perm.

Chem 416 Methods in Radiochem (3 cr). Basic theory and practice in use of radionuclides; practical lab experience. Two lec and one 3-hr lab a wk. Enrollment is limited by facilities. Prereq: 306 or perm.

Chem 418 Environmental Chem (3 cr). See J318/J418.

Chem 435 Prin of Chem Instrumentation (4 cr). Practical theory and appl of modern analog/digital electronics and small computers to chem measurement and control systems. Three hrs of lec and one 3-hr lab a wk. Prereq: 253, Phys 211, or perm.

Chem 441 Chem Lit (1 cr). Survey of important chem reference works and periodicals; use of these sources. Prereq: perm.

Chem 454 Instrumental Analysis (4 cr). For students in chem and allied fields. Tech in operating new and specialized instruments for qual and quantitative analysis and analyt methods of an adv nature. Three lec and one 4-hr lab a wk. Prereq: 253, 305; prereq or coreq: 306.

Chem 455 Survey of Analytical Chem (3 cr). Fundamentals of modern analytical chem. Open only to chem M.S. and Ph.D. students. Cr is not allowed in both Chem 454 and 455. Prereq: 306 and perm.

Chem 463-464 Inorganic Chem (3 cr). Prin. complex ions and coordination compounds, theory of acids and bases, bonding theory, non-aqueous solvents, familiar elements and their relationship to the periodic table. Prereq: 305; prereq or coreq: 306 or perm.

Chem 465 Inorganic Chem Lab (1 cr). Lab to accompany 463. One 3-hr lab a wk. Coreq: 463.

Chem 466 Survey of Inorganic Chem (3 cr). Fundamentals of modern inorganic chem. Open only to chem M.S. and Ph.D. students. Cr is not allowed in both Chem 463 and 466. Prereq: 306 and perm.

Chem 473 Interm Organic Chem (3 cr). Theories and mechanisms of organic chem. Prereq; 372; prereq or coreq: 306.

Chem 475 Organic Synthesis (3 cr). Strategy of organic synthesis applied to the lab synthesis of reactive organic intermediates. One lec and six hrs of lab a wk. Prereq: 376 or perm.

Chem 476 Survey of Organic Chem (3 cr). Fundamentals of modern organic chem. Open only to chem M.S. and Ph.D. students. Cr is not allowed in both Chem 473 and 476. Prereq: 306 and perm.

Chem J481-J482/J541-J542 Biochem (3 cr). See Biochem J481-J482/J541-J542.

Chem 483-484 Biochem Lab (2 cr). See Biochem 483-484.

Chem 486 Plant Biochem (3 cr). See Biochem 486.

Chem 491 (s) **Research** (1-6 cr, max 6). Submission of a report of the research done for placement in the permanent dept files is required. Prereq: perm of dept.

Chem 495 Thermodynamics and Kinetics (3 cr). Prereq: 306 or equiv.

Chem 496 Survey of Physical Chem (3 cr). Fundamentals of modern physical chem. Open only to chem M.S. and Ph.D. students. Cr is not allowed in both Chem 495 and 496. Prereq: 306 and perm.

Chem 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Chem 499 (s) **Directed Study** (cr arr). Prereq: perm.

Chem 500 Master's Research and Thesis (cr arr).

Chem 501 (s) **Seminar** (cr arr). Prereq: perm.

Chem 502 (s) **Directed Study** (cr arr). Prereq: perm.

Chem WS503 Adv Topics in Inoganic Chem (1-3 cr, max arr). Prereq: 561.

Chem 504 (s) **Workshop** (cr arr). Prereq: perm.

Chem 507 Topics in Physical Chem (1-9 cr, max 9). Colloid chem, polarography, nuclear magnetic and electron paramagnetic resonance; kinetics of irreversible processes; other topics not covered extensively in regularly scheduled courses. Prereq: perm.

Chem 509-510 Adv Physical Chem (3 cr). Appl of quantum theory to chem bonding, molecular spectroscopy, and molecular structure. Prereq: 306 or perm.

Chem 513 Nuclear Chem (3 cr). Intro to artificial and natural radioactivity, tracer methods, and atomic energy. Prereq: 306 or Phys 360.

Chem R516 Methods in Radiochem (3 cr). Radiochem tech and appl of tracers to chem; fundamentals of radioactive decay; stat relationships; interaction of radiation with matter; production of radioactive samples; chem of radioactive elements. Prereq: perm.

Chem WS525 Selected Topics in Analyt Chem (1-3 cr, max arr). WSU 529. Prereq: perm.

Chem WS537 Adv Topics in Physical Chem (1-3 cr, max arr).

Chem 541-542 Biochem (3 cr). See J481-J482/J541-J542.

Chem WS544 Adv Topics in Organic Chem (1-3 cr, max arr). Prereq: 575.

Chem 553 Separation Theory and Gas Chromatography (3 cr). Separation theory; modern gas chromatography, ident and quantification; analytical mass spectrometry. Prereq: 306, 454 or perm.

Chem 554 Liquid Chromatography (3 cr). Modern liquid chromatography; ion chromatography; supercritical-fluid chromatography. Prereq: 553 or perm.

Chem 555 Adv Analyt Chem (3 cr). Fundamental prin of analysis; sampling; measurement validation; stat eval; optimization tech; pattern recognition; info theory. Prereq: 306, 454, or perm.

Chem 556 Chem Spectrocopy (3 cr). Interp of spectra.

Chem 557 Topics in Analyt Chem (1-9 cr, max 9). Atomic and molecular analyt spectroscopy; modern electrochem methods; surface analysis tech.

Chem 561 Adv Inorganic Chem (3 cr). Theoretical approach to the underlying prin of inorganic chem; integration of theory and descriptive chem. Prereq: 306, 463, or perm.

Chem 565 Topics in Inorganic Chem (1-9 cr, max 9). Coordination compounds; halogens; less familiar elements; clathrate, interstitial, nonstoichiometric compounds; chem bonding; inorganic reaction mechanisms. Prereq: perm.

Chem 571 Topics in Organic Chem (1-9 cr, max 9). Selected topics from the current lit. Prereq: perm.

Chem 573 Synthetic Organic Chem (3 cr). Use of organic reactions in synthesis. Prereq: 306, 473 or perm.

Chem 575 Mechanisms of Organic Reactions (3 cr). Nucleophilic substitution; reactions of carboxylic acids and esters; carbanions; electrophilic and nucleophilic aromatic substitutions; elimination and addition reactors. Prereq: 306, 473.

Chem 579 Physical Organic Chem (3 cr). Physical chem methods applied to organic chem.

Chem 581 Carbohydrates (3 cr). See Biochem 581.

Chem 582 Proteins and Enzymes (4 cr). See Biochem 582.

Chem 583 Lipids and Membranes (3 cr). See Biochem 583.

Chem 584 Nucleic Acids (3 cr). See Biochem 584.

Chem 589 Adv Topics in Biochem (1-9 cr, max 9). See Biochem 589.

Chem 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

CHEMISTRY: GENERAL (B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 372 Organic Chemistry I, II	6
Chem 278, 376 Organic Chemistry Lab	3
Chem 305-306 Physical Chemistry	6
Chem 307-308 Physical Chemistry Lab	2
Chem 409 Proseminar	1
CS 112 Intro to Problem Solving & Programming	3
Math 180, 190, 200 Analytic Geom & Calculus	11
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Intro Physics Lab	1

This is a subminimal curriculum for students wishing to enter the profession of chemistry, but will provide a suitable foundation in chemistry for students who intend to enter secondary-school teaching or medicine.

CHEMISTRY: PROFESSIONAL (B.S.)

Note: Students who complete this curriculum will be certifiable to the American Chemical Society.

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, the courses listed in the "Chemistry: General" curriculum (above), and:

Course	Credits
Chem 454 Instrumental Analysis	4
Chem 463-464, 465 Inorganic Chem & Lab	7
FL/GN 121-122 Elementary German	8

And two additional chemistry courses having Chem 306 as a prerequisite, or an alternate upper-division course in math or physics in combination with an approved chemistry course.

CHEMISTRY: TECHNICAL LITERATURE (B.S.)

Required course work includes the university requirements (see regulation J-3), general requirements for the B.S. degree, and:

Course	Credits
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chemistry & Qual Analysis	5
Chem 277, 372 Organic Chemistry I, II	6
Chem 278, 376 Organic Chemistry Lab	3
Chem 305-306 Physical Chemistry	6
Chem 307-308 Physical Chemistry Lab	2
Chem 409 Proseminar	1
Chem 441 Chemical Literature	1
Chem 463 Inorganic Chemistry	3
CS 112 Intro to Problem Solving & Programming	3
Eng 317 Technical & Engr Report Writing	3
FL/FR 101-102 Elementary French	8
FL/GN 121-122 Elementary German	8
FL/GN 221-222 Intermediate German	8
Math 180, 190, 200 Analytic Geom & Calculus	11
Phys 210, 211, 222, 212, 213, 225 Engineering Physics & Lab or 113-114-115-116 General Physics & Lab	8-12

CHEMISTRY: TECHNOLOGICAL (B.Tech.)

Note: Students who complete this curriculum will be certifiable to the American Chemical Society.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 305-306 Physical Chemistry	6
Chem 307-308 Physical Chemistry Lab	2
Chem 372, 376 Organic Chem II & Lab	5
Chem 409 Proseminar	1
Chem 454 Instrumental Analysis	4
Chem 463-464, 465 Inorganic Chemistry & Lab	7
Acctg 201 Principles of Accounting	3
Bus 265 Legal Environment of Business	3
Bus 321 Marketing	3
CommG 131 Fundamentals of Public Speaking	2
CS 112 Intro to Problem Solving & Programming	3
Econ 100 Contemporary Econ and 272 Foundations of Econ Analysis or 151, 152 Principles of Econ	6-7
Eng 317 Technical & Engr Report Writing	3
Math 330 Linear Algebra: Appl & Numerical Methods	3
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Intro Physics Lab	1
Stat 251 Principles of Statistics	3
Two courses in chem that require physical chem as prereq, or one chem course as above and one upper-div course in math or physics	6

It is strongly recommended that students take at least one year of German or Russian and ChE 223 (Material and Energy Balances).

Academic Minor Requirements

CHEMISTRY MINOR

This program is designed to give a nonscience major a sufficient background in general chemistry and laboratory techniques to improve his or her employment prospects as a laboratory technician and to improve the technical background of the student interested in science education or communication.

Course	Credits
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 302, 303 Prin of Physical Chem & Lab	4
Chem 372 Organic Chem II	3

Department of Civil Engineering

James H. Milligan, Dept. Chair (104 Buchanan Engr. Lab.). Faculty: Charles E. Brockway, John I. Finnie, Verne A. Geidl, Donald F. Haber, James H. Hardcastle, Cecil W. Hathaway, Dennis R. Horn, Terry R. Howard, Michael D. Kyte, Chyr Pyng Liou, Robert P. Lottman, James H. Milligan, Richard J. Nielsen, Ronald L. Sack, William E. Saul, Sunil Sharma, Alfred T. Wallace, Frederick J. Watts, Gerald A. Willett, Jr.

Civil engineers continually are faced with changing needs for modern life. They conceive, design, construct, and sometimes operate the physical facilities essential to those needs in areas such as transportation, water supply and control, environmental protection, and urban development.

Many civil engineers in practice specialize eventually in one area, such as structural engineering, sanitary and environmental engineering, soil mechanics and geotechnical engineering, highway and airport engineering, hydraulics and water resources engineering, and city and land-use planning. Many work in consulting firms, industrial companies, construction firms, or in governmental agencies. With the proper training, interest, and experience a civil engineer may move into executive positions and most do.

The conception and design of most civil engineering projects take place in engineering offices, but civil engineers often go into the field to supervise construction of projects they have designed. Some field assignments, located in interesting and different parts of the world, may be particularly appealing.

Civil engineers practice their art in the spirit of public service while at the same time gaining personal satisfaction and earning good salaries. Creative and talented engineers can find a true sense of accomplishment in contributing vital structures and facilities to modern society.

At UI, the lower-division courses consists of a common core of basic courses in science, mathematics, and engineering required of all College of Engineering students. A required "core" of course work in the junior and senior years provides the student with a broad civil engineering education. Some specialization is possible at the undergraduate level.

The Department of Civil Engineering occupies the first floor of the Buchanan Engineering Laboratory Building with some additional office and laboratory space in the basement and on the second floor of the building. Maintenance and replacement of existing equipment is provided by funds from research projects, from alumni donations, and from state educational funds. Instructional and research equipment include modern computing and data acquisition equipment.

The civil engineering faculty is a strong professional group with a wide variety of academic backgrounds and engineering practice experience. The faculty composition is such that a balance between the theoretical and practical aspects of civil engineering is preserved in the program.

Goals of the Department of Civil Engineering focus on maintaining a quality undergraduate program and a quality master's-degree program in most specialty areas of civil engineering with associated research programs to support graduate education. Graduate programs at the Ph.D. level are limited to those areas of specialization where combined resources of this department and other departments at both UI and Washington State University provide a program of adequate depth. Research efforts of greatest interest are those that will provide financial support for graduate students and that provide solutions to real problems of concern to the people of Idaho. Other departmental goals focus on providing professional service to state and local agencies and organizations and to individuals by providing continuing education opportunities and by assisting in very special engineering problems.

The department offers three graduate degree programs: (1) Master of Science (30 credits, with thesis), (2) Master of Engineering (33 credits, nonthesis), and (3) Doctor of Philosophy (in limited specialty areas). Course work requirements in each of the degree programs is relatively flexible depending on student interest and course availability. Financial assistance is available on a competitive basis in the form of instructional and graduate research assistantships. Students interested in graduate studies should specify the specialty area in which they wish to study.

Civil Engineering Courses

CE 200 (s) **Seminar** (cr arr). Prereq: perm.

CE 203 (s) **Workshop** (cr arr). Prereq: perm.

CE 204 (s) **Special Topics** (cr arr).

CE 211 Engr Measurements (3-4 cr). For engr and cartography students. Theory and practice; types and distribution of errors; manipulation of instruments; route and land surveying; constr survey; intro to photogrammetry. Two lec and one 3-hr lab a wk; additional 1-hr recitation a wk for 4 cr reqd unless waived by exam. Prereq: Math 140 and Engr 101 or equiv.

CE 218 Elem Surveying (2 cr). Primarily for nonengr students. Theory of measurements and manipulation of surveying instruments; appl of surveying methods to constr; topographic and land surveys. One lec and one 3-hr lab a wk. Prereq: Math 140.

CE 299 (s) **Directed Study** (cr arr). Prereq: perm.

CE 316 Adv and Route Surveys (3 cr). Alt/yrs. Adv survey methods incl state plan coordinate systems, practical astronomy, and route surveys, field layout to incl meridian determination, circular curves, spirals, setting slope and grade stakes, bridge and culvert surveys. Two lec and one 3-hr lab a wk. Prereq: 211.

CE 317 Land Surveying (2 cr). Hist and dev; related laws; prep and filing of property descriptions and plats; subdivision planning; methods for property surveys. Prereq: 211.

CE ID319 Photogrammetry and Photo-Interp (3 cr). Alt/yrs. Geometry of single and stereoscopic pairs of aerial photographs; stereo-plotters; photo-interp; appl to problems of engr importance. Two lec and one 3-hr lab a wk. Prereq: 211.

CE 321 Hydrology (3 cr). See AgE 351.

CE 322 Hydraulics (3 cr). Applied prin of fluid mechanics; open channel flow, pressure conduit flow, intro to pumps. Two 1-hr lec and one 1-hr supervised lab a wk; variable number of hrs of unsupervised lab. Prereq: ES 320.

CE 342 Theory of Structures (4 cr). Stresses and strains in statically determinate and indeterminate beam, truss, and rigid frame structures; effects of moving loads; matrix displacement method. Three lec and one 3-hr lab a wk. Prereq: ES 340.

CE 357 Mech Properties of Construction Materials (3 cr). Analysis of concrete mixtures; characteristics and measurements of stress-strain stiffness and strength properties of construction materials for improvement, selection, and design. Two lec, two hrs of lab, and 1 hr of recitation a wk. Prereq: Stat 301 and ES 340; coreq: Eng 317.

CE 372 Fundamentals of Transportation Engr (4 cr). Intro to planning, design, and operation of highway and traffic, public transportation, and airport systems. Three lec and one 3-hr lab a wk. Prereq: Stat 301; coreq: Eng 317.

CE 400 (s) **Seminar** (cr arr). Prereq: perm.

CE 403 (s) **Workshop** (cr arr). Prereq: perm.

CE 404 (s) **Special Topics** (cr arr).

CE 420 Fluid Mechanics II (3 cr). Fluids in motion; basic laws for systems and control volumes; Navier-Stokes equations; boundary layer theory; potential flow. Prereq: ES 320.

CE 421 Engr Hydrology (3 cr). See AgE 451.

CE ID422 Hydraulic Design (3 cr). Hydraulic problems in design of gravity and pressure systems. One field trip. Prereq: perm.

CE 428 Open Channel Hydraulics (3 cr). See AgE 458.

CE 431 Sanitary Engr (4 cr). Appl of basic engr sc to treatment of domestic and industrial water supplies; treatment and disposal of domestic sewage and industrial wastes. Three lec and one 3-hr lab a wk. Prereq: 322 and ES 320 or perm.

CE J432/J533 Water Quality Mgt Tech (3 cr). Physical, chem, and biol tech for analysis of water quality mgt problems; dev of design criteria for corrective systems. Additional effort reqd for grad cr. Two lec and one 3-hr lab a wk. Prereq: perm.

CE ID&WS-J436/ID&WS-J536 Wastewater Treatment System Design (3 cr). Appl of unit operations and processes to design of integrated wastewater treatment systems; critical analysis of existing designs. Additional effort reqd for grad cr. Prereq: perm.

CE 441 Reinforced Concrete Design (3 cr). Ultimate strength method in accordance with latest bldg code. Two lec and one 3-hr lab a wk. Prereq: 342.

CE WS442 Prestressed Concrete Deisgn (3 cr). WSU CE 434.

CE WS443 Design of Timber Structures (3 cr). WSU CE 436.

CE 444 Steel Design (3 cr). Working stress design and plastic design of steel using latest AISC specs. Two lec and one 3-hr lab a wk. Prereq: 342.

CE ID&WS-J445/ID&WS-J545 Matrix Structural Analysis (3 cr). WSU 530. Formulation of the analysis of trusses, beams, and frames using the stiffness method of matrix structural analysis; dev of element properties, coordinate transformations, and global analysis theory; special topics such as initial loads, member and joint constraints, modification procedures. Special project demonstrating mature understanding of materials reqd for grad cr. Prereq: 342 or perm.

CE 460 Soil Mechanics (3 cr). Physical and mech properties of soils; behavior of soil structures under load. Prereq: ES 320 and ES 340.

CE WS461 Foundations (3 cr). WSU 435. Prereq: 441, 460, coreq: 444.

CE 468 Engr Properties of Soils (3 cr). Lab measurements of physical and mech properties of soils; related appl, geotechnical reports. Two lec and one 3-hr lab a wk. Prereq: 460.

CE ID474 Intermediate Transportation Engr (3 cr). Geometric design of urban and rural roadways, traffic operations analysis, traffic control systems, service and route planning for public transportation systems, transit operations analysis, and transportation network analysis. Prereq: 372 or perm.

CE 475 Pavement Eval and Design (3 cr). Selection of conventional and new materials and appl; methods and comparative procedures of structural and other performance capabilities of asphalt and portland cement concrete pavements. Prereq: 357; Eng 317, or equiv; coreq: 372, 460, or equiv.

CE 482 Project Mgt Tech (1-4 cr, max 4). Four accelerated, 1 cr minicourses offered in one sem. Modern engr mgt tech for design, constr, and operation of typical engr projects: (1) linear programming applied to project design and operation; (2) project econ and cost estimation; (3) reliability, risk, and decision analysis; (4) scheduling and bidding of projects (CPM, PERT). Four lec a wk for four wks for each minicourse. These minicourses may be taken separately. Prereq: univ sr standing and Stat 251 or Stat 301.

CE ID484 Engr Law and Contracts (2 cr). Dev. of law, courts, and ethics; laws of contracts, agency, sales, property, and patients; specs, prep of contract documents. Prereq: sr standing.

CE 486 Engr Economy (3 cr). Econ analysis and comparison of engr alternatives. Prereq: sr standing.

CE 491 Civil Engr Professional Seminar (1 cr). Employment tech, prep and presentation of professional paper. Course to be taken in next to last sem before graduation. Up to five days of field trips may be reqd.

CE 492 Civil Engr Professional Seminar (0 cr). Graded P/F. Irregular meetings of students in their last sem before graduation. One 1- to 5-day field trip may be reqd.

CE 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

CE 499 (s) **Directed Study** (cr arr). Prereq: perm.

CE 500 Master's Research and Thesis (cr arr).

CE 501 (s) **Seminar** (cr arr). Conferences and reports on current dev.

CE 502 (s) **Directed Study** (cr arr). Prereq: perm.

CE 503 (s) **Workshop** (cr arr). Prereq: perm.

CE 504 (s) **Special Topics** (cr arr).

CE ID&WS510 Adv Mechanics of Materials (3 cr). See ME J439/J539.

CE ID522 Adv Hydraulic Design (3 cr). Appl of prin of fluid mech and hydraulics in design of hydraulic works, structures, and systems; design problems may incl wells, pumps, pipelines and control valves; spillways, outlet works, and open channel control structures. Prereq: perm.

CE ID523 Water Resources Systems (3 cr). Concepts in water dev; coordination of dev of other natural resources; systems approach and optimization tech. Prereq: perm.

CE ID524 Water Resources Planning (3 cr). Use of water resources; provision for domestic water supply, power, flood control, navigation, irrigation, and rec; design and feasibility problems; guest lecturers. Prereq: perm.

CE WS525 Interm Fluid Mechanics (3 cr). WSU 550. Prereq: ES 320.

CE WS526 Topics in Fisheries Engr (1-3 cr, max 6). WSU 557.

CE WS527 Adv Topics in Hydraulic Engr (1-3 cr, max 6). WSU 552. Prereq: perm.

CE ID&WS528 Stochastic Hydrology (3 cr). WSU 559. Prereq: 321 and a course in stat.

CE 529 Natural Channel Flow (3 cr). See AgE 555.

CE WS530 Instrumental Analysis of Environmental Contaminants (3 cr). WSU 540.

CE ID&WS531 Environmental Engr Unit Operations (3 cr). WSU 541. Analysis and design of physical and chem operations of water and waste treatment; flow models, sedimentation, flocculation, filtration, and water conditioning. Prereq: perm.

CE ID&WS532 Environmental Engr Unit Processes (3 cr). WSU 542. Analysis and design of chem and biol processes of water and waste treatment, stream pollution analysis, gas transfer, biol oxidations, aerobic and anaerobic processes, and combustion processes. Prereq: perm.

CE 533 Water Quality Mgt Tech (3 cr). See J432/J533.

CE WS534 Sanitary Engr Analysis (2 cr). WSU 581. Prereq: perm.

CE ID&WS536 Wastewater Treatment System Design (3 cr). See ID&WS-J436/ID&WS-J536.

CE WS538 Engr Aspects of Aquatic Biol (4 cr). WSU 584.

CE WS539A Industrial Waste Problems (3 cr). WSU 545.

CE WS539B Water Quality Mgt (3 cr). WSU 546.

CE WS539C Radiological Health (3 cr). WSU 547.

CE WS539E Air Pollution Measurement Tech (3 cr). WSU 572.

CE WS539F Air Pollution Abatement and Admin (2 cr). WSU 573.

CE WS539G Engr Aspects of Aquatic Chem (2-4 cr). WSU 583.

CE WS539H Applied Stream Sanitation (3 cr). WSU 586.

CE 540 Continuum Mechanics (3 cr) See ES 540.

CE ID&WS541-ID542 Design of Structures I-II (3 cr). CE 541: arches, reinforced concrete appl, incl prestressed concrete and thin-shell design. CE 542: nonprismatic member analysis, secondary stresses, composite sections, plate girder design. Prereq: 441, 444, or perm.

CE ID&WS543 Dynamics of Structures (3 cr). WSU 512. Alt/yrs. Behavior of structures under impact, impulse, and seismic loads. Prereq: 441, 444, Math 310.

CE ID&WS544 Buckeling in Structures (3 cr). Analysis of elastic and inelastic stability of columns, trusses, rigid frames, plates, and shells, lateral stability of beams. Prereq 444, Math 310.

CE ID&WS545 Matrix Structural Analysis (3 cr). See J445/J545.

CE ID&WS546 Finite Element Analysis (3 cr). Same as ME 549. Formulation of theory from basic consideration of mechanics; appl to structural engr, solid mechanics, soil and rock mechanics; fluid flow. Prereq: perm.

CE WS547 Adv Reinforced Concrete Design (3 cr). WSU 532.

CE 548 Elasticity (3 cr). Same as ME 548. Math analysis of strain and stress, incl vectors, tensors, and coordinate transformations; equations of elasticity; stress problems involving extension, torsion, and flexure; theories of failure. Prereq: perm.

CE WS549 Adv Topics in Structural Engr (3 cr). WSU C E 537.

CE 556 Physical Properties of Concrete (3 cr). Design aspects of portland cement and asphalt concrete mixtures; physical and mech properties; effects of aggregate and binder constituents. Two lec and one 3-hr lab a wk. Prereq: 357 or perm.

CE ID557 Mech Properties of Elastic and Nonelastic Materials (3 cr). Procedures for determining stress, strain, and modulus of materials used in construction, and for evaluating their performance with changes of time and frequency, temperature, and moisture under various modes of loading.

CE ID561 Adv Soil Mechanics (3 cr). Effective stress, pore pressures, strain, and shear strength of soil; dynamic behavior; appl to design of rigid and flexible earth-retaining structures; stability analyses of natural slopes and embankments. Prereq: 460 or perm.

CE ID562 Adv Foundation Engr (3 cr). Consolidation theories, stress and strain distribution, bearing capacity and settlements of shallow and deep foundations, pile group behavior, theory of subgrade reaction, mat foundations, laterally loaded piles. Prereq: 460 or perm.

CE 563 Seepage and Earth Dams (3 cr). See GeoIE 535.

CE WS565 Soil Dynamics (3 cr). Theory of foundation response to dynamic loads, design and analysis of machine foundations, foundation isolation, behavior of soils subjected to dynamic loads, field and laboratory methods for eval of dynamic properties, liquefaction, wave equation analysis of piles.

CE WS567 Soil and Site Improvement (3 cr).

CE WS569 Advanced Soil Mechanics Lab (3 cr). WSU C E 510.

CE ID571 (s) **Adv Topics in Transportation Engr** (3 cr, max 12). Series of adv courses in transportation engr focusing on traffic and highway engr, public transportation engr, airport planning and engr, and transportation planning. Prereq: 474 or perm.

CE 589 Water Resources Seminar (1 cr). See Inter 589.

CE 597 (s) **Practicum** (cr arr). Prereq: perm.

CE 598 (s) **Internship** (cr arr). Prereq: perm.

CE 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

CE 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

CIVIL ENGINEERING (B.S.C.E.)

Note: A minimum GPA of 2.00 in UI College of Engineering upper-division courses is required for graduation in this program.

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years	**Credits**
Courses common to engineering curricula (see part 4)	39
CE 211 Engineering Measurements	3
EE 207 Intro to Electrical Engineering	3
ES 220 Engineering Dynamics	3
ES 340 Mechanics of Materials	3
Third and Fourth Years	
CE 321 Hydrology	3
CE 322 Hydraulics	3
CE 342 Theory of Structures	4
CE 357 Mech Properties of Construction Materials	3
CE 372 Fundamentals of Transportation Engineering	4
CE 431 Sanitary Engineering	4
CE 441 Reinforced Concrete Design or CE 444 Steel Design	3
CE 460 Soil Mechanics	3
CE 486 Engineering Economy	3
CE 491-492 Civil Engr Professional Seminar	1
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
Eng 317 Technical & Engr Report Writing	3
Geol 101, 102 Physical Geology and Lab	4
Stat 301 Probability & Statistics	3
Humanities and social sciences electives (in addition to satisfying regulation J-3-d, one urban studies course must be selected from Arch 483, Arch 484, Soc 311, Geog 330, or Econ 410)	16
Technical electives (incl at least 6 cr from CE 421, 422, 436, 441, 444, 468, 474, 475	14
Undesignated electives	1

School of Communication

Gary T. Hunt, Director, School of Communication (Communication Bldg.). Faculty: Roy Alden Atwood, Don H. Coombs, Peter A. Haggart, Gary T. Hunt, Tom E. Jenness, Alan Lifton, Paul L. Miles, Mark Secrist, William P. Woolston. Affiliate Faculty: Jay Baltezore.

Communication is more and more being seen as the discipline that links other disciplines, as the discipline whose success will be vital if people, organizations, and governments are to cope with today's complex world. Students with degrees from the School of Communication find jobs with newspapers, broadcasting stations, public relations firms, advertising agencies, industry, and government.

The School of Communication provides professional preparation in communication fields and also functions as an academic unit of the College of Letters and Science for the purpose of offering courses to students in other fields.

The degree programs at UI are designed to combine theory and practical experience. Students get hands-on experience with equipment in their areas of specialization. There are degree programs or options in advertising, communication, journalism, organizational communication, photography/film, public relations, and telecommunication. Students in those programs either take a foreign language and get a B.A. degree or take 20 credits in a specialized subject matter area outside the school and get a B.S. degree.

Courses

GENERAL COMMUNICATION

CommG 131 Fundamentals of Public Speaking (2 cr). Satisfies core requirement J-3-a. Skills and tech of effective speaking.

CommG 132 Oral Interp (2 cr). Use of voice and body to communicate the intellectual and emotional meaning of lit.

CommG 134 Nonverbal Comm (2 cr). Study of body language, proxemics, kinesics, and other nonverbal codes.

CommG 232 Parliamentary Law and Procedure (1 cr). Practice of speech under parliamentary conditions.

CommG 233 Interpersonal Comm (3 cr). Comm concepts and skills applied to relationship mgt: comm process, listening, self-disclosure, perception, conflict.

CommG 288 Intro to Film Art (3 cr). Intro to aesthetics of film; considers film as a cultural artifact by surveying fundamental aspects of film form, systems, style, and analysis; no previous knowledge of film or photography reqd. Two lec, one discussion period, and one film showing period a wk.

CommG 331 Conflict Mgt (3 cr). Prin of effective conflict mgt in various settings; emphasis on styles of conflict, power, goals, strategies, and intervention tech.

CommG 332 Comm and the Small Group (3 cr). Problem-solving methods; performing as a group leader or as a group member; small group behavior.

CommG 333 Interviewing (3 cr). Prin of info gathering and problem solving in interviews.

CommG 335 Organizational Comm (3 cr). Philosophy, methods, and designs for studying comm system of a complex organization.

CommG 347 Persuasion (3 cr). Theory and practice of effective persuasive tech. Prereq: CommG 131.

CommG 382 Hist of Photography (3 cr). Hist and dev of photography in its various forms; photography as a creative art form and a reflection of society; selected slide lecs. Prereq: Comm 281 or perm.

CommG 384 Hist of American Film (3 cr). Hist and dev of U.S. film industry; film as an art form; film as a reflection of society; selected genres and directors.

CommG 430 Perspectives in Film (3 cr). See Eng 430.

CommG 433 Organizational Comm Theory and Research (3 cr). Overview of current theory and research in organizational comm; interpretive and critical perspectives on organizational culture, organizational change, organization and environment relationships, mgt systems, and power relationships.

CommG 435 Strategies of Organizational Comm (3 cr). Theory and methods of improving comm in organizations; consulting, training, organizational change. Prereq: CommG 335.

COMMUNICATION

Comm 121 News Wrtg (3 cr). Basic prin of wrtg news. Two 2-hr lec-labs a wk. Prereq: Eng 104 and ability to type.

Comm 140 Mass Media and Society (3 cr). Role of the media; their performance and significance.

Comm 200 (s) **Seminar** (cr arr). Prereq: perm.

Comm 203 (s) **Workshop** (cr arr). May be graded P/F. Prereq: perm.

Comm 204 (s) **Special Topics** (cr arr).

Comm 222 Reporting (3 cr). Types and sources of news; gathering and wrtg news. Two lec and one lab a wk. Prereq: Comm 121.

Comm 265 Advertising and Society (3 cr). Survey of role of advertising in American society incl effects on consumers; regulation, media, and advertising as a creative process.

Comm 270 Broadcast Writing (3 cr). Basic prin of wrtg for broadcast. Prereq: Comm 121.

Comm 278 Intro to Radio/TV Production (3 cr). Audio and video equipment and recording procedures.

Comm 281 Understanding Photography (3 cr). Basic skills of camera operation; emphasis on image design and creative tech; lec topics incl exposure, lenses, composition, filters, and films. Two lec and one 3-hr recitation a wk.

Comm 299 (s) **Directed Study** (cr arr). Prereq: perm.

Comm 323 Public Affairs Reporting (3 cr). Problems and practice in reporting the courts, govt, politics, other public issues. Prereq: Comm 121, 222, or perm.

Comm 325 News Editing (3 cr). News selection, eval, editing, and display. Two lec and one lab a wk. Prereq: Comm 121, 222, or perm.

Comm 352 Prin of Public Relations (3 cr). Understanding public relations prog, functions and tech; projects related to student's interest. Prereq: Comm 121.

Comm 354 Publications Editing (3 cr). Design and production of magazines, periodicals, brochures.

Comm 356 Organizational Media (3 cr). Exam of various types of media used by organizations to communicate with internal and external audiences; focus on problem ident, problem solving, and critical thinking skills related to use of media in context of organizational issues and problems. Prereq: Comm 352.

Comm 360 Broadcast Media Advertising (3 cr). Advertising creative process in radio and television, incl copywriting, and production processes and tech. Prereq: Comm 265.

Comm 362 Print Media Advertising (3 cr). Advertising creative process in print media (newspapers, magazines, direct mail, outdoor, etc.), incl copywriting, typesetting, layout, design, and production processes and tech. Prereq: Comm 265.

Comm 364 Advertising Media Planning (3 cr). Advertising media planning for all media, both broadcast and print; incl interpretation of ratings and market data, media strategies and concepts, and specific buying process in each advertising medium. Prereq: Comm 265.

Comm 371 Basics of TV Production (2 cr). For non-telecomm majors. Basic camera operation, VCR operation, lighting, editing.

Comm 372 Broadcast News Production (3 cr). Tech of gathering, writing, and producing news for radio and television; on-air news duties reqd. Prereq: Comm 270.

Comm 374 Radio Production (3 cr). Theory and practical appl in the creation, design, and production of radio program elements. Prereq: Comm 265, 278.

Comm 378 Television Production (3 cr). Basic production theory, lighting, composition, sound; producing and directing; practice in a variety of television production forms. Field trips. Prereq: Comm 265, 278, 374.

Comm 381 Photographic Materials and Tech (3 cr). Basic to intermediate level black and white lab course; film dev, printing; exploration of various films, developers, toners, and photo tech; group critiques. Two lec and two 3-hr labs a wk. Prereq: Comm 281 or perm.

Comm 385 Color Photography (3 cr). Entry-level color lab course; discussion and practice in color theory; exploration of all conventional color processes, slides, negatives, and prints. Two lec and two 3-hr labs a wk. Prereq: Comm 281 or perm.

Comm 386 American Documentary Film (3 cr). Open to all students. Dev of nonfiction film; documentary style and form; film's power to communicate; noted filmmakers; issues raised by films.

Comm 400 (s) **Seminar** (cr arr). Prereq: perm.

Comm 403 (s) **Workshop** (cr arr). May be graded P/F. Prereq: perm.

Comm 404 (s) **Special Topics** (cr arr).

Comm 425 Feature Article Writing (3 cr). Writing human interest stories, editorials, reviews, and columns. Prereq: Comm 121 or perm.

Comm 431 Professional Presentation Tech (3 cr). Multimedia presentation of proposals, mgt plans, feasibility reports, instructions, and scientific papers; designed to assist students in professional fields in making presentations to professional and lay audiences.

Comm 441 Ethics in Mass Comm (3 cr). Exam of ethical responsibilities and obligations of people working in the mass media.

Comm 444 Comm and Public Opinion (3 cr). Role of comm in the formation of public opinion with special emphasis on mass media.

Comm 445 Hist of Mass Comm (3 cr). Growth and dev of mass media in the U.S.

Comm 448 Law of Mass Comm (3 cr). Freedom of the press, libel, right to know, privacy, contempt in print and broadcast media.

Comm 449 Theory in Comm (3 cr). Interdisciplinary approach to understanding the process of comm.

Comm 450 Quantitative Research Methods (3 cr). Design of experiments and field studies and planning of polls relevant to comm, with special attention to causality, reliability, and validity, and emphasis on interpretation of results. Prereq: Stat 251.

Comm 451 Qualitative Research Methods (3 cr). Aims and methods of qualitative research; emphasis on philosophical assumptions, research design, data collection, reliability/validity issues, and data analysis within the context of interpretive, critical and naturalistic approaches to comm research and practice.

Comm 452 Public Relations Mgt (3 cr). Mgt case studies of public relations and advertising prog; practice in developing and executing campaigns with emphasis on presentation skills and equipment. Prereq: Comm 352.

Comm 458 Public Relations Case Studies (3 cr). Exam of actual and created public relations case studies; reasons for their success or failure examined and evaluated. Prereq: Comm 452.

Comm 466 Advertising Campaign Strategy (3 cr). Adv advertising strategies in creative approaches and media usage; current ad campaigns and dev of a complete advertising campaign for a client. Prereq: Comm 360, 362, 364, 431, and Art 121 or 225.

Comm 468 The Ad Agency (3 cr). Functioning of an ad agency, incl mgt, acctg, creative and media buying systems, govt regulation, account mgt, and creative strategies in the marketplace. Field trips. Prereq: Comm 466 or perm.

Comm 473 Telecomm Programming/Mgt (3 cr). Sources of telecomm progs, scheduling strategies, audience research, legal limitations, prog design; role of mgt, prog promotion, and prog decisions.

Comm 478 Adv Television Production (4 cr). Dev, planning, budgeting, and execution of television productions; dev of professional tech. Field trips. Prereq: Comm 374, 378.

Comm 479 Telecomm Sr Seminar (1 cr, max 2). Disc of telecomm realities such as systems, regulation, programming, and mgt oriented issues; current events from trade press as source of topics of disc. Field trips.

Comm 481 Adv Black and White Photography (3 cr). Adv-level black and white lab course; covers basic lighting, portraits, studio, photojournalism, business; group critiques. Two lec and two 3-hr labs a wk. Prereq: Comm 381 or perm.

Comm 485 Adv Color Photography (3 cr). Adv-level lab course; covers process monitoring, masking, posterization, special effects, and conceptual dev; group critiques. Two lec and two 3-hr labs a wk. Prereq: Comm 385 or perm.

Comm 498 Internship (0-3 cr, max 3). Supervised experience in professional comm. Graded P/F. Prereq: perm of director, School of Comm.

Comm 499 (s) **Directed Study** (cr arr). Prereq: perm.

Comm 501 (s) **Seminar** (cr arr). Prereq: perm.

Comm 502 (s) **Directed Study** (cr arr). Prereq: perm.

Comm 503 (s) **Workshop** (cr arr). May be graded P/F. Prereq: perm.

Comm 504 (s) **Special Topics** (cr arr).

Curricular Requirements

Note: Required courses in a student's major cannot be used to satisfy the distributional requirements for the College of Letters and Science.

School of Communication Requirements

All majors in the School of Communication are required to take Comm 121, News Writing (freshman or sophomore year), CommG 131, Fundamentals of Public Speaking, Comm 140, Mass Media and Society, one 3-credit course in computer science, and at least one course in the "visual" basic skill area as approved by the School of Communication. Candidates for the B.S. degree are required to complete at least 20 credits in a specialized subject matter area outside the School of Communication. For students to receive internship credit toward a degree from the School of Communication requires approval of the school.

All majors are required to earn a grade of C or better in CommG 131, Fundamentals of Public Speaking, in Comm 121, News Writing, and in courses taken to fulfill the visual skills requirement.

A cumulative university grade point average of 2.25 is required of students seeking upper-class standing in the school or graduating with any of the majors offered by the school. Probation, if granted, shall be at the discretion of the faculty. In order to remain in good standing in the school, the 2.25 average must be maintained.

A student who graduates with a major in the School of Communication must complete a minimum of 128 credits of which (1) a maximum of 38 credits may be taken in Comm courses, (2) a minimum of 65 credits must be taken in courses offered by the College of Letters and Science and the Departments of Art and Economics, and (3) a maximum of 25 credits may be taken in courses offered outside the College of Letters and Science or the Departments of Art and Economics.

COMMUNICATION (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general L & S and School of Communication requirements for either the B.A. or B.S. degree, and:

A. ADVERTISING OPTION

Course	Credits
CommG 233 Interpersonal Communication	2
Comm 265 Advertising and Society	3
Comm 360 Broadcast Media Advertising	3
Comm 362 Print Media Advertising	3
Comm 364 Advertising Media Planning	3
Comm 431 Professional Presentation Tech	3
Comm 441 Ethics in Mass Communication	3
Comm 445 Hist of Mass Communication or Comm 448 Law of Mass Communication	3
Comm 466 Advertising Campaign Strategy	3
Art 121 Visual Comm & the Design Process or Art 225 Communication Graphics	2-3
Bus 321 Marketing	3
Business elective course	3
Courses selected from the following	6
Comm 281 Understanding Photography	
Comm 352 Principles of Public Relations	
Comm 354 Publications Editing	
Comm 371 Basics of TV Production	
Comm 444 Comm & Public Opinion	
Comm 445 History of Mass Communication	
Comm 448 Law of Mass Communication	
Comm 449 Theory in Communication	
Comm 451 Qualitative Research Methods	
Comm 468 The Ad Agency	

B. PUBLIC RELATIONS OPTION

Course	Credits
CommG 335 Organizational Communication	3
CommG 433 Org Comm Theory & Research	3
Comm 352 Prin of Public Relations	3
Comm 356 Organizational Media	3
Comm 431 Professional Presentation Techniques	3
Comm 451 Qualitative Research Methods	3
Comm 452 Public Relations Management	3
Comm 458 Public Relations Case Studies	3
Two of the following courses	6
CommG 233 Interpersonal Comm	
CommG 332 Comm & the Small Group	
CommG 347 Persuasion	
Comm 222 Reporting	
Comm 354 Publications Editing	
Comm 425 Feature Article Writing	
Comm 444 Comm & Public Opinion	
Comm 449 Theory in Communicatiion	
One of the following courses	3
Bus 322 Marketing Research & Analysis	
PolSc 435 Political Research Methods & Approaches	
Soc 410 Intro to Social Research	

C. PHOTOGRAPHY/FILM OPTION

Course	Credits
CommG 233 Interpersonal Communication	2
CommG 288 Intro to Film Art or Comm 485 Adv Color Photography	3
CommG 382 History of Photography	3
CommG 384 Hist of American Film or Comm 386 Documentary Film	3
Comm 281 Understanding Photography	3
Comm 354 Publications Editing	3
Comm 381 Photographic Materials & Techniques	3
Comm 385 Color Photography	3
Comm 441 Ethics in Mass Comm or Comm 445 Hist of Mass Comm	3
Comm 448 Law of Mass Communication	3
Comm 481 Adv Black and White Photography	3
Art 121-122 Visual Comm & the Design Process	6

D. GENERAL OPTION

Course	Credits
CommG 233 Interpersonal Communication	2
CommG 332 Communication & the Small Group	3
CommG 335 Organizational Communication	3
Comm 449 Theory in Communication	3
Additional upper-div CommG courses	9
Additional upper-div Comm courses	9

JOURNALISM (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general L & S and School of Communication requirements for either the B.A. or B.S. degree, and:

Course	Credits
Comm 222 Reporting	3
Comm 281 Understanding Photography	3
Comm 323 Public Affairs Reporting	3
Comm 325 News Editing	3
Comm 441 Ethics in Mass Communication	3
Comm 445 History of Mass Communication	3
Comm 448 Law of Mass Communication	3
Three of the following	9
Comm 354 Publications Editing	
Comm 425 Feature Article Writing	
Comm 444 Comm & Public Opinion	
Comm 449 Theory in Communication	
Comm 451 Qualitative Research Methods	
Comm 498 Internship	
Cognate fields (at least 12 cr in upper-div courses; if the student's minor is one of these fields, no more than 6 cr of the minor may be counted toward this requirement)	
Economics	6
Political science	6
Additional cr from anthro, econ, geog, hist, pol sc, soc, phil, and psych	18

ORGANIZATIONAL COMMUNICATION (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general L & S and School of Communication requirements for either the B.A. or B.S. degree, and:

Course	Credits
CommG 233 Interpersonal Communication	3
CommG 332 Communication & the Small Group	3
CommG 331 Conflict Management	3
CommG 333 Interviewing	3
CommG 335 Organizational Communication	3
CommG 433 Organization Comm Theory & Research	3
Comm 431 Professional Presentation Techniques	3
Comm 450 Quantitative Research Methods or Comm 451 Qualitative Research Methods	3
Communication electives selected from the following	11-12
CommG 134 Nonverbal Communication	
Comm 265 Advertising & Society	
Comm 352 Principles of Public Relations	
Comm 354 Publications Editing	
Comm 356 Organizational Media	
Comm 371 Basics of TV Production	
Comm 441 Ethics in Mass Communication	

and one of the following emphasis areas (constitutes minor) (Stat 251 is recommended for the math core requirement):

Human Resources Development Emphasis

CommG 435 Strategies of Organization Comm	3
Ed 314 Strategies for Teaching	3
Psych 316 Industrial Psychology	3
Psych 325 Cognitive Psychology	3
Electives selected from general emphasis list	12

General Emphasis

Electives selected from the following	20

Acctg 201 Principles of Accounting
Bus 311 Intro to Management
Bus 321 Marketing
Bus 412 Personnel Management
Bus 416 Compensation Administration
Bus 441 Labor Relations
Eng 313 Business Writing
PolSc 451 Public Administration
PolSc 454 Public Organization Theory
Psych 320 Intro to Social Psychology
Psych 446 Engineering Psychology
Rec 260 Leisure & Society
Soc 312 Sociology of Organizations

TELECOMMUNICATION (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general L & S and School of Communication requirements for either the B.A. or B.S. degree, and:

Course	Credits
Comm 265 Advertising & Society or Comm 222 Reporting	3
Comm 270 Broadcast Writing	3
Comm 278 Intro to Radio-TV Production	3
Comm 374 Radio Production	3
Comm 378 Television Production	3
Comm 448 Law of Mass Communication	3
Comm 473 Telecomm Programming/Mgt	3
Comm 479 Senior Seminar	1
Three of the following	9
CommG 288 Intro to Film Art	
Comm 323 Public Affairs Reporting	
Comm 360 Broadcast Media Advertising	
Comm 372 Broadcast News	
Comm 386 American Documentary Film	
Comm 441 Ethics in Mass Communication	
Comm 444 Comm and Public Opinion	
Comm 445 History of Mass Communication	
Comm 478 Adv Television Production	
Comm 498 Internship	

And for the B.S. degree the following course area requirements:

Humanities	6
Social sciences	6

Academic Minor Requirements

ADVERTISING MINOR

Course	Credits
Comm 140 Mass Media & Society	3
Comm 265 Advertising & Society	3
Comm 360 Broadcast Media Advertising	3
Comm 362 Print Media Advertising	3
Comm 431 Professional Presentation Tech	3
At least two of the following	6
Comm 352 Prin of Public Relatiions	
Comm 364 Advertising Media Planning	
Comm 444 Comm & Public Opinion	
Comm 448 Law of Mass Comm	
Comm 468 The Ad Agency	

INTERPERSONAL COMMUNICATION MINOR

Course	Credits
CommG 131 Fundamentals of Public Speaking	2
CommG 233 Interpersonal Communication	2
CommG 332 Comm and the Small Group	3
Comm 140 Mass Media & Society	3
Electives from the following (minimum cr)	10
CommG 132 Oral interpretation	
CommG 134 Nonverbal Communication	
CommG 232 Parliamentary Law & Procedure	
CommG 331 Conflict Management	
CommG 333 Interviewing	
CommG 335 Organizational Communicatiion	
CommG 347 Persuasioin	
Comm 431 Professional Presentation Tech	

JOURNALISM MINOR

Course	Credits
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 222 Reporting	3
At least four of the following	12
Comm 323 Public Affairs Reporting	
Comm 425 Feature Article Writing	
Comm 441 Ethics in Mass Communication	
Comm 444 Communication & Public Opinion	
Comm 445 History of Mass Communicatioin	
Comm 448 Law of Mass Communication	

PHOTOGRAPHY MINOR

Course	Credits
CommG 288 Intro to Film Art	3
CommG 382 History of Photography or CommG 384 History of American Film	3
Comm 140 Mass Media & Society	3
Comm 281 Understanding Photography	3
Comm 371 Basics of Television Production	2
Comm 381 Photographic Materials & Tech	3
Comm 385 Color Photography	3

PUBLIC RELATIONS MINOR

Course	Credits
CommG 433 Org Comm Theory & Research	3
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 352 Prin of Public Relations	3
Comm 356 Organizational Media	3
Comm 452 Public Relations Mgt	3
One of the following	3
CommG 335 Organizational Communication	
Comm 354 Publications Editing	
Comm 431 Professional Presentation Tech	

TELECOMMUNICATION MINOR

Course	Credits
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 265 Advertising & Society or Comm 222 Reporting	3
Comm 270 Broadcast Writing	3
Comm 278 Intro to Radio-TV Production	3
Comm 323 Public Affairs Reporting or Comm 360 Broadcast Media Advertising	3
Comm 374 Radio Production or Comm 378 Television Production	3

Department of Computer Science

John W. Dickinson, Dept. Chair (B40 Janssen Engr Bldg.). Faculty: John W. Dickinson, A. Kent Dunnam, Michael R. Fellows, William S. Junk, Jack Kulas, Thomas H. Miller, Dean C. Mumme, Charles K. Nelson, Paul W. Oman, Robert C. Probasco, Robert E. Rinker, Molly W. Stock, Karen H. Van Houten, Ya-Yen Wang.

Computer science is a new, exciting and expanding field for study and research. It is a broad discipline covering such diverse areas as programming languages, logic design, payroll and personnel systems, management information systems, and numerical and algorithmic analysis. Graduates in this field can find employment in a wide spectrum of public and private enterprises.

The field of computer science encompasses many areas of specialization. One may find his or her personal niche in software development, systems development and hardware selection, studies of compatability between hardware and software, language development and modification, or perhaps a combination of these and any number of other diverse computer-oriented applications and concepts. Because of this diversity in potential application areas, the computer scientist must be familiar with the language of the physical sciences, business, mathematics, and English. If the computer is indeed to become a benefit to mankind, the computer scientist must be broadly educated and conversant with the many implications of the powerful tool that he or she is controlling and developing.

The Department of Computer Science was formed in 1981 and is in the College of Engineering. The Bachelor of Science in Computer Science has been offered at UI since 1977. Following a national trend and the burgeoning demands of an industry that is growing at an explosive rate, UI has gathered talent from the Departments of Computer Science, Electrical Engineering, Mathematics and Statistics, and Business to provide a degree program in computer science. This program consists of a carefully selected grouping of courses that will provide an orderly, inter-

esting, and effective curriculum leading to the B.S.C.S. degree.

Students in computer science have the unique opportunity to draw from the expertise of an interdisciplinary faculty with extensive experience in industry, teaching, and research. Computers currently available to students include the university's two IBM 4341 computers, one with extensive time-sharing capabilities throughout campus and the other with batch processing capabilities, and departmental computers such as a VAX 11/780, several HP9000 computers, and a generous assortment of microprocessors.

The purpose of the graduate program in computer science is to develop the student's critical professional thinking and intuition. The curriculum involves a balanced mixture of learning experiences to make the graduate capable of sound professional decisions. Although a B.S.C.S. degree is not required, the study of computer science at the graduate level requires mathematical maturity, skill in the use of high-level and machine-level programming languages, and basic knowledge of computer hardware organization and technology. Students wishing to enter the master's program must demonstrate competence in specific areas equivalent to the material covered in several of the undergraduate courses. The following list of courses is considered to be the minimum set necessary to satisfy prerequisite requirements for advanced undergraduate and graduate level courses in computer science: CS 112, 113, and 213; Math 176; Math 190 or 376; Math 330; Stat 251 or 301. A student who does not have an adequate background in these subject areas will be required to satisfactorily complete those courses in which he or she is deficient. The Graduate Record Examination general test is also required for admission. For a complete description of the master's program in computer science, consult the Graduate Bulletin.

Computer Science Courses

Preregistration is required for computer science courses; consult the departmental administrator

CS 100 Intro to Computers and Programming (3 cr). Intended for noncomputer sc majors. Survey of computer systems and appl incl overview of hardware, software, industry trends, and societal implications; intro to personal computer application software and programming in BASIC.

CS 103 Intro to COBOL Programming (3 cr) (233). Intro to COBOL programming, incl coverage of files, sorts, and tables. Prereq: 100, 105, or 112.

CS 105 FORTRAN Programming for Engr (2 cr) (135). Basics of computer programming in FORTRAN, emphasizing scientific appl; one- and two-dimensional arrays, functions, subroutines. Coreq: Math 180.

CS 112 Intro to Problem Solving and Programming (3 cr) (150). Intro to fundamental problem solving techniques using the computer; use of a programming language, structured programming concepts; use of fundamental data types, incl arrays and records; basic concepts of computer organization, editing, and program execution; programming lab in which the student solves problems using Pascal. Prereq: high school algebra.

CS 113 Program Design and Algorithms (3 cr) (201). Further problem-solving and design methods used in computer sc; problem definition and analysis; preliminary design methods, module analysis and refinement methods, cohesion, coupling, top down design; internal and external program documentation; intro to algorithm analysis, cost and complexity concepts; discussion and comparison of several well-known algorithms for searching, sorting, text, and numeric processing. Lab work reqd. Prereq: 112 and Math 176.

CS 200 Soph Seminar (0 cr). Curriculum options, elective courses, prep for grad study, and current tech topics. Field trip may be required. Graded P/F.

CS 204 (s) **Special Topics** (cr arr). Prereq: perm.

CS 213 Data Structures (3 cr). Intro to abstract data types, linear lists, linked lists, stacks, queues, graphs, and trees; methods for implementing, and algorithms for manipulating these types; dynamic memory methods; additional searching and sorting algorithms that result from using these data types; intro to files, incl sequential, random access, and indexed processing; application of these concepts in the lab to provide further exper in the program design process. Prereq: 113.

CS 220 (s) **Programming Language** (3 cr, max arr). Intro to computer programming in a selected language; one language taught each term from the following: PL/1, Ada, C, and others. Prereq: 105 or 112.

CS 241 Computer Organization (4 cr). Computer structure, machine language, addressing and programming techniques; use and operation of assemblers, linkage editors, loaders, and compilers; use of macros; systems programming using system calls; comparison of assembly language implementations with implementations using high level languages, such as C. Three lec and one lab a wk. Prereq: 113.

CS 299 (s) **Directed Study** (cr arr). Prereq: perm.

CS 310 Computing Languages (3 cr). Major features of good programming languages, with primary emphasis on language features and their role in writing good software; programming language design alternatives; various types of languages, incl procedure, data-flow, functional, and object-oriented languages. Prereq: 213.

CS 324 Computer Graphics (3 cr). Use of the computer to define, store, manipulate, and display 2-D and 3-D objects; 2-D curvefitting and 3-D surface dev. Prereq: 105, or 112 and Math 160 or 180 and trig or perm.

CS 334 Adv COBOL Programming (3 cr). Indexing and use of tables, COBOL sort feature, report writer, subroutines, and access methods. Prereq: 103.

CS 341 Computer Operating Systems (4 cr) (447). Analysis and design of methods used by operating systems to perform typical system services; design and implementation of file and directory systems; I/O methods, incl programmed, interrupt-driven, and DMA; CPU scheduling; memory management tech and implementations; concurrent programming; deadlocks; protection mechanisms; distributed systems; lab component focuses on implementation of several designs and algorithms discussed in lec. Three lec and one lab a wk. Prereq: 241.

CS H370 (s) **Seminar** (2 cr). Computer sc issues. Prereq: perm of dir of Univ Honors Program.

CS J381/J581 Software Engr (3 cr) (J410/J510). Current topics in dev of software systems; software life cycle model, requirements definition, design, validation and verification, and project mgt tech. Additional effort reqd for grad cr. Prereq: perm.

CS 400-401 Sr Seminar (0 cr) (491-492). Tech topics, employment practices, and interviewing. Graded P/F. One lec a wk. Prereq: sr standing in CS.

CS 404 (s) **Special Topics** (cr arr). Prereq: perm.

CS J420/J520 Data Communication Systems (3 cr). Concepts and terminology of data communications, equipment, protocols, architectures; transmission alternatives, regulatory issues, network pricing and mgt. Additional effort reqd for grad cr.

CS J422/J522 Distributed Processing Systems (3 cr) (J460/J560). Analysis and design of multiprocessor and geographically dispersed computer systems; allocation of processing functions, distributed data bases, and resource mgt. Additional effort reqd for grad cr. Prereq: 341.

CS 430 System Modeling and Simulation I (3 cr). Intro to a discrete simulation language, queueing models, random number generation, design and analysis of systems. Prereq: 103, 105, or 112 and Stat 251 or 301 and Math 160 or 180.

CS 445 Systems Program Design (3 cr). Algorithms used by the following system software: assemblers, macro-processors, interpreters, and compilers; compiler design options and code optimization; all concepts implemented in major programming assignments. Prereq: 241, 310.

CS J461/J561 Data Base Mgt Systems (3 cr) (550). Theory of relational and distributed data base systems, query optimization tech, and current issues in DBMS dev. Additional projects/assignments reqd for grad cr. Prereq: 360.

CS J470/J570 Artificial Intelligence (3 cr). Concepts and tech involved in artificial intelligence; Lisp, goal-directed searching, hist trees, inductive and deductive reasoning, natural language processing, and learning. Extra term paper reqd for cr in 570. Prereq: 213 or perm.

CS 480 Design--Individual Project (3 cr). Formal dev tech applied to definition, design, coding, testing, and documentation of a computer programming project; each student completes an individual project. Two lec a wk; significant lab work reqd. Prereq: Eng 317 and sr standing in CS.

CS 481 Design--Group Project (3 cr). Application of formal design tech to dev of a large computer sc project performed by students working in teams. Significant lab work reqd. Prereq: 480.

CS 490 Theory of Computation (3 cr) (485). See Math 485.

CS 495 Analysis of Computer Algorithms (3 cr). See Math 405.

CS 499 (s) **Directed Study** (cr arr). Prereq: perm.

CS 500 Master's Research and Thesis (cr arr). Prereq: perm.

CS 502 (s) **Directed Study** (cr arr). Prereq: perm.

CS 504 (s) **Special Topics** (cr arr). Prereq: perm.

CS 520 Data Communication Systems (3 cr). See J420/J520.

CS 521 Computer Network Design (3 cr). Design of optimal and near-optimal network topologies; capacity and flow assignment; performance analysis of networks; routing, flow control, and congestion algorithms. Prereq: J420/J520.

CS 522 Distributed Processing Systems (3 cr). See J422/J522.

CS 530 System Modeling and Simulation II (3 cr). Analysis of simulation data; input data analysis, verification and validation of models; output analysis; applications to computer system modeling and analysis. Prereq: 430 and 431.

CS 545 Syntax of Programming Languages (3 cr). Context free and regular languages; parsing by recursive descent and the theory of LL and LR parsing; error repair and recovery. Prereq: 445 or perm.

CS 558 Supercomputer (3 cr). See EE 548.

CS 561 Data Base Mgt Systems (3 cr). See J461/J561.

CS 570 Artificial Intelligence (3 cr). See J470/J570.

CS 572 Adv Topics in Artificial Intelligence (3 cr). One topic each semester, such as expert systems, knowledge representation, machine learning. Prereq: J470/J570.

CS 573 Computational Linguistics (3 cr). Analysis and computational representation of syntactic and semantic structures representing meanings of English and other natural languages; comparison with similar structures of formal languages; current natural language processing systems. Prereq: 490 or 545, and J470/J570.

CS 580 Grad Project (1-6 cr, max 6). Appl of formal design and documentation tech to the dev of computer programming project; project selected in consultation with student's major professor. Prereq: J381/J581, 480 or perm.

CS 581 Software Engr (3 cr). See J381/J581.

CS 582 Models for Software Project Mgt (3 cr) (511). Use of quantitative and qualitative models of cost, schedule, reliability, and quality for large-scale software systems dev; survey of recent research and application. Prereq: J381/J581.

Curricular Requirements

COMPUTER SCIENCE (B.S.C.S.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
CS 112 Intro to Problem Solving & Programming	3
CS 113 Program Design & Algorithms	3
CS 200 Sophomore Seminar	0
CS 213 Data Structures	3
CS 241 Computer Organization	4
CS 310 Computing Languages	3
CS 341 Computer Operating Systems	4
CS 351 Computer Architecture	3
CS 360 Files & Databases	3
CS 400-401 Senior Seminar	0
CS 445 Systems Program Design	3
CS 480, 481 Design	6
CS 490 Theory of Computation	3
CS 495 Analysis of Algorithms	3
EE 340 Digital Computer Fundamentals	3
EE 344 Logic Circuit Lab	1
Eng 317 Tech & Engr Report Writing	3
Math 176 Discrete Math	4
Math 180, 190 Analytic Geom & Calculus I, II	8
Math 330 Linear Algebra	3
Stat 301 Probability & Statistics	3
Technical electives A minimum of 3 cr in upper-div courses A minimum of 9 cr in upper-div CS courses The remaining 6 cr may be in upper-div CS, EE, or math courses, or an approved set of courses may be taken to gain an area of emphasis; no more than 3 cr in 499 courses.	18
Science electives At least 3 courses selected from approved courses; must incl Phys 210/212 and a two-semester sequence in a lab science	12
Other electives A minimum of 15 cr in humanities and social sc that satisfy regulation J-3-d A minimum of 6 cr from an approved list of courses that include study in humanities, social sciences, arts, and other disciplines that serve to broaden students background	26
Electives to complete 128 cr for the degree	--

Technical and undesignated electives may be chosen to allow students to develop individualized programs to meet personal and career goals. Emphasis areas include, but are not limited to, software engineering, artificial intelligence, information systems, theoretical computer science, and computer graphics. A list of suggested electives for these areas is available from the Computer Science departmental office. Other areas may be developed by the student with the approval of the CS faculty.

Department of Counseling and Special Education

John W. Filler, Jr., Dept. Chair (Education 111).

Counseling Faculty: Thomas N. Fairchild, W. Harold Godwin, Thomas E. Hipple, James D. Morris, Charles Murray, Marilyn K. Murray, Ted H. Murray, Bruce M. Pitman, Joan Pulakos, Gerald L. Tuchscherer, Beth Waddell.

Special Education Faculty: Diane M. J. Baumgart, Jeanne Christiansen, John W. Filler, Jr., N. Dale Gentry, Demerise Hunter, Jennifer J. Olson, A. Lee Parks.

Counseling and special education are human service fields in which professionals work with children and adults to promote intellectual, academic, physical, emotional, and personal growth. The study of human behavior and the theories underlying human development and change are critical areas addressed in these programs. The processes and practices used to enhance growth are studied in classroom and clinical settings. Program graduates are prepared for public school, public agency, and private agency positions.

The counseling program at the University of Idaho offers preparation at the master's level for individuals seeking employment as school psychologists and counselors in school and agency settings. The programs may be used to meet state school certification endorsements (school and vocational counselors; school psychologists) and national registry (National Certified Counselor). Specialist-level programs meet Idaho school certification requirements in school psychology and advanced counseling, and licensure requirements for private practice counseling. Doctoral level programs prepare individuals for advanced clinical, supervisory, administrative, and counselor education positions.

The special education program offers training at undergraduate and graduate levels. The undergraduate program prepares teachers to work with students who have intellectual, emotional and/or behavioral, language, sensory and/or motor impairments and exceptional abilities. Special education is characterized by the study of behavioral, assessment, and curriculum principles, that, when applied systematically, result in improved performance of students eligible for special education services. Content focuses on the application of best practices in instruction, the arrangement of the teaching environment for maximum learning, and systematic evaluation of student performance.

At the master's level, the graduate program in special education provides advanced training in such areas of specialization as severe handicaps, secondary/vocational training, early childhood special education, and consulting teacher. The specialist degree is designed to prepare personnel for leadership roles in public school special education programs. The Educational Specialist is trained in the consulting, supervisory, and administrative competencies needed by a coordinator or director. The doctoral program prepares special educators for positions of leadership in schools, state agencies, colleges, and universities. Major emphasis is placed on research, university level teaching, and leadership skills.

The counseling program offers graduate curricula leading to Master of Science (M.S.) and Master of Education (M.Ed.) degrees in counseling. At the specialist level the Specialist in Counseling and Human Services degree is available for counselors, and the Specialist in School Psychology degree for those preparing as school psychologists. Doctoral degrees, Doctor of Philosophy (Ph.D.) and Doctor of Education (Ed.D.), in education with a counseling major are offered to those seeking advanced graduate preparation. These programs are fully accredited by the Council for the Accreditation of Counseling and Related Education programs (CACREP).

Degrees available in special education include: B.S. in Education, Master of Science (M.S.), Master of Education (M.Ed.), Specialist in Special Education, Doctor of Philosophy (Ph.D.), and Doctor of Education (Ed.D.). The programs are certified by National Council for the Accreditation of Teacher Education (NCATE) and National Association of State Directors of Teacher Education and Certification (NASDTEC).

Faculty members in the department will be happy to discuss programs in detail with interested persons. Requests for information or appointments can be made by letter or telephone call (208/885-6159) to the department.

Courses

COUNSELING AND HUMAN SERVICES

Couns 200 (s) **Seminar** (cr arr). Prereq: perm.

Couns 203 (s) **Workshop** (cr arr). Prereq: perm.

Couns 204 (s) **Special Topics** (cr arr).

Couns 299 (s) **Directed Study** (cr arr). Prereq: perm.

Couns 400 (s) **Seminar** (cr arr). Prereq: perm.

Couns 403 (s) **Workshop** (cr arr). Prereq: perm.

Couns 404 (s) **Special Topics** (cr arr).

Couns J405/J505 (s) **Professional Development** (cr arr). Professional dev and enrichment of certificated school personnel. Cr earned will not be accepted toward grad degree programs, but may be used in a fifth-yr program.

Couns 415 Prin and Practices in Guid (3 cr). Nature of the guid process and the services provided by counselors and other interested persons.

Couns 460 Occupational-Ed Info (3 cr). Same as VocEd 460. Sources, dissemination, and uses of voc and ed info. May include two 1-day field trips.

Couns 464 Voc Guid (3 cr). Same as VocEd 464. Ident of individuals who can profit from vo-tech ed prog; info for realistic voc and ed planning; adjustments in voc-ed prog; occupational placement and adjustment; follow-up procedures.

Couns 499 (s) **Directed Study** (cr arr). Prereq: perm.

Couns 500 Master's Research and Thesis (cr arr).

Couns 501 (s) **Seminar** (cr arr). Prereq: perm.

Couns 502 (s) **Directed Study** (cr arr). Prereq: perm.

Couns 503 (s) **Workshop** (cr arr). Prereq: perm.

Couns 504 (s) **Special Topics** (cr arr).

Couns 505 (s) **Professional Development** (cr arr). See J405/J505.

Couns 520 Group Standardized Tests (3 cr). Theories and group tech of appraising indiv characteristics, performances, and behavior; eval of group tests; collection and interp of data. Prereq: Stat 251 or perm.

Couns 523 (s) **Practicum in Guidance** (3 cr). One hundred and fifty hrs of supervised exper in guid (not counseling), incl (as appropriate) planning, procedures, consulting, testing, info, referral, placement, reports, etc., in a professional setting. Prereq or coreq: 415, 460, or perm.

Couns 525 Tech of Counseling (3 cr). Dev of basic counseling tech; case studies, role playing, tape and video recordings.

Couns 527 Psychometric Assessment (3 cr). Developmental assessment procedures used by counselors in various settings. Prereq: 520, 525.

Couns 529 (s) **Practicum in Counseling** (3 or 6 cr, max 6). Three hundred hrs of supervised experience as a counselor conducted in professional setting; incl minimum of 60 hrs of counseling contact, 30 hrs of which need to be taped and critiqued by univ faculty members. Prereq or coreq: 415, 460, 520, 525, 564, and perm.

Couns 560 Theories of Voc Choice (3 cr). Same as VocEd 560. Soc, psych, and econ foundation of voc choice and adjustment. Prereq: 460 and perm.

Couns 561 Organization and Admin of Guid Services (3 cr). Simulated planning, primarily for those anticipating responsibility for admin of guid services in public schools or public agencies. Prereq: perm.

Couns 562 Intro to School Psychology (3 cr). Hist, role and status, and current issues.

Couns 564 Group Counseling (3 cr). Prin and tech of counseling groups; dev skills in group. Prereq: 525 or perm.

Couns 565 Theories of Counseling (3 cr). Consideration and eval of contemporary theories. Prereq: 525 and perm.

Cound 567 Adv Counseling Practicum (cr arr). Incl individual counseling procedures, field exper in a variety of settings, and a minimum of 30 hrs of supervised exper. Prereq: 529 and perm.

Couns 568 Group Counseling Practicum (cr arr). Involves co-leading groups and debriefing on the group process. Prereq: 525, 564, and perm.

Couns 598 (s) **Internship** (cr arr). For adv grad students. Currently offered in counselor ed, college counseling, college student personnel services, school pupil personnel services, school psych, school counseling, agency counseling, and private counseling practice. Prereq: perm.

Couns 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Couns 600 Doctoral Research and Dissertation (cr arr).

SPECIAL EDUCATION

SpEd 190 (s) **Special Ed Lab** (1-3 cr, max 3). Supervised observation and participation with exceptional persons. Graded P/F.

SpEd 200 (s) **Seminar** (cr arr). Prereq: perm.

SpEd 204 (s) **Special Topics** (cr arr).

SpEd 275 Ed of Exceptional Individuals (3 cr) (C). Intro to the ed of exceptional individuals, incl the mentally retarded, learning disabled, physically handicapped, deaf or hearing impaired, blind or visually impaired, emotionally disturbed/behavior disordered, communication disordered, health impaired, and gifted or talented; appl of systematic instructional practices to different exceptionalities, ages, and degrees of handicapping conditions. Prereq: soph standing, coreq: 190 or perm.

SpEd 290 (s) **Special Ed Lab** (1-3 cr, max 3). See 190.

SpEd 299 (s) **Directed Study** (cr arr). Prereq: perm.

SpEd 323 Behavioral Prin: Ed, Social, and Emotional Implications for Exceptional Individuals (3 cr). Intro to behavioral prin; their implications in the ed, social, and emotional dev of exceptional individuals emphasized; incl both theoretical and applied aspects. Prereq: 275.

SpEd 377 Instructional Programming for Exceptional Individuals (3 cr). Analysis of the goals of special ed progs; appl of the prin of learning to individualization of instruction for exceptional individuals, incl curriculum selection, assessment, formulation of objectives, instructional planning and intervention, evaluation of student progress for instructional decisions, summative eval, and classroom org and mgt; emphasis on instructional strategies and procedures. Prereq: 275, 323, or perm; coreq: 290 or perm.

SpEd 378 Curriculum Dev for Exceptional Individuals (3 cr). Design of curriculum for exceptional individuals, incl selection, adaptation, and use of instructional sequences, materials, and equipment; procedures will be considered for task analysis, eval, and dev of curriculum materials; use of ed technology in curriculum dev, incl storage-retrieval systems for accessing info. Prereq: 275, 323, and 377 or perm; coreq: 390 or perm.

SpEd 390 (s) **Special Ed Lab** (1-3 cr, max 3). See 190.

SpEd 400 (s) **Seminar** (cr arr). Prereq: perm.

SpEd 403 (s) **Workshop** (cr arr). Prereq: perm of dept.

SpEd 404 (s) **Special Topics** (cr arr).

SpEd J405/J505 (s) **Professional Development** (cr arr). Professional dev and enrichment of certificated school personnel. Cr earned will not be accepted toward grad degree programs, but may be used in a fifth-yr program.

SpEd 421 Family and Community Involvement in Ed of Exceptional Individuals (3 cr). Orientation to involvement of parents and families in ed of exceptional individuals, as well as to school and community resources; emphasizes parent-teacher conferencing skills, home-school programming, and ident and use of school and community resources; skills in serving as liaison person with other disciplines and professionals serving the exceptional individual are included. Prereq: 275, 323 or perm.

SpEd 425 Diagnostic Eval of the Exceptional Individual (3 cr). Diagnostic procedures for ident behavioral and ed deficits in individuals with special learning problems. Prereq: 377 or 378, 323, or perm.

SpEd 450 Individuals with Behavioral Disorders (3 cr). Provides a framework for identifying, describing, and managing behaviors that are frequently associated with children/youth who are considered learning disabled, or behaviorally disordered, or who exhibit behavior problems; included in this exam will be discussions of etiological models, definitions of deviant behavior and learning disabilities, and service delivery models. Prereq: 275, 323, or perm.

SpEd 476 Ed of Severely Mentally Retarded Individuals (3 cr). Org of special classes in public school prog for severely mentally retarded individuals; dev of teaching materials and tech; emphasis on community org and parent ed. Prereq: 377, 378, or perm.

SpEd 480 Practicum (3-9 cr, max 9). Directed teaching in classes for exceptional individuals. Graded P/F. Prereq: perm of dept. (Submit appl to director of clinical experiences in teacher ed by December 1 of school year before enrolling.)

SpEd 487 Comm Disorders of Exceptional Individuals (3 cr). Survey of the theory, characteristics, assessment, and remediation of common comm disorders incl articulation, voice, stuttering, language, and nonverbal comm. Prereq: 275 or perm.

SpEd 497 Teaching Gifted Individuals (3 cr). Ident and teaching of gifted individuals in public schools. Prereq: 275 or perm.

SpEd 499 (s) **Directed Study** (cr arr). Prereq: perm.

SpEd 500 Master's Research and Thesis (cr arr).

SpEd 501 (s) **Seminar** (cr arr). Prereq: perm.

SpEd 502 (s) **Directed Study** (cr arr). Prereq: perm.

SpEd 503 (s) **Workshop** (cr arr). Prereq: perm.

SpEd 505 (s) **Professional Development** (cr arr). See J405/J505.

SpEd 522 Diagnostic and Remedial Instruction (3 cr). Methods and materials; problems of acceleration as well as retardation. Prereq: 425 or perm.

SpEd 540 Behavior Analysis in Applied Settings (3 cr). Prin of behavior analysis; concepts, early appl; current issues. Two lec and one 2-hr lab a wk. Prereq: 323 or perm.

SpEd 541 Special Ed Trends and Issues (3 cr). Current problems and issues in ed of

exceptional individuals; alternative solutions to those problems; research bearing on problems and solutions; may incl broader social issues in addition to ed. Prereq: 275 or perm.

SpEd 542 Guid of Exceptional Individuals (3 cr). Personal and social problems of exceptional individuals and their families; tech of working with them; working with parent groups. Prereq: 275, 421, or perm.

SpEd 543 Survey of Physical and Medical Aspects of Handicaps (3 cr). Orientation to physical and medical aspects of handicapping conditions; how they influence people; symptomatology; incidence; causation; remediation. Prereq: 275 or perm.

SpEd 545 Community Service Seminar (3 cr). Analysis of needed ancillary services; planning for and implementing services; role of the educator on the interdisciplinary team. Prereq: 275 or perm.

SpEd 546 Assessment and Mgt of Learning Disorders (3 cr). Assessment, mgt, and intervention with children and youth with learning disorders/disabilities. Prereq: 275 and 323 or perm.

SpEd 548 Special Ed Curriculum (3 cr). Problems of programming for the handicapped; different curriculum approaches; practice in developing curricula for handicapped individuals. Prereq: 275, 377, 378, or perm.

SpEd 549 Language Dev and Disorders (3 cr). Study of language dev and disorders of children and adults incl phonology, morphology, syntax, semantics, and pragmatics; emphasis on normal dev and diagnosis and remediation of language. Prereq: 275 and 487 or perm.

SpEd 551 Ed of Emotionally Disturbed Individuals (3 cr). Definitions and characteristics of different categories of emotional disturbance; assessment, intervention, and eval approaches for individuals with emotional disturbances/behavior disorders; emphasis given to more severe problems. Prereq: 323, equiv. or perm.

SpEd 577 Curriculum Dev for the Severely Retarded (3 cr). Curriculum for severely retarded individuals, e.g., self-help, gross motor, cognitive, language, social, and vocational skills. Prereq: 548 or perm.

SpEd 597 (s) **Practicum** (cr arr). Prereq: perm.

SpEd 598 (s) **Internship** (cr arr). Supervised field experience in an appropriate public or private agency. Graded P/F. Prereq: perm.

SpEd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

SpEd 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

SPECIAL EDUCATION (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the elementary or secondary level, and the following courses (which will qualify the student for the Exceptional Child Certificate and Generalist endorsement):

Course	Credits
SpEd 190, 290, 390 Special Ed Lab (1 cr each)	3
SpEd 275 Ed of Exceptional Individuals	3
SpEd 323 Behavioral Principles	3
SpEd 377 Instructional Prog for Exceptional Individuals	3
SpEd 378 Curriculum Dev for Exceptional Individuals	3
SpEd 421 Family & Community Involvement	3
SpEd 425 Diagnostic Evaluation	3
SpEd 480 Practicum	9
SpEd 487 Comm Disorders of Exceptional Individuals	3
Psych 311 Abnormal Psychology	3

And the satisfactory completion of one of the following options:

A. Completion of all requirements for the B.S.Ed. degree in secondary ed (leads to certification in both secondary ed and special ed); or

B. Completion of all requirements for the B.S.Ed. degree in elem ed (leads to certification in both elem ed and special ed); or

C. Completion of one subject matter minor and an approved minor in elem ed (leads to certification in special ed but not in elem ed; certification in elem ed requires completion of all requirements specified for elem ed majors).

Department of Economics

Raymond Dacey, Acting Dept. Head (342B Admin. Bldg.). Faculty: Richard B. Coffman, Michael J. DiNoto, S. M. Ghazanfar, Catherine A. Hofmann, John W. Knudsen, R. Ashley Lyman, John A. Sondey, John T. Wenders.

Economics deals with how people choose among alternatives and then exchange with others based on these choices. Because many choices are made in the private sector of the economy, economics majors study consumer behavior, business behavior, and the workings of markets. Because many other choices are made in the public sector, economics majors study public finance, government decision-making, and the behavior of bureaucracies. Problems of inflation, unemployment, economic growth and development, regional and labor economics, and international trade are also studied.

However, because choice and exchange are basic to much human activity, the tools of economics are applicable to many areas of human behavior other than those conventionally thought of as economic. Increasingly, economic concepts are being used in other disciplines such as business, law, political science, history, and the social sciences. Thus, in addition to providing an understanding of economic phenomena, economics also provides a discipline of mind and an approach that are widely applicable. For these reasons, economics is often chosen as a major by students who do not intend to become professional economists. Economics has traditionally been attractive as a major to those preparing for careers in business, MBA study, law school, government, and public administration. Many successful business and professional people have majored in economics as undergraduates.

The wide applicability of economic training also means that there are many employment opportunities for professional economists. Careers as a professional economist usually require graduate training. The undergraduate majors provide an opportunity to prepare for successful graduate work. Students intending to attend graduate school in economics are expected to consult with faculty members for specific advice on their undergraduate course selections.

The department offers three undergraduate economics degree programs, one in the College of Business and Economics and two in the College of Letters and Science. The essential difference among these programs is that those in the College of Letters and Science require fewer business courses and allow more electives. The less structured programs in this college are in the liberal arts tradition. A minor in economics is also offered through the College of Letters and Science.

The Department of Economics also offers an integrated course of graduate study oriented toward policy analysis and applied studies. Two types of master's degrees are offered: (1) a thesis degree, which provides specialized research experience for careers requiring such expertise, and (2) a nonthesis degree, which provides a broader background for careers where research competence may be desirable but is not of primary importance.

Applicants for graduate study in economics are considered on the basis of their prior academic performance and their potential for success in the program. The undergraduate degree need not be in economics, though a minor in economics is desirable. Students with a minimal background in economics will be required to take certain undergraduate courses that may not be included in the graduate study plan.

Economics Courses

Note: Enrollment in 300- and 400-level economics courses is restricted to students who have completed at least 58 credits. Enrollment for CBE students is further restricted to include at least a 2.4 GPA in the CBE predictor courses.

Econ 100 Contemporary Econ (3 cr). Econ issues and the econ prin involved. One sem survey course for nonmajors; less tech than 151 and 152. Carries no cr after 151 and 152.

Econ 151, 152 Prin of Econ (3 cr) (C). Satisfies core requirement J-3-d. May be taken in either order. Econ 151: organization and operation of American economy; supply and demand, money and banking, macroeconomic analysis of employment, aggregate output, and inflation, public finance, and econ growth. Econ 152: microeconomic prin governing production, price relationships, and income distribution. Econ 151 and 152 carry only two cr each after 100. May involve some evening exams.

Econ 204 (s) **Special Topics** (cr arr).

Econ 272 Foundations of Econ Analysis (4 cr). Satisfies core requirement J-3-d. Not

open to students who have taken 151 and 152 or equiv. Concepts underlying micro- and macroecon analysis. Econ 272 carries only three cr after 100. Prereq: Math 111 and 160 or equiv.

Econ 299 (s) **Directed Study** (cr arr).

Econ 321 Interm Microecon Analysis (3 cr). Theory of the consumer, firm, industry, market, price determination, and allocation of productive resources. Honors section covering additional selected topics offered fall sem. Prereq: 151 and 152 or perm.

Econ 372 Interm Macroecon Analysis (3 cr). Theory of the economy as a whole; national income acctg as a tool of analysis; national output and income, employment, price levels, and growth. Honors section covering additional selected topics offered spring sem. Prereq: 151 and 152 or perm for regular sections; 321 or perm for honors section.

Econ 399 Econ Internship Program (1-3 cr, max 6). Enrollment restricted to econ majors; may not be used to fulfill upper-div econ requirement in any of the three econ degree programs. Graded P/F. Relevant learning exper in business and govt. Prereq: perm.

Econ 400 (s) **Seminar** (cr arr). Prereq: perm.

Econ 402 (s) **Workshop** (cr arr). Prereq: perm.

Econ 403 Money and Banking (3 cr) (C). Influence of money and banking on econ activity; influence of monetary policies to achieve society's econ goals. Prereq: 151 and 152 or 272.

Econ 404 (s) **Special Topics** (cr arr).

Econ 409 Public Finance (3 cr). Role of govt in a market economy; public choice and collective decision-making; tax-shifting and incidence; structure and econ of federal taxes; govt budgeting; public dept; special topics. Prereq: 151 and 152, or 272.

Econ 410 State and Local Govt Finance (3 cr). Fiscal federalism and the role of state-local jurisdictions, patterns and determinants of expenditures, structure and econ effects of revenue sources (e.g., sales, income, property taxation), urban fiscal problems, intergovt relations, and future trends. Prereq: 151 and 152 or 272.

Econ 415 Market Power, Competition, and Govt Policy (3 cr). Econ analysis of market structures, behavior, and performance; econ rationale and appraisal of govt policies —antitrust, regulation, public ownership — on business and markets; antitrust cases and industry studies. Prereq: 151 and 152, or 272.

Econ 425 Energy Econ (3 cr). Structure, econ nature, and policies influencing energy industries; normative analysis of policy — equity, adequacy, welfare, and incentives; special topics such as the allocation of govt-owned energy, policies for disadvantaged, trade-offs with irrigation and hydroelec generation, conservation, and alternative technologies. Prereq: 151 and 152 or 272.

Econ 430 Regional/Urban Econ (3). Location of econ activity, transportation problems, resource and product distribution methods, urban structure and growth, and related policy issues. Prereq: 151 and 152 or 272.

Econ 433 Intro to Econometrics (3 cr). Same as Stat 433. Use of quantitative tech to analyze and test econ theories. Prereq: Stat 251 or equiv stat, and Math 160 or 180.

Econ 435 American Econ Dev (3 cr). Patterns and causes of change in the American economy from colonial times to the present. Prereq: 100 or 151 and 152 or 272.

Econ 436 Econ and Business Forecasting (3 cr). Same as Bus 436. Econ and statistical analysis with forecasting tech (e.g., econ indicators, decomposition, time series, and regression) for economy, region, industry, and firm; computer applications. Prereq: 151, 152, and Stat 251.

Econ 441 Labor Econ (3 cr). Structure and composition of the labor force, wages and employment, human resources, income-maintenance prog, and related policy issues. Prereq: 151 and 152 or 272.

Econ 474 International Econ (3 cr). Analysis of international trade and financial transactions; trade policy; foreign exchange markets; adjustment processes; and international monetary system. Prereq: 151 and 152, or 272.

Econ 477 Econ of Developing Countries (3 cr). Same as AgEc 477. Characteristics of underdevelopment; historical perspective; theories and policies; development problems, e.g., poverty and income distribution, population, urban-rural migration and unemployment, agriculture, trade, aid, investment, debt; future propsects. Prereq: 151 and 152, or 272, or perm.

Econ 485 Environmental Econ (3 cr). Welfare econ, "public goods," and the appl of econ theory to environmental problems, incl pollution. Prereq: 321 or 272 or perm.

Econ 490 Comparative Econ Systems (3 cr). International comparisons of the origin, dev, and attributes of the world's econ systems. Prereq: 100 or 151 and 152 or 272.

Econ 493-494 Seminar in Urban Studies (2 cr). See Inter 493-494.

Econ 499 (s) **Directed Study** (cr arr).

Econ 500 Master's Research and Thesis (cr arr).

Econ 501 (s) **Seminar** (cr arr). Prereq: perm.

Econ 502 (s) **Directed Study** (cr arr). Prereq: perm.

Econ 504 (s) **Special Topics** (cr arr).

Econ 505 Hist of Econ Thought (3 cr). Econ doctrines; value and distribution; 19th-century dissenters.

Econ 507 Research Methodology (3 cr). See AgEc 507.

Econ 509 Adv Microecon Theory I (3 cr). Same as AgEc 509. Neoclassical theory of consumption, production, distribution, and capital; dev and use of comparative static tools of analysis. Prereq: 321 or perm.

Econ 510 Adv Microecon Theory II (3 cr). Same as AgEc 510. Current dev in microecon theory and policy. Prereq: 509 or perm.

Econ 522 Adv Aggregate Econ (3 cr). Same as AgEc 522. Theory of national income determination and stabilization policy in a monetary economy. Prereq: 372 or perm.

Econ 524 Theory of Econ Dev (3 cr). Macrodynamic theory as it relates to econ growth; conditions for and process of econ dev and its significance to new areas and underdeveloped areas. Prereq: 321 and 372.

Econ 525 Econometrics (3 cr). See AgEc 525.

Econ 526 Econ of Business Decisions (3 cr). Carries no credit after 509 or 510. Applied microecon, covering topics such as theory of demand, production, cost, forecasting, capital budgeting. May involve some evening exams. Prereq: perm.

Econ 597 (s) **Practicum** (cr arr). Prereq: perm.

Econ 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

ECONOMICS (B.S.Bus.)

This program is offered through the College of Business and Economics.

Students preparing for professional careers as economists in private business, government service, or careers where a broad knowledge of economics is useful should elect this curriculum.

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Econ 321 Intermediate Microeconomic Analysis	3
Econ 372 Intermediate Macroeconomic Analysis	3
Additional upper-division cr in economics	15
Upper-division courses in related field areas, with approval of the dept, e.g., courses required in a social science minor or related courses	9

ECONOMICS (B.A.)

This program is offered through the College of Letters and Science.

Required course work includes the university requirements (see regulation J-3), the general College of L & S requirements for the B.A. degree, and:

Course	Credits
Econ 151, 152 Principles of Economics	6
Econ 321 Intermediate Microeconomic Analysis	3
Econ 372 Intermediate Macroeconomic Analysis	3
Acctg 201 Principles of Accounting	3
Math 111 Finite Math or 140 Pre-calculus Algebra & Analytic Geom and Phil 211 Logic	4-6
Stat 251 Principles of Statistics	3
Upper-division cr in economics	18
Upper-division cr in anthro, geog, hist, political sc, psych, or soc (at least 9 cr in one social sc)	15

ECONOMICS (B.S.)

This program is offered through the College of Letters and Science.

Required course work includes the university requirements (see regulation J-3), the general College of L & S requirements for the B.S. degree, and:

Course	Credits
Econ 151, 152 Principles of Economics	6
Econ 321 Intermediate Microeconomic Analysis	3
Econ 372 Intermediate Macroeconomic Analysis	3
Econ 433 Intro to Econometrics or Econ 436 Econ & Business Forecasting	3
Acctg 201 Principles of Accounting	3
Math 111 Finite Math	4
Math 160 Survey of Calculus or Math 180 Analytic Geometry & Calculus I	4
Stat 251 Principles of Statistics	3
Upper-division cr in economics	15
Upper-division social sc cr (cr earned in math beyond the stated requirement will be accepted)	15

Academic Minor Requirements

ECONOMICS MINOR

This academic minor is offered through the College of Letters and Science.

Course	Credits
Econ 151, 152 Principles of Economics or Econ 272 Foundations of Econ Analysis	4-6
Econ 321 Intermediate Microecon Analysis	3
Econ 372 Intermediate Macroecon Analysis	3
And one of the following areas (with the permission of the student's adviser, the student may petition to have one substitute course for one of the following specific courses):	
Forecasting	
Econ 403 Money & Banking	3
Econ 433 Intro to Econometrics	3
Econ 436 Econ & Business Forecasting	3
Public Policy	
Econ 409 Public Finance or Econ 410 State & Local Government Finance	3
Econ 415 Market Power, Competition, & Govt Policy	3
Econ 435 American Economic Development or Econ 490 Comparative Economic Systems	3
Development	
Econ 430 Regional/Urban Economics	3
Econ 474 International Economics	3
Econ 477 Economics of Developing Countries	3
Economic Resources	
Econ 425 Energy Economics	3
Econ 441 Labor Economics	3
Econ 485 Environmental Economics	3

Department of Educational Administration

Marvin A. Nottingham, Dept. Chair (404B Educ. Bldg.). Faculty: Jack L. Dawson, Zeph H. Foster, Lowell D. Jackson, Edward L. Kelly, Marvin A. Nottingham, Roger Reynoldson, Everett V. Samuelson, Edward C. Woolums.

The Department of Educational Administration provides programs for the preparation of school administrators and for persons interested in teaching or administration in institutions of higher learning. Master's, specialist, and doctoral degrees may be earned in the department.

It is widely acknowledged that leadership is a key ingredient in effective schools. The development of leadership capabilities is enhanced by systematic study of factors that contribute to the human, conceptual, and technical skills required for effective leadership.

The department offers an array of courses that draw on significant research and experience in management and the supervision of instruction. The training program for prospective school principals includes courses in personnel administration, the principalship, research interpretation and use, the organization and administration of schools in America, supervision, school law, curriculum design, and interpersonal relations. Certification as a school principal accompanies successful completion of master's degree requirements in school administration.

At the specialist degree level, the training emphasis is aimed at superintendent certification for students who have master's degrees in administration. Students with master's degrees in related fields may achieve principal certification with a specialist degree.

The specialist degree further expands leadership training in school/community relations, school facilities planning, school finance, curriculum evaluation, and theory in administration. Persons seeking certification in these programs must also enroll as interns for two semesters.

At the doctoral level, the department offers individualized programs of study leading to Ed.D. or Ph.D. degrees. Programs may be directed to administration or teaching in higher education or toward significant leadership positions in public schools and other related agencies.

Persons interested in degree programs or administrative certification programs may get in touch with the dean of the College of Education or with members of the departmental faculty.

Educational Administration Courses

EdAd 500 Master's Research and Thesis (cr arr).

EdAd 501 (s) **Seminar** (cr arr). Prereq: perm.

EdAd 502 (s) **Directed Study** (cr arr). Prereq: perm.

EdAd 503 (s) **Workshop** (cr arr). Prereq: perm.

EdAd 504 (s) **Special Topics** (cr arr).

EdAd 505 (s) **Professional Development** (cr arr). Professional dev and enrichment of certificated school personnel. Cr earned will not be accepted toward grad degree programs, but may be used in a fifth-yr program.

EdAd 506 Elem Ad Admin (3 cr). Patterns of organization of grades 1-6; problems and tech. Prereq: 10 cr in ed.

EdAd 508 Secondary Ed Admin (3 cr). Problems of organization, admin, and supervision of the secondary school; problems of small high schools.

EdAd ID&WS509 Ed Admin (2-3 cr). WSU 590. Prin and problems of organization and admin of city, county, and state systems. Two field trips.

EdAd 534 The Principalship (3 cr). Prepare students for assuming the role of elem or secondary school principal; emphasis on skills reqd for confidence in the role of principal.

EdAd ID&WS535 School Finance (3 cr). WSU 585. Theory and application of financing schools; appl to Idaho schools. Prereq: 509.

EdAd 580 Seminar in Admin and Contemporary Issues (3 cr). See Inter 580.

EdAd 587 The Superintendency (2 cr). Prepare students for assuming the role of superintendent of schools; emphasis on research-based role expectation and practical guidelines for superintendent behavior.

EdAd 591 Admin of Personnel (3 cr). Selection, placement, and eval of teachers; salaries and salary schedules; tenure; leave of absence; teacher organizations and related matters.

EdAd 592 School-Community Relations (3 cr). Interp the schools to the public, two-way flow of ideas between school and community.

EdAd 593 School Facilities Planning and Maintenance (3 cr). Planning new school facilities and maintaining them; legal provisions involving financing; preliminary surveys of need; relationships with architects and contractors. Two field trips.

EdAd 594 Theory in Ed Admin (3 cr). Theories from psych, soc, and cultural points of view; appl to school admin; problem solving/decision making; case study approach. Prereq: 509.

EdAd 595 Higher Ed (3 cr). College and university ed in the U.S.; hist, objectives, organization, finance, instructional methods, faculty, and student problems.

EdAd 596 Collective Negotiations for Teachers (3 cr). Collective negotiations in public ed; recognition of bargaining agent; appropriate unit; admin personnel and unit determination; representation and recognition procedures; scope and process of negotiations; bargaining power and impasse procedures; collective agreements; impact of collective negotiations.

EdAd 598 (s) **Internship** (cr arr). Currently offered in ed admin and higher ed. Graded P/F. Prereq: perm.

EdAd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

EdAd 600 Doctoral Research and Dissertation (cr arr).

Department of Electrical Engineering

Howard B. Demuth, Acting Dept. Chair (214 Buchanan Engr. Lab.). Faculty: Howard B. Demuth, Joseph J. Feeley, Calvin L. Finn, Catherine French, Earl E. Gray, George G. Hespelt, John Law, Gary K. Maki, Robert M. Nelson, Patrick A. Owsley, James N. Peterson, John E. Purviance, Damodaran Radhakrishnan,.

The Department of Electrical Engineering provides students the opportunity to receive a solid education in the fundamentals of electrical circuits, electronics, and electrical machines, as well as to explore advanced topics through technical elective courses primarily in the senior year. Included in the curriculum is a heavy emphasis on mathematics, along with courses in physics, chemistry, technical writing, humanities, and social sciences. This program, leading to the degree of Bachelor of Science in Electrical Engineering, produces graduates with the technical skills needed for stepping into challenging careers with a wide variety of companies and for continuing their education in new and changing areas.

Graduates in electrical engineering can expect to be involved with applying technical skills and knowledge to problems in such areas as energy, computers, instrumentation, microprocessors, electrical power, electronics, and communication systems. The range of needs in these as well as other areas that use electrical engineers provide career opportunities in design, production, reliability and quality control, research and development, marketing and sales, education, technical management, and plant operations. Continued strong demand for electrical engineering graduates suggests that employment opportunities will be excellent in selected areas.

Electrical engineering is an extremely rewarding field; it is also a demanding occupation. The high-school student planning to enter an engineering career should prepare for entrance into UI by taking at least three years of mathematics (including advanced algebra and trigonometry) and three years of natural science (including chemistry and physics). Deficiencies in high school can be made up on campus, but only at the cost of a delay in the regular degree program.

On campus, the freshman year is common for all engineering students. It is a busy year of adjustment and background acquisition involving the study of graphics and written communication, introductory calculus, chemistry, physics, and computer programming.

During the sophomore and junior years, the student continues with his or her academic program that is developed jointly with an adviser, who is a faculty member in the Department of Electrical Engineering. After taking introductory electrical circuits classes and a laboratory class that allows students to experiment with electrical circuits and become familiar with laboratory instruments, students study topics in electronics, electrical machines, digital logic and microprocessors, electromagnetic fields, and analysis of signals and dynamic systems. Two more laboratory classes during this time further develop the student's understanding of concepts presented in lecture classes while introducing some of the practical problems that arise in hardware.

As a senior, the student will take a two-semester sequence in electrical engineering design that involves both individual and team design projects. Also during the senior year the student selects technical elective courses primarily from the advanced elective courses that are offered in electrical engineering. These include specialized topics in digital logic and design, computer methods in electrical power systems, feedback control systems, advanced electronics, communication theory, analysis and ap plications of microprocessors, and antennas and microwave devices.

Eighteen credits of technical electives are required by the Electrical Engineering Department, nine of which must be upper-division electrical engineering courses. The remaining nine credits must be selected from upper-division courses in electrical engineering or appropriate supporting areas. These support areas include the Departments of Mechanical and Chemical Engineering, Engineering Science, Computer Science, Physics, and Mathematics and Statistics. It is recommended that nine of the eighteen credits be taken in one electrical engineering subject area.

The eighteen credits of technical electives are separate from, and in addition to, the required nine credits of engineering science electives that must be chosen from upper-division courses.

The Department of Electrical Engineering has offices and laboratory rooms in two campus buildings, the Buchanan Engineering Laboratory (BEL) and the Johnson Electrical Laboratory (JEL). The seven laboratories consist of electronics, senior design, and computers in BEL, and electrical circuits, microwaves, digital logic, and electrical machines in JEL. In addition, laboratory space is used for microprocessor system development and testing. The computer laboratory, which is shared with the Department of Computer Science, includes a minicomputer with several terminals, microprocessor instructional systems, and two specialized computer systems for developing microprocessor software and other dedicated computing.

Courses

ELECTRICAL ENGINEERING

Note: In addition to the college requirements for admission to classes, a qualifying examination will be required of students majoring in electrical engineering as a prerequisite to upper-division electrical engineering classes.

EE C010 Elem Elec Theory (0 cr) (C). Basic elec theory and circuits for elec employees based upon the background of high school algebra, geometry, and physics. Content equiv to 2 cr for fee purposes.

EE 204 (s) **Special Topics** (cr arr).

EE 207 Intro to Elec Engr (3 cr). Not open for cr to elec engr majors. Power and energy concepts, circuit analysis, transient and steady state behavior, resonant systems, system analysis; elem differential equations will be introduced to solve basic transient problems. Prereq: Math 190, Phys 211.

EE 210 Electrical Circuits I (3 cr). Intro to d.c., transient, and sinusoidal steady-state elec circuit analysis; transient analysis by Laplace transform methods. Three lec and one recitation a wk. Preregistration reqd; consult dept administrator. Coreq: Math 310.

EE 211 Electrical Circuits Lab I (1 cr). Lab to accompany 210. One 3-hr lab a wk. Preregistration reqd; consult dept administrator. Coreq: 210.

EE 212 Electrical Circuits II (4 cr). Continuation of 210. Time and frequency domain analysis of second order systems; filters, transformers, and dependent sources; Fourier series and applications; poly-phase power system analysis. Four lec and one recitation a wk. Preregistration reqd; consult dept administrator. Prereq: 210, Math 310.

EE 213 Electrical Circuits Lab II (1 cr). Lab to accompany 121. One 3-hr lab a wk. Preregistration reqd; consult dept administrator. Coreq: 212.

EE 241 Basic Microprocessor Systems (0 cr). Machine language programming, overview of current microprocessor technology. Graded P/F.

EE 242 Microcomputer Programming (0 cr). Use of minicomputer operating system, incl prog creation, execution, use of system utilities, and system facilities; programming done in FORTRAN. Prereq: CS 105.

EE 292 Soph Seminar (0 cr). Curriculum options, elective courses, prep for graduate study, and current tech topics. Field trip may be required. Graded P/F.

EE 310 Electronics (5 cr). Intro to the appl of electron devices in elec networks; devices considered incl diodes, bipolar and field effect transistors, and linear integrated circuits (op-amps); circuit configurations of interest incl rectifiers and power supplies, small signal amplifiers, large signal amplifiers, and oscillators. Four lec and one 3-hr lab a wk. Preregistration reqd; consult dept administrator. Prereq: 212, 213.

EE 314 Electronic Systems (3 cr). Not open for cr to elec engr majors. Electronic devices and systems. Three lec a wk. Prereq: 210 or 207.

EE 320 Elec Machinery (5 cr). Theory and appl of elec machinery and transformers. Four lec and one 3-hr lab a wk. Preregistration reqd; consult dept administrator. Prereq: 212, 213, Phys 211.

EE 324 Elec Machinery (3 cr). For nonmajors. Magnetic circuits and electromech energy converting systems; theory and characteristics of common AC and DC machinery. Two lec and one 3-hr lab a wk. Prereq: 210 or 207.

EE 330 Electromagnetic Theory (4 cr). Vector calculus; electrostatics, electrodynamics; electromagnetic waves in isotropic media; Maxwell's equations; boundary value problems. Preregistration reqd; consult dept administrator. Prereq: Math 200, Math 310, Phys 211.

EE 340 Digital Computer Fundamentals (3 cr). Number systems, truth tables, logic gates, elem combination and sequential logic, concepts of machine language programming, intro to data structures and subroutines, hands-on use of minicomputer stressed. Preregistration reqd; consult dept administrator.

EE 344 Logic Circuit Lab (1 cr). Design and constr of logic circuits. Preregistration reqd; consult dept administrator. Coreq: 340.

EE 350 Signal and Systems Analysis (4 cr). Continuous and discrete time signal and system analyses; Fourier transforms, z-transforms, filtering, sampling and modulation; intro to state space methods and feedback control. Preregistration reqd; consult dept administrator. Prereq: 212.

EE 401 Adv Circuit Theory (3 cr). Passive and active elec networks; frequency response and complex frequency domain analysis, incl pole-zero considerations, root locus, and sensitivity functions. Prereq: 212, 213.

EE 404 (s) **Special Topics** (cr arr).

EE 405 Transmission Lines (3 cr). Transmission of signals and power in distributed parameter circuits; characteristic impedances, attenuation, phase shift, reflections, and Smith charts. Prereq: 212, 213.

EE 410 Electronics II (3 cr). Modern microelectronics technology; thin film and thick film electronics circuits; adv electronic devices. Prereq: 310, 330.

EE J411/J511 Pulse and Digital Circuits (3 cr). Electronic switching, timing, and

pulse-shaping tech; logic functions, realization with diodes, transistors, and FETs. Additional effort required for grad cr. Prereq: 310.

EE J413/J513 Adv Electronic Circuits and Systems (3 cr). Audio and radio frequency power amplifiers, modulation and demodulation circuitry, frequency multiplication and changing; radio, TV, and telemetering systems and circuits. Additional effort is required for grad cr. Prereq: 310, J411/J511, or perm.

EE J414/J514 Analog Integrated Circuit Analysis and Design (3 cr). Extension of biasing and signal analysis, active current sources and loads, frequency response analysis and compensation tech and analysis of currently available integrated circuits. Prereq: 310.

EE J415/J515 Adv Integrated Circuit Analysis and Design (3 cr). CMOS technology, modeling and subcircuits plus amplifier, comparator and converter analysis and design. Additional projects/assignments reqd for grad cr. Prereq: 310.

EE 418 Basic Instrumentation Tech (3 cr). Sensor types and selection, signal conditioning, environmental considerations; isolation requirements of signal, power and logic systems; linearity and compensation concepts. Two lec and one 3-hr lab a wk. Prereq: 310, 330 or perm.

EE J419/J519 Microprocessor Based Instrumentation (3 cr). Elec transducers, instrumentation amplifiers, computer interfacing, real-time data acquisition, A-D/D-A use, control appl, noise, and safety restrictions. Two lec and one lab a wk. Prereq: 310, 340.

EE 420 Direct Energy Conversion (3 cr). Direct energy conversion devices; solar cells, fuel cells, thermoelec and thermionic devices; solar thermal electricity, flat plate collectors, solar energy utilization. Prereq: 330 and Phys 360 or perm.

EE 421 Intro to Power Systems (3 cr). Power and energy relationships in power systems, multiphase, generators, lines and transformers; power system representation, network solution, and intro to symmetrical components. Prereq: 320.

EE 422 Power Systems Analysis (3 cr). Prin of load flow, fault and stability analysis; computer methods; load flow and econ dispatch. Prereq: 421.

EE 435 Microwave Engr (3 cr). Intro to transmission line theory, impedance matching, Smith Chart; N-port descriptions, microwave amplifiers, resonators and sources; antennas and their properties; measurement tech. Two lec and one 3-hr lab a wk. Prereq: 330 or perm.

EE 440 Digital Systems Engr (3 cr). Adv topics in combinational logic design such as iterative logic arrays, hazard free design, and VLSI logic implementations; study of asynchronous and synchronous sequential circuits; combinational and sequential circuit design with PLA's; register transfer language design of digital system incl data path and control structures with TTL incl timing analysis. Preregistration reqd; consult dept administrator. Prereq: 340, 344.

EE 441 Computer Organization (3 cr). Register transfer language design of micro and mini computer systems; micro and mini architectures incl interrupt structures and software control; 8-bit and 16-bit microprocessor design incl associated interfacing with RAM, ROM, and I/O. Preregistration reqd; consult dept administrator. Prereq: 340.

EE 442 Microprocessor System Software (3 cr). Use of microprocessor development system, high level language programming with C or PL/M, assembler language programming, in-circuit-emulation, data structures relative to microprocessors, algorithms in developing microprocess software, incl interrupt control; software design methods. Preregistration reqd; consult dept administrator. Prereq: 340; coreq: 441.

EE 443 Microcontrollers (3 cr). Computer arch, combinational and synchronous logic design and implementation; basic software considerations and hardware designs for microprocessor-based controllers. Preregistration reqd; consult dept administrator. Prereq: 310, 340; coreq: 442.

EE 445 Intro to VLSI Design (3 cr). Prin of design of very large scale systems; CMOS and NMOS logic design, transistor sizing, design and layout methodologies, intro to CAD tools. Prereq: 310, 440, or perm.

EE 446 System Modeling and Simulation (3 cr). Mathematical modeling using physical laws and empirical data; computer simulation methods; simulation of dynamical systems; use of computer simulation models; probability concepts in simulation; optimization methods. Prereq: 350 or perm.

EE R448 Adv Assembler Language and Operating Systems (3 cr). EXCP and CHANNEL programs, user-written SVC's, user-written program interrupt, I/O buffering tech, channel end appendage, conditional coding, and Macro writing. Prereq: perm.

EE 452 Comm Systems (3 cr). Linear and exponential modulation, noise, digital comm systems, inro to info theory. Prereq: 350.

EE 465 Control Engr (3 cr). For nonmajors. Continuous systems; transient response; frequency response; root locus; stability. Prereq: 207 and familiarity with basic Laplace transforms.

EE 470 Control Systems (3 cr). Control system design, frequency and time domain methods; performance specifications; computer control and computer aided design. Prereq: 350.

EE 477 Digital Process Control (3 cr). See ChE 445.

EE 480-481 Prin of Design (3 cr). Computer-aided tech, econ, marketing, reliability, and patents; projects require original design, working model, and report. Two lec and one 3-hr lab a wk. Preregistration reqd; consult dept administrator. Prereq: 310, 320, 330, 340, 350 or perm.

EE 486 Solid-State Electronics I (3 cr). Physical electronics; diode and transistor models; noise mechanics. Prereq: 310, 330.

EE 491-492 Sr Seminar (0 cr). Tech topics, employment practice, and interviewing. One lec a wk; one 3-6 day field trip may be required. Graded P/F.

EE 493 Thesis (3 cr, max 6). Original investigation or dissertation upon some subject in elec engr. Prereq: sr standing and perm.

EE 499 (s) **Directed Study** (cr arr). Prereq: perm.

EE 500 Master's Research and Thesis (cr arr).

EE 501 (s) **Seminar** (cr arr). Prereq: perm.

EE 502 (s) **Directed Study** (cr arr). Prereq: perm.

EE 504 (s) **Special Topics** (cr arr).

EE 505 Analysis of Nonlinear Systems (3 cr). Approximations; parameter space methods; describing functions; Krylov-Bogoiubov asymptotic method; Lispunov Stability; absolute stability; Lure problem; Popov's circle criterion. Prereq: 572 or perm.

EE 507 Computer-Aided Network Design (3 cr). Digital computers in design of elec networks; constrained and unconstrained optimization in network design. Prereq: perm.

EE 511 Purse and Digital Circuits (3 cr). See J411/J511.

EE 512 Active Network Synthesis (3 cr). Active devices; classical network synthesis; two-port theory; amplifiers, filters, negative impedance converters. Prereq: 401 or perm.

EE 513 Adv Electronic Circuits and Systems (3 cr). See J413/J414.

EE 514 Analog Integrated Circuit Analysis and Design (3 cr). See J414/J514.

EE 515 Adv Integrated Circuit Analysis and Design (3 cr). See J415/J515.

EE 519 Microprocessor Based Instrumentation (3 cr). See J419/J519.

EE ID&WS520 Adv Elec Machinery (3 cr). WSU 509. Synchronous machines and transformers, machine transient and subtransient reactances, excitation and voltage regulation, power curves, transformer connections, impedance, harmonics, and impulse characteristics. Prereq: 422.

EE 521 Power System Planning and Resources (3 cr). Major decision-making and econ factors in elec energy systems, planning and resource selection; hydroelec, nuclear, and fossil fuel plants, steady state and transient stability, reliability, voltage levels, econ choices, and future resource potential. Prereq: perm.

EE 523 Symmetrical Components (3 cr). Concepts of symmetrical components, sequence impedances of devices and lines, circuit equiv for unbalanced faults, mgt during faults. Prereq: 421.

EE 524 Transients in Power Systems (3 cr). Voltage transients; overvoltages during faults; recovery voltage characteristics; arc restrikes, switching surges, ferroresonance, and nonlinear phenomena. Prereq: 422.

EE ID&WS525 Industrial Power Systems (3 cr). WSU 486. Analysis and design of industrial and commercial power systems; fault and circuit protection, voltage standards and selection, and application problems of large motors; applicable codes and standards. Prereq: 421.

EE ID&WS526 Power System Protection and Relaying (3 cr). WSU 511. Power system faults and applicable relay systems; review of symmetrical components as applied to fault currents and consideration of lightning and voltage surge protection. Prereq: 421.

EE 530-531 Electromagnetic Field Theory I-II (3 cr). EE 530: static field problems; Laplace and Poisson equations for charge configurations. EE 531: time-varying fields, radiation, propagation in anisotropic and layered media; vector and scaler potentials, retarded potentials; general relativity theory. Prereq: 330 for 530, 530 for 531. Equiv to Phys 541-542.

EE 533 Antenna Theory (3 cr). Linear, loop, and special antennas; synthesis and arrays; microwave reflectors and lenses. Prereq: 531 or perm.

EE 535 Microwave Circuits (3 cr). Waveguide systems and components, oscillators and detectors; masers, parametric amplifiers, and other related methods. Prereq: 531 or perm.

EE 540 Switching and Finite Automata Theory (3 cr). Finite-state automata; functional decomposition; threshold logic; synchronous and asynchronous sequential design; sequential circuit decomposition; fault detection and diagnosis in combinational sequential machines. Prereq: 440.

EE 541 Design of Digital Computer Systems (3 cr). Formal description of computer systems; multiprocessor organization, microprocessor design, self-checking microprocessor design, microprogramming; pipelined processors, distributed processors, systolic arrays in VLSI; CAD tools in implementing digital systems on a chip set, PLA-register stack configurations, pipelined/parallel VLSI architectures, reduced instruction set computers. Prereq: 441 or equiv.

EE R543 Teleprocessing Systems Design (3 cr). Components of a teleprocessing system; terminals, modems, the telecomm network, the central site; types of teleprocessing; message switching, on-line inquiry systems, transaction-processing systems; software for teleprocessing systems; use of telecomm packages.

EE R544 Adv Computer Programming Systems (3 cr). Adv systems software; generation of operating systems and I/O systems; adv machine language programming.

EE 545 VLSI Design (3 cr). Prin of design of very large-scale systems; design metho-

dologies, integrated system fabrication, system arch, system timing, data flow, and topological consideration. Prereq: 440, 441, or perm.

EE 546 VLSI Design Project (2 cr). Design project starting from req definition and ending with testing of fabricated chip; design review conducted by faculty and other students. Prereq or coreq: 545.

EE R547 Applied Time Series Forecasting (3 cr). Same as Stat 547. Necessary theory for ident by bldg stochastic and dynamic models for designing forecasting and control schemes; emphasis on problem solving; examples used to illustrate methods; students participate in solution of specimen problems.

EE 548 Supercomputing (3 cr). Same as CS 558. A perspective of supercomputing from von Neumann machines to neural networks; supercomputer architectures, computing applications, and research topics in parallel architectures and algorithms by speakers from industry, government, and various universities; students encouraged to perform research in supercomputing field. Prereq: computer architecture course and skills in at least two computer languages (such as Pascal, LISP, or FORTRAN), or perm.

EE 549 Fault-Tolerant Digital Systems (3 cr). Fault detection in combinational networks, fault-tolerant design of combinational and sequential circuits, fail-safe circuits, fault-tolerant microprocessor design, testing of iterative array cells. Prereq: 440 or equiv.

EE ID&WS550 Comm Theory I (3 cr). WSU 507. Hypothesis testing; optimum detection of signals in noise; sequential detection; estimation of signal parameters; space time processing. Prereq: perm.

EE 554-555 Info Theory I-II (3 cr). EE 554: info and uncertainty measure; channel capacity; reliable transmission through unreliable channels. EE 555; error detecting/correcting code via linear codes, polynomial codes. Base-Chaudhuri codes, codes for arithmetic operations; design of encoders and decoders. Prereq: perm.

EE 570 Random Signals and Systems (3 cr). Probability and random processes as applied to engr systems, correlation and power spectrum of stationary processes, harmonic analysis, linear systems analysis with stochastic inputs, Wiener-Kolmogoroff Theory, matched filters. Prereq: 350 and Stat 301 or Stat 451, or perm.

EE ID&WS571 Estimation Theory (3 cr) WSU 508. Basic concepts and criteria for estimation; properties of estimators; error analysis and prior statistics; Kalman-Bucy filter theory; colored noise; smoothing and prediction; nonlinear estimation; appl to engr systems. Prereq: 570 or perm.

EE ID&WS572 Linear System Theory (3 cr). WSU 501. Linear spaces and linear operators; descriptions of dynamic systems; input-output descriptions; state-space concepts; canonical forms; controlability and observability; minimal realizations; appl to control and general systems analysis; pole assignment; observers. Prereq: 470 or equiv.

EE ID&WS574 Optimal Control Theory I (3 cr). WSU 502. Intro to optimization, parameter optimization, optimization of dynamic systems, optimization of dynamic systems with path constraints, optimal feedback control and dynamic programming, linear quadratic regulators, second variation methods, singular control problems differential games. Prereq: 572 or perm.

EE 575 Optimal Control Theory II (3 cr). Computational methods of optimization; mathematical programming; computational aspects of dynamic programming; second variation methods; algorithms for constrained minimization in function space; computational requirements; convergence properties. Prereq: 572 or perm.

EE 576 Digital Signal Processing (3 cr). Discrete time signals; sampling and z-transforms; discrete Fourier transform; digital filter design tech; fast Fourier transform algorithm; power spectrum estimation; appl. Prereq: 350 or perm.

EE 577 Digital Control Systems (3 cr). Signal sampling and hold; z-transforms and relationship with s-plane, discrete state variable equations; stability; transform and state-space design tech; optimal control. Prereq: 470 or perm.

EE 586 Solid-State Electronics II (1-3 cr, max 6). Offered in one-cr modules. Typical modules are: adv treatment of bipolar transistors, other junction devices, metal-semiconductor devices, field-effect transistors, optoelectronic devices, Gunn oscillators and other bulk-effect devices, properties of semiconductors, and semiconductor stat and noise mechanisms. Prereq: 410, 486, or perm.

EE 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

EE 600 Doctoral Research and Dissertation (cr arr).

ENGINEERING TECHNOLOGY/ELECTRICAL ENGINEERING

ET/EE 130 Basic Electricity (3 cr). Same as IEd 130. Tech theory and skills in elec testing procedures; prep of instructional prog for jr high schools.

ET/EE 131 Basic Electronics (3 cr). Same as IEd 131. Continuation of ET/EE 130. Electron tube and semiconductor circuits. Prereq: 130.

ET/EE R135 Elec Systems (3 cr). Same as IEd 135. Fundamentals of AC/DC circuits and components, motors, transformers, and switchgear; national elec code wiring requirements.

ET/EE R215 Electronic Components (3 cr). Same as IEd 215. Physical and elec characteristics of electronic devices; emphasis on solid state devices; incl discrete and integrated circuit components.

ET/EE R235 Comm Electronics (3 cr). Same as IEd 235. Appl of electronic circuits to comm equipment; radio receivers and transmitters; tech radio and TV for avocational use. Prereq: 130, 131.

ET/EE R240 Electronics and Control Systems (3 cr). Same as IEd 240. Complex frequency domain; appl of electronic devices and systems; intro to control theory.

ET/EE R245 Minicomputer Fundamentals (3 cr). Same as IEd 245. Machine language programming, use of minicomputer software, assembler programming, real-time programming, interrupt facilities, system allocation.

ET/EE R320 Electronic Drafting (3 cr). Same as IEd 320. Drafting phil as related to instrumentation and control circuits; design, layout, and fabrication of printed circuit boards; drafting as related to circuit fabrication.

ET/EE R330 Industrial Instrumentation I (3 cr). Same as IEd 330. Use of electronic circuits and devices for process parameter measurements.

ET/EE R331 Industrial Instrumentation II (3 cr). Same as IEd 331. Methods of process control from digital and analog signals; investigation of computer control concepts.

ET/EE R333 Computer Electronics (3 cr). Same as IEd 333. Logic of circuits, basic circuits used in computers, and interfacing hardware for computer peripherals.

Curricular Requirements

ELECTRICAL ENGINEERING (B.S.E.E.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Courses common to engineering curricula (see part 4)	38
EE210, 211 Electrical Circuits I and Lab	4
EE 212, 213 Electrical Circuits II and Lab	5
EE 292 Sophomore Seminar	0
EE 310 Electronics I	5
EE 320 Electrical Machinery	5
EE 330 Electromagnetic Theory	4
EE 340 Digital Computer Fundamentals	3
EE 344 Logic Circuit Lab	1
EE 350 Signal & Systems Analysis	4
EE 480-481 Principles of Design	6
EE 491-492 Senior Seminar	0
CE 486 Engineering Economy	3
Eng 317 Technical & Engineering Report Writing	3
ES 220 Engineering Dynamics	3
Phys 212-213 Engineering Physics Laboratory	2
Engineering science electives	3
Humanities and social sciences electives (incl at least one upper-div course that is the second course completed in a subject, or that has another humanities/social sc course as a prereq)	18
Technical electives	18
Undesignated electives	3

Engineering Science and General Engineering

Weldon R. Tovey, Coordinator (125 Janssen Engr. Bldg.).

The engineering sciences have their roots in mathematics and basic sciences, but carry knowledge further toward creative application. When a field of mathematics or basic science proves pertinent to an engineering application, corresponding courses in engineering science develop to afford a bridge between basic science and engineering practice. Thus, the engineering sciences form the foundation on which the applied engineering disciplines are built.

The engineering science program is one of service to the degree-granting departments of the College of Engineering and College of Mines and Earth Resources; a degree in engineering science is not offered. Faculty members who hold appointments in one of the degree-granting departments are responsible for teaching basic engineering and engineering science courses.

Courses

ENGINEERING (GENERAL)

Engr 101 Engr Graphics (2 cr) (C). Org of work, freehand and instrument drawing in pictorial and orthographical projection; visualization and description of points, lines, planes, and solids in space; graphical mathematics and geometric constructions.

Engr 102 Engr Graphics (2 cr) (C). Descriptive geometry; graphical solution of problems involving points, lines, planes, and surfaces in space. Prereq: 101 or equiv.

Engr 103 Intro to Engr (2 cr). Summer short course for JETS Program. Intro to engr career opportunities through analysis of engr design problems; incl computer graphics, programming languages, econ, and stat.

Engr 135 Engr Graphics and Programming (3 cr). Basics of graphics incl visualization and specification of points, lines, planes, and solids in space; use of graphs, charts, and graphical math for engr work; programming in FORTRAN to generate and manipulate geometric shapes.

Engr 200 (s) **Seminar** (cr arr). Prereq: perm.

Engr 203 (s) **Workshop** (cr arr). Prereq: perm.

Engr 294 The Man-Made World (4 cr). For nonengr students. Intro to technology through the dev of such concepts as decision making, optimization, systems, and uses of the computers. Three lec and one 3-hr lab a wk. Prereq: high school algebra.

Engr 299 (s) **Directed Study** (cr arr). Prereq: perm.

Engr R314 Adv Engr Graphics (2 cr). Industrial drafting practices, curve plotting, sketching, production illustrations, graphical math. Prereq: 101.

Engr 394 Technology and Societal Decisions (3 cr). Same as Inter 394. Engr approach to decision making in society, incl eval of alternatives based upon econ, social, and human values.

Engr 396 Society and Engr Decisions (3 cr). Primarily for engineers. Commercial, political, soc, and ecological considerations relevant to technological decisions.

Engr 398-399 Engr Cooperative Internship I-II (3 cr). Supervised internship in professional engr settings, integrating academic study with work exper; requires written report to be evaluated by student's major dept; positions are assigned according to student's ability and interest. Reqd of cooperative ed students. Graded P/F. Prereq: perm.

Engr 400 (s) **Seminar** (cr arr). Prereq: perm.

Engr 403 (s) **Workshop** (cr arr). Prereq: perm.

Engr 404 (s) **Special Topics** (cr arr). Prereq: perm.

Engr 407 Professional Mgt for Engineers (3 cr). Consideration of analyt, quantitative, and human functions in mgt sc; emphasis on socioecon synthesis.

Engr 411 Engr Fundamentals (0 cr). Review of basic engr and sc material covered in engr fundamentals (EIT) exam. Graded P/F. Prereq: sr standing or perm.

Engr 495 Practicum in Tutoring (1 cr, max 2). Tutorial service performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

ENGINEERING SCIENCE

ES ID&WS210 Engr Statics (3 cr). WSU C E 212. Prin of statics with engr applications; addition and resolution of forces, vector algebra, moments and couples, resultants and static equilibrium, equivalent force systems, centroids, center of gravity, free body method of analysis, two and three dimensional equilibrium, trusses, frames, friction, virtual work. Prereq: CS 105 or CS 112 or equivv, Math 190; coreq: Phys 210.

ES ID&WS220 Engr Dynamics (3 cr). WSU M E 303. Particle and rigid body kinematics and kinetics; rectilinear, curvilinear, and relative motion, equations of motion, work and energy, impulse and momentum, systems of particles, rotation, rotating axes, rigid body analysis, angular momentum vibration, and time response. Prereq: ES 210, Phys 210.

ES 301 Engr Stat (3 cr). Theory and appl of probability and stat to the design and analysis of engr problems; stat distributions, experiments of comparison, regression, correlation, analysis of variance, and design of experiments. Prereq: Math 190.

ES 310 Engr Materials Sc (3 cr). Structure of materials; mech, elec, chem, and thermal properties of materials. Prereq: Chem 114, Phys 211.

ES ID&WS320 Fluid Mechanics (3 cr) (C). Physical properties of fluids; fluid statics; continuity, energy, momentum relationships; laminar and turbulent flow; boundary layer effects; flow in pipes, open channels, and around objects. Prereq: 210, Math 200.

ES 321 Thermodynamics and Heat Transfer (3 cr). First and second laws of thermodynamics; thermodynamic processes; thermodynamic properties; flow processes; conversion of heat into work; conduction, convection, radiation, and heat exchangers. Prereq: 210, Math 200.

ES 322 Application of Computers in Thermodynamics (1 cr). Calculation of thermodynamic properties using equations of state and heat capacity equations for real fluids; use of iterative procedures and numerical differentiation and integration; computer modeling and analysis of thermodynamic systems. Coreq: 321.

ES ID&WS340 Mechanics of Materials (3 cr) (C). Elasticity, strength, and modes of failure of engr materials; theory of stresses and strains for ties, shafts, beams, and columns. Prereq: 210, Math 200.

EE ID402 Applied Numerical Methods (3 cr). Approximate and numerical methods for solution of systems of linear and nonlinear equations, initial value, boundary value, and partial differential equations with practical appl, analysis of error, improvement of accuracy, and numerical and matrix tech for computation by digital computer. Prereq: Math 310.

EE 406 Design and Analysis of Engr Experiments (3 cr). Experiments of eval and comparison, accelerated and factorial experiments, sequential, nonparametric and fatigue experiments, and analysis of data with appl to computers, propulsion, automatic control systems, air and water pollution. Prereq: college-level stats course.

ES 440 Adv Mechanics of Materials (3 cr). See ME J439/J539.

ES 490 Systems Analysis of Environmental Problems (3 cr). Modeling and simulation of environmental systems; systems analysis and optimization tech especially applied to environmental problems. Prereq: Math 310.

ES 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

ES 499 (s) **Directed Study** (cr arr). Prereq: perm.

ES 504 (s) **Special Topics** (cr arr).

ES R505 Engr Stat (1-3 cr). Same as Stat 505. Theory of probability, stat, and stochastic processes applied to selected areas of engr. Prereq: 301 or perm.

ES 540 Continuum Mechanics (3 cr). Same as CE and ME 540. Stress and deformation of continua using tensor analysis; relationship between stress, strain, and strain rate in fluids and solids; appl. Prereq: perm.

ES 590 Systems Analysis of Environmental Problems II (3 cr). Systems analysis of environmental problems and processes, incl linear, dynamic, and geometric programming; systems modeling, stochastic systems, and other optimization tech. Prereq: perm.

Department of English

J. Gary Williams, Dept. Chair (200 Carol Ryrie Brink Hall). Faculty: Douglas Q. Adams, David S. Barber, Steven R. Chandler, Jack L. Davis, Richard J. Dozier, Stephan P. Flores, Kathryn M. Forlyes, Candida Gillis, Richard G. Hannaford, Walter A. Hesford, D'Wayne Hodgin, Carole Lowinger, Ronald E. McFarland, Barbara R. Meldrum, Sheila O'Brien, Kurt O. Olsson, Florence Roberts, Teoman Sipahigil, Timothy Steury, Charles R. Stratton, Dene Kay Thomas, Gordon P. Thomas, Mason Tung, Roger P. Wallins, J. Gary Williams.

The goal of the Department of English is to help students become critical and appreciative readers of literature and to familiarize them with the nature and resources of the English language. Literary studies aid in the development of insight and of a broad perspective on the human condition. No field of study offers a comparable opportunity to build such skills as verbal analysis, documentation and research methodology, and writing. The English major is valuable, therefore, not only for those who wish to teach, but also for those who plan careers in law, many areas of business or industry, and government.

The department offers a program to provide the major with historical breadth (from the Middle Ages to the present) and with a balance of course work in the three basic genres (poetry, fiction, drama) and in both English and American literature. Special emphases within the major are available for students wishing to concentrate on creative writing and for those wishing to prepare specifically for entrance to law school. Students with other career objectives are encouraged to consult with their advisers in making use of the 20-credit "related fields" requirement. Students who plan to teach are referred to the College of Education section in part 4 for public-school certification requirements.

The Department of English offers three graduate degrees, either thesis or nonthesis, at the master's level; the standard M.A. in literature, the M.A.T., and the M.A. in English as a second language. Some graduate course work in creative writing is available, but the department does not offer a graduate degree in that area. Students planning to work for the M.A. or the M.A.T. should be well prepared through the curriculum outlined below. Those planning to pursue the M.A. in English as a second language should take extra course work in linquistics.

English Courses

ADVANCED PLACEMENT: Courses in this subject field that are vertical in context are: 103-104.

PREREQUISITES: Students may enroll for a second-semester course in English without having had the first-semester course, unless it is a stated prerequisite to the second-semester course. Eng 103 and 104 are prequisite to all upper-division courses.

A transfer student who lacks 103 or 104, or both, may take either or both for credit even though he or she has already taken a literature course for which 103 or 104 is prerequisite at UI.

Eng 101 ESL Grammar and Writing Lab (0 cr). Lab review of basic grammar of written English for students who are not native speakers of English. Graded P (pass)/N (repeat).

Eng 103 Basic Skills for Writing (3 cr). Basic prin of argumentative essay writing; strategies of prewriting, paragraphing, and sentencing; focus on thesis, audience, and rhetorical situations. Graded P (pass/N (repeat)/F (fail). Coreq for ESL students: 101.

Eng 104 Essay Writing (3 cr). Applied prin of argumentative essay writing, in summaries and critical analyses of tests, and in the research essay; emphasis on clear, concise, and vigorous prose. Graded P (pass)/N (repeat)/F (fail). Prereq: 103 or equiv. ESL students may be reqd to attend 101 or additional tutorials.

Eng 111-112 Lit of Western Civ (3 cr). Satisfies core requirement J-3-d. Masterpieces reflecting the dev of Western thought and culture. Eng 111: Classical Greece to the Renaissance. Eng 112: 17th century to the present.

Eng 175 Intro to Lit (3 cr). Basic course in literary genres (novel, drama, poetry) to provide the general student or the beginning English major with the terminology and standard tech of literary explication.

Eng 205 (s) **Adv Expository Writing** (3 cr). Satisfies core requirement J-3-a. Develops skills in reading and writing across the univ curriculum; focuses on requirements of college writing; critical analyses, research, lab, and field reports, and essay exams. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a).

Eng 211 Analysis of Poetry and Early Drama (3 cr). Close reading tech, concepts and terminology necessary for studying and writing about poetry and early drama, incl Shakespeare. Prereq: 104 or equiv.

Eng 212 Analysis of Fiction and Modern Drama (3 cr). Close reading tech, concepts and terminology necessary for studying and writing about fiction and modern drama. Prereq: 104 or equiv.

Eng 291 Creative Wrtg: Poetry (3 cr). Intro to tech of wrtg poetry. Graded P/F.

Eng 292 Creative Wrtg: Fiction (3 cr). Intro to tech of wrtg fiction. Graded P/F.

Eng 300 ESL Research Wrtg (3 cr, max arr). Limited to students whose native language is not English. Research methods, scientific wrtg style, vocabulary grammar forms, reference citation forms, note-taking from lec, and technical lec presentations. Normally scheduled on the basis of three lec per wk; however, additional lec, lab, and/or tutorial sessions may be scheduled and reqd. Prereq: perm of dept.

Eng 301 (s) **Special Topics** (cr arr). Variable content course covering special topics of contemporary interest. Topics and number of cr will be announced in the time schedule.

Eng 309 Adv Prose Wrtg (3 cr). Theory and practice in wrtg prose; many assignments in expression, explanation, and persuasion. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a).

Eng 313 Business Wrtg (3 cr). Principles of clear wrtg related to bus style; correspondence and reports; form, content, and style. Preregistration reqd; consult dept administrator. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a); jr standing or perm.

Eng 317 Tech and Engr Report Wrtg (3 cr). Satisfies core requirement J-3-a. Prin of clear wrtg related to tech style; problems such as tech description, proposals, formal reports, and tech correspondence. Preregistration reqd; consult dept administrator. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a); jr standing or perm.

Eng 321 The Novel for Nonmajors (3 cr) (C). Major novels from the 18th century to the present.

Eng 325 Contemporary Lit for Nonmajors (3 cr). Current poetry and prose; emphasis on U.S. authors.

Eng 327 Black Lit (3 cr). Major works of U.S. black writers; emphasis on the 20th century.

Eng 330 American Indian Lit (3 cr). Recent poetry and prose written by and about American Indians.

Eng 341-342 Survey of British Lit (3 cr). Eng 341: Beowulf to Samuel Johnson. Eng 342: Robert Burns to contemporary writers.

Eng 343-344 Survey of American Lit (3 cr). Eng 343: Colonial beginnings to the Civil War. Eng 344: Post-Civil War to contemporary writers.

Eng 345 Shakespeare (3 cr). Introductory course; background and study of selected plays representative of Shakespeare's achievement in mode and kind.

Eng 350 Backgrounds of Lit (3 cr). Survey of those areas of tradition that underlie the art/lit of the Western world: the Bible, mythology of classical antiquity and Northern Europe, and medieval romance.

Eng 375 The Bible as Lit (3 cr). Literary qualities of the Bible.

Eng 387 Modern European Lit (3 cr). Major writers; incl dramatists of the late 19th and 20th centuries; readings in translation.

Eng 400 (s) **Seminar** (cr arr). Prereq: perm.

Eng 401 Writing Workshop for Teachers (3 cr). Theory and practice of jr/sr high school composition instruction; further dev of student's own wrtg skills. Three lec and one lab a wk. Prereq: 104 or equiv.

Eng 402 Composition and Criticism (3 cr). Survey of basic critical approaches that illuminate student experience as expressed in secondary-level lit; designed to aid in the integration of lit and composition.

Eng 404 (s) **Special Topics** (cr arr). Prereq: perm.

Eng 421 Dev of the English Novel (3 cr). Major writers from the beginnings to Scott.

Eng 422 The Nineteenth-Century English Novel (3 cr). Dickens to Hardy.

Eng 425 Irish Literary Renaissance (3 cr). Lit of Ireland after 1880, especially Yeats, Joyce, and Synge.

Eng 426 Modern Poetry (3 cr).

Eng 427 American Fiction, 1914-1945 (3 cr). Fiction by writers such as Cather, Dos Passos, Faulkner, Fitzgerald, Hemingway, and Wright.

Eng 428 British Fiction, 1900-1945 (3 cr). Fiction by such writers as Conrad, Forster, Joyce, Lawrence, and Woolf.

Eng 429 Contemporary Fiction (3 cr). Fiction since 1945 by writers such as Barth, Bellow, Fowles, Lessing, Morrison, Nabokov, and Pynchon.

Eng 430 Perspectives in Film (3 cr). Same as CommG 430. Survey of major prin and methods of film criticism as they relate to dev of film art from 1890 to the present. Prereq: Inter 126 or CommG 288 or perm.

Eng 433 Chaucer (3 cr). Intro to Chaucer's poetical works.

Eng 434 Middle English Lit (3 cr). Middle English lit to 1500, excluding Chaucer and drama.

Eng 436 Adv Shakespeare (3 cr). Designed mainly for English majors; intensive study of a number of plays grouped according to mode, kind, theme, or the dramatist's dev. Prereq: 345 or perm.

Eng 437 English Drama to 1642 (3 cr). Medieval through renaissance drama, emphasis upon Marlowe, Jonson, Webster.

Eng 438 English Drama, 1660-1800 (3 cr). Heroic play and tragedy; sentimental drama; comedy of manners.

Eng 439 Modern English and American Drama (3 cr). Plays of the chief 20th-century dramatists.

Eng 441 Intro to the Study of Language (3 cr). Same as Anthr 441. Surveys of sound patterns, morphological processes and syntactic structures; questions of language acquisition, variation, and history; exercises from a variety of languages, with emphasis on American English

Eng 442 Intro to Transformational Grammer (3 cr). Structure and processes of English syntax via transformational/generative grammar; transformational grammar compared with other approaches, including traditional; appl of transformational/generative grammar to teaching of English. Prereq or coreq: 441 or perm.

Eng 443 Language Variation (3 cr). Geographic and social dialects (e.g., black English); levels of formality and their linguistic consequences; literary use of language variation (as in Dickens and Hardy, Twain and Faulkner); occupational dialects and jargons. Prereq or coreq: 441 or perm.

Eng 445 Lit for Young People (3 cr). Primarily for students working for teacher or library certification. Reading and appraisal of lit appropriate to the needs, interests, and abilities of young people.

Eng 451 Sixteenth-Century Poetry and Prose (3 cr). Major authors of the period with emphasis on Spenser.

Eng 452 Milton (3 cr). Major prose and poetry of Milton.

Eng 453 Seventeenth-Century Poetry and Prose (3 cr). Major authors excluding Milton; emphasis on authors such as Bacon, Browne, Burton, Donne, Herbert, Herrick, Marvell.

Eng 456 Resoration and Eighteenth Century (3 cr). Neoclassical poetry and prose from Dryden to Johnson.

Eng 465 The Romantic Period (3 cr). Poetry and prose of the early 19th century; emphasis on Wordsworth, Coleridge, Shelley, Keats, Byron.

Eng 466 The Victorian Period (3 cr). Poetry and prose; emphasis on Tennyson, Browning, Arnold, Carlyle, Newman, J. S. Mill.

Eng 470 American Lit to 1830 (3 cr). Colonial period to the early republic; emphasis on authors such as Bradford, Bradstreet, Taylor, Edwards, Franklin, Cooper, Irving.

Eng 471 Poe, Hawthorne, and Melville (3 cr). Major works and their place in the American Renaissance.

Eng 472 Emerson, Thoreau, and Whitman (3 cr). Major works and their place in the American Renaissance.

Eng 473 Lit of the American West (3 cr). Writings that reflect the growth of the western U.S. from frontier days to the present.

Eng 474 American Lit, 1865-1914 (3 cr). Emphasis on writers of realistic and naturalistic fiction such as James, Twain, Howells, Wharton, Crane, and Dreiser.

Eng 482 (s) **Major Authors** (3 cr). Comprehensive study of the works of a single author. See the Time Schedule for author.

Eng 491 Adv Creative Wrtg: Poetry (3 cr, max arr). Continuation of 291. Prereq: 291 or perm.

Eng 492 Adv Creative Wrtg: Fiction (3 cr, max arr). Continuation of 292. Prereq: 292 or perm.

Eng 494 Methods of Literary Criticism (3 cr). Intro to major prin and methods of literary analysis; practice in applying critical methods to selected poems, fiction, and drama.

Eng 495 Literary Criticism (3 cr). From Plato to the present.

Eng 496 Hist of the English Language (3 cr). Evolution of the language from Proto-Germanic to American English.

Eng 499 (s) **Directed Study** (1-3 cr, max 3). Prereq: perm.

Eng 500 Master's Research and Thesis (cr arr). Graded P/F.

Eng 501 (s) **Seminar** (cr arr). Prereq: perm.

Eng 502 (s) **Directed Study** (1-3 cr, max 3). Normally offered in English and American lit and in linguistics; may not duplicate course offerings. Graded P/F. Prereq: perm.

Eng 503 Problems and Methods of Literary Study (3 cr).

Eng 504 (s) **Special Topics** (cr arr). Prereq: perm.

Eng 505 (s) **Workshop** (cr arr). May be graded P/F. Prereq: perm.

Eng 506 Language and Teaching of Wrtg (3 cr). Linguistic, rhetorical, stylistic, and pedagogical concepts essential to teaching college-level wrtg.

Eng 507 (s) **Studies in the English Language** (3 cr, max 9). Normally offered in Old English, Middle English, and Early and Late Modern English. Prereq: 441, 496, or perm.

Eng 509 (s) **Creative Wrtg** (3 cr, max 12). Workshop for adv writers; analysis of theory, composition, and tech with applied goal of extending tech skills of the student writer through study of professional writers' work. All applicants must submit typed manuscripts of their work at least 10 days before registration. Prereq: perm.

Eng ID&WS510 (s) **Studies in Linguistics** (3 cr, max 12). WSU Engl 541. Topics such as phonology, morphology, syntax, linguistic hist, or the appl of linguistics to the teaching of English lit or composition. Prereq: 6 cr in the following: 441, 442, 443, 495, 506, or perm.

Eng ID511 (s) **Studies in Literary Criticism** (3 cr, max 12). Hist of criticism; various schools of literary criticism. Prereq: 495 or perm.

Eng 512 (s) **Studies in Literary Theory** (3 cr, max 12). Various genres (poetry, drama, fiction), forms, and modes (tragedy, comedy, satire).

Eng 514 ESL Methods (3 cr). Alt/yrs. Survey of the most widely used classroom techniques for second language teaching and a brief look at some of the more innovative approaches proposed in recent years. Prereq: 441 or perm.

Eng 515 ESL Teaching Practicum (3 cr). Alt/yrs. Organization and teaching of an ESL course under direction of practicum instructor. Prereq: 514 or perm.

Eng 516 Intercultural Comm (3 cr). Alt/yrs. In-depth exam of major issues related to comm across cultures: comm theory, linguistic relativity, ethnography of speech, crosscultural rhetoric, and nonverbal comm. Prereq: 441 or perm.

Eng 517 Contrastive Linguistics (3 cr). Alt/yrs. Theory and practice of comparing and contrasting linguistic systems as basis for preparing instructional materials. Prereq: 441 and one of the following: 442, 443, 496, 510, or perm.

Eng 518 Adv English Grammar (3 cr). In-depth linguistic analysis of English grammar, giving special emphasis to morphology and syntax. Prereq: 441 or perm (recommended prep: Eng 442).

Eng 519 Linguistic Analysis (3 cr). Adv work in analysis and description of phonology, morphology, and syntax of languages. Prereq: 441 or perm (recommended prep: Eng 442).

Eng 520 (s) **Studies in Medieval Lit** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

Eng 530 (s) **Studies in Renaissance and 17th-Century British Lit** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

Eng 540 (s) **Studies in Restoration and 18th Century British Lit** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

Eng WS543 Topics in English Linguistics (3 cr, max 6).

Eng 550 (s) **Studies in 19th-Century British Lit** (3 cr, max 12). Normally offered in survey of Romantic lit, survey of Victorian lit, genre studies, and major author(s).

Eng 560 (s) **Studies in American Lit Before 1900** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

Eng 570 (s) **Studies in 20th-Century British and American Lit** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

Eng 597 (s) **Practicum** (cr arr). Prereq: perm.

Eng 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

ENGLISH (B.A.)

Where specific courses are listed with the area requirements, the department may approve equivalencies.

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
Eng 111-112 Lit of Western Citilization	6
Eng 211 Analysis of Poetry & Early Drama	3
Eng 212 Analysis of Fiction & Modern Drama	3
Eng 341-342 Survey of British Literature	6
Eng 343-344 Survey of American Literature	6
Eng 345 Shakespeare	3
Area requirements incl one course each from six of the areas below	18
Middle Ages — Eng 433, 434	
Renaissance and 17th Century — Eng 437, 451, 452, 453	
Restoration and 18th Century — Eng 421, 438, 456	
19th Century British — Eng 422, 465, 466	
American Literature — Eng 470, 471, 472, 474	
20th Century British and Amer — Eng 426, 427, 428, 439	
Linguistics — Eng 441, 442, 443, 496	
English electives (two courses from the list approved by department chair)	6
Related fields approved by department chair	20

CREATIVE WRITING EMPHASIS. Students wishing to emphasize creative writing must take Eng 111-112, 211-212, 341-342, 343-344, 345; two 400-level English courses in literature, including one in literature before 1900; and 18 credits selected from the following courses: Eng 291, 292, 309 (may not be repeated), 404, 491, 492 (may be repeated). Students will choose 20 credits of course work in a related field approved by the department chair.

PRELAW EMPHASIS. Students wishing to emphasize preparation for law school must take Eng 111-112, 211-212, either 341 or 342, either 343 or 344; three upper-level English courses, one of which must be a 400-level course; and the following nine courses from outside the department: Acctg 201, CS 100, Econ 151 or 152, Hist 101-102, Phil 101 and 211, PolSc 105, Psych 100. Twenty credits of related course work will be chosen from the list approved for this emphasis.

Academic Minor Requirements

ENGLISH MINOR

Course	Credits
Eng 211 Analysis of Poetry & Early Drama	3
Eng 212 Analysis of Fiction & Modern Drama	3
Eng 345 Shakespeare	3
Three of the following courses	9
Eng 341-342 Survey of British Literature	
Eng 343-344 Survey of American Literature	
One 400-level English course	3

ENGLISH AS A SECOND LANGUAGE MINOR

Course	Credits
Eng 404 Special Topics: ESL Methods	3
Eng 441 Intro to the Study of Language	3
Eng 442 Intro to Transformational Grammar	3
Ed 314 Strategies for Teaching	3
Anthr/Soc 322 Racial & Ethnic Relations	3
Electives in English language and linguistics	6

Department of Fish and Wildlife Resources

Ernest D. Ables, Dept. Head (105B FWR Bldg.).

Fishery Resources Faculty: David H. Bennett, Ted C. Bjornn, James L. Congleton, C. Michael Falter, George W. Klontz, Christine M. Moffitt.

Wildlife Resources Faculty: Ernest D. Ables, Edward O. Garton, Maurice G. Hornocker, Lewis Nelson, Jr., James M. Peek, Kerry P. Reese, John T. Ratti, J. Michael Scott, R. Gerald Wright.

The professions of fish and wildlife conservation deal with the application of principles of biology and ecology to the management of fish or wildlife populations and their habitats. The two professions are nearly identical in their basic approach to resource management and differ mainly in the type of environment, i.e., aquatic or terrestrial, with which they are concerned.

Fishery biologists and scientists conduct research or apply management principles to aquatic ecosystems. They may become involved with biological monitoring, environmental impact studies, area planning and preservation, maintenance of endangered fish, hatchery operation, control and prevention of fish diseases, and management of stream or lake ecosystems.

Wildlife biologists, or managers, attempt to maintain adequate populations of game and nongame wildlife species. This involves studying wildlife and its habitat so that management programs can be established based on biological facts. The job often involves coordinating wildlife management programs with other natural resource activities such as forest management, range management, and land use planning.

Both professions offer opportunities in law enforcement, communications, and public relations. A common saying, and one with a great deal of truth, is that fish or wildlife management is largely people management.

Bachelor of Science degrees are offered in fishery resources and in wildlife resources. The fishery curriculum offers professional-level courses in three major areas: (1) fishery management, (2) aquatic ecology, and (3) aquaculture and fish health management, and has two curricular options, management and aquaculture. The curriculum in wildlife resources provides a broad background in natural resources and in addition offers the student an opportunity to select a field of interest in one of six options: aquatic, biology, communications, habitat, policy-law-administration, and quantitative. Elective courses in both curricula provide an opportunity to gain additional knowledge in a special area of interest or to broaden into other fields. To ensure that the student gains practical experience, one season of approved work experience or internship before graduation is required.

Fish and wildlife graduates find employment with numerous federal, state, and private agencies. These include the U.S. Fish and Wildlife Service, the Bureau of Land Management, the U.S. Forest Service, the National Marine Fisheries Service, the Army Corps of Engineers, state fish and game or conservation departments, and private organizations such as power companies, commercial fish growers, and consultants. Recent surveys have shown that baccalaureate graduates of UI obtain employment at a rate considerably above the national average.

The university offers Master of Science and Doctor of Philosophy degrees in several specialty areas of fish and wildlife resources. The M.S. (thesis option) and the Ph.D. degrees each require original research.

The research mission of the department is attainment of new knowledge and the understanding of natural resources, their interrelationships and uses. The objectives of the research program are, thus, to attain knowledge of the environment and to develop management alternatives that will assist in the conservation of resources while meeting society's needs. The dissemination of this knowledge through publications, continuing education, and other channels of communication is an essential departmental function.

For additional information, please call the department at (208) 885-6434.

Courses

FISHERY RESOURCES

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

Fish 102 The Fishery Resources Profession (1 cr). Orientation of students to profession of fishery resources; employment opportunities, current research efforts in the Pacific Northwest, etc. Graded P/F.

Fish 200 (s) **Seminar** (cr arr). Prereq: perm.

Fish 203 (s) **Workshop** (cr arr). Prereq: perm.

Fish 204 (s) **Special Topics** (cr arr).

Fish 299 (s) **Directed Study** (cr arr). Prereq: perm.

Fish 301 Aquatic Resources Mgt (4 cr). Tech of managing aquatic resources and their impacts on and by conservation agencies and private industries. Four wks of field sessions at Clark Fork facility.

Fish 390 Prin of Fish and Wildlife Ecology (3 cr). Not open to wildlife and fishery majors. Hist, objectives, and prin of fish and wildlife mgt, interrelationships with other renewable resources. Prereq: course in ecology or perm.

Fish 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

Fish 400 (s) **Seminar** (cr arr). Prereq: perm.

Fish 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Fish 403 (s) **Workshop** (cr arr). Prereq: perm.

Fish 404 (s) **Special Topics** (cr arr).

Fish 411 Ichthyology (4 cr). See Zool 481.

Fish ID413 Fish Ecology (3 cr). Prin regulating density and diversity of fishes; adaptations and interrelationships of fishes; response of fishes to environmental stress. Prereq: general ecology or perm.

Fish 415 Limnology (5 cr). Same as Zool 435. Physical, chemical, and biological features of lakes and streams. Two lec and six hrs of lab a wk; two 1-day field trips. Prereq: ecology.

Fish 417 Aquaculture (3 cr). Concepts and methods of extensive and intensive aquaculture in warmwater, coldwater, and marine systems. One 1-day field trip. Prereq: 411.

Fish 418 Fisheries Mgt Tech (2 cr). Methods and tech employed in fishery resources, sampling, and presentation of findings. Four days of field trips. Prereq: 411 and 413, Eng 317.

Fish 419 Prin of Fisheries Mgt (3 cr). Appl of prin toward managing rec and commercial aquatic resources. Prereq: 418, Stat 251.

Fish 420 Fish Diseases (3 cr). Epidemiology, diagnostics, prevention, and treatment of infectious and noninfectious diseases of free-living and confined finfish.

Fish 446 Diseases of Wild Birds and Mammals (2 cr). See WLF 446.

Fish 495 Seminar (1 cr). Disc integrating biol, social, political, econ, and philosophic aspects of problems in managing fishery resources.

Fish 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5, and perm.

Fish 500 Master's Research and Thesis (cr arr).

Fish 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

Fish 502 (s) **Directed Study** (cr arr). Prereq: perm.

Fish 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

Fish 504 (s) **Special Topics** (cr arr).

Fish ID510 Adv Fishery Mgt (3 cr). Alt/yrs. Compensation as a phenomenon basic to exploitation; yield in numbers and weight; models of yield; stock-recruitment functions; econ yield; appl of theory of physical and econ yield to empirical examples in commercial and sport exploitation. One 5-day field trip.

Fish ID511 Fish Physiology (4 cr). Alt/yrs. Prin and methods used to study vital organs, organ systems, growth, and reproduction of fishes; emphasis on osmoregulation, metabolsim, endocrinology, and respiration. Prereq: 411 and perm.

Fish ID512 Aquatic Pollution Ecology (3 cr). Alt/yrs. Prin and working examples of the ecology of polluted aquatic stream and lake habitats. Two 1-day field trips. Prereq: 415 or perm.

513 Adv Fish Culture (3 cr). Alt/yrs. Prin underlying freshwater and marine fishes; emphasis on good pond design, nutrition, bioenergetics, genetics, water quality interactions. Prereq: 411, 417, and perm.

514 Fish Population Dynamics (3 cr). Alt/yrs. Models and empirical examples of density changes, competition, and predation; mechanisms controlling density and biomass; social behavior; fish production; aquatic community processes.

Fish 515 Adv Limnology (3 cr). Alt/yrs. Physicochemical interrelationships and dynamics of primary and secondary production in aquatic systems. Two 4-hr lec-labs a wk. Prereq: 415.

Fish 516 Epidemiology and Diagnostics of Fish Diseases (3 cr). Alt/yrs. Epidemiology, etiology, and pathology of major infectious and noninfectious diseases of free-living and confined fishes. Prereq: 420 and VS 512A.

Fish 517 Fish Behavior (2 cr). Response of fishes to environmental stimuli. One lec and one scheduled and three unscheduled hrs of lab a wk. Prereq: ecology and biometrics.

Fish 518 Fish Parasitology (4 cr). Parasitology of freshwater fishes; ecology and life hist

of freshwater fish parasites; histopathology of parasitic diseases; current mgt problems associated with parasitic diseases.

Fish 589 Water Resources Seminar (1 cr). See Inter 589.

Fish 595 (s) **Problems in World Resources** (1-3 cr, max 3).

Fish 597 (s) **Practicum** (cr arr). Prereq: perm.

Fish 598 (s) **Internship** (cr arr). Prereq: perm.

Fish 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Fish 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

WILDLIFE RESOURCES

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

WLF 102 The Wildlife Profession (1 cr). Survey of mgt problems and professional opportunities. Graded P/F.

WLF 200 (s) **Seminar** (cr arr). Prereq: perm.

WLF 203 (s) **Workshop** (cr arr). Prereq: perm.

WLF 204 (s) **Special Topics** (cr arr).

WLF 299 (s) **Directed Study** (cr arr). Prereq: perm.

WLF 314 Wildlife Ecology (4 cr). Appl of prin of ecology to conservation and mgt of wildlife in natural and altered habitats. Three lec and one lab a wk. Prereq: general ecology or perm.

WLF 390 Prin of Fish and Wildlife Ecology (3 cr). See Fish 390.

WLF 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

WLF 400 (s) **Seminar** (cr arr). Prereq: perm.

WLF 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

WLF 403 (s) **Workshop** (cr arr). Prereq: perm.

WLF 404 (s) **Special Topics** (cr arr).

WLF 441 Wildlife Behavioral Ecology and Mgt (2 cr). Prin, methodology, and concepts of wildlife behavior and social org applied to the study and mgt of wildlife populations. One 2-day field trip. Prereq: 314, Zool 478, or perm.

WLF 442 Wildlife Mgt (4 cr). Review of social and biol context for current practice of wildlife mgt. Three lec and one lab a wk. Prereq: 314, 448, Zool 482, Zool 483 or perm.

WLF WS444 Disease Concepts for Wildlife Biologists (3 cr). WSU V Mic 435. Prereq: perm.

WLF 445 Nongame Mgt (2 cr). Disc; relation to current land-use practices. Prereq: Zool 482, 483, or perm.

WLF 446 Diseases of Wild Birds and Mammals (2 cr). Alt/yrs. Same as VS 446A and Fish 446. Epidemiology, pathology, treatment, and control. Prereq: perm.

WLF 448 Fish and Wildlife Population Ecology (4 cr). Attributes, natality, mortality, growth forms, fluctuations, and regulatiion of fish and wildlife populations. Three lec and one lab a wk. Prereq: Stat 251, course in vertebrate ecology.

WLF WS465 Law of Evidence and Criminal Procedure (3 cr). WSU Crm J 420.

WLF 489 Personalities and Philosophies in Conservation (2 cr). See RcMgt. 489.

WLF 493 Environmental Law (2 cr). Laws governing resource admin and environmental impacts. Prereq: sr standing.

WLF 495 Wildlife Seminar (1-2 cr). Disc integrating biol, social, political, econ, and philosophic aspects of wildlife problems.

WLF 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5, and perm.

WLF 500 Master's Research and Thesis (cr arr).

WLF 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

WLF 502 (s) **Directed Study** (cr arr). Prereq: perm.

WLF 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

WLF 504 (s) **Special Topics** (cr arr).

WLF 541 Adv Population Biol (2 cr). Alt/yrs. Readings and disc of current theories of population control, their biol basis, and appl to wildlife poopulations. Prereq: 448 or perm.

WLF 542 Waterfowl Mgt (3 cr). Alt/yrs. Ecology and mgt of species using wetland habitats. Lec-disc periods, field labs; three days of field trips. Prereq: ecology, population dynamics, and aquatic plants.

WLF 543 Fish and Wildlife Population Analysis (3 cr). Quantitative analysis of fish and wildlife habitat, diet, harvest, population density, survival, and natality data; dev and appl of population models in fish and wildlife mgt. Two lec and 3 hrs of lab a wk. Prereq: 448 or Fish 419, Stat 401 and CS 112 or perm.

WLF ID544 Big Game Mgt (3 cr). Readings and disc on large mammal mgt and ecology. One 3-hr lec a wk; two days of field trips. Prereq: 442 or perm.

WLF 545 Game Range Ecology (2 cr). Alt/yrs. Reading and disc on synecological relationships of wildlife habitats. Two days of field trips. Prereq: 442 or perm, animal and plant ecology.

WLF ID546 Upland Game Ecology (2 cr). Alt/yrs. Ecology and mgt of forest and rangeland wildlife species. Three days of field trips. Prereq: perm.

WLF WS560 Environmental Physiology (4 cr). WSU Zool 560. Prereq: perm.

WLF WS588 Adv Topics in Wildlife (1-3 cr, max 10). WSU WI B 588. Prereq: perm.

WLF 595 (s) **Problems in World Resources** (1-3 cr, max 3).

WLF 597 (s) **Practicum** (cr arr). Prereq: perm.

WLF 598 (s) **Internship** (cr arr). Prereq: perm.

WLF 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

WLF 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Curricular Requirements

FISHERY RESOURCES (B.S.Fish.Res.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Fish 102 Fishery Resources Professions	1
Fish 411 Ichthyology	4
Fish 413 Fish Ecology	3
Fish 415 Limnology	5
Fish 417 Aquaculture	3
Fish 418 Fish Mgt Techniques	2
Fish 419 Principles of Fish Mgt	3
Fish 420 Fish Diseases	3
Fish 495 Seminar	1
Bact 250 General Microbiology	4
Biochem 380 Intro Biochemistry	3
Biol 201 Intro to Life Sciences	4
Biol 202 General Zoology	4
Biol 331 General Ecology	3
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Eng 317 Tech & Engr Report Writing	3
FWR 101 FWR Orientation	1
Physics 101 Fundamentals of Physics	4
Stat 251 Principles of Statistics	3
Zool 423 Comparative Vertebrate Physiology	4
Electives to total 136 credits for the degree	--

And one of the following options (including an employment requirement for the management option):

AQUACULTURE OPTION

Course	Credits
Fish 397 Internship	6
Acctg 201 Principles of Accounting	3
AgEc 391 Agribusiness Mgt	3
AnSc 305 Animal Nutrition	3
Bus 321 Marketing	3
Econ 151, 152 Principles of Economics	6
Math 160 Survey of Calculus or Math 180 Analytic Geom & Calc	4
Social science/humanities electives	9

MANAGEMENT OPTION

Course	Credits
Biol 203 General Botany	4
Econ 272 Foundations of Economic Analysis	4
Ent 472, 474 Aquatic Entomology & Lab	3
For 462 Watershed Mgt or Range 351 Range Mgt or For 370 Prin of Forest Mgt	2-3
For 494 Models for Resource Decisions	4
Geol 101, 102 Physical Geol and Lab or Soils 205, 206 General Soils and Lab	4
Math 160 Survey of Calculus	4

WLF 448 Fish & Wildlife Population Ecology 4
Social science/humanities electives 12-13

WILDLIFE RESOURCES (B.S.Wildl. Res.)

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years	Credits
Biol 201 Intro to Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
CommG 131 Fundamentals of Public Speaking	2
CS 100 Intro to Computers & Programming or CS 105 FORTRAN Programming for Engr	2-3
Econ 151, 152 Principles of Economics or Econ 272 Foundations of Econ Analysis	4-6
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geol & Lab, or Soils 205-206 Gen Soils & Lab	4
Math 180 Analytical Geometry & Calculus I or Math 160 Survey of Calculus	4
Phys 113-114 General Physics	6
Range 221 Forest Ecology or Biol 331 General Ecology	3
Electives	9

Third and Fourth Years	
WLF 314 Wildlife Ecology	4
WLF 442 Wildlife Management	4
WLF 448 Fish & Wildlife Population Ecology	4
WLF 495 Wildlife Seminar	1
Biol 351 General Genetics	3
Eng 317 Technical & Engr Report Writing	3
Fish 413 Fish Ecology	3
For 383 Econ for Natural Resource Mgrs or For 470 Intro to Forest Land Resources Planning or For 484 Forest Policy and Admin	2-3
For 370 Prin of Forest Management	2
Range 351 Elements of Range Mgt	3
RcMgt 488 Interpretive Methods Lab or Comm 431 Professional Presentation Tech or Eng 205 Adv Expository Writing	3
Stat 251 Principles of Statistics	3
VS 371 Anatomy & Physiology or Zool 416 Mammalian Physiology or Zool 324 Comparative Vertebrate Anatomy	4
WLF/RcMgt 400 Seminar in Public Relations Problems in Natural Resource Mgt	2
Zool 482 Natural History of Birds	3
Zool 483 Natural History of Mammals	3
Approved electives from one of the following areas: quantitative; habitat; aquatic; communications; policy-administration; biology	12
Electives	22

Department of Foreign Languages and Literatures

Michael W. Moody, Dept. Chair (314 Admin. Bldg.). Faculty: George Bridges (German), Alfred W. Jensen (Spanish), Richard M. Keenan (Spanish), Elisabeth Lapeyre (French), Cecelia E. Luschnig (Classics), Michael W. Moody (Spanish), Louis A. Perraud (Classics), James R. Reece (German), Alan Rose (French), Galen O. Rowe (Classics), Gerd Steckel (German), Robert L. Surles (Spanish), Dennis D. West (Spanish), Joan M. West (French).

The study of a foreign language and literature is a way of expanding one's horizons while developing specific linguistic skills that will enhance career, academic, and travel opportunities. One of the many benefits derived from foreign-language study is the ability to transcend linguistic and cultural parochialism. To understand the uniqueness of one's own language and civilization, knowledge of another culture is essential. Language study is the key that unlocks the mysteries surrounding a foreign people. Through language, one is able to explore their literature, art, history, and philosophy — in short, their way of life. In preparing to meet the challenges of a rapidly changing and interdependent world, foreign language expertise plays an increasingly important role. In many areas (business, education, communications, social work, technical and engineering positions, science, law, medicine, etc.), knowledge of a second language is not only desirable but necessary.

The Department of Foreign Languages and Literatures offers major programs of study in modern languages (French, German, Spanish) and classical studies (Greek, Latin). A new program offers students an opportunity to combine training in a foreign language with business.

A modern language laboratory enables students to develop speaking and listening skills in specially prepared autotutorial courses. In addition to the standard audiocassette record/playback units, the laboratory includes a high-speed copying service that allows students to have their own audiocassettes for home study. There are also special facilities for synchronized slide/-sound and videocassette instruction. A capability for computer-assisted instruction is now being developed.

All members of the permanent faculty hold Ph.D. degrees, and most of them have lived and traveled extensively in the foreign countries of their expertise. Foreign language classes are small enough to ensure that each student receives individual attention. The department's faculty members have established an excellent record for teaching.

Information about opportunities for work and study in foreign countries is kept up-to-date in the department's seminar room, and faculty advisers gladly assist students in planning a semester's or a year's study abroad. You may already have studied one or more foreign languages in high school; if you have, you are eligible to receive advanced-placement credits simply by completing a higher level course at UI.

The department offers graduate work in French, German, and Spanish leading to the M.A.T. degree. The purpose of graduate programs in languages, cultures, and literatures is to offer advanced scholarly preparation for careers in teaching.

For further information, please consult the department chair (208/885-6179).

Courses

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content are: FL/FR 101-102-201-202; FL/GN 121-122-221-222; FL/GK 341-342-441-442; FL/LA 161-162; FL/SP 181-182-281-282. In appropriate cases, with the approval of the chair of the Dept of Foreign Languages and Literatures, any one of the following courses may be considered the terminal course in the vertical sequence for adv placement: FL/FR 301-302; FL/GN 321-322; FL/SP 381-382. Any upper-division Latin literature course may be used to receive advanced placement credit for FL/LA 161-162.

PREREQUISITE: Prereq for upper-div language courses, except those in Greek, is the appropriate interm course or equiv.

COURSES OFFERED IN ENGLISH

No knowledge of foreign language required. May be used to fulfill the L & S humanities requirement.

FL/EN 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/EN 204 (s) **Special Topics** (cr arr).

FL/EN 209 Learning Lab (1 cr, max arr). Autotutorial instruction using audiovisual materials. Graded P/F. Prereq: perm.

FL/EN 211-212 Classical Mythology (2 cr). Intro to classical myths and legends and their survival in western lit and art.

FL/EN 243 English Word Origins (2 cr). Fundamental Latin and Greek words used in the humanities and natural sc; emphasis on terminology of fields in which students are interested; knowledge of Greek or Latin is not required.

FL/EN 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/EN 313-314 Modern French Lit in Translation (3 cr). A maximum of 3 cr of 313-314 may be counted toward a major in French. Major modern French authors in English translation; knowledge of French is not required.

FL/EN 323-324 German Lit in Translation (3 cr). A maximum of 3 cr in 323-324 may be counted toward a major in German. Major German-language authors in English translation; knowledge of German is not required.

FL/EN 363-364 Lit of Ancient Greece and Rome (3 cr). FL/EN 363: Greece. FL/EN 364: Rome. Ancient culture primarily through writings of Greek and Roman poets, playwrights, thinkers, and historians in English translation; may take the form of a survey or center on a theme or genre; lec, disc, and wrtg.

FL/EN 391 Hispanic Film (3 cr). Open to all students. Genre, structure, and style of representative fiction and nonfiction films of Spain and Latin America. May not be taken concurrently with FL/SP 391.

FL/EN 393 Spanish Lit in Translation (3 cr). A maximum of 3 cr in 393 and 394 may be counted toward a major in Spanish. Major Spanish-language authors in English translation; knowledge of Spanish is not required.

FL/EN 394 Latin America Lit in Translation (3 cr). A maximum of 3 cr of 393 and 394 may be counted toward a major in Spanish. Major Spanish-language authors in English translation; knowledge of Spanish is not required.

FL/EN 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/EN 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/EN 498 (s) **Proseminar** (1-3, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/EN 499 (s) **Directed Study** (cr arr). Prereq: perm.

FRENCH

FL/FR 101-102 Elem French (4 cr) (C, 101 only). 101 satisfies core requirement J-3-a. Pronunciation, vocab, reading, spoken French, and functional grammar.

FL/FR 103 (s) **French Language Lab** (1 cr, max 4). Practice in listening comprehension, pronunciation, and grammatical structures. Graded P/F. Coreq: elem or interm French (FL/FR 101-102, 201-202).

FL/FR 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/FR 201-202 Interm French (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 102.

FL/FR 204 (s) **Special Topics** (cr arr).

FL/FR 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/FR 301-302 Adv French Grammar and Composition (3 cr). Recommended for prospective teachers of French.

FL/FR 303-304 French Culture and Institutions (3 cr).

FL/FR 305-306 Survey of French Lit (3 cr). Middle Ages to the present.

FL/FR 309 French Language Lab (1 cr, max arr). Adv conversational skills. Graded P/F. Prereq: perm.

FL/FR 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/FR 401-402 Nineteenth-Century French Lit (3 cr).

FL/FR 403-404 Seventeenth-Century French Lit (3 cr).

FL/FR 405-406 Eighteenth-Century French Lit (3 cr).

FL/FR 407-408 Contemporary French Lit (3 cr).

FL/FR 409-410 French Phonetics (1-3 cr, max 6). Phonetic description and phonemic analysis; stress, its nature and place; intonation patterns in conversation; reading of prose and poetry.

FL/FR 411-412 French Composition and Conversation (2 cr).

FL/FR 415 (s) **Special Topics** (cr arr).

FL/FR 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/FR 498 (s) **Proseminar** (1-3 cr, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/FR 499 (s) **Directed Study** (cr arr). Prereq: perm.

FL/FR 500 Master's Research and Thesis (cr arr).

FL/FR 501 (s) **Seminar** (cr arr). Prereq: perm.

FL/FR 502 (s) **Directed Study** (cr arr). Prereq: perm.

FL/FR 503 Hist of the French Language (3 cr).

FL/FR 504 Explications Francaises (3 cr).

FL/FR 505 Seventeenth-Century French Drama (3 cr).

FL/FR 507 (s) **Special Topics** (cr arr).

FL/FR 597 (s) **Practicum** (cr arr). Prereq: perm.

FL/FR 598 (s) **Internship** (cr arr). Prereq: perm.

FL/FR 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GERMAN

FL/GN 121-122 Elem German (4 cr). 121 satisfies core requirement J-3-a. Pronunciation, vocab, reading, spoken German, and functional grammar.

FL/GN 123 (s) **German Language Lab** (1 cr, max 4). Practice in listening comprehension and conversational skills. Graded P/F. Coreq: elem or interm German (FL/GN 121-122, 221-222).

FL/GN 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/GN 204 (s) **Special Topics** (cr arr).

FL/GN 221-222 Interm German (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 122.

FL/GN 225 German for Reading Knowledge (3 cr). Emphasis on descriptive grammar and rapid acquisition of reading fluency in German; prep for grad reading exam. May not be counted toward fulfillment of language requirement for B.A. degree.

FL/GN 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/GN 321-322 Adv German Grammar and Composition (3 cr). Recommended for prospective teachers of German.

FL/GN 325-326 German Culture and Institutions (3 cr). Recommended for prospective teachers of German.

FL/GN 327-328 Survey of German Lit (3 cr). To the close of the 19th century.

FL/GN 329 (s) **German Language Lab** (1 cr, max 2). Adv aural comprehension and conversation. Graded P/F. Prereq: perm.

FL/GN 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/GN 404 (s) **Special Topics** (cr arr).

FL/GN 421-422 Nineteenth-Century German Lit (3 cr).

FL/GN 423-424 Modern German Lit (3 cr).

FL/GN 425-426 Eighteenth-Century German Lit (3 cr).

FL/GN 427-428 Classical Period in German Lit (3 cr).

FL/GN 429-430 German Phonetics (1 cr). Phonetic description and phonemic analysis; stress, its nature and place; intonation patterns in conversation; reading of prose and poetry.

FL/GN 431-432 Topics in German Language and Culture (2 cr). Cultural, political, and linguistic topics of contemporary interest.

FL/GN 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/GN 498 (s) **Proseminar** (1-3 cr, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/GN 499 (s) **Directed Study** (cr arr). Prereq: perm.

FL/GN 500 Master's Research and Thesis (cr arr).

FL/GN 501 (s) **Seminar** (cr arr). Prereq: perm.

FL/GN 502 (s) **Directed Study** (cr arr). Prereq: perm.

FL/GN 504 (s) **Special Topics** (cr arr).

FL/GN 506 (s) **Workshop** (cr arr). Prereq: perm.

FL/GN 523 Hist of the German Language (3 cr).

FL/GN 524 Middle High German (3 cr).

FL/GN 525 Goethe's Faust (3 cr).

FL/GN 597 (s) **Practicum** (cr arr). Prereq: perm.

FL/GN 598 (s) **Internship** (cr arr). Prereq: perm.

FL/GN 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GREEK

FL/GK 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/GK 204 (s) **Special Topics** (cr arr).

FL/GK 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/GK 341-342 Elem Greek (4 cr). 341 satisfies core requirement J-3-a. Pronunciation, vocab, reading, and functional grammar.

FL/GK 349 (s) **Greek Language Lab** (1 cr, max arr). A maximum of two credits may be earned in basic skills. Graded P/F. Prereq: perm.

FL/GK 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/GK 404 (s) **Special Topics** (cr arr).

FL/GK 441-442 (s) **Interm Greek** (4 cr, max arr). Readings in classical Greek prose and poetry.,

FL/GK 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/GK 498 (s) **Proseminar** (1-3, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/GK 499 (s) **Directed Study** (cr arr). Prereq: perm.

ITALIAN

FL/IT 299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

LATIN

FL/LA 161-162 Elem Latin (4 cr). 161 satisfies core requirement J-3-a. Pronunciation, vocab, reading, composition, and functional grammar.

FL/LA 163 Latin Language Lab (1 cr, max arr). Elem- and interm-level skills. Graded P/F. Prereq: perm.

FL/LA 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/LA 204 (s) **Special Topics** (cr arr).

FL/LA 261-262 Intensive Latin (4 cr). Grammar, reading, composition. Prereq: perm.

FL/LA 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/LA 365-366 Survey of Latin Lit (3 cr). From early Latin to the Middle Ages.

FL/LA 369 (s) **Latin Language Lab** (1 cr, max arr). Adv-level expressive skills. Graded P/F. Prereq: perm.

FL/LA 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/LA 404 (s) **Special Topics** (cr arr).

FL/LA 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/LA 461-462 Latin Lit of the Augustan Age (3 cr).

FL/LA 463-464 Latin Lit of the Republic (3 cr).

FL/LA 465-466 Latin Lit of the Silver Age (3 cr).

FL/LA 498 (s) **Proseminar** (1-3 cr, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/LA 499 (s) **Directed Study** (cr arr). Prereq: perm.

RUSSIAN

FL/RU 299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

SPANISH

FL/SP 181-182 Elem Spanish (4 cr). 181 satisfies core requirement J-3-a. Pronunciation, vocab, reading, spoken Spanish, and functional grammar.

FL/SP 183 Spanish Language Lab (1 cr, max arr). Elem and interm conversational skills. Graded P/F. Prereq: perm.

FL/SP 200 (s) **Seminar** (cr arr). Prereq: perm.

FL/SP 204 (s) **Special Topics** (cr arr).

FL/SP 281-282 Interm Spanish (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 182.

FL/SP 299 (s) **Directed Study** (cr arr). Prereq: perm.

FL/SP 381-382 Adv Spanish Grammar and Composition (3 cr). Recommended for prospective teachers of Spanish.

FL/SP 383-384 Hispanic Culture and Institutions (3 cr). Topics in Spanish-American civ.

FL/SP 385-386 Survey of Spanish Lit (3 cr).

FL/SP 387-388 Survey of Spanish-American Lit (3 cr).

FL/SP 389 Spanish Language Lab (1 cr, max arr). Adv conversational skills. Graded P/F. Prereq: perm.

FL/SP 391 Hispanic Film (3 cr). Genre, structure, and style of representative fiction and nonfiction films of Spain and Latin America. May be taken concurrently with FL/SP 282 with perm of instructor; may not be taken concurrently with FL/EN 391.

FL/SP 400 (s) **Seminar** (cr arr). Prereq: perm.

FL/SP 404 (s) **Special Topics** (cr arr).

FL/SP 449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

FL/SP 485-486 Contemporary Spanish Lit (3 cr).

FL/SP 487-488 Contemporary Spanish-American Lit (3 cr).

FL/SP 493 Spanish for Teachers (2 cr). Language and culture; pronunciation and diction.

FL/SP 498 (s) **Proseminar** (1-3 cr, max 12). May be graded P/F when grading system is uniform for all students in the class. Prereq: perm.

FL/SP 499 (s) **Directed Study** (cr arr). Prereq: perm.

FL/SP 500 Master's Research and Thesis (cr arr).

FL/SP 501 (s) **Seminar** (cr arr). Prereq: perm.

FL/SP 502 (s) **Directed Study** (cr arr). Prereq: perm.

FL/SP 504 (s) **Special Topics** (cr arr).

FL/SP 506 (s) **Workshop** (cr arr). Prereq: perm.

FL/SP 597 (s) **Practicum** (cr arr). Prereq: perm.

FL/SP 598 (s) **Internship** (cr arr). Prereq: perm.

FL/SP 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GENERAL COURSES

FL 200; 400 (s) **Seminar** (cr arr). Prereq: perm.

FL 204; 404 (s) **Special Topics** (cr arr). Prereq: perm.

FL 299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

CLASSICAL STUDIES (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
FL/EN 211-212 Classical Mythology	4
FL/EN 363-364 Lit of Ancient Greece & Rome	6
FL/GK 341-342 Elem Greek (or equiv)	8
FL/LA 161-162 Elem Latin or FL/LA 261-262 Intensive Latin (or equiv)	8
Additional Latin and/or Greek courses numbered above FL/LA 262 and FL/GK 342 (may incl up to 3 cr of adv lab courses in each language — FL/LA 369; FL/GK 349 other than basic skills)	18
At least eight credits chosen from the following	8
Aditional upper-div Latin and Greek courses (recommended for those seeking admission to graduate school)	
FL/EN 243 English Word Origins	
Anthr 230 World Prehistory	
Arch 385 History of Architecture	
Eng 441 Intro to the Study of Language	
Hist 441 Greek History	
Hist 442 Roman History	
Phil 309 History of Ancient Philosophy	

Related fields or minor as approved by major adviser

FRENCH (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
FL/FR 101-102 Elementary French (or equiv)	8
FL/FR 201-202 Intermediate French (or equiv)	8
Upper-division courses in French language	20
A second foreign language (elem and interm, or equiv)	16
Related fields (as approved by chair) or an approved minor in a related field	20

GERMAN (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
FL/GN 121-122 Elementary German (or equiv)	8
FL/GN 221-222 Intermediate German (or equiv)	8
Upper-division courses in German language, lit and culture, to include a minimum of 12 cr from the following (with at least one course from each sequence)	21
FL/GN 321-322 Adv German Grammar & Comp (3-6 cr)	
FL/GN 325-326 German Culture & Institutions (3-6 cr)	
FL/GN 327-328 Survey of German Lit (3-6 cr)	
A second foreign language (elem and interm, or equiv)	16
Related fields (see chair for list of suggested courses) or an approved academic minor in a related area	20

LATIN (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
FL/LA 161-162 Elementary Latin (or equiv)	8
FL/EN 243 English Word Origins	2
FL/EN 364 Literature of Rome	3
Hist 442 Roman History	3
Upper-division courses in Latin	20
A second foreign language (elem and interm, or equiv)	16
Related fields or academic minor (as approved by chair)	20

SPANISH (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
FL/SP 181-182 Elementary Spanish (or equiv)	8
FL/SP 281-282 Intermediate Spanish (or equiv)	8
FL/SP 381-382 Advanced Spanish Grammar & Comp	6
FL/SP 383-384 Hispanic Culture & Institutions	6
FL/SP 385-386 Survey of Spanish Literature	6
FL/SP 388 Survey of Spanish-American Literature	3
Upper-division courses in Spanish language	3
A second foreign language (elem and interm, or equiv)	16
Related fields (as approved by chair)	16

FOREIGN LANGUAGES (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
One foreign language, incl 20 cr at the upper-div level	36

And one of the following options:

A. BUSINESS OPTION

Designed to provide the student majoring in foreign languages with a liberal arts background and a component of business courses that will form a good beginning for entering a program leading to the degree of Master of Business Administration.

Course	Credits
Acctg 395 Fundamentals of Acctg or 201-202 Prin of Acctg and Managerial Acctg	4-6
Bus 301 Financial Management	3
Bus 311 Intro to Management	3
Bus 321 Marketing	3
Bus 350 Mgt Information Systems	3
Bus 474 Internatl Bus or Bus 475 Internatl Marketing or Econ 474 Internatl Econ or Econ 477 Econ of Developing Countries	3
CS 100 Intro to Computers & Programming or CS 112 Intro to Problem Solving & Programming	3
Econ 272 Foundations of Econ Analysis or 151, 152 Prin of Economics	4-6
Stat 251 Principles of Statistics	3
Electives (as approved by chair) to total 128 cr for the degree	--

B. COMPUTER SCIENCE OPTION

Designed to provide a student majoring in foreign languages with a liberal arts background and a component of computer science courses to prepare for admission to either the M.A.T. program in foreign languages or the M.S. program in computer science. This type of curriculum, involving competence in a foreign language as well as mathematical maturity, skill in the use of at least one programming language, and a basic knowledge of computer hardware, should also prove to be a fine background for developing interesting careers and/or graduate study in various fields, e.g., library science, international business, communications media, instructional media, and education.

Course	Credits
One modern language, incl 20 cr at the upper-div level or the following FL/EN 243 English Word Origins FL/GK 341-342 Elementary Greek FL/LA 161-162 Elementary Latin Upper-div Latin and/or Greek courses (18 cr)	36
CS 112 Intro to Problem Solving & Programming	3
CS 113 Program Design & Algorithms	4
CS 213 Data Structures	3
EE 340 Digital Computer Fundamentals	3
Math 176 Discrete Math	4
Math 180, 190 Analytic Geometry & Calculus	8
Math 330 Linear Algebra: Appl & Num Methods	3
Stat 251 Principles of Statistics	3
Electives to total 128 cr for the degree (incl at least 3 cr at upper-div level)	--

Academic Minor Requirements

CLASSICAL STUDIES MINOR

Course	Credits
FL/EN 211-212 Classical Mythology	4
FL/EN 243 English Word Origins	2
FL/GK 341-342 Elementary Greek	8
FL/LA 161-162 Elementary Latin	8
Courses chosen from the following Upper-division Latin or Greek FL/EN 363 Lit of Ancient Greece FL/EN 364 Lit of Rome	3

FRENCH MINOR

Course	Credits
FL/FR 101-102 Elementary French	8
FL/FR 201-202 Intermediate French	8
Upper-div courses in French (not incl lab-based and lit in translation courses)	9

GERMAN MINOR

Course	Credits
FL/GR 121-122 Elementary German	8
FL/GR 221-222 Intermediate German	8
Upper-div courses in German (not incl lab-based and lit in translation courses)	9

GREEK MINOR

Course	Credits
FL/GK 341-342 Elementary Greek	8
FL/GK 349 Adv Greek lab (other than basic skills)	1-3
FL/EN 211 and/or 212 Classical Mythology	2-4
FL/EN 363 Lit of Greece	3
Advanced Greek readings (400-level)	6-8
Courses to total 25 credits for the minor chosen from the following Additional upper-division Greek courses FL/EN 243 English Word Origins FL/EN 364 Literature of Rome Hist 441 Greek History Phil 309 Ancient Philosophy	--

LATIN MINOR

Course	Credits
FL/LA 161-162 or 261-262 Elem or Intensive Latin	8
FL/LA 369 Advanced Latin Lab	1-3
FL/EN 243 English Word Origins	2
FL/EN 364 Lit of Ancient Rome	3
Adv Latin readings (300- or 400-level)	6
Courses to total 25 credits for the minor chosen from the following Additional Latin reading courses at 300- or 400-level (especially recommended for prospective teachers of Latin) FL/EN 211-212 Classical Mythology FL/EN 363 Lit of Ancient Greece Hist 442 Roman History	--

SPANISH MINOR

Course	Credits
FL/SP 181/182 Elementary Spanish	8
FL/SP 281-282 Intermediate Spanish	8
Upper-div courses in Spanish (not incl lab-based and lit in translation courses)	9

Department of Forest Products

Ali A. Moslemi, Dept. Head (102D FWR Bldg.). Faculty: Alton G. Campbell, Thomas M. Gorman, Robert L. Govett, Leonard R. Johnson, Harry W. Lee, Ali A. Moslemi, H. Peter Steinhagen. Adjunct Faculty: Louis L. Edwards, Robert P. Lottman, George M. Simmons. Affiliate Faculty: John G. Haygreen, Peter Koch, William F. Lehman, Herbert B. McKean.

Wood is a constant part of the lives of the people in this country and throughout the world. Nearly 80 percent of the material going into the construction of a home is wood based. It is also in the paper we use as newspapers, money, books, packaging, and countless other products of basic human need. For example, over three-fourths of the food packages in the average supermarket are made with wood fiber. In the U.S., every man, woman, and child consumes over 2,000 pounds of wood per year in the form of various products. This level of wood use is projected to double by the turn of the century. The forest products industries rely on a renewable resource — trees — to produce over 5,000 different products for shelter, communications, packaging, and chemicals. Wood not only provides the feedstock for product manufacture, it also supplies a large portion of the energy needed by these industries. Many wood-using industries generate more than 50 percent of their energy requirements from residues. The nation's pulp and paper segment of the industry is the largest cogenerator of electrical power, accounting for 40 percent of the cogenerated electricity produced in the U.S. This power is produced from a variety of byproducts such as waste paper and wood residue. A ton of dry waste paper has the energy equivalent

of two barrels of oil, and a cord of wood contains the energy equivalent of 2.7 barrels of oil.

The forest products industries employ nearly 1.5 million people and annually ship products valued at nearly $125 billion. This makes these industries among the largest in the U.S. A great deal of innovation and modernization is now taking place to attain a higher degree of efficiency. At present, the U.S. forest products industries are believed to be the world's low-cost producer of goods. These industries are also the largest exporters of wood and fiber products in the world. There is an excellent opportunity to substantially increase exports thereby contributing to a greater level of employment opportunities in the U.S. and abroad for forest-products graduates.

The programs of the Forest Products Department are designed to prepare students for rewarding careers in an array of forest-products industries. Outstanding careers await graduates of the department in such areas as logging engineering, log transport systems, pulp and paper manufacture, wood and fiber processing, business, and marketing aspects of the various industries. The department continually monitors the needs of the industries for which it provides skilled manpower. In addition to jobs in industry, UI graduates also obtain positions in a variety of governmental agencies and multinational corporations. Some graduates are working on large industrial development projects in various parts of the world.

The Department of Forest Products, which is in the College of Forestry, Wildlife and Range Sciences, cooperates with Washington State University's wood technology program, the University of Minnesota, and the region's large forest products industries in carrying out its program responsibilities. The department offers an option in harvesting technology leading to the B.S.For.Prod. degree. In addition, options are offered in wood science and engineering and in forest products business management and marketing. The latter two options also lead to the B.S.For.Prod. degree.

A cooperative program with the University of Minnesota allows the student to select a degree option in pulp and paper technology. Under this program, the student spends the first three years at UI. The senior year is spent at the University of Minnesota, but the degree is awarded by the University of Idaho. This program permits access to the professional courses at both universities.

Each of these four curricular options is designed to give the student a solid foundation so that graduates can function effectively in their fields and in society in general. A variety of facilities, such as a 2,000 PSI computerized hot press, testing machine, wood flaker, blender, microwave generator, dry kiln, and microcomputer lab, add special educational capabilities to the department.

Students who have earned the B.S.For.Prod. degree in any of the above four programs or related areas are eligible for graduate study. The department offers both master's and doctoral programs. A graduate student's program is tailor-made to the student's career goals and aspirations. A variety of industrial organizations and public agencies provide the funds and facilities for carrying out research and this allows the department to offer assistantships and fellowships.

Graduate work is often undertaken by students who desire to enter careers in teaching and research. In addition, the program is also recommended for students who plan to enter production management and marketing. Work at the master's level is designed to enhance the student's professional background and is often pursued by those with backgrounds in forestry, business management, engineering, and other fields.

The department maintains an active research program involving many projects and graduate students. For some students who plan to strengthen their background and enter the industrial and production fields, a nonthesis option at the master's level is available. Current research involves topics on solid wood products, fiber and particle products, harvesting systems, energy, wood chemistry, and fundamental research. The department cooperates with several institutions around the world, and international opportunities for faculty and student exchanges are being developed.

Forest Products Courses

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

Note: Courses numbered 460-471 are taught at the University of Minnesota. UM is on the quarter system; however, credits are listed in this catalog in equivalent semester hours.

ForPr 200 Seminar: Intro to Forest Products (1 cr). May not be taken for cr after 331 or by students who have attained jr standing. Survey of North American forest products industry with emphasis on Intermountain West; overview of both wood mfg and forest engr, incl forest harvesting and road construction. Two to four half-day field trips.

ForPr 203 (s) **Workshop** (cr arr). Prereq: perm.

ForPr 204 (s) **Special Topics** (cr arr).

ForPr 230 Forest Land Measurements (2-3 cr). Public Land Survey System; pacing, chaining; traverse with silva and staff compass; slope measurements; contour mapping; triangulation; and corner location. Third cr will involve coordinate systems and curve layout with transit during last five wks of semester. Prereq: Math 140.

ForPr 299 (s) **Directed Study** (cr arr). Prereq: perm.

ForPr ID331 Intro to Wood Technology (3 cr). Understanding wood as a raw material; technologies and quality requirements of major forest products; wood use for construction and paper products. Two half-day field trips.

ForPr 335 Primary Wood Products Processes (3 cr). Tech for manufacturing primary wood products; industrial tech involved in analyzing process flow; study of wood machining requirements; lumber manufacturing process. Prereq: jr standing.

ForPr 336 Intro to Wood Chemistry/Pulp and Paper (3 cr). Intro to chemistry of wood structure and its effect on the utilization of wood; intro to pulp and paper technology. Prereq: Chem 103 or equiv.

ForPr 337 Physical and Mechanical Properties of Wood (3 cr). Wood density; acoustical, thermal, electrical properties of wood; strength properties of wood. Prereq: 331 or perm.

ForPr 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

ForPr 400 (s) **Seminar** (cr arr). Prereq: perm.

ForPr 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

ForPr 403 (s) **Workshop** (cr arr).

ForPr 404 (s) **Special Topics** (cr arr).

ForPr 405 Pulp and Paper Technology (3 cr). Technological overview of chem and physical processes involved in conversion of wood into paper. Prereq: organic chem or perm.

ForPr 430 Forest Engr and Harvesting (3 cr) (330). Survey of logging equipment capabilities; intro to cable logging systems, road layout, and design; cost analysis of logging systems; dev of road and logging plans. Three days of field trips. Prereq: 230 or perm; CS 105 or equiv.

ForPr 431 Production and Cost Control in Timber Harvesting (3 cr). Intro to production planning and cost control for logging operations; dev and appl of machine rates and system production rates; breakeven analysis; machine replacement; timber sale appraisal; use of microcomputers in analysis. Prereq: 430 or equiv.

ForPr ID432 Low Volume Forest Roads (3 cr). Road classification; design of forest roads; constr tech; costing, environmental considerations, design project. Three days of field trips. Coreq: 430.

ForPr ID433 Forest Tractor System Analysis (3 cr). Planning, layout, and cost analysis of forest tractor systems, production estimating, machine capabilities, and options; layout project. Three days of field trips. Prereq: 430 or equiv.

ForPr ID434 Cable Systems Analysis (3 cr). Layout, planning, and design for cable logging systems; analysis of forces involved in cable logging; crew and terrain reqs; layout and design project; cost and equipment analysis. Three 1-day field trips. Prereq: 430 or equiv.

ForPr 435 Wood-Moisture Relationships and Drying (3 cr). Wood moisture content, shrinking and swelling, dimensional stabilization; theory and practice of drying lumber, veneer, particles, and fibers. Prereq: 331, 337 or perm.

ForPr 436 Plywood and Particleboard (3 cr). Alt/yrs. Properties, quality, manufacture, and use of veneer, plywood, and particleboard. Three 1-day field trips. Prereq: 331.

ForPr 437 Wood as a Structural Material (3 cr). Alt/yrs. Appl of mech behavior to wood and wood composites; structural consideration of wood materials, incl beams,

columns, fasteners, and miscellaneous structures. Two lec and one 3-hr lab a wk. Prereq: 337.

ForPr 438 Wood Chemistry (3 cr). Alt/yrs. Aspects of wood chem in relation to its appl, incl utilization of wood, wood residues, and pulping by-products; pulping chem, pulp bleaching, and cellulose derivatives. Prereq: organic chem.

ForPr 440 Energy from Wood (2 cr). Alt/yrs. Status and potential of wood as renewable energy resource; wood energy generating technologies used in the forest products industry and the residential home; environmental aspects of wood utilization for energy.

ForPr 450 Topics in Wood Technology (3 cr). Wood anatomy and wood ident; adhesion, preservation, biodeterioration, finishing, and coating of wood. Prereq: 331 or perm.

ForPr 460 Wood Industry Tours (1.3 cr; see headnote). Visits to a number of firms involved with various facets of forest products industry.

ForPr 461 Wood Fluid Relationships (2 cr; see headnote). Moisture in wood and its relationship to density and specific gravity, shrinking and swelling, elec properties, strength properties, thermoconductivity, sorption isotherms, dimensional stabilization, permeability and diffusion.

ForPr 462 Manufacturing Processes (2 cr; see headnote). Manufacture of wood-based products from systems point of view; input requirements, machinery selection, methods of econ comparison; technology related to lumber manufacture.

ForPr 463 Pulp and Paper Process Lab (2 cr; see headnote). Chem and mechanical pulping, pulp preparation, secondary fiber, de-inking, wet end additives; lab problems and exercises supplemented by lec. One lec and one hr of lab a wk.

ForPr 464 Pulp and Paper Process Calculations (2.7 cr; see headnote). Chem and physical process calculations; steady and unsteady state material and energy balances applied to pulping and papermaking processes.

ForPr 465 Pulp and Paper Process Operations (3.3 cr; see headnote). Application of prin of momentum, heat, and mass transfer to unit operations in pulp and paper industry; fluid transport; filtration, sheet forming, sedimentation, heat exchange, evaporation, gas absorption and stripping; distillation, leaching extraction, crystallization, humidification, and drying.

ForPr 466 Paper Engr Lab (1.3 cr; see headnote). Experiments designed to illustrate prin of momentum, heat, and mass transfer using the pilot-plant paper machine and coater.

ForPr 467 Coated Product Development (1.3 cr; see headnote). Coating process and products (primarily paper); theory, tech, and procedures for formulating and applying coatings; properties and uses of coated products.

ForPr 468 Senior Seminar (1.3 cr; see headnote). Current dev in forest products.

ForPr 469 Surface and Colloid Chem of Papermaking (2 cr; see headnote). Prin of surface and colloid chem applied to basic problems in pulp and paper manufacturing operations and products uses.

ForPr 470 Adhesion and Adhesives (2 cr; see headnote). Intro to adhesion; physicochem interactions at adhesive-adherend interface; polymer absorption; polymer structure and adhesive utility; wood as adherend; adhesive-wood interface; shelf-life of resins; curing; adhesive cohesion and performance; adhesives from renewable resources.

ForPr 471 Automatic Control Instrumentation (2.7 cr; see headnote). Control of machines and processes; linear feedback control; linking of physical and biol control systems; instrumentation for control systems and industrial dev studies.

ForPr 477 Topics in Forest Industries Mgt (3 cr). Applied mgt, marketing, trade, taxation, and corporate performance in wood products sector. Prereq: For 383, Bus 311, Bus 321, or perm.

ForPr 494 Models for Resource Decisions (4 cr). See For 494.

ForPr 496 Forest Products Seminar (1 cr). Contemporary problems relevant to the manufacture of wood products.

ForPr 498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

ForPr 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5, or perm.

ForPr 500 Master's Research and Thesis (cr arr).

ForPr 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of forest products industries; presentation of indiv studies on assigned topics. Prereq: perm.

ForPr 502 (s) **Directed Study** (cr arr). Prereq: perm.

ForPr 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

ForPr 504 (s) **Special Topics** (cr arr).

ForPr 522 Adv Forest Roads (3 cr). Alt/yrs. Field layout of L-line in a forest setting; curves; slope staking and clearing limits; lab analysis of soil for subgrade; lab analysis of gravel for surfacing; stability analysis; costing of alternatives. Prereq: 430.

ForPr WS530 Adv Wood Science (3 cr). WSU MSE 546.

ForPr 531 Adv Wood Technology (2-3 cr). Anatomical features of wood, incl fibers; methods of preparing woody tissues for study; physical properties of wood and their implications on technology. Prereq: 331, 336.

ForPr WS532 Basic Prin of Adhesion (3 cr). WSU MSE 547. Prereq: Met 418.

ForPr WS533 Reinforced Polymer and Wood-Based Composites (3 cr). WSU MSE 548.

ForPr 534 Adv Tech of Timber Harvesting Analysis (3 cr). Alt/yrs. Layout, planning, and cost analysis of timber harvesting systems using available computer analysis tech and prog; analysis of road cost and stability problems; cost control of logging operations. Two lec and one 3-hr lab a wk; three 1-day field trips. Prereq: 430 or equiv or perm.

ForPr WS535 Nondestructive Testing of Wood-Base Materials (3 cr). WSU MSE 549.

ForPr WS537 Parameters for Synthesis of Wood Composition Materials (3 cr). WSU MSE 550.

ForPr 538 Adv Wood Chem (3 cr) (536). Chem of woody tissues, incl lignin, cellulose, hemicelluloses, and other polysaccharides; lab work in analysis and chem of wood. Prereq: organic chem or perm.

ForPr 555 Primary Wood Processing and Project Feasibility Analysis (2 cr). Mech and tech aspects of sawmill industry; managerial and engr economy as a foundation for project feasibility analysis mgt and coordination of a group study of a sawmill feasibility project. Prereq: 331 and perm.

ForPr 577 Adv Topics in Forest Industries Mgt (3 cr). Appl of a variety of managerial, analytical, and scientific tech to ident, exam, and potential resolution of problems faced by firms in the forest products industry; students reqd to complete a number of case analysis for both written and oral presentation. Prereq: 331 and perm.

ForPr 595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

ForPr 597 (s) **Practicum** (cr arr). Prereq: perm.

ForPr 598 (s) **Internship** (cr arr). Prereq: perm.

ForPr 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

ForPr 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Curricular Requirements

FOREST PRODUCTS (B.S.For.Prod.)

Required course work includes the university requirements (see regulation J-3) and one of the following options:

A. WOOD SCIENCE AND ENGINEERING OPTION

This program area is designed for students interested in management and technical positions associated with the production of lumber, plywood, particleboard, and other solid wood and wood fiber products. The program offers the opportunity to develop a professional background in understanding wood as an industrial material. Courses include basic knowledge of the sciences, business, production engineering, and management. Students are preparing themselves for a variety of positions in the wood-processing industry.

Course	Credits
ForPr 200 Seminar: Intro to Forest Products	1
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 336 Intro to Wood Chem/Pulp & Paper	3
ForPr 337 Physical & Mechanical Properties of Wood	3
ForPr 430 Forest Engineering & Harvesting	3
ForPr 435 Wood-Moisture Relationships & Drying	3
ForPr 436 Plywood & Particleboard	3
ForPr 438 Wood Chemistry	3
ForPr 450 Topics in Wood Technology	3
ForPr 494 Models for Resource Decisions	4
ForPr 496 Forest Products Seminar	1
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
For 383 Econ for Natural Resource Managers or CE 486 Engineering Economy	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qualitative Analysis or Chem 114 General Chemistry	4-5
Chem 227, 278 Organic Chem I & Lab	4
Chem 372 Organic Chem II	3
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 151, 152 Principles of Economics or Econ 272 Foundations of Econ Analysis	4-6
ES 210 Engr Statics	3
Eng 317 Technical & Engr Report Writing	3
For 370 Principles of Forest Management	2
For 476 Forest Investment Analysis or ForPr 477 Topics in Forest Industries Mgt	2-3
FWR 101 Forestry Orientation	1
Math 180 Analytical Geom & Calculus I	4
Phys 210 Engineering Physics I	3

Stat 251 Principles of Statistics 3
Restricted electives 12
Electives to total 136 cr for the degree . . . . . --

B. TIMBER HARVESTING OPTION

This program area prepares students to work as managers and designers of logging operations in small timber harvesting firms, larger forest products companies, forest engineering consulting organizations, and government agencies. The program provides background in planning and design of harvesting plans and timber sales, supervision of logging crews, design and layout of roads, management of logging operations, and wood procurement. Other positions can be found in the areas of equipment development and marketing and as technical representatives for equipment companies.

For the business emphasis of this option, no more than 25 percent of the course work counted to the Forest Products degree may be taken in business courses (excluding Econ 251 and 252). Specifically, of the 136 credit hours required, at most 33 credits taken in business courses may be counted toward the degree.

Course	Credits
ForPr 200 Seminar: Intro to Forest Products	1
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 430 Forest Engr & Harvesting	3
ForPr 431 Production & Cost Control	3
ForPr 432 Low Volume Forest Roads	3
ForPr 433 Forest Tractor System Analysis	3
ForPr 434 Cable Systems Analysis	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Chem 111 Principles of Chemistry	4
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 151, 152 Principles of Economics or Econ 272 Foundations of Econ Analysis	4-6
Eng 313 Business Writing or Eng 317 Technical & Engineering Report Writing	3
FWR 101 Forestry Orientation	1
For 221 Forest Ecology	3
For 274 Forest Measurement Tech	1
For 275 Aerial Photo Interpretation	2
For 308 Forest Soil Management	3
For 374 Forest Mensuration	3
For 383 Economics of Conservation	3
Math 180 Analytic Geom & Calculus I	4
Phys 210 Engineering Physics I	3
Stat 251 Principles of Statistics	3
Social sciences and humanities electives	8-10

And one of the following emphasis areas:

Technical Emphasis

CE 211 Engineering Measurements	3
CE 316 Advanced & Route Surveys or CE 317 Land Surveying	2-3
CE 321 Hydrology	3
CE 482 Project Management Techniques	4
ES 210 Engineering Statics	3
ES 220 Engineering Dynamics	3
For 370 Principles of Forest Management	2
Math 190 Analytic Geom & Calculus II	4
Phys 211 Engineering Physics II	3
Electives chosen from the following	8-9
Chem 114 General Chemistry	
CE 460 Soil Mechanics	
CE 486 Engineering Economy	
EE 207 Intro to Electrical Engr	
ES 320 Fluid Mechanics	
ES 321 Thermodynamics	
ES 340 Mechanics of Materials	
Math 200 Analytic Geom & Calculus III	
Math 310 Ordinary Differential Equations	
Electives to total 136 cr for the degree	--

Resource Emphasis

ForPr 230 Forest Land Measurements	3
Bot 241 Systematic Botany	3
CE 317 Land Surveying	2
For 301 Wildland Ecology	4
For 324 Silviculture	3
For 462 Watershed Management	2
For 474 Forest Resource Inventories	2
For 494 Models for Resource Decisions	4
Electives chosen from the following	13
CE 321 Hydrology	
ES 210 Engineering Statics	
For 320 Dendrology	
For 367 Wildland Fire Management	
For 463 Watershed Analysis & Planning	
For 470 Forest Land Resource Planning	
For 476 Forest Investment Analysis	
For 477 Forest Harvest Scheduling	
For 484 Forest Policy & Administration	
Math 190 Analytic Geom & Calculus II	
Range 351 Elements of Range Management	
RcMgt 235 Sociology of Natural Resources	
WLF 390 Prin of Fish & Wildlife Ecology	
Electives to total 136 cr for the degree	--

Business Emphasis

ForPr 230 Forest Land Measurements	3
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 301 Financial Management	3
Bus 311 Intro to Management	3
Bus 332 Quantitative Methods in Business or CE 482 Project Mgt Techniques or For 494 Models for Resource Decisions	3-4
CE 317 Land Surveying	2
For 370 Prin of Forest Management	2
For 462 Watershed Management	2
Electives chosen from the following	11-12
Acctg 381 Financial & Admin Acctg	
Bus 265 Legal Environment of Business	
Bus 321 Marketing	
Bus 350 Mgt Information Systems	
Bus 370 Production/Operations Mgt	
Bus 412 Personnel Management	
Bus 414 Entrepreneurship	
Bus 415 Small Business Management	
Bus 441 Labor Relations	
Bus 474 or Econ 474 International Business	
ES 210 Engineering Statics	
For 476 Forest Investment Analysis	
For 477 Forest Harvest Scheduling	
Math 190 Analytic Geom & Calculus II	
Electives to total 136 cr for the degree	--

C. FOREST PRODUCTS BUSINESS MANAGEMENT OPTION

This program is designed for students who plan careers in the staff or line management of firms in the forest products industry. Graduates are prepared for positions in production management, marketing and distribution of wood products, and in the technical service and support areas of the forest products industry. Students focus on the production, distribution, and marketing of wood products from a combined technical and managerial perspective. The degree also provides a foundation for pursuing a graduate degree in business, for example, the M.B.A. or M.S.

Course	Credits
ForPr 200 Seminar: Intro to Forest Products	1
ForPr 230 Forest Land Measurements	2
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 336 Intro to Wood Chem/Pulp & Paper	3
ForPr 337 Physical & Mech Properties of Wood	3
ForPr 430 Forest Engr & Harvesting	3
ForPr 435 Wood-Moisture Relationships & Drying	3
ForPr 436 Plywood and Particleboard	3
ForPr 437 Wood as a Structural Material	3
ForPr 450 Topics in Wood Technology	3
ForPr 477 Topics in Forest Industries Mgt	3
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Acctg 381 Financial & Admin Acctg	3
Biol 201 Intro to the Life Sciences	4
Bus 265 Legal Environment of Business	3
Bus 301 Financial Management	3
Bus 311 Intro to Management	3
Bus 321 Marketing	3
Bus 332 Quantitative Methods in Business	3
Bus 350 Mgt Information Systems	3
Bus 370 Production/Operations Mgt	3
Chem 103 Intro to Chemistry	4
CommG 131 Fundamentals of Public Speaking	2
CS 100 Intro to Computers & Programming	3
CS 105 FORTRAN Programming for Engineers	2
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing	3
For 370 Prin of Forest Management	2
FWR 101 Forestry Orientation	1
Math 111 Finite Math	4
Math 160 Survey of Calculus	4
Phys 101 Fundamentals of Physical Science	4
Phil 101 Ethics	3
Stat 251 Principles of Statistics	3
Humanities or social science courses to satisfy regulation J-3	6
Electives to total 136 cr for the degree	--

D. PULP AND PAPER TECHNOLOGY OPTION

This innovative cooperative program allows the student to take advantage of courses at both UI and the University of Minnesota. Senior year courses are taken at the University of Minnesota while the student continues to register at UI. Graduates are prepared for employment in the pulp and paper industry as process engineers and this entry

position can lead to work in careers in pulp and paper mills in areas such as production engineering, plant supervision, and quality control. Salaries are similar to those of engineering graduates with the pulp and paper industry projecting good growth over the next two decades.

Course	Credits
ForPr 200 Seminar: Intro to Forest Products	1
ForPr 331 Intro to Wood Technology	3
ForPr 405 Pulp & Paper Technology	3
ForPr 438 Wood Chemistry	3
ForPr 462 Manufacturing Processes	2
ForPr 463 Pulp & Paper Process Lab	2
ForPr 464 Pulp & Paper Process Calculations	2.7
ForPr 465 Pulp & Paper Process Operations	3.3
ForPr 466 Paper Engineering Lab	1.3
ForPr 467 Coated Product Development	1.3
ForPr 468 Senior Seminar	1.3
ForPr 469 Surface & Colloid Chem of Papermaking	2
ForPr 471 Automatic Control Instrumentation	2.7
ChE 223 Material & Energy Balances	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem or Chem 114 General Chem	4-5
Chem 277, 278 Organic Chem I and Lab	4
Chem 302 Prin of Physical Chemistry	3
Chem 372 Organic Chemistry II	3
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 151-152 Principles of Economics	6
ES 210 Engineering Statics	3
ES 220 Engineering Dynamics	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
Eng 317 Tech & Engr Report Writing	3
FWR 101 Forestry Orientation	1
Math 180, 190, 200 Analytical Geom & Calc	11
Math 310 Ordinary Differential Equations	3
Phys 210, 211 Engr Physics I, II	6
Stat 301 Probability & Statistics	3
Electives to total 136 cr for the degree	--

Academic Minor Requirements

FOREST PRODUCTS MINOR

For students in business, engineering, forestry, or vocational education who wish to gain specific background and knowledge related to the forest products industry.

Course	Credits
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 336 Intro to Wood Chem-Pulp & Paper	3
ForPr 337 Physical & Mech Properties of Wood	3
ForPr 430 Forest Engr & Harvesting	3
For 370 Prin of Forest Management	2
One of the following courses	3
ForPr 431 Production & Cost in Timber Harvesting	
ForPr 450 Topics in Wood Technology	
ForPr 477 Topics in Forest Industries Mgt	

Department of Forest Resources

Charles R. Hatch, Dept. Head (203B FWR Bldg.). Faculty: David L. Adams, George H. Belt, Jr., Brian C. Dennis, Lauren Fins, Jo Ellen Force, Charles R. Hatch, John C. Hendee, Frederic D. Johnson, Leonard R. Johnson, Gary E. Machlis, Ronald L. Mahoney, Charles W. McKetta, E. Lee Medema, James A. Moore, Penelope Morgan, Leon F. Neuenschwander, Harold L. Osborne, Arthur D. Partridge, Marvin H. Robison, John A. Schenk (Assistant Dept. Head), Charles T. Stiff, Molly W. Stock, Karel J. Stoszek, Joseph J. Ulliman, David L. Wenny.

Forestry is "managing and using for human benefit the forest lands and natural resources that occur on and in association with forest lands." Forest management deals not only with the production of timber crops but also with the other plants, animals, soil, and water.

One-third of the nation's land area and 40 percent of Idaho's land area are forested. It is imperative that the managers of these lands and of the valuable resources thereon be properly prepared for the task of producing on a continuing basis the many goods and services desired and demanded by the population. With an ever decreasing forest land base and a steady increase in demand for forest products, the practice of forestry is rapidly becoming more complex. Present-day forest management, thus, requires professionals highly trained in a multidisciplinary approach that recognizes and applies the sociological and economic constraints on the biological bases of forestry.

The forest resources curricula not only provide students with a multidisciplinary education, but also the opportunity to emphasize areas of individual interest, such as computer applications in forestry, aerial-photo interpretation (remote sensing), silviculture, forest genetics and tree improvement, protection against insects, disease, and fire, and forest soils, by selective use of elective credits.

The college's well-equipped building in Moscow, along with the nearby experimental forest, nursery/greenhouse, and field campuses at McCall and Clark Fork, are among the excellent facilities available for instructional and research use.

The department offers programs leading to the degrees of Bachelor of Science in Forest Resources, with options in administration (business), management, and science; Master of Science (thesis and nonthesis options); Master of Forestry; and the Doctor of Philosophy, with a major in forestry, wildlife, and range sciences (administered at the college level for all departments).

The three specialty options in the forest resources undergraduate curriculum provide each student with an opportunity to select a course of study suited to his or her primary career goal. The forest management option is designed for the student who wants to emphasize his or her understanding of forest biology while learning the application of technical forestry principles to the operation of a forest. The science option provides flexibility of curricular programming for the student who has specific curricular objectives not readily obtainable under the management option. It is particularly attractive for the student who anticipates going on to graduate study. Entry into the science option requires a 2.5 grade point average, at least one semester in residence in the department, and petition to a committee of the department. The program for each student is individually designed by the student in consultation with and approval of the committee and appropriate advisers. The resources administration option combines basic forest biological skills with the business management and administrative skills necessary for resource decision positions in both public and private forestry. A library orientation session during the first semester on campus and a four-week summer camp following the sophomore year are required for all options.

Further information can be obtained from the department head (208/885-7952) or from the coordinator of graduate studies (208/885-6126).

Forest Resources Courses

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

For 102 Intro to Forest Mgt (1 cr). Intro to forestry, current management issues, timber and non-timber resources, ed and professional opportunities.

For 200 (s) Seminar (cr arr). Prereq: perm.

For 203 (s) Workshop (cr arr). Prereq: perm.

For 204 (s) Special Topics (cr arr).

For 205 Wildland Resource Conservation (3 cr). Not open to majors in the College of FWR. Concepts of forest and rangeland ecology; major resources of wildlands, prin of conservation and mgt application to wildlands. Two days of field trips.

For 206 Wildland Resource Conservation Lab (1 cr). Same as RcMgt 206. Descriptive survey of renewable natural resources; emphasis on Idaho's flora and fauna. Two hrs of lab a wk; three days of field trips. Coreq: 205.

For 208 Community and Urban Forestry (2 cr). Community or urban environment as affected by its included forest; forest components, benefits, liabilities, values, ordinances, and issues; mgt by selection, design, planting, care, and maintenance.

For 216 Tree Ident (2 cr). Not open to majors in the College of FWR. Ident, distribution, and econ value of important trees of western U.S.; emphasis on Idaho trees. One lec and one 2-hr lab a wk; one 1-day field trip.

For 221 Forest Ecology (3 cr). Same as Range 221. Ecological basis for the mgt of vegetation, especially forests. Prereq or coreq: general bot and perm.

For 235 Sociology of Natural Resources (2 cr). See RcMgt 235.

For 274 Forest Measurement Tech (1 cr). Field tech and theory of forest tree and stand measurements; inventory procedures. Accelerated last six weeks. Prereq: Math 140, Math 179.

For 275 Aerial Photo Interp of Renewable Natural Resources (2 cr). Quantitative and qual eval of aerial photos for planning and decision making in renewable natural resource mgt. One lec and one lab a wk. Prereq: college algebra.

For 299 (s) **Directed Study** (cr arr). Prereq: perm.

For 301 Wildland Ecology (4 cr). Same as Range 301. Ecological prin, methods, and concepts applied to forest, range, wildlife, and fishery mgt; ecological basis for integrated mgt of wildland. Four wks all-day lec/lab. Prereq: 221 and systematic bot.

For 303 Forest Resources Conservation (2 cr). Ecosystem approach to resource mgt on forest and range lands; mgt practices integrating timber, range forage, wildlife, fish, water, and rec resources, stressing prin that lead to their conservation. Two wks of all-day summer camp. Prereq: course in a biol sc.

For 305 Farm Forestry (2 cr). The farm woodlot; growing wood products; seasoning, preservation, use, and marketing of farm forest products; windbreak and shelterbelt planting; forestry in the econ of ag. Prereq: jr standing in ag.

For 308 Forest Soil Mgt (3 cr). Characteristics of forest soils; emphasis on mgt problems and solutions.

For 320 Dendrology (3 cr). Ident, classification, distribution, and associations of the important tree species of the U.S.; important regional shrubs. Two lec and two 2-hr labs a wk; two 1-day field trips. Prereq: systematic bot, 301.

For 324 Silviculture (3 cr). Cutting systems, cultural operations, and characteristics of important commercial species. Two lec and one 3-hr lab a wk; one or two 1-day field trips. Prereq: 301.

For 327 Elem Forest Tree Improvement (2 cr). Same as Genet 307. Basic genetic prin and practices. Two 1/2-day field trips. Prereq: general bot.

For 361 Farm and Natural Resource Appraisal (3 cr). See AgEc 361.

For 367 Wildland Fire Mgt (2 cr). Alt/yrs. Same as Range 367. Fire mgt based on wildland fuels, fire weather, and fire behavior; minor emphasis on fire hist, control, and use; effect of fire on the ecosystem. One 2-day field trip. Prereq: 301 or perm.

For 370 Prin of Forest Mgt (2 cr). Not open to majors in forest resources. Forest regions and industries; silvicultural prin and practices employed in timber production and use; interrelations between wood production and other uses of forest land.

For 374 Forest Mensuration (3 cr). Theory of log, tree, and stand measurements; elem forest sampling, variable probability sampling, growth studies. Three hrs of lec and one 1-hr recitation a wk. Prereq: 274, Stat 251, CS 105, and Math 160 or Math 180.

For 383 Econ for Natural Resource Managers (3 cr). Same as Ag Ec 383. Role of econ forces in resource analysis and conservation; planning of forest resource use by the firm and society. Prereq: Econ 151 and 152 or Econ 272.

For 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

For 400 (s) **Seminar** (cr arr). Prereq: perm.

For 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

For 403 (s) **Workshop** (cr arr). Prereq: perm.

For 404 (s) **Special Topics** (cr arr).

For WS415 Remote Sensing Applied to Terrain Eval (3 cr). WSU Soils 474. Prereq: basic remote sensing, physical geol, sr standing or perm.

For ID-J420/ID-J520 Tropical Dendrology/Ecology (3 cr). Distribution, physiognomy, and climate of world tropical and subtropical vegetation types; ident, ecology, and uses of major pantropical trees and associated vegetation. Cr earned in 520 by preparation of paper on a specific genus or species. Two lec and 4 hrs of lab a wk. Prereq: perm.

For 422 Artificial Regeneration (2 cr). Alt/yrs. Methods of seed collection, extraction, and storage; germination; field handling; planting; contracts; regeneration surveys. One lec and one 3-hr lab a wk; 3 days of field trips. Prereq: 324 and perm.

For 423 Forest Nursery Mgt (2 cr). Alt/yrs. Seeding ecophysiology; cultural practices for bareroot and containerized seedlings; eval of stock quality; nursery location and design considerations. One lec and one 3-hr lab a wk; two days of field trips. Prereq: 324.

For 426 Fire Ecology (2 cr). Alt/yrs. Same as Range 426. Cr will not be allowed in both 426 and 526; adv students should take 526. Fire-related synecology and autecology of dominant species in wildland habitats; effects of fire suppression, prescribed burning, and fire mgt. Five days of field trips. Prereq: 301 or equiv or perm.

For 427 Prescribed Burning Lab (2 cr). Alt/yrs. Same as Range 427. Fire use planning with emphasis on prep, execution, and eval. Eight days of field trips. Prereq: 367, sr standing, and perm.

For J458/J558 Agroforestry (2 cr). See Range J458/J558.

For 462 Watershed Mgt (2 cr). Hydrologic processes of forest and range lands; land mgt practices as they influence surface run-off and erosion.

For 463 Watershed Analysis and Planning (3 cr). Procedures and tech for analyzing the impact of land mgt practice on the hydrologic characteristics of forest catchments. Two lec and one 2-hr lab a wk. Prereq: 462 or perm.

For 464 Forest Pathology (3 cr). Alt/yrs. Pathology, symptomatology, and ident of causes of diseases and decays; disease control and prevention by means of silviculture, mgt, and use. One lec and two 3-hr labs a wk; occasional lab trip. Prereq: 301 or perm.

For 465 Forest Protection (2 cr). Key abiotic and biotic disturbance factors; causal relationships, forest dynamics interactions, effects on product or amenity value yields; mgt considerations; hazard predictions, silvicultural preventions and controls. Two days of field trips. Prereq: 324 or perm.

For 467 Applied Forest Ent (3 cr). Alt/yrs. Influence of insects on forestry practices and on the forest ecosystem; ident, ecology, survey, and control of major forest insect pests. Two lec and one 3-hr lab wk.

For 470 Intro to Forest Land Resources Planning (2 cr). Multiple-objective land-use planning concepts; current tech and methods applied to forest and range lands. Three days of field trips. Prereq: sr standing.

For ID472 Remote Sensing of Environment (3 cr). Current systems, data acquisition on ground and from remote locations, instrumentation, imagery interp and analysis, appl for natural resources.

For 474 Forest Resource Inventories (2 cr). Log scaling; defect determination in standing timber; fixed plot, variable plot, and 3-P sampling; cruise design and implementation; timber appraisal; regeneration, soil, downed woody fuel, watershed, and range surveys. Two 1-day field trips. Prereq: 275 and 374.

For 476 Forest Investment Analysis (2 cr). Timber mgt decisions for biol and financial production objectives; stand maturity, treatment feasibility, forest valuation and taxation, trade-offs with alternative land uses. Two lec and 1 hr of lab a wk. Prereq: 324, 374, 383, or perm.

For 477 Forest Harvest Scheduling (2 cr). Forest output flow regulation for sustained yield and financial objectives; simulation and optimization tech in timber planning, timber supply models, multiple-use interactions. Two lec and 2 hrs of lab a wk. Prereq: 476, 494, or perm.

For 478 Western Forestry Practices (1 cr). Field tour of coastal and transition forests; comparative analysis of differing forest mgt strategies and practices. One 8-day field trip. Prereq: sr standing or perm.

For 484 Forest Policy and Admin (2 cr). Same as Range 484. Eval of land and forest problems and policies in the U.S.; analysis of current conditions and policies; hist dev of govt and private agencies concerned with the admin of forest conservation prog. Accelerated first 11 weeks. Prereq: general econ.

For 494 Models for Resource Decisions (4 cr). Same as ForPr 494. Use of math models of resource systems to explore mgt strategy; problem analysis; systems concepts and optimization of resource allocation. Prereq: Math 160 or 180 and CS 105. Prereq or coreq: Stat 251 or equiv.

For ID-J496/ID-J596 Field Studies in Tropical Ecology and Dendrology (3 cr). Extensive three-wk field course in the tropics; emphasis on primary and secondary vegetation types, land-use problems, utilization of pantropical trees. Graded P/F. Prereq: J420/J520 and perm.

For 498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

For 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5, and perm.

For 500 Master's Research and Thesis (cr arr).

For 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq perm.

For 502 (s) **Directed Study** (cr arr). Prereq: perm.

For 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

For 504 (s) **Special Topics** (cr arr).

For 505 Fundamentals of Research (2-3 cr). Same as RcMgt 505. Objectives and tech of research; hist dev of the scientific method; prep of working plans; assembly, interp, and presentation of data; structure and use of scientific lit; prep of manuscripts. Enrollment limited to 15.

For 506 Interpretation of Natural Resource Research (2 cr). Eval of research lit and its translation into managerial terms; interpretation and presentation of data; tech transfer; prep and presentation of written and oral critiques of current research lit.

For WS511 Population and Quantitative Genetics (3 cr). WSU GenCB 511. Prereq: general genetics.

For ID520 Tropical Dendrology/Ecology (3 cr). See J420/J520.

For 521 Adv Forest Soils (3 cr). Alt/yrs. Wildland soils, relation to vegetation; emphasis may be varied according to the specific interests of students. Two lec and one lab a wk; one or two 1-day field trips. Prereq: perm.

For 523 Forest Community Classification (2 cr). Field course in structure and ident of undisturbed and disturbed forest communities; practice in habitat type delineation as applied in western U.S. Accelerated first nine wks; one lec and one 8-hr field lab a wk. Prereq: perm.

For 524 Quantitative Silviculture (2 cr). Quantifying site quality, measures of stand density, predicting forest growth and yield, simulation models, and use of simulation models in silvicultural prescriptions. Field trips.

For 525 Adv Silviculture (3 cr). Silvicultural systems and cultural practices; design of silvicultural prescriptions. Term project, field labs, and two days of field trips. Prereq: 324 and/or perm.

For 526 Fire Mgt and Ecology (3 cr). Alt/yrs. Same as Range 526. Cr will not be allowed in both 426 and 526. Integrating fire-related biol, ecological, physical, and technological info for land mgrs; autecology and synecology of dominant species in wildland habitats; natural role of fire; fire as a mgt tool. Seven days of field trips. Prereq: 301, 367, or perm.

For ID527 Forest Genetics (3 cr). Alt/yrs. Same as Genet 527. Appl of prin of genetics to the improvement of trees and silvicultural practices. Two lec and one lab a wk. Prereq: 324 and general genetics.

For ID528 Forest Tree Improvement (3 cr). Same as Genet 528. Alt/yrs. Practical problems and tech related to genetic improvement of forest trees. Two days of field trips. Prereq: 324 and general genetics.

For WS536 Modeling and Simulation of Ecological Systems (3 cr). WSU Cpt S 536.

For WS540 Cytogenetics (3 cr). Alt/yrs. WSU GenCB 540. Prereq: general genetics.

For ID555 Statistical Ecology (3 cr). Same as Stat 555. Alt/yrs. Stochastic models in ecological work; discrete and continuous statistical distributions, birth-death processes, diffusion processes; applications in population dynamics, population genetics, ecological sampling, spatial analysis, and ecological diversity. Prereq: Math 451.

For 558 Agroforestry (2 cr). See J458/J558.

For ID564 Adv Forest Pathology (2-4 cr). Alt/yrs. Field methods, lab tech, and original lit used in study of tree diseases and rots, organisms that cause them, and deterioration of wood products; seminar in selected problems in forest pathology and their relations to forest practices. Prereq: 464.

For 569 Adv Forest Entomology (3 cr). Alt/yrs. Methods and appl of biol and econ eval and control strategies of forest insect populations in relation to pest mgt progs. One 2-hr seminar and one 2-hr lab a wk; two 1-day field trips. Prereq: 467 or perm.

For ID&WS572 Adv Remote Sensing (2 cr). WSU Geol 594, R P 574, and Soils 574. Alt/yrs. Digital image processing systems applied to satellite and other remote sensing systems. Prereq: 472, CS 105 or perm.

For ID573 Adv Aerial Photo Interp (2-3 cr). Alt/yrs. Project planning; interp of vegetation, landforms, land use, disease and insect infestation, pollution, sequential changes, high-altitude-satellite imagery; mapping, photo-mensurational tech; multistage sampling, and special problems. One lec and one 2- or 4-hr lab a wk; two 1-day field trips. Prereq: 275 or equiv, or perm.

For 574 Adv Forest Mensuration (2 cr). Alt/yrs. Math and statistical prin and tech in determination of volume and growth of trees and stands; appl of sampling theory and correlation analysis. Prereq: 374 or equiv and course in statistical methods, preferably beyond the elem course.

For 575 Adv Forest Mgt (2 cr). Alt/yrs. Forest regulation; recent dev in applied forest mgt and important contributions in forest mgt.

For ID581-582 Adv Forest Econ (2 cr). 582 alt/yrs. Econ prin, legislation, and policies affecting forestry, particularly those bearing on the character and intensity of land use.

For 586 Social Ecology of Natural Resources (3 cr). See RcMgt 586.

For 589 Water Resources Seminar (1 cr). See Inter 589.

For 595 (s) **Problems in World Resources** (1-3 cr, max 3).

For ID596 Field Studies In Tropical Ecology and Dendrology (3 cr). See J496/J596.

For 597 (s) **Practicum** (cr arr). Prereq: perm.

For 598 (s) **Internship** (cr arr). Prereq. perm.

For 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

For 500 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Curricular Requirements

FOREST RESOURCES (B.S.For.Res.)

Required course work includes the university requirements (see regulation J-3) and one of the following options:

A. MANAGEMENT OPTION

Course	Credits
FWR 101 Forestry Orientation	1
For 102 Intro to Forest Mgt	1
For 221 Forest Ecology	3
For 235 Sociology of Natural Resources	2
For 274 Forest Measurement Techniques	1
For 275 Aerial Photo Interpretation	2
For 301 Wildland Ecology	4
For 308 Forest Soil Management	3
For 320 Dendrology	3
For 324 Silviculture	3
For 367 Wildland Fire Mgt or 464 Forest Pathology or 467 Applied Forest Entomology	2-3
For 374 Forest Mensuration	3
For 383 Econ for Natural Resource Managers	3
For 462 Watershed Management	2
For 465 Forest Protection	2
For 470 Intro to Forest Land Resources Planning	2
For 474 Forest Resource Inventories	2
For 476 Forest Investment Analysis	2
For 477 Forest Harvest Scheduling	2
For 478 Western Forestry Practices	1
For 484 Forest Policy & Administration	2
For 494 Models for Resource Decisions	4
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 272 Foundations of Econ Analysis or Econ 151, 152 Principles of Econ	4-6
Eng 317 Tech & Engr Report Writing	3
ForPr 230 Forest Land Measurements	2
ForPr 331 Intro to Wood Technology	3
ForPr 430 Forest Engr & Harvesting	3
Geol 101, 102 Physical Geology & Lab	4
Math 160 Survey of Calculus or 180 Analyt Geom & Calc	4
Range 351 Elements of Range Mgt or WLF 390 Prin of Fish & Wildlife Ecology	3
Range 351 or WLF 390 (course not taken above) or RcMgt 385 Resource Rec & Tourism Mgt or Geog 425 Mineral Land Mgt	3
Stat 251 Principles of Statistics	3
Library orientation	0
Electives in social sc and humanities (at least 3 in social sc and at least 6 in humanities)	10
Electives to total 136 cr	--

B. SCIENCE OPTION

Note: Admission to this option requires sophomore standing and petition.

Course	Credits
FWR 101 Forestry Orientation	1
For 221 Forest Ecology	3
For 274 Forest Measurement Tech	1
For 275 Aerial Photo Interpretation	2
For 301 Wildland Ecology	4
For 324 Silviculture	3
For 374 Forest Mensuration	3
For 474 Forest Resource Inventories	2
For 494 Models for Resource Decisions	4
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 272 Foundations of Economic Analysis	4
ForPr 230 Forest Land Measurements	2
Math 180 Analytic Geometry & Calculus I or Math 160 Survey of Calculus	4
Stat 251 Principles of Statistics	3
Library orientation	0
Social science electives	4
Humanities electives	6
Quantitative science electives	4
Natural/social science electives	21
Professional electives	14
Electives to total 136 cr	--

C. ADMINISTRATIVE OPTION

Course	Credits
FWR 101 Forestry Orientation	1
For 102 Intro to Forest Management	1
For 221 Forest Ecology	3
For 235 Sociology of Natural Resources	2
For 274 Forest Measurement Tech	1
For 275 Aerial Photo Interpretation	2
For 301 Wildland Ecology	4
For 308 Forest Soil Management	3
For 320 Dendrology	3
For 324 Silviculture	3

For 374 Forest Mensuration . . . 3
For 383 Econ for Natural Resource Managers . . . 3
For 470 Intro to Forest Land Resources Planning . . . 2
For 476 Forest Investment Analysis . . . 2
For 477 Forest Harvest Scheduling . . . 2
For 484 Forest Policy & Administration . . . 2
For 494 Models for Resource Decisions . . . 4
Acctg 201 Principles of Accounting . . . 3
Acctg 202 Managerial Accounting . . . 3
Biol 201 Intro to the Life Sciences . . . 4
Biol 203 General Botany . . . 4
Bus 301 Financial Management . . . 3
Bus 311 Intro to Management . . . 3
Chem 103 Intro to Chemistry . . . 4
CommG 131 Fundamentals of Public Speaking . . . 2
CS 105 FORTRAN Programming for Engineers . . . 2
Econ 272 Foundations of Economic Analysis . . . 4
Eng 317 Tech & Engr Report Writing or Eng 313 Business Writing . . . 3
ForPr 230 Forest Land Measurements . . . 2
ForPr 331 Intro to Wood Technology . . . 3
ForPr 430 Forest Engineering & Harvesting . . . 3
Geol 101, 102 Physical Geology & Lab . . . 4
Math 180 Analytic Geometry & Calculus I or Math 160 Survey of Calculus . . . 4
Stat 251 Principles of Statistics . . . 3
Library orientation . . . 0
Social science electives . . . 4
Humanities electives . . . 6
Forest protection electives . . . 2
Business management electives . . . 6
Multiple-use management electives . . . 5
Electives to total 136 cr . . . --

Forestry, Wildlife and Range Sciences (General)

John C. Hendee, Dean (202C FWR Bldg.); James R. Fazio, Assoc. Dean for Academics; Leon F. Neuenschwander, Assoc. Dean for Research.

Forestry, Wildlife and Range Sciences (General) Courses

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

FWR 101 Forestry Orientation (1 cr). Intro to forestry and related wildland mgt professions.

FWR 200, 409 (s) **Seminar** (cr arr). Prereq: perm.

FWR 203; 403 (s) **Workshop** (cr arr). Prereq. perm.

FWR 204; 404 (s) **Special Topics** (cr arr).

FWR 299; 502 (s) **Directed Study** (cr arr). Prereq: perm.

FWR 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

FWR 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, o: lab work. Prereq: sr standing in the College of FWR, GPA 2.5, and perm.

FWR 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

FWR 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

FWR 597 (s) **Practicum** (cr arr). Prereq: perm.

FWR 598 (s) **Internship** (cr arr). Prereq: perm.

FWR 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

FWR 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Academic Minor Requirements

FORESTRY, WILDLIFE AND RANGE SCIENCES MINOR

Course	Credits
For 205, 206 Wildland Resource Conservation and Lab	4
At least two of the following courses	4-6
For 370 Prin of Forest Management	
ForPr 331 Intro to Wood Technology	
RcMgt 287 Prin of Wildland Rec Management	
Range 351 Elements of Range Management	
WLF 390 Prin of Fish & Wildlife Ecology	
At least two of the following	4-6
For 383 Econ for Natural Resource Managers	
For 470 Intro to Forest Land Resources Planning	
For/RcMgt 235 Soc of Natural Resources	
RcMgt 386 Resource Rec & Tourism Planning	
At least one of the following	2-6
Fish 413 Fish Ecology	
For 208 Community & Urban Forestry	
For 216 Tree Identification	
For 221 Forest Ecology	
ForPr 335 Primary Wood Products Processes	
RcMgt 385 Resource Rec & Tourism Mgt	
RcMgt 387 Environmental Interp Methods	
Range 453 Range Inventory & Analysis	
WLF 445 Nongame Management	

The minimum number of credits for the minor is 18.

Genetics

Faculty: Dick L. Auld, Roger Blair, Lauren Fins, O. Clifford Forbes, Raymond J. Hoff, Geral I. McDonald, Gerald E. Rehfeldt, Raphael J. Steinhoff.

Though there is no genetics degree per se at the University of Idaho, many degrees emphasize genetics. Information about research programs, specifics of courses, and academic advising is available from any member of the genetics faculty.

Genetics Courses

Genet 106 Heredity and Man (2 cr). See Biol 150.

Genet 200 (s) **Seminar** (cr arr). Prereq: perm.

Genet 299 (s) **Directed Study** (cr arr). Prereq: perm.

Genet 307 Elem Forest Tree Improvement (2 cr). See For 327.

Genet 314 General Genetics (3 cr). See Biol 351.

Genet 315 Experimental Genetics (1 cr). See Biol 352.

Genet 320 Animal Breeding (3 cr). See AnSc 320.

Genet 400 (s) **Seminar** (cr arr). Prereq: perm.

Genet 421 Population Genetics (3 cr). See AnSc 421.

Genet J485/J585 Molecular Genetics I (3 cr). See Bact J485/J585.

Genet 499 (s) **Directed Study** (cr arr). Prereq: perm.

Genet 501 (s) **Seminar** (cr arr). Prereq: perm.

Genet 502 (s) **Directed Study** (cr arr). Prereq: perm.

Genet WS505 Population and Quantitative Genetics (3 cr). WSU GenCB 511. Prereq: 314 and 1 semester stat.

Genet 522 Stat Genetics (3 cr). See AnSc 522.

Genet 527 Forest Genetics (3 cr). See For 527.

Genet ID528 Forest Tree Improvement (3 cr). See For 528.

Genet 537 Physiological and Molecular Genetics (2-3 cr). See Biol 555.

Genet WS540 Cytogenetics (3 cr). Alt/yrs. WSU GenCB 540. Prereq: 314.

Genet WS550 Adv Cell Biology (3 cr). WSU GenCB 550.

Genet WS570 Plant Molecular Genetics (3 cr). WSU GenCB 570.

Genet WS592 Adv Topics in Cell Biology (1-3 cr, max 7). WSU GenCB 592.

Department of Geography

Harley E. Johansen, Dept. Head (210 Mines Bldg.). Faculty: Kang-Tsung Chang, Nancy B. Hultquist, Harley E. Johansen, Allan Jokisaari, Olen Paul Matthews, Scott E. Morris, Gundars Rudzitis, Sam M. W. Scripter.

Modern geography is a way to discover and explore the world around us and to learn how to use its land and other resources for the best purpose. Geography is also a way to understand the spatial variation in natural and human phenomena such as climate, vegetation, landscape, cultural diversity, and resource

management, and to use this understanding to predict future patterns. Today, geographers use their knowledge of locational patterns and their skills in spatial analysis and mapping to answer a wide range of questions in business, industry, planning, and other fields where locational decisions are common.

The geography program at UI is designed to prepare students for a variety of important and rewarding career opportunities. The Department of Geography, which is in the College of Mines and Earth Resources, offers programs leading to the degrees of Bachelor of Science in Geography and Bachelor of Science in Cartography (one of three cartography programs in the U.S.). The department also offers the major in geography (leading to the B.A. or B.S. degree) through the College of Letters and Science. Each of these degree programs is designed to provide a solid curriculum to prepare students for a growing employment market in applied geography and cartography. Students benefit from close contact with their instructors and hands-on experience in their course work and through internships with industries and agencies involved in geographic and cartographic activities.

The B.S.Geog. curriculum provides three specialty options and a general option for students who wish to design their own programs. The B.S.Cart. curriculum prepares students for careers in map design and production using both conventional and computer-generated teaching techniques. The department has a fully equipped cartography laboratory with a large-format process camera and darkroom, a plate maker, a phototypesetter, and a digitizer that is interfaced with both micro and mainframe computers. Computing equipment also includes color graphics terminals and a color ink jet printer. The specialty options and the cartography degree are directed toward identified areas of employment in applied geography. The B.A. and B.S. curricula in geography that are offered through the College of Letters and Science are less structured degree programs and have a liberal-arts orientation.

The B.S. Geog. and B.S.Cart. are the most appropriate degrees for students who plan to continue into graduate work. The Department of Geography offers both the Master of Science and the Master of Arts in Teaching (major in geography), and more information about these programs may be found in the Graduate Bulletin.

Although it is assumed that the equivalent of the undergraduate major is needed to start the program, certain requirements may be waived to maintain maximum flexibility. The student's preparation should include related courses in the natural resource sciences, social sciences, statistics, economics, and computer programming.

Faculty members in the department will be happy to answer questions about specific programs and courses. Prospective majors in geography or cartography should get in touch with the department head (telephone 208/885-6216).

Geography Courses

Geog 100 Man's Physical Environment (3 cr). Satisfies core requirement J-3-b. Natural environment of man; nature, distribution, and relationships of climate, landforms, oceans, vegetation, hydrography, and soils.

Geog 101 Man's Physical Environment Lab (1 cr). Satisfies core requirement J-3-b. Lab study relevant to Geog 100. One 2-hr lab a wk. Prereq or coreq: 100 or perm.

Geog 165 Human Geog (3 cr). Intro to geographical dimension in human behavior and how this is evident in population distribution, rural and urban land use, and social, econ, and political attributes of societies.

Geog 180-181-182 Spatial Graphics I, II, III (1 cr). Nontech; language of maps, aerial photography, and remote sensory imagery; understanding graphic symbol systems. Geog 180: earth as a sphere, globes and models, hist of maps and map-making, the round earth on flat paper. Geog 181: sources of primary (base) map data; basic topographic maps, geologic maps and block diagrams. Geog 182; thematic special-purpose maps, space-age maps, and graphics, atlases, map intelligence. Two lec and one 1-hr lab a wk for five wks. These courses may be taken in any order.

Geog 200 (s) **Seminar** (cr arr). Prereq: perm.

Geog 203 (s) **Workshop** (cr arr). Prereq: perm.

Geog 204 (s) **Special Topics** (cr arr).

Geog 240 Econ Geog (3 cr). Reciprocal relations between people and the earth environment within an econ framework; resource distribution, dev alternatives, movement; processing and industrialization, local to global perspective, theories and case studies.

Geog 250 World Regional Geog (3 cr). Satisfies core requirement J-3-d. Countries, regions, and peoples of the world; interrelationships between man and his physical and cultural environments.

Geog 299 (s) **Directed Study** (cr arr). Prereq: perm.

Geog 315 Geomorphology (3 cr). See Geol 335.

Geog 316 Processes in Glacial and Periglacial Environments (3-6 cr). See Geol 336.

Geog 325 Quantitative Geomorphology (3 cr). Process-oriented approach to geomorphic systems and quantitative analysis of force and resistance relationships that govern these processes. Prereq: 100 or Geol 101 or perm.

Geog 330 Urban Geog (3 cr). Theory and models of the functions, origin, dev, structure, and distribution of cities; land-use classification; geographic aspects of city planning. One 1-day field trip.

Geog 340 Business Location Decisions (3 cr). Locational decision making in primary, secondary, and tertiary industries; resulting patterns of industrial location; importance of location and impact of industries on other characteristics of communities as demonstrated by examples from each sector. One 1-day field trip. Prereq: 240 or Econ 151.

Geog 346 Transportation (3 cr). Structure of transportation systems and the role of these in spatial interactions; comparative advantages of air, water, highway, rail, and pipeline transport, and current dev in each mode.

Geog 360 Population Dynamics and Distribution (3 cr). Same as Soc 360. Effects of fertility, mortality, and migration on population size and distribution; demographic trends in U.S. and other societies and how these relate to econ, political, environmental, and other factors.

Geog 362 U.S. and Canada (3 cr). Regional and systematic geog; emphasis on contemporary problems. Two 1-day field trips.

Geog 364 Idaho and the Pacific Northwest (3 cr). Regional and systematic geog of the Northwest; emphasis on Idaho and contemporary problems. One 2-day field trip.

Geog 365 Political Geog (3 cr). Conceptual approach to manifestations of political activity at every org level; intro to basic ideas of politics, territory, and geographic environment.

Geog 370 Spatial Analysis (3 cr). Methodological need for analyses of spatial data; spatial stat; measurement of aggregation and concentration; description of areal distributions and gradients; regionalization tech; intro to computer appl for spatial data. Prereq: intro courses in physical sc and social sc and Stat 251 or equiv.

Geog 380 Cartography and Graphic Comm (4 cr). For the map-using professions (e.g., ag. engr, forestry, geosciences, planning). Map design and constr; maps as graphic comm devices, design and drafting processes for map creation and production. Two lec and 6 hrs of lab a wk.

Geog 400 (s) **Seminar** (cr arr). Prereq: perm.

Geog 401 Atmospheric Environment (3 cr). Weather, air masses, storms and associated phenomena, meteorological instruments, weather maps, forecasting; world's weather and climate types with emphasis on their effects on man. One 1-day field trip. Prereq: 100-101 or Geol 101-102, or perm.

Geog 403 (s) **Workshop** (cr arr). Prereq: perm.

Geog 404 (s) **Special Topics** (cr arr).

Geog ID420 Land and Resource Regulation (3 cr). Legal aspects of land-use control and resource mgt; methods of research in law libraries for planners and resource mgrs not trained as attorneys.

Geog 425 Mineral Land Mgt (3 cr). Same as Min 425. Acquisition of mineral rights on federal, state, and private land; emphasis on laws and regulations affecting mineral dev.

Geog 427 Decision-Making in Resource Mgt (3 cr). Impact of ecosystem analysis and conflicts over environmental quality control on conversation theory; econ, political, managerial, perceptual, and scientific factors in shaping decisions for allocating natural resources.

Geog C439 Comprehensive Urban Plan Dev (3 cr). For planning commission members, administrators, and elected officials. Relationship between urban process and environment and comprehensive urban plan dev; specific elements of most comprehensive plans as applied to situations and cases in one's home city or town.

Geog WS444 Environmental Impact Statement Assessment (3 cr). WSU Env S 444.

Geog 447 Rec and Tourism (3-4 cr). Changing relationship of rec to travel and tourism, domestic and international behavioral dynamics, trends, fads, spatial significance, econ and environmental impacts, measurement and planning tech. Registration for 4 cr requires an additional approved sem project.

Geog 470 Computer Mapping (3 cr). For the map-using professions (e.g., ag, engr, forestry, geosciences, planning). Line printer, coordinate plotter, and interactive video displays; tradeoffs between time, cost, precision, and graphic quality; types of maps represented; geographic base files and info systems; lab exercises with standardized

computer-mapping prog. One lec, 2 hrs of lab, and 4 hrs computer run prep a wk.

Geog 471 Adv Computer Mapping (3 cr). Continuation of Geog 470. Specialized displays of data geared to in-depth treatment of mapping progs in conjunction with stat packages, and cartographic projection capabilities; lab exercises. Prereq: 470.

Geog ID475 Geog Info Systems (3 cr). Computerized mgt of data organized on geog bases — mgt areas, admin areas, cities, counties, etc. — for decision making by planners, resource mgrs, and other public administrators; exercises in prep, computer processing, and eval of geo-coded data using existing GIS computer prog with interactive and batch capabilities. Prereq: course in computer prog or perm.

Geog 478 Interactive Carto-graphics (3 cr). Interactive production of colored maps and geostatistical graphics on CRT screens and ink-jet printer, primarily via microcomputer systems; capabilities for color; type sizes and styles; line, point, and area symbols; graphic detail, memory requirements, computing speed, software; geocoding; prog wrtg. Two hrs lec and 4 hrs lab a wk. Prereq: course in computing or perm.

Geog 480 Adv Cartography and Remote Sensing (3 cr). Problems in compilation, design, and production of complex thematic maps using state-of-the-art tech and materials; scribing, process photography, computer cartography, remotely sensed imagery, and printing and reproduction methods to produce a printed map. One lec and six hrs of lab a wk; one 2-day field trip. Prereq: 380 or perm.

Geog 485 Cartographic Production Tech (3 cr). Theory and practice of process (copy) camera for cartographic reproduction; line and half-tone photo, tray method film processing, pin registration, contact printing incl screening and color proofing, offset platemaking. Prereq: 380 or perm.

Geog 490 Trends in Geog (3 cr). Alt/yrs. Current themes; geog as a professional field; employment as a geographer; nature of research, research proposal prep. Prereq: adv study in geog.

Geog 491 (s) **Field Tech** (1-3 cr, max 6). Acquisition of data in the field; analysis, interp, and presentation of results of field investigations. May also be taken in conjunction with other geog courses. Prereq: perm.

Geog 492 Mineral Industry Case Studies (3 cr). See Min. 472.

Geog 497 (s) **Practicum** (1-6 cr, max 6). Practical on-the-job experience in applied geog and cartography; oral and written reports are presented in which the student reviews and constructively criticizes the experience gained.

Geog 499 (s) **Directed Study** (cr arr). Prereq: perm.

Geog 500 Master's Research and Thesis (cr arr).

Geog 501 (s) **Seminar** (cr arr). Prereq: perm.

Geog 502 (s) **Directed Study** (cr arr). Prereq: perm.

Geog 503 (s) **Workshop** (cr arr). Prereq: perm.

Geog 504 (s) **Special Topics** (cr arr).

Geog 505 Applied Climatology (3 cr). Climatic classifications, microclimatic investigations, instrumentation; impact of climate on ag, vegetation, and econ activities.

Geog 510 Seminar in Physical Geog (3 cr). Current research trends in physical geog; dev of theory and methodology; process and theoretical geomorphology, physical climatology, and geographic hydrology; resource-related applications of this research.

Geog 516 Adv Field Glaciology (3 cr). See Geol 536.

Geog 520 Land and Resource Regulation Seminar (3-6 cr, max 6). Current legal issues in land use control and mineral resource mgt. Prereq: 420 or 425 or perm.

Geog 525 Plant Geog (3 cr). See Bot 535.

Geog 526 Animal Geog (2 cr). See Zool J438/J538.

Geog 527 Seminar in Resource Geog (3 cr). Exam of spatial ramifications of resource issues; emphasis on fuel and non-fuel minerals and dev of spatial models used in evaluation process.

Geog 529 Regional Land-Use Planning (3 cr). Alternative regional goals, plans, structures, laws; spatial options; comparison of various domestic and foreign approaches and experiences; constr of models and scenarios of alternative proposals. One 2-day field trip.

Geog 530 Urban Systems and Structure (3 cr). Demographic, econ, settlement, and locational characteristics of communities; emphasis on small cities and towns. Prereq: 330, 360, or perm.

Geog WS541 Planning in Rural Environments (3 cr). WSU RP 541.

Geog WS544 Environmental Impact Statement Assessment (3 cr). WSU Env S 544.

Geog WS550 Methods and Processes in Regional Planning (3 cr). WSU RP 550.

Geog 570 Tech of Regional and Urban Analysis (3 cr). Theory and tech for studying regional and urban phenomena from the spatial perspective; spatial structure, data and relationships among variables; projections and forecasts; models of econ activity, population, land use and transportation. Prereq: 370 or Stat 251 or Math 451-452.

Geog 580 Cartography Seminar (3 cr, max 6). Survey of cartography as a discipline and its major areas of specialization; lit of cartography; areas of applied and theoretical research; philosophy of maps. Prereq: 380 or perm.

Geog ID585 Cartography for Planners (3 cr). Role of maps in the planning process, problems of the small planning agency with limited cartographic resources; prin and tech of large-scale map compilation from various source materials, incl aerial photographs; coordinate systems, multiple-use cartographic drafting, map duplication and reproduction processes, agency use of commercial firms for part or all of the map-making process. Two lec and one 3-hr lab a wk; one 1-day field trip.

Geog WS590 Special Topics in Regional Planning (1-3 cr). WSU RP 590.

Geog 595 Public Planning Participation (1 cr, max 2). Attendance at public-planning meetings followed by written and classroom critiques. Travel to nearby communities reqd for some meetings.

Geog 597 (s) **Practicum** (cr arr). Prereq: perm.

Geog 598 (s) **Internship** (cr arr). Practical, on-the-job experience with govt agencies or commercial establishments; oral and written reports are presented in which the student reviews and constructively criticizes the experience gained; salary may be received for services performed. Prereq: perm.

Geog 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

GEOGRAPHY (B.S.Geog.)

This program is offered through the College of Mines and Earth Resources. Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Geog 100, 101 Man's Physical Environment & Lab	4
Geog 165 Human Geography	3
Geog 180-181-182 Spatial Graphics	3
Geog 240 Economic Geography	3
Geog 250 World Regional Geog or Geog 362 U.S. & Canada or Geog 364 Idaho & Pacific Northwest	3
Geog 370 Spatial Analysis	3
Geog 380 Cartography & Graphic Comm	4
Stat 251 Principles of Statistics	3

And completion of one of the following options (a list of recommended electives may be obtained from the departmental office; students interested in pursuing graduate studies are advised to emphasize analytical techniques in their choice of electives):

A. PHYSICAL ENVIRONMENT AND EARTH RESOURCES OPTION

This option emphasizes the interaction between natural environmental systems and human activities. Students gain a knowledge of major issues in the utilization and management of earth resources as they relate to the natural environment. They also acquire the skills necessary to solve practical problems related to resource development.

Course	Credits
Geog 315 Geomorphology or Geog 325 Quantitative Geomorphology	3
Geog 401 Atmospheric Environment	3
Geog 491 Field Techniques	3
Courses chosen from the following	21
Geog 470 Computer Mapping	
Geog 475 Geographic Information Systems	
Geog 478 Interactive Cartographics	
Chem 103 Intro to Chem or Chem 111 Principles of Chem	
CE 218 Elementary Surveying	
CS 100 Intro to Computers & Programming or CS 105 FORTRAN Programming for Engr	
Eng 317 Tech & Engr Report Writing	
For 275 Aerial Photo Interpretation	
Math 140 Pre-calculus Algebra & Analytic Geom	
Math 160 Survey of Calculus	
Phys 113 General Physics	
Courses chosen from the following	6
Geog 316 Processes in Glacial/Periglacial Env	
AgE 351 Hydrology	
For 462 Watershed Management	
Geol 101, 102 Physical Geol & Lab	
Geol 409 Groundwater	
Geol 425 Sedimentology	
Soils 205 General Soils	
Electives to total 128 cr for the degree (geography cr must total at least 44)	

B. APPLIED ECONOMIC GEOGRAPHY OPTION

This option is designed to prepare students for employment opportunities in business and industry and also in the field of planning at the regional or community scale. It emphasizes the locational aspects of economic activity and economic decision making. Students will gain an understanding of geographical patterns of markets, transactions and trade, transportation, production and consumption, industrial processing, and other aspects of the spatial economy. With this option, most students can go on to complete master's degrees in business administration or geography within one year or move directly into a growing area of employment for the business-oriented geographer.

Course	Credits
Geog 330 Urban Geography	3

Geog 340 Business Location Decisions	3
Geog 346 Transportation	3
Geog 427 Decision-Making in Resource Mgt	3
Geog 475 Geographic Information Systems	3
Bus 321 Marketing	3
Econ 151, 152 Principles of Economics	6
Econ 430 Regional/Urban Economics	3
Eng 313 Business Writing or Eng 317 Tech & Engr Report Writing	3
Courses chosen from the following	9
Geog 470 Computer Mapping	
Geog 471 Advanced Computer Mapping	
Geog 478 Interactive Cartographics	
Geog 497 Practicum (internship with a company or agency)	
Bus 421 Marketing Research & Analysis	
Econ 321 Interm Microeconomic Analysis	
LArch 490 Regional Landscape Planning	
Math 180 Analytic Geom & Calculus I	
Math 326 Linear Programming	
Courses chosen from the following	9
Geog 360 Population Dynamics & Distribution	
Geog 365 Political Geography	
Geog 447 Recreation & Tourism	
AgEc 332 Econ of Agricultural Development	
AgEc 451 Land & Natural Resource Economics	
Bus 325 Retailing	
Econ 415 Market Power, Competition, & Govt Policy	
Econ 474 International Economics	
Econ 485 Environmental Economics	
Electives to total 128 cr for the degree	--

C. MINERAL PROPERTY AND LAND MANAGEMENT OPTION

This option is designed to provide a background in land-use decision making and land management. Emphasis is on mineral properties, but the techniques also apply to other resources. Courses include locational, socioeconomic, environmental, and legal aspects of land management to prepare the student for either employment or advanced study in this growing profession.

Course	Credits
Geog 315 Geomorphology or Geog 401 Atmospheric Environment	3
Geog 330 Urban Geography or Geog 360 Population Dynamics	3
Geog 420 Land & Resource Regulation or Geog 425 Mineral Land Mgt	3
Geog 470 Computer Mapping or Geog 475 Geog Information Systems or Geog 478 Interactive Cartographics	3
Geog 492 Mineral Industry Case Studies	3
AgEc 451 Land & Natural Resource Economics or Econ 430 Regional/Urban Economics or Econ 485 Environmental Economics	3
Bus 462 Real Property Appraisal	3
CE 218 Elementary Surveying	2
CS 105 FORTRAN Programming for Engr	2
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing or Eng 317 Tech & Engr Report Writing	3
Math 140 Pre-calculus Algebra & Analytic Geom	3
PolSc 451 Public Admin or PolSc 452 Admin Law	3
Approved geography electives	6
Electives to total 128 cr for the degree	--

D. GENERAL OPTION

For students interested in geography but not in one of the specialty options, this option allows them to design their own curricula with the approval of a geography faculty adviser.

Course	Credits
Math 140 Pre-calculus Algebra & Analytic Geom	3
Approved electives in geography	27
Approved electives to total 128 cr for the degree	--

GEOGRAPHY (B.A. or B.S.)

This program is offered through the College of Letters and Science. Required course work includes the university requirements (see regulation J-3), the general College of L & S requirements for either the B.A. or B.S. degree, and:

Course	Credits
Geog 100, 101 Man's Physical Environment & Lab	4
Geog 165 Human Geography	3
Geog 240 Economic Geography	3
Geog 250 World Regional Geography	3
Geog 380 Cartography & Graphic Communication	4
Geog 490 Trends in Geography	3
Geol 101, 102 Physical Geology & Lab	4
Geography electives (upper-division)	18
Related fields approved by the Dept of Geography	20

CARTOGRAPHY (B.S.Cart.)

This program is offered through the College of Mines and Earth Resources. It emphasizes graphic design and communication and both computerized and conventional techniques of production cartography. It provides extensive applied professional cartographic training and exposure to theoretical-research oriented aspects of the field. Students who complete this program should be capable of eventually occupying supervisory positions in graphic sections of organizations producing maps and allied graphic products. To provide these students with a realistic education, the department has developed a modern, fully equipped graphic arts laboratory (Cart-O-Graphics) that has the capacity to execute all necessary map-making functions from original drafting or scribing to press-ready printing plates. The laboratory provides talented and interested students with the opportunity to solve real cartographic problems, gaining professional experience, academic credit, and income.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Geog 100, 101 Man's Physical Environment & Lab	4
Geog 165 Human Geography	3
Geog 180-181-182 Spatial Graphics	3
Geog 250 World Regional Geog or Geog 362 U.S. & Canada or Geog 364 Idaho & Pacific Northwest	3
Geog 315 Geomorphology	3
Geog 370 Spatial Analysis	3
Geog 380 Cartography & Graphic Comm	4
Geog 470 Computer Mapping	3
Geog 475 Geographical Info Systems	3
Geog 478 Interactive Carto-graphics	3
Geog 480 Adv Cartography & Remote Sensing	3
Geog 485 Cartographic Production Techniques	3
Geog 497 Practicum	3-6
CE 211 Engr Measurements	4
CE 319 Photogrammetry & Photo Interp	3
CS 105 FORTRAN Programming for Engrs	2
Engr 101 Engr Graphics	2
Engr 313 Business Writing or Eng 317 Tech & Engr Report Writing	3
For 275 Aerial Photo Interp or For 472 Remote Sensing of Environment	2-3
Math 140 Pre-calculus Algebra & Analytic Geom	3
Math 160 Survey of Calculus or Math 180 Analytic Geom & Calc I	4
Psych 218 Intro to Research in Behavioral Sc	4
Stat 251 Principles of Statistics	3
Adviser-approved electives	5

Department of Geology and Geological Engineering

John H. Bush, Jr. Dept. Head (211 Mines Bldg.). Faculty: John H. Bush, Jr., Valerie E. Chamberlain, William B. Hall, James H. Hardcastle, Terry R. Howard, Peter E. Isaacson, Robert W. Jones, Maynard M. Jiller, Stanley M. Miller, James Oslensky, Dale R. Ralston, Roliand R. Reid, Peter L. Siems, Charles J. Smiley, Kenneth F. Sprenke, George A. Williams, Roy E. Williams. Adjunct Faculty: Earl H. Bennett II, Bill Bonnichsen, Roy M. Breckenridge, Charles R. Knowles, Roger C. Stewart.

Geology is the study of the origin and evolution of the earth, utilizing the principles of chemistry, physics, and biology and the unifying concepts of geologic time of uniformitarianism. The applied aspects of geology include the search for ores, industrial minerals, petroleum, coal, water, and other useful geologic materials. Geological engineering is the application of engineering principles to geologic problems. Hydrology is concerned with water: surface water, underground water, and water in the atmosphere. Geophysics is the scientific study of the earth using the methods of physics.

Bachelor's degrees are offered in geology and in geological engineering. Both programs emphasize field and applied aspects along with theoretical considerations. Both programs require effective use of English in written and oral reports. It is the goal of the department that our graduates not only be ready for immediate employment, but also that they have the broad education that will help them to grow professionally and advance through positions of greater responsibility during their careers.

The geology program provides the student with the necessary background courses in basic sciences and mathematics plus a spectrum of courses in the subdisciplines of geology, including mineralogy, petrology, paleontology, stratigraphy, structural geology, geomorphology, geochemistry, and geophysics. A liberal education is obtained through courses in the humanities and social sciences. Specialized elective courses can be chosen to prepare for various careers such as exploration for minerals or for petroleum; or in dealing with geological problems related to engineering; or in the search for, and management of, ground water; or for preparation for advanced studies in graduate school.

The geological engineering program provides a broad background in the engineering sciences plus specialized courses that integrate the principles of engineering with the principles of geology. Humanities and social science courses provide a liberal education. Groups of elective courses may be taken to prepare for specialization in geotechnical engineering, geophysical engineering, or mineral exploration.

A minor in geology is offered for students in allied fields who have an interest in geology. The minor curriculum can be tailored to meet the needs of individual students.

Laboratories are maintained for work in all of the basic courses, with large study collections of fossils, rocks, minerals, crystal models, ore suites, thin sections, polished sections, and topographic and geologic maps.

Equipment used in advanced courses includes rock sawing and polishing facilities, binocular microscopes, reflection and polarizing microscopes, photomicrographic apparatus, x-ray diffraction and fluorescence equipment, and an atomic absorption spectrophotometer. The electron microprobe of the Idaho Geological Survey is available to advanced students. Also available are several computers, resistivity survey equipment, seismographs, magnetometer, soil drilling and sample kits, water-level recorders, and a universal rock-testing machine.

Research laboratories are equipped for work in applied geochemistry, geophysics, petrology, economic geology, paleontology, photogeologic analysis, remote sensing, engineering geology, and geomechanics. Facilities for research in hydrology are also available in other divisions of the university.

Through the Glaciological and Arctic Sciences Institute, cooperative facilities for field training and research in British Columbia and Alaska are available in the disciplines of mining and exploration geology, geophysics, terrestrial photogrammetry, geomorphology, and glaciology.

The department offers Master of Science degrees in geology, hydrology, geophysics, and geological engineering. Theses are required in all these programs. Nonthesis programs include the Master of Natural Science and the Master of Arts in Teaching (major in earth science). The Doctor of Philosophy is offered in geology.

The undergraduate preparation expected of the entering candidates depends upon the degree sought. Candidates who do not have adequate preparation are admitted with the requirement that deficiencies be made up. Some of our most promising graduate students have come to us with bachelor's degrees in the humanities or social sciences. Deficiencies for master's candidates are determined by the major professor. The master's degrees in hydrology and geophysics are interdisciplinary and candidates are accepted from various fields of science and engineering; mathematics through Math 310 is required and other deficiencies will be determined by the major professor. There are no special requirements as to deficiencies of candidates for the Master of Arts in Teaching. Candidates for the Doctor of Philosophy in geology are expected to have earned a master's degree in geology.

BSU-ISU Cooperative Programs. The department cooperates fully with the earth science programs at Boise State University and at Idaho State University. Students interested in pursing bachelor's degrees in geology or geophysics at those institutions may take transferable preparatory courses at UI. The master's degree in geophysics at UI is fully cooperative and students may take courses or perform research at any of the three institutions.

Courses

GEOLOGICAL ENGINEERING

GeolE 200 (s) **Seminar** (cr arr). Prereq: perm.

GeolE 203 (s) **Workshop** (cr arr). Prereq: perm.

GeolE 204 (s) **Special Topics** (cr arr).

GeolE 299 (s) **Directed Study** (cr arr). Prereq: perm.

GeolE 301 Field Geol and Report Wrtg (6 cr). See Geol 301.

GeolE 400 (s) **Seminar** (cr arr). Prereq: perm.

GeolE 403 (s) **Workshop** (cr arr). Prereq: perm.

GeolE 404 (s) **Special Topics** (cr arr).

GeolE 409 Ground Water (3 cr). See Geol 409.

GeolE 410 Tech of Ground Water Study (3 cr). Same as Geol 410. Collection and analysis of field data for reconnaissance ground water studies.

GeolE ID428 Intro to Geostatistics (3 cr). Same as Stat and Min 428. Applications of random variables and probability in geologic and engr studies; regression, regionalized variables, spatial correlation, variograms, kriging, and simulation. Prereq: Stat 301.

GeolE ID&WS435 Intro to Geol Engr (3 cr). WSU C E 426. Appl of geol to engr problems; rock weathering; soil mechanics, fractures, landslide recognition; materials location; explosives; damsite and reservoir problems; earthquakes; route locations; requirements of a report for an engr project. Two lec and one 2-hr lab a wk; two 1-day field trips. Prereq: Geol 101-102 and Phys 113.

GeolE 436 Geol Engr Design (3 cr). Appl of engr and geol prin to analysis and design in constr industries. One 1-day field trip. Prereq: 435.

GeolE 440 Site Testing and Evaluation (3 cr). Geotechnical site investigation methods; decision analysis for site selection; data acquisition, analysis, and interpretation of geologic conditions; design considerations. Two lec and one 2-hr lab a wk. Prereq: Geol 101, ES 340.

GeolE 475 Mineral Deposits (4 cr). Occurrence, classification, and origin of metallic and nonmetallic econ mineral deposits. Three lec and one 3-hr lab a wk; one 3-day field trip. Prereq: Geol 253, 257, 345; recommended prep: Geol 386.

GeolE 476 Exploration Geol (3 cr). Same as Geol 476. Design of geol surveys and mineral exploration prog; integration and eval of geol, geochem, and geophysical exploration tech. Prereq or coreq: 475.

GeolE 485 Geochem Exploration (3 cr). See Geol 485.

GeolE 490 Mineral Resource Wastes and Mine Hydrology (3 cr). See Geol 490.

GeolE 491 Waste Mgt (3 cr). See Geol 491.

GeolE 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

GeolE 499 (s) **Directed Study** (cr arr). Prereq: perm.

GeolE 500 Master's Research and Thesis (cr arr).

GeolE 501 (s) **Seminar** (cr arr). Prereq: perm.

GeolE 502 (s) **Directed Study** (cr arr). Prereq: perm.

GeolE 503 (s) **Workshop** (cr arr). Prereq: perm.

GeolE WS524 Geophysical Engr (4 cr). WSU Geol 405.

GeolE ID535 Seepage and Earth Dams (3 cr). Same as CE 563. Prin of earth-dam design, failures, practical considerations in constr; prin governing the flow of water through soils. Prereq: perm.

GeolE 536 Adv Geol Engr Design (3 cr). Alt/yrs. Design and constr of structures in rock, incl tunnels, large underground openings, and slopes. Prereq: perm.

GeolE 537 Adv Topics in Geotech Engr (3 cr). Alt/yrs. Selected topics in geotechnical engr; emphasis on recent dev. Prereq: perm.

GeolE 540 Probabilistic Methods in Geological Engr (3 cr). Probabilistic methods applied to geological engr design; site selection and optimization, simulation tech, probabilistic stability analyses, and seismic risk assessment. Prereq: Stat 451 or equiv.

GeolE 563 Geohydrology (3 cr). See Hydro 563.

GeolE 578 Theory of Mineral Exploration (2 cr). Alt/yrs. Hist and dev of thought; stat methods; appl of geol studies in search for mineral deposits.

GeolE 589 Water Resources Seminar (1 cr). See Inter 589.

GeolE 597 (s) **Practicum** (cr arr). Prereq: perm.

GeolE 598 (s) **Internship** (cr arr). Prereq: perm.

GeolE 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GEOLOGY

Geol 101 Physical Geol (3 cr). Satisfies core requirement J-3-b. The earth, its composition, structure, and natural processes. Concurrent enrollment in 102 recommended. One 1-day field trip.

Geol 102 Physical Geol Lab (1 cr). Satisfies core requirement J-3-b. Lab study relevant to 101. Coreq: 101.

Geol 106 Historical Geol (3 cr). Satisfies core requirement J-3-b. Evolution of the physical earth, plants, and animals; tech used in interp of geologic hist. Concurrent enrollment in 107 recommended. One 1-day field trip.

Geol 107 Historical Geol Lab (1 cr). Satisfies core requirement J-3-b. Lab study relevant to 106. Coreq: 106.

Geol 200 (s) **Seminar** (cr arr). Prereq: perm.

Geol 203 (s) **Workshop** (cr arr). Prereq: perm.

Geol 204 (s) **Special Topics** (cr arr).

Geol 212 Prin of Paleontology (4 cr). Studies of morphology, classification of fossil groups, and utility of fossils in interpreting depositional environments and ages of sedimentary rocks. Three lec and one 2-hr lab a wk; one 1- to 2-day field trip. Prereq: 106.

Geol 253 Minerals and Rocks I (2 cr). Elements of crystallogrphy; properties, occurence, uses, ident, and classification of rock-forming minerals; intro to petrology. One lec and one 2-hr lab a wk. Recommended prep: high school chem or one sem of college chem.

Geol 257 Minerals and Rocks II (2 cr). Properties, occurrence, uses, ident, and classification non-silicate minerals; intro to petrology of sedimentary and metamorphic rocks and to economic mineral deposits. One lec and one 2-hr lab a wk. Recommended prep: 253 and high school chem or one sem of college chem.

Geol 259 Minerals for Metallurgists (1 cr). Ident and classification of minerals with emphasis on aspects of interest to met engrs. Accelerated. One lec and one 2-hr lab a wk. Prereq: perm.

Geol 275 Earth Materials (2 cr). Survey of origin and classification of minerals and rocks. May not be taken for cr by geol or geol engr majors. One lec and one 2-hr lab a wk. Prereq: 101, 102.

Geol 299 (s) **Directed Study** (cr arr). Prereq: perm.

Geol 301 Field Geol and Report Wrtg (6 cr). Same as GeolE 301. Field problems and methods; use of instruments; interp of field data; prep of reports based on field observations and interps. Three field trips. Accident and health insurance reqd. Prereq: 345 or perm.

Geol 323 Geol of Idaho and the Pacific Northwest (3 cr) (123). Geologic dev of geologic structures and present-day distribution of rocks and mineral deposits in Idaho and the Pacific Northwest. Two 1-day field trips. Prereq: 101 or Geog 100.

Geol 335 Geomorphology (3 cr). Same as Geog 315. Classification, recognition, origin, and significance of land forms; land form analysis in interp of geologic structure and hist. One 2-day field trip. Prereq: 101-102 or 106-107 or Geog 100-101 or perm.

Geol 336 Processes in Glacial and Periglacial Environments (3-6 cr). Same as Geog 316. Quantitative treatment using examples from regions of existing glaciers and permafrost. Two lec and one 3-hr lab a wk or (for 6 cr) 6-wk intensive field session in Alaska and Canada.

Geol 344 Geologic Spatial Methods (1 cr). Analysis of plansections and cross sections in geol.

Geol 345 Structural Geol (3 cr). Deformed rocks; mechanics of failure, recognition, description, classification, and genesis of folded and fractured rocks. Two lec and one 2-hr lab a wk; one 2-day field trip. Prereq: 101, 102, and 344.

Geol 365 Igneous and Metamorphic Rocks (3 cr). Petrology. Two lec and one 2-hr lab a wk; two 1-day or one 2-day field trips. Prereq: 253, 257, 386 and Chem 112 or 114.

Geol 386 Prin of Geochemistry (3 cr) (286). Physiochemical prin applied to geologic processes; phase equilibria in rock systems. Two lec and one 2-hr lab a wk. Prereq: 253, 275, or perm and Chem 111.

Geol 400 (s) **Seminar** (cr arr). Prereq: perm.

Geol 405 Earth Sc (4 cr). For earth sc teaching majors and minors. Earth and its place in the solar system, processes responsible for changes. Three lec and one 2-hr lab a wk; two 1-day field trips. Prereq: 101, 102, or Geog 100-101, or equiv.

Geol 409 Ground Water (3 cr). Same as GeolE 409. Occurrence, movement, and properties of subsurface water; intro to ground-water geol and hydrology. Two lec and one 2-hr lab a wk; one 1-day field trip. Prereq: 101, 102, and Math 111 or 140.

Geol 410 Tech of Ground Water Study (3 cr). See GeolE 410.

Geol 417 Adv Paleontology (3 cr). Fossil assemblage analyses and report wrtg; marine faunal assemblage 1st half sem; nonmarine floral assemblage 2nd half sem. Three 2-hr labs a wk; one 1-day field trip. Prereq: 212 or perm.

Geol J419/J519 World Regional Geol and Tectonics (3 cr). Exam of stratigraphy, orogenic episodes, and tectonics of selected areas around the world.

Geol 425 Sedimentology (3 cr). Environments and processes responsible for separation of clastic and nonclastic sedimentary rock materials; roles of transportation, deposition, incl situation and lithification. Two lec and one 2-hr lab a wk; one 2-day field trip. Prereq: 253, 257.

Geol 426 Stratigraphy (3 cr). Description, classification, distribution, and correlation of layered rocks; significance of stratigraphic analysis and geologic hist. Two lec and one 2-hr lab a wk; one 4-day field trip. Prereq: 425.

Geol 449 Geol of Industrial Rocks and Minerals (2 cr). Classification, occurrence, origin, prep, extraction, use, and econ of chiefly nonmetallic rocks and minerals of major importance to industry. Prereq: 253, 257.

Geol 451 Practicum in X-ray Diffraction (1 cr). Use of x-ray diffraction in ident of minerals; x-ray safety training reqd. Accelerated course; enrollment limited to 8. Graded P/F. Minimum of 20 hrs of practical exper. Prereq: 253, 257, and perm.

Geol 465 Optical Mineralogy (3 cr). Optical crystallography; ident of minerals by optical means. One lec and two 2-hr labs a wk. Prereq: 253, 257.

Geol 467 Petrography (3 cr). Description and classification of rocks by thin-section study. One lec and two 2-hr labs a wk. Prereq: 365, 465.

Geol 472 Mineral Industry Case Studies (3 cr). See Min 472.

Geol 476 Exploration Geol (3 cr). See GeolE 476.

Geol J484/J584 Adv Geochemistry (3 cr). Alt/yrs. Major and trace elements geochemistry of igneous, metamorphic, and sedimentary rocks. Cr earned in 584 by completion of term project. Two lec and one 3-hr lab a wk. Prereq: 365, 386.

Geol ID485 Geochem Exploration (3 cr). Same as GeolE 485. Prin of geochem tech in prospecting for mineral deposits; design, execution, and interp of geochem surveys. Two lec and one 3-hr lab a wk; two 1-day field trips. Prereq: 386, Chem 112.

Geol J488/J588 Isotope Geology (3 cr). Alt/yrs. Geologically useful radioactive isotopes; geochronology and isotopes as tracers. Cr earned in 588 by completion of term project. Two lec and one 3-hr lab a wk. Prereq: perm.

Geol 490 Mineral Resource Wastes and Mine Hydrology (3 cr). Same as GeolE 490. Treatment of mineral resource waste production and mgt; interaction of wastes and water after disposal in the environment under existing legal constraints.

Geol 491 Waste Mgt (3 cr). Same as GeolE and Hydro 491. Technological aspects of implementing regulations that govern the disposal of earth resource wastes under federal and state laws.

Geol ID492 Geologic Dev of North America (3 cr). Tectonic, magmatic, and sedimentary sequence studies of North American continent through time; concepts of metal and petroleum enrichment related to time and geol processes. One 7-day field trip. Coreq: 426.

Geol 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

Geol 499 (s) **Directed Study** (cr arr). Prereq: perm.

Geol 500 Master's Research and Thesis (cr arr).

Geol 501 (s) **Seminar** (cr arr). Prereq: perm.

Geol 502 (s) **Directed Study** (cr arr). Prereq: perm.

Geol 503 (s) **Workshop** (cr arr). Prereq: perm.

Geol WS511 Adv Topics in Paleontology (3 cr).

Geol ID515 Paleoecology (3 cr). Alt/yrs. Past environments; interrelation of physical and biol factors; changes in the physical environments of the past; their influence on distribution and evolution of organism, incl man.

Geol ID516 Methods in Paleontology and Biostratigraphy (3 cr). Methods of collection, prep, illustration of paleontologic data; prin of systematic paleontology; statistical-graphic presentation of biostratigraphic and paleontologic info. One lec and two 2-hr labs a wk; one 5-day field trip.

Geol ID518 Biostratigraphy (3 cr). Tech of correlation of sedimentary rock units and construction of relative time scale; concepts of evolution, extinction, biogeography, and animal assemblages through time. One 5-day field trip.

Geol 519 World Regional Geol and Tectonics (3 cr). See J419/J519.

Geol WS520 Adv Topics in Sedimentary Rocks (3 cr). Alt/yrs. Prereq: 425, 426.

Geol WS523 Adv Topics in Stratigraphy (3 cr).

Geol 525A Stratigraphic Paleobotany (3 cr). Alt/yrs. Fossil floras and floral successions; taxonomic problems; geologic ranges and past distributions of plant taxa; paleoecological interp; methods and correlation and dating by fossil plants. One 1-day and one 2-day field trips.

Geol WS525B Carbonate Depositional Systems (3 cr).

Geol ID526 Petrology of Carbonate Rocks (3 cr). Origin, classification, distribution, depositional environments, and diagenesis of modern and ancient carbonates; emphasis on petrographic analysis. Two lec and one 3-hr lab a wk; one 3-day field trip.

Geol ID527 Petrology of Clastic Rocks (3 cr). Origin, classification, depositional environments, and diagenesis of fragmental rocks, incl low-rank metasedimentary rocks; emphasis on petrographic rocks. Two lec and one 3-hr lab a wk; one 3-day field trip.

Geol WS528 Clastic Depositional Systems (3 cr). WSU 521.

Geol 536 Adv Field Glaciology (6 cr). Same as Geog 516. Adv quantitative treatment of glaciological problems carried out on selected glaciers of the Juneau Icefield, Alaska, or an alternative area in the Rocky Mountains or Cascades. Intensive 7-wk summer field session.

Geol WS541 Structural Analysis (3 cr). Alt/yrs. Prereq: 345.

Geol WS548 Tectonics (3 cr). WSU 540. Alt/yrs. Prereq: 345.

Geol WS550 Adv Mineralogy (3 cr). Alt/yrs. Prereq: 101, 102, and Chem 111.

Geol WS551 Ore Microscopy and Fluid Inclusion Analysis (3 cr). Alt/yrs. Prereq: 253, 257, GeolE 475.

Geol WS552 X-Ray Analysis in Geol (3 cr).

Geol WS560 Adv Igneous Petrology (3 cr). Prereq: 465.

Geol WS563 Igneous Petrogenesis (3 cr).

Geol ID565 Metamorphism (3 cr). Metamorphic minerals, rocks, processes, and facies; polymetamorphic rocks; recent dev in structural geometry. Two lec and one 3-hr lab a wk; one 2-day field trip. Prereq: 465.

Geol 566 Volcanic Geol (3 cr). Volcanoes, volcanic activity, petrology of volcanic rocks, and regiional problems in layered volcanic rocks. Two lec and one 2-hr lab a wk; one 5-day and one 1-day field trips. Prereq: 465.

Geol WS571 Geochemistry of Hydrothermal Ore Deposits (3 cr). Prereq: GeolE 475.

Geol WS573 Adv Topics in Econ Geol (2 cr). Alt/yrs. Prereq: GeolE 475.

Geol ID575 Adv Mineral Deposits I (3 cr). Ore mineralogy and fabric; sulfid phase equilibria.

Geol 576 Adv Mineral Deposits I Lab (1 cr). Ident of ore minerals; their textures, association, and paragenesis.

Geol 577 Adv Mineral Deposits II (3 cr). Modern concepts of the origin and geochem of metallic mineral deposits. Two lec and one 3-hr lab a wk; one 3-day field trip.

Geol WS581 Petrologic Phase Diagrams (3 cr). Prereq: course in metamorphic petrology.

Geol WS583 Introductory Geochemistry (3 cr). Alt/yrs. WSU 480. Prereq: Chem 111.

Geol 584 Adv Geochemistry (3 cr). See J484/J584.

Geol ID586 Adv Geochem Exploration (3 cr). Theory and use of colorimetric and instrumental analyt methods in mineral exploration; primary and secondary dispersion patterns; endogenetic and exogenetic behavior of indiv elements. Two lec and one 3-hr lab a wk. Prereq: 485.

Geol 587 Instrumental Tech in Geochem (3 cr). Modern instrumentation, incl x-ray fluorescence, gas chromatography, electron microprobe, atomic absorption, infrared and Mossbauer spectrometry applied to geochem problems. Two lec and one 3-hr lab a wk. Prereq: perm.

Geol 588 Isotope Geology (1 cr). See J488/J588.

Geol 589 Water Resources Seminar (1 cr). See Inter 589.

Geol ID590 Photogeol (3 cr). Manipulation and analysis of air photos for geologic info; photogrammetry; map prep and interp of stereo vertical and oblique air photos, some in color. One lec and two 3-hr labs a wk. Prereq: 335, 345, or perm.

Geol WS592 Interdisciplinary Research Topics in Geol (3 cr, max 6).

Geol 596 Adv Photogeol (3 cr). New research tech; use of special photographic and remote sensor imagery, such as color, infrared color, and multispectral scanner imagerh, incl satellite photos. One lec and two 3-hr labs a wk. Prereq: 590 or perm.

Geol 597 (s) **Practicum** (cr arr). Prereq: perm.

Geol 598 (s) **Internship** (cr arr). Prereq: perm.

Geol 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Geol 600 Doctoral Research and Dissertation (cr arr).

GEOPHYSICS

Geoph J420/J520 Exploration Geophysics (3 cr). Design and interpretation of geophysical surveys for exploration of metallic and nonmetallic mineral deposits; use of geophysics to solve exploration problems. Prereq: perm.

Geoph 421 Engr Geophysics (3 cr). See Min 421.

Geoph 422 Prin of General Geophysics (3 cr). Same as Min 422. Outline of geophysical methods used to investigate earth's interior. One 1-day field trip. Prereq: perm.

Geoph J423/J523 Seismic Stratigraphy (3 cr). Intro to seismic exploration with emphasis on stratigraphic interpretation; solution of geologic problems using seismic techniques; design of seismic surveys. Prereq: perm.

Geoph 489 (s) **Directed Study** (cr arr). Prereq: perm.

Geoph 499 (s) **Directed Study** (cr arr). Prereq: perm.

Geoph 500 Master's Research and Thesis (cr arr).

Geoph 501 (s) **Seminar** (cr arr). Prereq: perm.

Geoph 502 (s) **Directed Study** (cr arr). Prereq: perm.

Geoph 520 Exploration Geophysics (3 cr). See J420/J520.

Geoph 521 Mining Geophysics (3 cr). See Min 520.

Geoph 523 Seismic Stratigraphy (3 cr). See J423/J523.

HYDROLOGY

Hydro 491 Waste Mgt (3 cr). See Geol 491.

Hydro 500 Master's Research and Thesis (cr arr).

Hydro 501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Hydro 502 (s) **Directed Study** (cr arr). Prereq: perm.

Hydro 503 (s) **Workshop** (cr arr). Prereq: perm.

Hydro 563 Geohydrology (3 cr). Same as GeolE 563. Equations governing single fluid flow through saturated porous media under various geologic conditions; models, general relations between flow systems and water quality, and between surface and ground water. Prereq: Geol 409, Math 200, or perm.

Hydro 566 Geochem of Ground Water (3 cr). Nature and origin of dissolved constituents in ground water; modification of ground water quality through mineral processes and by human activities. Two lec and one 2-hr lab a wk. Prereq: Geol 409 or perm.

Hydro 568 Adv Geohydrology (3 cr). Analysis of problems that have confronted the geohydrologist since the inception of quantitative methods. Prereq: 563.

Hydro 569 Appl of Hydrogeol Concepts (3 cr). Appl of hydraulic and chem characteristics of well and aquifer systems to practical field problems.

Hydro ID572 Ground Water Mgt (3 cr). Hydrologic, economic, and legal factors controlling dev and mgt of ground water resources.

Hydro ID575 Design and Constr of Water Wells (3 cr). Analysis of geologic and engr factors important in design, constr, operations, and maintenance of water wells.

Hydro 577 Computer Applications in Geohydrology (3 cr). Numerical modeling of groundwater systems with particular emphasis on finite difference methods. Prereq: Geol 409, CS 105, or perm.

Hydro 597 (s) **Practicum** (cr arr). Prereq: perm.

Hydro 598 (s) **Internship** (cr arr). Prereq: perm.

Hydro 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

GEOLOGY (B.S.Geol.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Geol 101, 102 Physical Geology & Lab	4
Geol 106, 107 Historical Geology & Lab	4
Geol 200 Seminar	1
Geol 212 Principles of Paleontology	4
Geol 253, 257 Minerals & Rocks I, II	4
Geol 301 Field Geology & Report Writing	6
Geol 335 Geomorphology	3
Geol 344 Geologic Spatial Methods	1
Geol 345 Structural Geology	3
Geol 365 Igneous & Metamorphic Rocks	3
Geol 386 Principles of Geochemistry	3
Geol 425 Sedimentology	3
Geol 426 Stratigraphy	3
Geol 465 Optical Mineralogy	3
Geol 467 Petrography	3
Geoph 422 Prin of General Geophysics	3
Biol 201 Intro to the Life Sciences	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qualitative Analysis	5
Eng 317 Technical & Engr Report Writing	3
Math 160, 161 Survey of Calculus or Math 180, 190 Analytic Geom & Calculus	7-8
Phys 113-114-115-116 Gen Physics & Lab	8
Stat 251 Principles of Statistics	3

The equivalent of one year of college-level foreign language, one course in computer programming, and approved electives to total 134 credits for the degree.

GEOLOGICAL ENGINEERING (B.S.Geol.E.)

As part of a cooperative program with Oregon State University, Oregon resident students may enroll in this program and will **not** be charged out-of-state tuition by U.I.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
GeolE 200 Seminar	1
GeolE 301 Field Geology & Report Writing	6
GeolE 428 Intro to Geostatistics	3
GeolE 435 Intro to Geological Engineering	3
Geol 101, 102 Physical Geology & Lab	4
Geol 253, 257 Minerals & Rocks I, II	4
Geol 335 Geomorphology	3
Geol 345 Structural Geology	3

Geol 425 Sedimentology 3
Chem 111, 114 Prin of Chem and General Chem 8
CE 211 Engr Measurements 3
CE 486 Engineering Economy 3
CS 105 FORTRAN Programming for Engr 2
ES 210 Engineering Statics 3
ES 220 Engineering Dynamics 3
ES 320 Fluid Mechanics 3
ES 321 Thermodynamics & Heat Transfer 3
ES 340 Mechanics of Materials 3
Eng 317 Technical & Engr Report Writing 3
Math 180, 190, 200 Analytical Geom & Calculus 11
Math 310 Ordinary Differential Equations 3
Min 401 Rock Mechanics 3
Phys 210-211-212-213 Engineering Physics & Lab 8
Stat 301 Probability & Statistics 3
Humanities and social sciences electives 16

And one of the following areas of emphasis:

Geotechnical Engineering Emphasis

GeoIE 409 Ground Water 3
GeoIE 436 Geological Engineering Design 3
GeoIE 410 Tech of Ground Water Study or CE 321 Hydrology 3
Geoph 421 Engineering Geophysics 3
CE 460 Soil Mechanics 3
Approved technical electives 9

Geophysical Engineering Emphasis

GeoIE 409 Ground Water 3
GeoIE 436 Geological Engineering Design 3
EE 330 Electromagnetic Theory 4
ES 402 Applied Numerical Methods 3
Geophysics courses 9
Approved technical electives 6

Mineral Exploration Emphasis

GeoIE 475 Mineral Deposits 4
GeoIE 476 Exploration Geol or GeoIE 485 Geochemical Exploration 3
Geol 365 Igneous & Metamorphic Rocks 3
Geol 386 Prin of Geochemistry 3
Geoph 420 Exploration Geophysics 3
Min 450 Mine Planning I 3
Approved technical electives 6

The minimum number of credits for the degree is 134.

Academic Minor Requirements

GEOLOGY MINOR

Course	Credits
Geol 101, 102 Physical Geol and Lab	4
Geol 106, 107 Historial Geol and Lab	4
Geol 200 Seminar	1
Electives in geol, geoph, or geol engr	12

Division of Health, Physical Education, Recreation and Dance

Calvin W. Lathen, Acting Div. Director (101 Phys. Ed. Bldg.). Faculty: Damon D. Burton, Jess D. Caudillo, Dennis Doiny, Bonnie J. Hultstrand (Coordinator, Physical Education), James D. Karabetsos (Director, Campus Recreation), Calvin W. Lathen (Coordinator, Recreation), Dwaine J. Marten (Coordinator, HPE Minors), Ronald E. McBride, Randy M. Page, Elinor M. Preston, Sharon K. Stoll, Charles J. Thompson, Diane B. Walker (Director, Center for Dance), Dorothy B. Zakrajsek.

The Division of Health, Physical Education, Recreation and Dance is one of three divisions in the College of Education. The division offers a Ph.D. in education (sport pedagogy); master's degrees in recreation and physical education; baccalaureate degrees in dance, physical education, recreation, and sport science; several minors and options; basic instruction in numerous activities, and leisure activities through Campus Recreation.

The activity portion of the program is supported by outstanding facilities, which include three gymnasia, a dance studio, two pools, eight indoor tennis courts, eleven racketball courts, indoor and outdoor tracks, weight rooms, fitness trail, and expansive field and play areas.

The baccalaureate degree in dance prepares teachers and professionals in dance education, performance, and choreography. Students enrolled in this program are expected to participate in Dance Theatre.

The baccalaureate degree in physical education leads to elementary and secondary teaching certification and provides a foundation for athletic coaching. Physical education is concerned primarily with the art and science of human movement, principles and concepts relating to skill acquisition, and the effects of exercise on the body.

The baccalaureate degree in recreation prepares the student for recreation leadership roles in municipalities, agencies, institutions, and private industry. Students enrolled in this program complete a summer recreation internship.

The baccalaureate degree in sport science prepares students to work in the general areas of sport, exercise, and wellness. It is for students interested in professional opportunites that do not require teacher certification.

Minors offered by the division include: health education, health and driver education, dance, recreation, therapeutic recreation, municipal recreation, youth agencies, elementary physical education, secondary physical education, fitness/wellness, coaching, and athletic training.

Master's degree tracks include sport pedagogy and sport science in physical education and sport recreation management in recreation. A 2.8 undergraduate grade-point average is required for admission. Doctoral admission requirements can be obtained from the College of Education.

Courses

DANCE

Dan 105 (s) **Dance** (1 cr. max arr.). Same as PE 105. Modern, folk, ballet, jazz, square, and social dancing. Two hrs a wk. Graded P/F.

Dan 112 Social and Creative Dance Forms (3 cr). Rhythmic analysis, creative movement, structured dance, and teaching strategies. Five hrs of lec-lab a wk. Prereq: PE 111.

Dan 113 Problems in Dance Composition (1 cr, max 4). Various styles, choreography, movement quality, music, costuming, and staging. Two hrs a wk. Prereq: 105 or perm.

Dan 200 (s) **Seminar** (cr arr). Prereq: perm.

Dan 203 (s) **Workshop** (cr arr). Prereq: perm.

Dan 204 (s) **Special Topics** (cr arr).

Dan 220 Children's Dance (2 cr). Alt/yrs. Methods and resource material for teaching recreational and creative dance to elem school child and integrating dance into elem school curriculum.

Dan 299 (s) **Directed Study** (cr arr). Prereq: perm.

Dan 320 Labanotation (3 cr). Alt/yrs. Intro to methods of notating movement; notating and reading basic elements of motif writing and Labanotation.

Dan 321 Dance Pedagogy (2 cr). Methods and resource materials for teaching folk, square, social, and modern dance in secondary schools. Prereq: 112 or perm.

Dan 325 Dance Production (2 cr). Alt/yrs. Org and production of dance concerts; program planning, marketing, mgt, costume design, staging the production.

Dan 383 Dance Composition (1-2 cr, max 6). Improvisation and choreography using basic composition elements; adv exploration of choreographic procedures and performance. Prereq: 105 (modern I) and perm.

Dan 400 (s) **Seminar** (cr arr). Prereq: perm.

Dan 403 (s) **Workshop** (cr arr). Prereq: perm.

Dan 404 (s) **Special Topics** (cr arr).

Dan 420 Dance Accompaniment (3 cr). Recorded music, percussion, and electronic accompaniments used for contemporary dance. Prereq: perm.

Dan 421 Dance History (3 cr). Dev of theatrical, social, and ed dance from primitive to contemporary styles. Prereq: perm.

Dan 498 Practicum in Tutoring (1 cr, max arr). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Dan 499 (s) **Directed Study** (cr arr). Prereq: perm.

HEALTH & SAFETY

H&S 150 Health Sciences (3 cr). Contemporary health issues; medical breakthroughs.

H&S 200 (s) **Seminar** (cr arr). Prereq: perm.

H&S 203 (s) **Workshop** (cr arr). Prereq: perm.

H&S 204 (s) **Special Topics** (cr arr).

H&S 245 Intro to Athletic Injuries (3 cr). Special fee course. Athletic training; recognition, eval, general care of athletic injuries; adhesive strapping. Two lec and one lab a wk.

H&S 288 First Aid (2 cr). Emergency care of injuries resulting from accidents or illness; adv Red Cross first aid card given.

H&S 289 Drugs in Society (2 cr). Legal implications, values, and physical, social, and emotional factors involved in the use and abuse of drugs in society.

H&S 299 (s) **Directed Study** (cr arr). Prereq: perm.

H&S 316 School Health Services (2 cr). For elem classroom teachers.

H&S 323 Health Ed Methods (3 cr). Curriculum design, organization, strategies, and resource materials for teaching health education.

H&S 349 Adv Athletic Injuries (3 cr). Special fee course. Etiologic symptoms of sports-related injuries; diagnostic emphasis given to specific injuries of the extremities. Two lec and one lab a wk. Prereq: 245 or perm.

H&S 400 (s) **Seminar** (cr arr). Prereq: perm.

H&S 403 (s) **Workshop** (cr arr). Prereq: perm.

H&S 404 (s) **Special Topics** (cr arr).

H&S 410 Athletic Rehabilitation and Admin (1 cr). Rehabilitation tech for reconditioning following specific injuries and surgeries; admin topics incl facilities, budgeting, and legalities.

H&S 440 Driver Ed I (3 cr). Special fee course. Methods, org, and admin tech; dev of habits, attitudes, knowledge, and skills. In addition to lec, 6-10 hrs of practicum reqd during sem. Prereq: valid driver's license and perm.

H&S 449 Driver Ed II (3 cr). Continuation of 440. Adv prep in prin and practice of driver and traffic safety ed for teachers, supervisors, and adminstrators; emphasis on new and broader teaching competencies in traffic safety. Lab work and safety projects reqd. Prereq: 440, valid driver's license, satisfactory driving record, and perm.

H&S 498 Practicum in Tutoring (1 cr, max arr). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

H&S 499 (s) **Directed Study** (cr arr). Prereq: perm.

H&S 501 (s) **Seminar** (cr arr). Prereq: perm.

H&S 502 (s) **Directed Study** (cr arr). Prereq: perm.

H&S 503 (s) **Workshop** (cr arr). Prereq: perm.

H&S 504 (s) **Special Topics** (cr arr).

H&S 592 The School Health Prog (3 cr). For teachers and administrators. Well-balanced health prog; organization and admin; health services, healthful school living, and health instruction.

PHYSICAL EDUCATION

ACTIVITY COURSES

Note: PE 105, 106, 107, and 108 may be repeated for cr if the student engages in a different activity or level of the same activity. Practical tests may be given at the beginning of the sem to determine the student's level of ability.

PE 105 (s) **Dance** (1 cr, max arr). See Dan 105.

PE 106 (s) **Indiv and Dual Sports** (1 cr, max arr). Bowling, racket sports, fencing, golf, gymnastics, conditioning, backpacking, cycling, cross-country skiing, etc. Two days of field trips may be a part of the course requirements for such activities as backpacking, cycling, etc. Two hrs a wk. Graded P/F.

PE 107 (s) **Team Sports** (1 cr, max arr). Field sports, volleyball, basketball, and softball. Two hrs a wk. Graded P/F.

PE 108 (s) **Swimming** (1 cr, max arr). All levels of proficiency, incl life saving, diving, and scuba. Two hrs a wk. Graded P/F.

PROFESSIONAL COURSES

PE 111 Fundamentals of Movement (1 cr). Concepts, prin, kinesthetic patterns, and rhythmic structure related to physical activity. Two lec-labs a wk.

PE 112 Skill and Analysis: Archery and Bowling (1 cr). Knowledge of teaching progressions, tech, and analysis of skills and common errors in archery and bowling. Two lec-labs a wk.

PE 113 Skill and Analysis: Badminton and Racketball (1 cr). Knowledge of teaching progressions, tech, and analysis of skills and common errors in badminton and racketball. Two lec-labs a wk.

PE 114 Skill and Analysis: Basketball (1 cr). Knowledge of teaching progressions, tech, and analysis of offensive and defensive skills and strategy in basketball. Two lec-labs a wk.

PE 115 Skill and Analysis: Golf (1 cr). Knowledge of teaching progressions, tech, and analysis of correction of the golf stroke and game. Two lec-labs a wk.

PE 116 Skill and Analysis: Soccer (1 cr). Knowledge of teaching progressions, tech, and analysis of offensive and defensive skills and strategy in soccer. Two lec-labs a wk.

PE 117 Skill and Analysis: Tennis (1 cr). Knowledge of teaching progressions, tech, and analysis of skills and common errors in tennis. Two lec-labs a wk.

PE 118 Skill and Analysis: Track and Field (1 cr). Knowledge of teaching progressions, tech, analysis, and correction of skills in track and field. Two lec-labs a wk.

PE 119 Skill and Analysis: Volleyball (1 cr). Knowledge of teaching progressions, tech, and analysis of skills and strategy in volleyball. Two lec-labs a wk.

PE 120 Skill and Analysis: Wrestling (1 cr). Skill analysis, skill dev, and teaching tech in wrestling. Two lec-labs a wk.

PE 121 Group Play (1 cr). Teaching game skills and strategies for all ages incl "new games" and lead-up games. Two lec-labs a wk.

PE 160 Foundations of Physical Ed (2 cr). Aims and objectives, overview of prin, hist dev, and intro to profession and related fields.

PE 200 (s) **Seminar** (cr arr). Prereq: perm.

PE 201 Weight Training and Conditioning (1 cr). Basic components of physical fitness, prin, testing, measurement, and dev. Two lec-labs a wk.

PE 202 Skill and Analysis: Gymnastics (2 cr). Skill analysis, skill dev, spotting, and teaching tech in gymnastics. Six lec-labs a wk. Prereq: 111.

PE 203 (s) **Workshop** (cr arr). Prereq: perm.

PE 204 (s) **Special Topics** (cr arr).

PE 240 Elem School Physical Ed (3 cr). Current theory in curriculum and teaching methods with practical appl in lab and field exper. Four hrs of lec-lab a wk. Prereq: 111, Dan 112.

PE 243 Play and Game Theory (2 cr). See Rec 243.

PE 244 Lifesaving (1 cr). Students passing the Red Cross tests receive lifesaving certificates. Two hrs a wk. Prereq: interm swimming or perm.

PE 250 Elem Physical and Health Ed (3 cr). Content, methods, and materials in elem school physical ed and health for classroom teachers. Four hours of lec-lab a wk.

PE 260 Motor Learning (3 cr). Various physical, psych, and neurological factors as they influence the acquisition of motor skills. Four hrs of lec-lab a wk. Prereq: Zool 119 or perm.

PE WS261 Human Anatomy (3 cr). WS4 PEP 262.

PE 266 Aquatic Instructor's Course (2 cr). Methods. Students passing Red Cross tests will receive instructor's certificate. Three hrs a wk. Prereq: current lifesaving certificate and 18 yrs old.

PE 271 Interp of Physical Ed, Health, and Rec (3 cr). Importance of these related fields to general ed from the Greeks to the present day.

PE 280 Tests and Measurements (2 cr). Eval and interp; use of tests and other assessment devices; appl of basic stat procedures. Three hrs of lec-lab a wk.

PE 299 (s) **Directed Study** (cr arr). Prereq: perm.

PE 300 Human Kinesiology (2 cr). Body movement; anatomical and mech analysis. Three hrs of lec-lab a wk. Prereq: Zool 119.

PE 305 Applied Sports Psychology (3 cr). Overview of key psych issues in physical ed and sport incl competition, personality, anxiety, motivation, self-confidence, imagery, and stress mgt; practical applications of psych concepts of youth sports and dev of key psych skills for competition.

PE 310 Cultural and Philosophical Aspects of Sport (2 cr). Analysis of philosophic and anthropological phenomenon in sport.

PE 317 (s) **Recreational Skills** (1 cr, max 3). For elem and secondary school teachers and rec leaders, with basic skills and methods of teaching. Areas normally offered are fly fishing, marksmanship, and scuba. One lec and three hrs of lab a wk per cr. Students may enroll for more than one of the areas. Prereq: perm.

PE 320 Methods and Materials in Physical Ed (3 cr). Study and appl of teaching methods and teaching behavior; structuring learning outcomes through performance objectives; lesson and unit planning. Prereq: 240, 260; coreq: 321.

PE 321 Physical Ed Teaching Lab (1 cr). Appl of teaching styles and analysis of teaching behavior. Graded P/F.

PE 322 Teaching Indiv Sports (2 cr). Methods for majors and minors.

PE 323 Teaching Team Sports (2 cr). Methods for majors and minors. Prereq: 322.

PE 400 (s) **Seminar** (cr arr). Prereq: perm.

PE 403 (s) **Workshop** (cr arr). Prereq: perm.

PE 404 (s) **Special Topics** (cr arr).

PE J405/J505 Professional Development (cr arr). Cr earned may not be applied toward grad degree programs but may be accepted for fifth-yr certification. Professional dev in physical ed and sport professional personnel.

PE 418 Physiology of Exercise (3 cr). Effects of physical activity on the circulatory, respiratory, and other systems. Two lec and one 2-hr lab a wk. Prereq: Zool 119.

PE 424 Adapted Physical Ed (2 cr). Adapting physical ed progs to meet indiv needs.

PE 440 Prog Planning and Mgt (3 cr). Curriculum, programming, org, and admin of school physical ed and intramurals, field experience.

PE 450 Coaching Clinic (1-2 cr, max 2). Alternate summers. Procedures and tech in

coaching high school and college sports. Consult the summer bulletin for info.

PE WS466 Adv Athletic Training (1 cr). Prereq: H&S 245.

PE J467/J567 Physical Ed and Rec for the Severely Handicapped (3 cr). See Rec 467.

PE J493/J593 Fitness Assessment and Prescription (3 cr). Dev of skills in testing, analysis, and prescription for health related fitness. Cr earned in 593 by completion of additional assignments. Two lec and 2 hrs of lab a wk. Prereq: sr standing and perm.

PE 495 Internship in Physical Ed (9 cr). Supervised field work. Graded P/F. Prereq: jr standing and Rec 445.

PE 497 Sports and Athletic Problems (3 cr). Scheduling, facilities, equipment, maintenance, budgeting, and public relations in the school.

PE 498 Practicum in Tutoring (1 cr, max arr). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

PE 499 (s) **Directed Study** (cr arr). Prereq: perm.

PE 500 Master's Research and Thesis (cr arr).

PE 501 (s) **Seminar** (cr arr). Prereq: perm.

PE 502 (s) **Directed Study** (cr arr). Prereq: perm.

PE 503 (s) **Workshop** (cr arr). Prereq: perm.

PE 504 (s) **Special Topics** (cr arr).

PE 505 Professional Development (cr arr). See J405/J505.

PE 506 Foundations of Motor Skills (3 cr). Appl of psych, kinesiological, and mech prin for an understanding of motor activity.

PE 518 Adv Physiology of Exercise (3 cr). Prin and methods essential to the experimental approach to physiological performance problems. Two lec and one lab a wk.

PE 519 Biomechanics of Sport (3 cr). Quantitative study of human movement examining internal and external forces acting on the body and the resultant limitations to motor behavior.

PE 520 Hist of Physical Ed and Sport (3 cr). Cultural, phil, and comparative study of physical ed and sport throughout civ; emphasis on background influences on U.S. prog.

PE 522 Pedagogy Applied to Physical Ed (3 cr). Study and analysis of teaching strategies and behaviors as they affect teaching and learning in phys ed.

PE 544 Program Dev (3 cr). Developing physical ed and sport prog; emphasis on new methods and curriculum content. Two days of field trips may be required.

PE 550 Sport in Society (3 cr). Soc aspects of sport with emphasis on cultural impact of sport on society and vice versa; econ and politics of sports as they apply in American society.

PE 560 Sport Psych (3 cr). Indiv differences as they apply to sport performance; emphasis on aggression, affiliation, motivation, and personality traits of sport participant.

PE 567 Physical Ed and Rec for the Severely Handicapped (3 cr). See J467/J567.

PE 570 Ethics in Physical Ed and Sport (3 cr). Problem solving approach to current ethical problems in leisure, physical ed, and sport.

PE 571 Motor Eval of Handicapped (3 cr). Eval of motor ability of handicapped children using various test devices; scoring of tests, interpreting results, and planning remedial programs.

PE 572 Program Appl in Physical Ed and Rec for the Handicapped (3 cr). Dev of appropriate programs in physical ed for handicapped people; emphasis on planning for all children with use of individualized ed program.

PE 581 Research in Physical Activity, Theory, and Design (1-6 cr, max 6). Prin of scientific inquiry; appl to the study of physical activity; indiv research projects.

PE 591 Philosophical Influences in Sport (3 cr). Use of the philosophical process in analyzing problems and issues in leisure and sport.

PE 593 Fitness Assessment and Prescription (3 cr). See J493/J593.

PE 597 (s) **Practicum** (cr arr). Appl of theories and tech. Graded P/F. Prereq: perm.

PE 598 (s) **Internship** (cr arr). Supervised field experience in an appropriate public or private agency. Graded P/F. Prereq: perm.

PE 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

PE 600 Doctoral Research and Dissertation (cr arr).

RECREATION

Rec 102 Intro to Rec Professions (1 cr). Same as RcMgt 102. Intro to rec and its related mgt problems, resources, and professional opportunities. Graded P/F.

Rec 110 Rec for Special Populations (3 cr). Overview of rec for special populations with emph on history, etiology, characteristics, services, resources, professional competencies and opportunities, and rec programs. Two 1-day field trips may be reqd.

Rec WS181 Introduction to Hospitality Services Industries (3 cr. WSU H A 181.

Rec 200 (s) **Seminar** (cr arr). Prereq: perm.

Rec 203 (s) **Workshop** (cr arr). Prereq: perm.

Rec 204 (s) **Special Topics** (cr arr).

Rec 220 Rock Climbing (1 cr). Alt/yrs. Intro to fundamentals of basic rock climbing incl: equipment, climbing tech, knots, belaying, and rappelling; emphasis on skill dev, risk mgt, and leadership. Three off-campus field sessions.

Rec 221 Mountaineering (2 cr). Alt/yrs. Intro to fundamentals of mountaineering incl: equipment; fundamentals; rock, snow, and ice tech; climbing equipment; navigation; expedition planning and safety; emphasis on skill dev and safety. One 3-day field trip. Prereq: 220 or perm of instructor.

Rec 222 Cross Country Skiing (1 cr). Alt/yrs. Intro to skills of cross country skiing incl: equipment, waxing, climbing tech, turns, downhill, and diagonal glides. One 1-day field trip.

Rec 223 Winter Camping (2 cr). Alt/yrs. Intro to fundamental skills reqd to successfully travel in winter environment, incl: equipment, trip planning, avalanche awareness, snow shelters, travel tech, and safety incl psychological and physiological aspects of cold/winter weather. One 1-day and one 2-day field trips. Prereq: 222 or perm of instructor.

Rec 224 Whitewater Rafting (1 cr). Alt/yrs. Intro to skills of whitewater rafting incl: equipment, trip planning, permits, safety, river hazards and accidents, river reading and water situations, tech, self rescue, and river impact. One or two field trips.

Rec 225 Kayaking (1 cr). Alt/yrs. Intro to skills of whitewater kayaking incl: equipment, eskimo rolls, eddy turns, ferrying, rapid maneuvering, river hazards, and safety/rescue. One 2-day field trip.

Rec 230 Prin of Therapeutic Rec (3 cr). Philosophy, design, and dev of rec programs for persons with disabling conditions, as well as theory and rationale of therapeutic rec. Field exper reqd. Prereq: 110.

Rec WS235 Prin of Tourism (3 cr). WSU H A 235.

Rec 243 Play and Game Theory (2 cr). Same as PE 243. Play and game strategy for high and low organized activities. One lec and two labs a wk.

Rec 254 Camp Leadership (2-3 cr, max 3). Objectives, prog, and phil of private, org, and school camp programs. One 3-4 day field trip.

Rec 255 Backpacking and Camping Skills (2 cr). Lec, disc, dem, and practical appl in backpacking and camping skills. Field trips required. Prereq: perm.

Rec 256 Camp Counseling Practicum (2-3 cr, max 3). For camp counselors who are employed by or assigned to approved camps. Cr granted on the basis of one cr for each two wks of camping. Student contracts with instructor for written work. Prereq: perm.

Rec 258 Survival Skills (2 cr). Instruction, analysis, and practice of short- and long-term survival skills; developing student awareness of needs and values of survival training.

Rec 260 Leisure and Society (3 cr). Expanding role of leisure in U.S. life; emphasis on factors influencing leisure; analysis of leisure values as related to the indiv and society.

Rec 261 Rec Arts and Crafts (2 cr). Handicrafts suitable for playground. Prereq: perm.

Rec 264 Rec Music (1 cr). Musical program in rec and community centers.

Rec 270 Big Game Hunting Techniques and Safety (2 cr). Intro to safety, equipment, tech, and ethics of big game hunting.

Rec 280 Rec Practicum (1 cr, max 2). Practical exper in agency rec and leisure services. Forty clock hrs reqd a cr. Graded P/F. Prereq: perm of adviser.

Rec 299 (s) **Directed Study** (cr arr). Prereq: perm.

Rec 320 Outdoor Rec Leadership (3 cr). Alt/yrs. Theory and practice of outdoor leadership tech necessary for successful outdoor leaders. One 2-day field trip.

Rec 321 Wilderness Medicine and Evacuation (1 cr). Alt/yrs. Fundamentals of handling wilderness emergencies; instruction incl prevention, recognition, eval, treatment, and evacuation of injured people in remote situations. One 2-day field trip.

Rec 329 Leadership in Rec (2 cr). Alt/yrs. Org, planning, and conduct of school and community, social, rec, and extracurricular events.

Rec 330 Implications of Disabling Conditions (3 cr). Prevalent disabling conditions (incl etiology, symptomatology, and characteristics) and their implications for rec programming intervention in clinical and nonclinical settings. One or two field trips may be reqd. Prereq: 110.

Rec 340 Leisure and Tourism Organization (3 cr). Dev, promotion, and study of leisure enterprises and their relationship to tourism; case studies related to resorts, clubs, amusement facilities, attractions, and other leisure-related enterprises. Field trips may be reqd.

Rec 349 Municipal Park Admin and Maintenance (2 cr). Alt/yrs. Prin, practices, and problems involved in public park mgt; emphasis on maintenance, finances, and admin. Two 1-day field trips may be reqd.

Rec 360 Youth Serving Agencies (2 cr). Services, background, org, and admin structure. Three days of field trips may be reqd.

Rec 365 Rec for the Elderly (3 cr). Alt/yrs. Rec programming for the elderly based on aging process, cultural influences, and psych and soc aspects; visitation and field exper reqd.

Rec WS382 Hospital Mgt and Organization (3 cr). WSU H A 381.

Rec 400 (s) **Seminar** (cr arr). Prereq: perm.

Rec 403 (s) **Workshop** (cr arr). Prereq: perm.

Rec 404 (s) **Special Topics** (cr arr).

Rec J405/J505 Professional Development (cr arr). Cr earned may not be applied toward grad degree program. Professional dev and enrichment of recreational professionals.

Rec 420 Experiential Ed (2 cr). Phil and admin of adventure activities incl the Outward Bound methodology, initiative games, rope courses, obstacle courses, and risk sports; program dev and staff dev.

Rec J422/J522 Funding and Marketing in Rec Agencies (2 cr). Alt/yrs. Funding resources and marketing strategies for rec agencies such as grantsmanship, contractual agreements, fees and charges, and marketing. Credit earned in 522 by completion of additional assigments.

Rec 430 Problems in Therapeutic Rec (3 cr). Problems encountered in delivery of therapeutic rec services to clients with special needs incl discussion of service delivery models, current trends and research, and ident of funding sources. Prereq: 110 and 230 or perm.

Rec J431/J531 Medical Terminology (1 cr). Intro to basic concepts of medical terminology and symbols related to working with people with disabilities. Additional projects/assignments reqd for grad cr.

Rec 445 Professional Seminar in Rec (1 cr). Orientation to rec internship, professionalism, and employment tech incl dev of a vita and interviewing skills. Graded P/F.

Rec 460 Hist Dev of Rec, Leisure, and Play (3 cr). Alt/yrs. Study of American influences that shaped the dev of rec, leisure, and play.

Rec 467 Physical Ed and Rec for the Severely Handicapped (3 cr). Same as PE J467/J567. Adaptation of physical ed and rec programs for the severely handicapped. Prereq: 230 or perm.

Rec J486/J586 Rec Program Planning (3 cr). Alt/yrs. Planning and dev of rec programs for rec agencies. Credit earned in 586 by completion of additional assignments.

Rec J493/J593 Rec Admin (3 cr). Alt/yrs. Planning and dev; leadership, facilities, finances, services, and public relations. Credit earned in 593 by completion of additional assignments.

Rec 495 Internship Rec (cr arr). Supervised field work in professional rec. Graded P/F. Prereq: 280, 445.

Rec 498 Practicum in Tutoring (1 cr, max arr). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Rec 499 (s) **Directed Study** (cr arr). Prereq: perm.

Rec 505 Professional Development (cr arr). See J405/J505.

Rec 522 Funding and Marketing in Rec Agencies (2 cr). See J422/J522.

Rec 531 Medical Terminology (1 cr). See J431/J531.

Rec 586 Rec Program Planning (3 cr). See J486/J586.

Rec 593 Rec Admin (3 cr). See J493/J593.

Rec 594 Sport and Rec Budget and Finance (3 cr). Policies and practices involved in acquisition, control, and financial mgt in sport and rec agencies. Prereq: Acctg 201 or 395.

Rec 595 Sport and Rec Facility Mgt (3 cr). Mgt tech and philosophies applied to rec and sport facilities, incl operation, marketing, legislation and legal issues, personnel and technical design and planning. Field trips. Prereq: Bus 311.

Rec 596 Recreation and Sport Mgt Behavior (3 cr). Mgt behavior and strategies related to recreation and sport agencies, incl leadership, supervision, and a variety of administrative issues.

Rec 598 (s) **Internship** (cr arr). Supervised field experience in an appropriate leisure agency. Graded P/F. Prereq: perm.

Rec 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

DANCE (B.Dan.)

The curriculum leading to the degree of Bachelor of Dance is designed to give the student professional training in teaching, performing, choreography, and concert production.

Required course work includes the university requirements (see regulation J-3), and:

Course	Credits
Dan 105 Dance (incl modern, ballet, jazz, adv tech)	10-15
Dan 105 Dance Theatre	8
Dan 112 Social & Creative Dance Forms	3
Dan 113 Problems in Dance Composition	2
Dan 220 Children's Dance	2
Dan 320 Labanotation	3
Dan 321 Dance Pedagogy	3
Dan 325 Dance Production	2
Dan 383 Dance Composition	4
Dan 420 Dance Accompaniment	3
Dan 421 Dance History	3
Art 101 Visual Art	3
MusC 120 Fundamentals of Music (or 2 sem piano class)	2
MusH 100 Survey of Music	3
PE 300 Human Kinesiology	2
PE 418 Physiology of Exercise	3
Psych 205 or Ed 415 Dev or Ed Psych	3
ThA 103 Intro to Stage Crafts	3
ThA 105-106 Basics of Performance	4
ThA 373 Stage Lighting	3
Two of the following courses	6
Eng 111-112 Lit of Western Civilization	
Eng 325 Contemporary Lit for Nonmajors	
Eng 387 Modern European Lit	
Two of the following courses	2
MusA 114 Individual Instruction (piano or voice)	
MusA 145-146 Piano Class	
MusA 147-148 Voice Class	
MusA 149-150 Voice for Actors	

Recommended electives:

Dance majors planning to qualify for the Standard Secondary-School Teaching Certificate must include college requirements and the following courses among the electives to complete the 128 credits for the degree and should elect Ed 415, Ed Psych, above:

Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2-3
Ed 328 Audiovisual Aids	1
Ed 433 Practicum (3 cr in Ed 435 may be substituted for 3 of the 9 cr in Ed 433)	9
Ed 440 Methods of Teaching Content Reading	3
Ed 445 Proseminar in Teaching	1
Ed 468 Contemporary Education	3

PHYSICAL EDUCATION (B.S.Ed.)

The major in physical education leads to certification in grades 1-12. This requires six hours of Ed 431 and 3 hours of Ed 435. A current Red Cross first aid card is required upon graduation and a swim proficiency or PE 108 is required before graduation. Students who want K-12 certification must take Ed 322.

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level (including Zool 119), and:

Course	Credits
PE 111 Fundamentals of Movement	1
PE 121 Group Play	1
PE 160 Foundations of Physical Ed	2
PE 201 Weight Training & Conditioning	1
PE 202 Gymnastics	2
PE 240 Elem School Physical Ed	3
PE 260 Motor Learning	3
PE 280 Tests & Measurements	2
PE 300 Human Kinesiology	2
PE 310 Cultural & Philosophical Aspects of Sport	2
PE 320 Methods & Materials in Phys Ed	3
PE 321 Phys Ed Teaching Lab	1
PE 418 Physiology of Exercise	3
PE 424 Adapted Physical Ed	2
PE 440 Program Planning & Mgt	3
Dan 112 Social & Creative Dance Forms	3
H&S 150 Health Sciences	3
Team sports (select two from PE 114, 116, 119)	2
Individual/dual sports (select five from PE 112, 113, 115, 117, 118, 120)	5

And the satisfactory completion of one 20-credit teaching minor outside the Division of Health, Physical Education, Recreation and Dance.

Note: In exceptional cases, students who wish to complete a teaching major in a second field may have the above list of requirements reduced to 30 credits with the approval of the division.

A single-subject 60-credit major in physical education includes the above courses and a concentration in one of the following: athletic training, coaching, dance, elementary physical education, health education, health and driver education, fitness/wellness, sport psychology, or wellness. Obtain course listings in the division office.

RECREATION (B.S.Rec.)

This curriculum is primarily for students interested in careers in leadership, supervision, or management of recreation agencies. Required course work includes the recreation major, the university requirements (see regulation J-3), division requirements, and completion of an academic minor or 20 credits in an approved cognate area of study.

Course	Credits
Acctg 201 Principles of Accounting	3
Bus 265 Legal Environment of Business	3
Comm 352 Prin of Public Relations or Comm 431 Professional Presentation Tech	3
Dan 105 Square of Contemp Social/Swing	1
Eng 205 Adv Expository Writing or 313 Business Writing or 317 Tech & Engr Report Writing	3
Psych 205 Developmental Psychology	3
Four courses selected from PE 112, 113, 114, 115, 116, 117, 118, 119, 201, or 202	4-5
Aquatic course (lifesaving/WSI recommended)	1
Current certification in adv first aid and emergency care	

Elective to complete 128 cr for the degree . . . . . --

Recreation Core:

Rec 102 Intro to Recreation Professions 1
Rec 110 Recreation for Special Populations 3
Rec 260 Leisure and Society 3
Rec 329 Leadership in Recreation 2
Rec 349 Municipal Park Admin & Maintenance
(therapeutic rec students should contact
adviser for alternate course requirement) 2
Rec 365 Recreation for the Elderly 3
Rec 400 Seminar: Recreational Readings 2
Rec 400 Seminar: Recreation Problems 3
Rec 422 Funding & Marketing in Rec Agencies 2
Rec 445 Professional Seminar in Recreation 1
Rec 460 Hist Dev of Rec, Leisure, & Play 3
Rec 486 Recreation Program Planning 3
Red 493 Recreation Administration 3
Rec 495 Internship in Recreation 9
RcMgt 310 Leisure Services Research & Eval 3
Additional courses selected from the following 7
Rec 243 Play & Game Theory
Rec 254 Camp Leadership
Rec 261 Recreation Arts & Crafts
Rec 264 Recreational Music
Rec 349 Mun Park Admin & Maintenance (if not reqd above)
Rec 360 Youth Serving Agencies.

SPORT SCIENCE (B.S.P.E.)

Ths curriculum is for students interested in profesional opportunities that do not require teacher certification. Graduates will be prepared to work in the general areas of sport, exercise, and wellness or enter a graduate program. Required course work includes an approved minor or option/studies, the university requirements (see regulation J-3), and:

Course	Credits
PE 111 Fundamentals of Movement	1
PE 112-120, 202 Skill & Analysis electives	5
PE 160 Foundations of Physical Ed	2
PE 201 Weight Training & Conditioning	1
PE 260 Motor Learning	3
PE 280 Tests & Measurements	2
PE 300 Human Kinesiology	2
PE 310 Cultural & Philosophical Aspects of Sport	2
PE 320 Methods & Materials in Physical Ed	3
PE 321 Physical Ed Teaching Lab	1
PE 418 Physiology of Exercise	3
PE 495 Internship in Physical Ed	9
Chem 103 Intro to Chem or Chem 111 Prin of Chem (students electing athletic training option must take Chem 103)	4
CommG 131 Fundamentals of Public Speaking	2
Dan 112 Social & Creative Dance Forms	3
Econ 152 Principles of Economics	3
Eng 205 Adv Expository Writing or Eng 317 Tech & Engr Report Writing	3
H&S 150 Health sciences	3
H&S 288 First Aid	2
HEc 205 Concepts in Human Nutrition	3
Phys 113, 115 General Physics and Lab	4
Psych 100 Intro to Psychology	3
Rec 445 Professional Seminar in Rec	1
Zool 119 Human Anatomy & Physiology	5
Approved minor or option/studies (minimum)	18
Electives to complete 128 cr for the degree	--

Sport science options/studies are available in the following areas: athletic training, communication, business, exercise specialist, fitness/wellness, prephysical therapy, research, sport psychology, and wellness. Consult the director of the Division of Health, Physical Education, Recreation, and Dance for specific course requirements.

Academic Minor Requirements

DANCE MINOR

Course	Credits
Dan 320 Labanotation	3
Dan 325 Dance Production	2
Dan 383 Dance Composition	2
Dan 420 Dance Accompaniment	3
Dan 421 Dance History	3
Electives in theatraical dance techniques (selected from ballet, jazz, modern)	7

OUTDOOOR RECREATION LEADERSHIP MINOR

Course	Credits
Rec 280 Recreation Practicum or RcMgt 397 Renewable Natural Resources Internship	1-3
Rec 320 Outdoor Recreation Leadership	3
Rec 321 Wilderness Medicine & Evacuation	1
Rec 420 Experiential Education	2
RcMgt 287 Prin of Wildland Rec Mgt	2
RcMgt 387 Environmental Interpretive Methods or RcMgt 488 Interpretive Methods Lab	3
RcMgt 490 Wilderness Mgt or RcMgt 487 Intro to Field Environmental Education	2-3
Courses selected from the following	7
Rec 220 Rock Climbing	
Rec 221 Mountaineering	
Rec 222 Cross-Country Skiing	
Rec 223 Winter Camping	
Rec 224 Whitewater Rafting	
Rec 225 Kayaking	
Rec 255 Backpacking & Camping Skills	
Rec 270 Big Game Hunting Tech & Safety	
One of the following courses	1-2
Rec 498 Practicum in Tutoring (1 cr)	
RcMgt 401 Practicum in Tutoring (1-2 cr)	

RECREATION MINOR

Course	Credits
Rec 102 Intro to Recreation Professions	1
Rec 243 Play & Game Theory	2
Rec 254 Camp Leadership	3
Rec 280 Recreation Practicum	2
Rec 329 Leadership in Recreation	2
Rec 349 Municipal Park Admin & Maintenance	2
Rec 460 Hist Dev of Recreation, Leisure, & Play	3
Rec 486 Recreation Program Planning	3
Rec 493 Recreation Administration	3

THERAPEUTIC RECREATION MINOR

Course	Credits
Psych 311 Abnormal Psychology	3
Rec 230 Prin of Therapeutic Recreation	3
Rec 280 Recreation Practicum	2
Rec 330 Implications of Disabling Conditions	3
Rec 430 Problems in Therapeutic Recreation	3
Rec 431 Medical Terminology	1
Rec 467 PE and Rec for Severely Handicapped	3
SpEd 275 Ed of Exceptional Individuals	3
Approved electives in special ed or adapted PE	2-3

TOURISM AND LEISURE ENTERPRISES MINOR

Courses	Credits
Bus 321 Marketing	3
Rec/RcMgt 181 Intro to Hospitality Services Industries	3
Rec 235/RcMgt 236 Principles of Tourism	3
Rec 280/RcMgt 397 Practicum/Internship	2
Rec 340 Leisure & Tourism Organization	3
Rec 382/RcMgt 381 Hospitality Mgt & Org	3
Rec/RcMgt 400 Seminar	1
RcMgt 383 Natural Resource Tourism	3
One course selected from the following	3
Bus 420 Promotional Strategy	
Geog 447 Recreation & Tourism	
Rec 486 Recreation Program Planning	
RcMgt 386 Resource Rec & Tourism Planning	

Department of History

Wm. Kent Hackmann, Dept. Chair (315 Admin. Bldg.). Faculty: Katherine G. Aiken, Robert W. Coonrod, Daniel J. Greenberg, Wm. Kent Hackmann, Craig E. Harline, Dolores E. Janiewski, Carlos A. Schwantes, Richard E. Spence, William R. Swagerty. Affiliate Faculty: Jacqueline Peterson-Swagerty.

The study of history provides a broad, general view of human development from the beginning of recorded time to the present. Emphasis is on intellectual and cultural values and activities in political, social, economic, and religious institutions. Each course provides rigorous training of the mind to think, to evaluate problems, and to reach sound conclusions through the examination of general or specific chronological periods in several geographic settings. Special attention is given to written work in the form of quizzes, examinations, and review or research essays.

A major in history can be used in government service, the new specialty of public history, several areas of business and industry, and many other fields. It can also be used in preparation for study of the law, the ministry, and archival work and librarianship. Double majors combining history with other fields are easily arranged.

The history curricula provide, through lectures, seminars, and directed studies, a survey of mankind's experience. The department offers courses of study leading to the B.A. or the B.S.

degree and has a staff of eight full-time professors who hold the Ph.D. degree. The historian's laboratory is the library, where one finds the record of the past as preserved in primary sources and interpreted by authorities in general works, monographs, and maps. The department has a good collection of maps, slides, and microform readers.

Graduate study is offered in American, English, European (medieval through modern), Latin American, and ancient history. The degree programs include Master of Arts, Master of Arts in Teaching, and Doctor of Philosophy, for which dissertation topics are limited to the fields of the American West, and Europe since 1760. Undergraduates considering graduate study should master at least one modern foreign language through the intermediate level.

History Courses

PREREQUISITE: Two-semester courses in this field may be taken in either order. Students may enroll in second-semester courses without having had the first. Ordinarily six lower-division credits in history are advised for registration in upper-division courses.

Note: In jointly numbered courses, additional project/assignments are required for graduate credit.

Hist 101-102 Hist of Civ (3 cr; 4 cr for honors sections)(C). Satisfies core requirement J-3-d. Contributions to the modern world. Hist 101: to 1650. Hist 102: 1650 to present.

Hist 111-112 Intro to U.S. Hist (3 cr)(C). Political, diplomatic, econ, social, and cultural hist; earliest times to the present. Hist 111: to 1877. Hist 112: 1877 to present.

Hist 180 Intro to East Asian Hist (3 cr). Survey of traditional and modern Chinese and Japanese hist.

Hist 271-272 Hist of England (3 cr)(C). Political, social, econ, and religious dev of the British Isles. Hist 271: to 1688. Hist 272: 1688 to present.

Hist 313 Red, White, and Black: The Peopling of Early North America (3 cr). Survey; Native American, Euroamerican, and Afro-American heritage in North America. 1400-1790.

Hist 330 Families in American Hist (3 cr). Courtship, marriage, childrearing, sex roles, domestic labor, home economics, and family values in the U.S. from the 1600s to the mid-1900s.

Hist 333 Social Groups and Social Movements in American Hist 1790-1896 (3 cr). Survey of interaction of racial, ethnic, sexual, and econ groups in American hist and social movements that represented their interests. 1790-1896.

Hist 345 European Christianity, 1200-1700 (3 cr). Nature and significance of institutional and personal religion in European civilization from Francis of Assisi to the Quakers.

Hist 350 European Popular Culture, 1500-1800 (3 cr). Hist of ordinary people in early modern Europe, with attention to social and economic life, material culture, popular pastimes, and especially thought or "mentalities."

Hist 366 Intellectual and Cultural Hist of Modern Europe (3 cr). Evolution of attitudes and values of European societies during 19th and 20th centuries; influence of key events and ideas, incl those of Marx, Darwin, Freud, Einstein, and Sartre.

Hist J401/J501 Seminar (cr arr). Research papers in U.S., Latin American, ancient, English, or European hist. Prereq: perm of dept.

Hist 404 (s) **Special Topics** (cr arr).

Hist J410/J510 Land and the American Imagination (3 cr). Hist, literary, and artistic images, perceptions, and experiences of Europeans and Euroamericans in North America, 1500 to present.

Hist J411/J511 American Colonial Hist to 1763 (3 cr). International rivalries; British colonial foundations.

Hist J412/J512 The American Revolution, 1763-1789 (3 cr). U.S. independence through the adoption of the Consitution.

Hist J413/J513 U.S.: Early National Period (3 cr). Econ, political, constitutional, and social problems; 1789 to 1828.

Hist J414/J514 Jacksonian America (3 cr). The Jackson era, sectionalism, westward expansion, slavery, and the coming of the Civil War.

Hist J415/J515 Civil War and Reconstruction, 1865-1896 (3 cr). War, industrial and econ dev, and political reform.

Hist J417/J517 Rise of Modern America (3 cr). Populism, Progressivism, World War I, the Twenties, the Depression, and the New Deal, 1896-1941.

Hist J418/J518 Recent America (3 cr). America since 1941.

Hist J420/J520 Hist of Women in American Society (3 cr). Exam of the roles of women—social, econ, and political—in U.S. hist from colonial times to the present.

Hist J423/J523 Idaho and the Pacific Northwest (3 cr)(C, 423 only). Political, econ, social dev; earliest times to the present.

Hist J428/J528 Hist of the American West (3 cr). Spanish beginnings, Anglo-French expansion, the American occupancy, 1540 to present.

Hist J429-J430/J529-J530 U.S. Diplomatic Hist (3 cr). Hist J429/J529; From independence to world power, 1763-1898. Hist J430/J530; World power through war and the quest for peace, 1898 to present.

Hist J431/J531 Hist of Indian-White Relations (3 cr). Survey 1400 to present; dynamics and themes of Indian hist with emphasis on Indian-White relations in the U.S.

Hist J433-J434/J533-J534 Social and Cultural Hist of the U.S. (3 cr). U.S. customs, traditions, and intellectual habits. Hist J433/J533: to 1865. Hist J434/J534: 1865 to 1950.

Hist J435/J535 Colonial Latin America (3 cr). Indian civ, European colonization, Spanish Imperial System, wars of independence.

Hist J436/J536 Intro to Candian Hist (3 cr). First European contact with natives; political and socio-econ dev to 1873.

Hist J438/J538 Mexico Since Independence, Central America, and the Caribbean (3 cr). Political, econ, social, and cultural dev; search for stability; growth of nationalism.

Hist J439/J539 National Latin America: The South American Republics (3 cr). Political, econ, social, and cultural dev; search for stability; growth of nationalism.

Hist J441/J541 Greek Hist (3 cr). Origins to Roman conquest.

Hist J442/J542 Roman Hist (3 cr). Origins to the end of the Western Empire.

Hist J446/J546 Medieval Europe (3 cr). Transition from classical Mediterranean civ to medieval civ, 400 to 1350 A.D.

Hist J447/J547 Renaissance Europe (3 cr). Nature and significance of Italian Renaissance and its early influence of northern Europe; 1300-1550.

Hist J449/J549 Reformation Europe (3 cr). Protestant and Catholic Reformations, from the time of Luther through the climatic Wars of Religion; 1500-1650.

Hist J451/J551 Age of the French Revolution (3 cr). Nature of the Old Regime; relationship between the Enlightenment and the French Revolution; aims, progress, and consequences of the revolution itself; Europe, 1650-1815.

Hist J452/J552 19th Century Europe (3 cr). Nationalism and nation-building; Imperialism and the Great Powers; Capitalism and Socialism; tensions and rivalries leading to WWI.

Hist J455/J555 20th Century Europe (3 cr). World Wars, revolutions, and totalitarianism; decline and fall of the European empires; rise of a New Europe.

Hist J457/J557 Hist of the Middle East (3 cr). Survey of the Middle East from the beginning of the Islamic period to the present.

Hist J458/J558 Military Hist (3 cr). Western military heritage, 19th and 20th century collective security, and the military in a democratic society.

Hist J467/J567 Russia to 1894 (3 cr). Russia from medieval origins to 1894; development of Tsarist autocracy and serfdom; reaction, reform, and rise of the revolutionary movements.

Hist J468/J568 Russia and Soviet Union Since 1894 (3 cr) The last years of Tsarism; revolutions of 1905 and 1917; dev of the Soviet Union under Lenin, Stalin, and their successors.

Hist J469/J569 Modern France (3 cr). French nation from 1815 through the De Gaulle era.

Hist J470/J570 Modern Germany, 1789-1914 (3 cr). Unification of Germany and Hapsburg monarchy in 19th century.

Hist J471/J571 Modern Spain (3 cr). 14th century to present.

Hist J473/J573 Tudor England (3 cr). Royal prerogative; rise of middle class; exploration and colonization; culture.

Hist J474/J574 Stuart England (3 cr). Royal prerogative; rise of middle class; exploration and colonization; culture.

Hist J477/J577 Georgian Britain, 1714-1830 (3 cr). Rule of the oligarchy; the Empire wars; industrialization; parliamentary reform.

Hist 490 Intro to Hist Research (3 cr). Tech in compiling a bibliography, assembling material, composition, interp, and hist criticism.

Hist J496/J596 Theory and Practice of Hist (3 cr). Survey of hist of historical writing; validity of hist as a form of knowledge; methods of hist inquiry, incl recent quantitative approaches.

Hist 499 (s) **Directed Study** (cr arr).

Hist 500 Master's Research and Thesis (cr arr).

Hist 502 (s) **Directed Study** (cr arr).

Hist 504 (s) **Special Topics** (cr arr).

Hist 591-592 Historiography (2 cr). Nature of hist; major historians; ideas in hist; phil of hist; bibliography. Hist 591: U.S. historians. Hist 592: European and British historians.

Hist 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Hist 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

HISTORY (B.A.)

Note: Recommended preparation should include at least 6 credits from introductory

courses in any two other social sciences. The choice of specific courses in each group below must be approved by the student's adviser from the Department of History.

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
Lower-div courses selected from the following	12
Hist 101-102 History of Civilization	
Hist 111-112 Intro to U.S. History	
Hist 180 Intro to East Asian History	
Hist 271-272 History of England	
Upper-division history courses, incl Hist 490	20
Related fields	20

HISTORY (B.S.)

Note: Students expecting to take graduate work in history are strongly urged to take the B.A. rather than the B.S. degree.

Recommended preparation should include at least 6 credits from introductory courses in any two other social sciences. The choice of specific courses in each group below must be approved by the student's adviser from the Department of History.

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
Lower-div courses selected from the following	12
Hist 101-102 History of Civilization	
Hist 111-112 Intro to U.S. History	
Hist 180 Intro to East Asian History	
Hist 271-272 History of England	
Upper-division history courses, incl Hist 490	20
Related fields	20
Any combination of the following	12
Any foreign language (high-school foreign language may be substituted at the rate of 4 cr per yr)	
FL/EN 313-314 Modern French Lit in Translation	
FL/EN 323-324 German Lit in Translation	
FL/EN 363-364 Literature of Ancient Greece & Rome	
FL/EN 393 Spanish Lit in Translation	
FL/EN 394 Latin American Lit in Translation	
Eng 111-112 Lit of Western Civilization	
Eng 387 Modern European Literature	

LATIN-AMERICAN STUDIES (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, including Spanish for the foreign language requirement, and:

Course	Credits
FL/SP 384 Hispanic Culture & Institutions	3
FL/SP 387-388 Survey of Spanish-American Lit or FL/SP 487-488 Contemporary Spanish-American Lit	6
Hist 435 Colonial Latin America	3
Hist 438 Mexico Since Independence, Central America & Caribbean or Hist 439 National Latin America	3
And at least seven of the following courses (or the optional courses listed above):	
Anthr 220 Peoples of the World	3
Anthr 230 World Prehistory	3
*Econ 477 Econ of Developing Countries	3
Eng 111-112 Lit of Western Civilization	6
FL/SP 386 Survey of Spanish Literature	3
Phil 411 Social Philosophy	3
PolSc 438 Conduct of American Foreign Policy	3
PolSc 440 International Organization & Law	3
*PolSc 483 Middle Eastern Politics	3

*Students are strongly urged to elect those courses marked with an asterisk and to take Hist 101-102 (History of Civilization) in their freshman year.

Academic Minor Requirements

HISTORY MINOR

Course	Credits
History courses chosen from the following*	9
Hist 101-102 Hist of Civilization	
Hist 111-112 Intro to U.S. History	
History courses at the 300- or 400-level (at least 3 cr in U.S. or Latin American history and at least 3 cr in Ancient or European history)	9
History elective (may be course not taken above)	3

*For demonstrable cause, department chair or minor adviser may allow the substitution of courses numbered above 100-level.

Margaret Ritchie School of Home Economics

Peggy J. Pletcher, Director (108 Mary Hall Niccolls Home Ec. Bldg.). Faculty: Jill Dacey, Janice F. Fletcher, Rose L. Forbes, Carolyn L. Hales, Virginia W. Junk, Kathleen Kearney, Shirley R. Medsker, Laura J. Miller, Shirley A. Newcomb, Peggy J. Pletcher, Nancy J. Wanamaker, Doris K. Williams.

Home economics focuses on the relationships, resources, and services contributing to individual and family well being. It is concerned with the aesthetic, economic, biological, physical, social, and psychological needs of people.

The programs developed in the five curricular areas in the School of Home Economics were designed to meet professional and individual goals of students. The five areas are: (1) child development and family relations; (2) clothing, textiles, and design; (3) food and nutrition with two options of consortium coordinated undergraduate dietetic program and food and nutrition research; (4) general home economics with three options of general, business, and communications; and (5) home economics education with two options of classroom teaching and extension. Students who complete the classroom teaching option are qualified for the Idaho standard secondary teaching certification with vocational home economics endorsement.

In keeping with the changing societal demands and interest expressed by students, several disciplines within home economics have developed programs in career emphasis areas. These are: (1) child development and family relations: human services, education (double major possible), aging, child life, or other emphases to meet developing societal trends; (2) clothing, textiles, and design: apparel design, textile design, and fashion merchandising; (3) food and nutrition: dietetics; and (4) general home economics: consumer foods.

A Master of Science degree in home economics is available.

The Ritchie School of Home Economics has an outstanding scholarship program for entering freshmen, continuing undergraduate majors, and home economics graduate students. Most scholarships are awarded on the basis of academic excellence regardless of financial need.

Home Economics Courses

Note: Courses numbered 371, 372, 376, 385, 472, 473, 486, and 488 are taught at Eastern Washington University, Cheney. EWU is on the quarter system; however, credits are listed in this catalog in equivalent semester hours.

HEc 105 Individual and Family Dev (3 cr). Basic prin and sequences in indiv and family dev; family structure and functions as they support human dev.

HEc 123 Textiles (3 cr). Properties of fibers, yarns, and fabric structure, dyes and finishes, labeling, and legislation affecting the consumer.

HEc 124 Clothing Constr Prin (3 cr). Prin of clothing constr and fitting; analysis and comparison related to efficiency, wear, appearance, fabric limitations. One lec and six hrs of lab a wk.

HEc 170 Meal Mgt (3 cr). Food consumerism, meal planning, preparaion tech. Two lec and one 2-hr lab a wk.

HEc 200 (s) **Seminar** (cr arr). Prereq: perm.

HEc 203 (s) **Workshop** (cr arr). Prereq: perm.

HEc 204 (s) **Special Topics** (cr arr).

HEc 205 Concepts in Human Nature (3 cr). Nutrition prin with their appl to nutrition in life cycle; nutrition prob and controversies such as weight control and nutrition for athletes; individual computerized study of student's dietary intake.

HEc 206 Color and Design (3 cr). Prin and elements of design as they relate to the near environment; dev of awareness of appl of design to clothing, housing, textiles, and other home ec areas. Two lec and two labs a wk.

HEc 208 Decision Making for Consumers (3 cr). Decision-making process as it influences effective consumer practices in food, clothing, shelter, and personal finance.

HEc 229 Intro to Fashion Industry (3 cr). Overview of dev, manufacturing, and retailing of fashion, incl raw materials of fashion, ready-made apparel eval, and terminology used in fashion industry. Field trips.

HEc 234 Infancy and Early Childhood (3 cr). Influences on dev before birth through the preschool years; factors that determine physical, emotional, cognitive, social, and creative dev.

HEc 235 Prin and Methods of Child Observation (3 cr). Dev of skills necessary to observe, record, and interpret child behavior; observations to be arranged. Prereq: 234 or perm.

HEc 240 Interpersonal Relationships Before Marriage (3 cr). Intro to relationships involved in getting together, going together, and achieving commitment in premarital relationships with emphasis on influence of romantic love and comm process; readiness for marriage evaluated in terms of compatibility in values, attitudes, role expectations, and personal goals.

HEc 242 Household Equipment (3 cr). Selection, use, care, and prin of operation of household appliances.

HEc 271 Food Preparation Prin (3 cr). Fundamental processes underlying food prep with emphasis on physical and chemical aspects. Two lec and one 3-hr lab a wk. Prereq: 3 cr in physical sc courses.

HEc 299 (s) **Directed Study** (cr arr). Prereq: perm.

HEc 309 Trends and Perspectives in Home Ec (1 cr). Key issues and trends of the past, present, and future for home ec as a profession. Recommended for undergrad majors.

HEc ID314 Weaving (3 cr). Prin, tech, and aesthetics of handweaving. One lec and six hrs of lab a wk.

HEc 323 Intermediate Textiles (2 cr). Lab investigation into fiber ident, dye application, fabric structure, care methods, performance standards, and textiles testing methods. One lec and 3 hrs of lab a wk. Prereq: 123, Chem 103 or 111.

HEc 324 Flat Pattern Study (3 cr). Fitting and pattern alteration for indiv shell and sloper; flat pattern design; constr related to original patterns. One lec and six hrs of lab a wk. Prereq: 124 or perm.

HEc 326 Intro to Housing and Home Furnishings (3-4 cr). Overview of housing decisions facing the contemporary family; organization of living spaces to fit various lifestyles; interior materials and furnishings from sources through utilization and effects; home energy conservation. Registration for 4 cr incl additional 2 hrs of lab a wk.

HEc 327 Tailoring and Experimental Construction (3 cr). Tailoring tech; experimental construction as applied to special fabrics and/or designs. One lec and 6 hrs of lab a wk. Prereq: 124.

HEc 329 Historic Costume (3 cr). Costume as an expression of the times; incl social and psych aspects of clothing and historical overview of costume.

HEc 333 Developmental Curriculum for Young Children (3 cr). Prin of curriculum design incorporating the following areas: language and creative arts, science, food prep, music, and movement. Two lec and one 3-hr lab a wk.

HEc 334 Middle Childhood-Adolescence (3 cr). Behavior, dev, and guidance of children and youth from entrance in school until they are launched into adulthood; influences of family, school, peer group, and larger community. Prereq: Psych 100, Soc 110, or perm.

HEc 340 Parent-Child Relationships in Family and Community (3 cr). May be taken by nonmajors. Dynamics of parent-child interactions and models for parent ed programs in community and school settings. Prereq: 234 or 334.

HEc 346 Family Resource Mgt (3-4 cr). Prin and procedures of mgt and their relationships to human and material resources; practical appl of mgt prin to use of family resources through supervised exper with attention to dev of professional competence as well as personal skills.

HEc 347 Home Mgt Practicum (3 cr). Decision making and managerial aspects of family living in a residential setting. One lec and 6 hrs of lab a wk. Prereq: 170 and perm; prereq or coreq: 346.

HEc 350 Communicating Home Ec Concepts (3 cr). Applying comm skills and concepts in home ec related programs incl multimedia, indiv and group leadership, presentation/dem tech. Two lec and one 2-hr lab a wk; one 1-day field trip. Prereq: jr standing or perm.

HEc 356 Experiential and Leadership Programs (1 cr). Prin and practices in planning, developing, conducting, supervising, and evaluating experiential and leadership programs for ag ed, home ec ed, and cooperative extension youth. Coreq: 357 and AgEd 358 or AgEd 359.

HEc 357 Supervising FHA and Occupational Home Ec Programs (2 cr). Role of home ec instructor in supervising FHA and Occupational Home Ec Programs. Coreq: 356.

HEc 371 Diet Therapy (4 cr; see headnote). Diet modification for adult and child needs in disease and convalescence. Clinical experience in Spokane hospitals. Prereq: 375, jr standing in CCUPD.

HEc 372 Clinical Dietetics (4.6 cr; see headnote). Clinical experience in Spokane hospitals. Prereq: jr standing in CCUPD.

HEc 375 Intro to Clinical Dietetics (4 cr). Dietetics, role of the dietition; dietary depts in health care facilities. Three lec and three hrs of clinical experience a wk; one field trip to Spokane. Prereq: jr standing in CCUPD.

HEc 376 Adv Nutrition (3.3 cr; see headnote). Prin of nutrition: physiology of digestion, absorption and metabolism of nutrients. Prereq: 205, jr standing in CCUPD.

HEc 384 Food Admin I (4 cr). Quantity food production, buying, and equipment; intro to admin. Lab in UI food service. Two lec and six hrs of lab a wk. Prereq: jr standing in CCUPD.

HEc 385 Food Admin II (4 cr; see headnote). EWU 386. Continuation of 384. Lab in Spokane hospitals and EWU food service. Two lec and six hrs of lab a wk. Prereq: 384.

HEc 400 (s) **Seminar** (cr arr). Prereq: perm.

HEc 403 (s) **Workshop** (cr arr). Prereq: perm.

HEc 404 (s) **Special Topics** (cr arr).

HEc J409/J509 Adult Ed Training and Dev in Ag and Home Ec (3 cr). See AgEd J409/J509.

HEc 413 Textile Dye Processes (3 cr). Alt/yrs. Study of selection of dyes for fabrics, color matching through scientific method, color theory, and appl of pattern through various dye tech. Prereq: 206 or perm.

HEc ID414 Advanced Weaving (3 cr). Continuation of 314 with concentration on drafting and designing woven structure. One lec and five hrs of lab a wk. Prereq: perm.

HEc 415 Textile Printing Processes (3 cr). Alt/yrs. Study of various print processes on fabric, using dyes and pigments, incl block, screen, roller, mono print, and intaglio methods; appl of various methods in lab to produce yardage. Prereq: 206 or perm.

HEc ID-J416/J516 Designing for the Loom (3 cr). Alt/yrs. Analysis of design tech specific to woven fabrics; studio exper designing woven fabrics for functional and decorative end use, culminating in a critical display. One lec and 6 hrs of lab a wk.

HEc WS417 Social Psychological Aspects of Clothing (3 cr). WSU C T 417.

HEc WS-J423/WS-J523 Textile Evaluation (3 cr). WSU 415/515.

HEc 424 Original Apparel Design (4 cr). Utilization of flat pattern and draping tech to produce original designs; individual dress forms constructed and draping skills developed; emphasis on creative expression. Prereq: 324 or perm.

HEc ID426 Hist of Interiors and Furnishings (2-3 cr). Hist and dev of styles and design in furniture and interiors as expressions of changes in art and culture. Registration for 3 cr incl 2 hrs a wk of lab problems. Prereq: 326 or perm.

HEc 428 Family Housing (2 cr). Housing and families as affected by consumer issues, public policy, housing history, and social, economics, political, and technical factors.

HEc ID&WS429 Fashion Merchandising (3 cr). WSU C T 318. Apparel merchandising planning, incl merchandise selection, buying, and promotion; emphasis on merchandising math. Prereq: 229, Bus 321 or perm.

HEc 436 Theories of Child Dev (3 cr). Ident, interp, and eval of psychoanalytic, behavioristic, cognitive, and humanistic theories of dev.

HEc 440 Contemporary Family Relationships (3 cr). Dynamics of the major types of family relationships; marital, parent-child, sibling, and extended-family interaction in contemporary society. Prereq: Psych 100, Soc 110, or perm.

HEc 442 Current Dev in Household Equipment (2 cr). Available space and selection of functional equipment; materials, constr, operation, care, and relative cost. Prereq: 242.

HEc 448 Consumer Ed (3 cr). Consumer motivation, decision making, and behavior; protection, org, use of credit.

HEc 450 Methods and Curriculum in Home Ec Ed (4 cr). Curriculum dev and organization of secondary and adult consumer/homemaking programs incl: methods and tech, lesson planning, eval of learning, youth org admin, and nature and scope of teacher's role. One 1-day field trip. Prereq: 350, Ed 201, acceptance in teacher ed prog, or perm.

HEc 451 Profession of Voc Home Ec Ed (1 cr). Orientation to student teaching to incl: profession of home ed educator, certification/endorsement standards and univ services. One 1-day field trip.

HEc 452 Classroom and Lab Mgt (3 cr). Classroom mgt to incl student/teacher/program eval and student behavior/discipline; lab org; teaching special students; pre-student-teaching exper. One 1-day field trip.

HEc 457 Student Teaching in Home Ec Classes (9 cr, max 9). Supervised teaching at secondary-school level. Apply to home ec teacher educator one sem before registration. Prereq: 350, 450, and VocEd J351/J551; cum GPA of 2.25; HEc GPA of 2.50; acceptance into teacher ed prog; sr standing.

HEc 460 Family as an Ecosystem (3 cr). Survey of the lit and disc of environmental factors affecting contemporary families; analysis of the interrelationship of social change, and family values, structure, roles on the ecological system; determination of the role and potential contribution of family life to ecology.

HEc 470 Problems in Nutrition (3 cr)(C). Recent advances; infant, child, and adult nutrition. Prereq: 205, Zool 119, sr or grad standing.

HEc 472 Clinical Dietetics II (5.3 cr; see headnote). Continuation of 372. Practical experience in Spokane hospitals. Prereq: 372, sr standing in CCUPD.

HEc 473 Community Nutrition (4 cr; see headnote). EWU 469. Nutrition prog; nutrition problems of special groups. Clinical experience in Spokane school lunch prog, public health, etc. Three lec and three hrs of lab a wk. Prereq: sr standing in CCUPD.

HEc 474 Investigation of Foods (3 cr). Adv problems in foods. Two lec and 3 hrs of lab a wk. Prereq: 271, Biochem 380 or perm.

HEc 475 Nutrition Prin for the Classroom Teacher (3 cr). For elem and secondary school teachers. Teaching food selection and daily diet; variations from the normal diet; malnutrition, overnutrition, food fads, additives, obesity, and nutrition for athletes.

HEc 478 Recent Advances in Foods (2 cr). Food preservation and processing; dev of low-calorie foods and commercial mixes; food additives. Prereq: 271 or equiv.

HEc 484 Food Systems Mgt I (4 cr). Institutional org and mgt. Lab experience in UI food service. Four lec and 12 hrs of lab a wk for nine wks. Prereq: 385, sr standing in CCUPD.

HEc 486 Nutrition in the Life Cycle (2.6 cr; see headnote). EWU 470. Maternal nutrition and fetal dev; lactation; nutritional needs and dietary patterns from infancy through old age.

HEc 488 Food Systems Mgt II (4 cr. see headnote). EWU 486. Continuation of 484. Lab in EWU food service and Spokane hospitals. Prereq: 484.

HEc 497 (s) **Home Ec Practicum** (cr arr). On- or off-campus supervised applied experience in home ec major areas; child dev and family relations; clothing, textiles, and home design; food and nutrition; consumer ed; and cooperative extension. Prereq: perm.

HEc 498 Home Ec Internship (3-9 cr). Supervised internship in ed institutions, govt/social agencies, hospitals, business, or industry; geared to the professional goals of students. Prereq: perm.

HEc 499 (s) **Directed Study** (cr arr). Prereq: perm.

HEc 500 Master's Research and Thesis (cr arr).

HEc 501 (s) **Seminar** (cr arr). Prereq: perm.

HEc 502 (s) **Directed Study** (cr arr). Prereq: perm.

HEc 503 (s) **Workshop** (cr arr). Prereq: perm.

HEc 504 (s) **Special Topics** (cr arr).

HEc 507 Research Methodology (3 cr). See AgEc 507.

HEc 509 Adult Ed Training and Dev in Ag and Home Ec (3 cr). See J409/J509.

HEc 516 Designing for the Loom (3 cr). See J416/J516.

HEc WS523 Textile Evaluation (3 cr). See J423/J523.

HEc 540 Parent-Child Relationships (2 cr). Open to nonmajors. The developing family; patterns of child rearing. Prereq: 234 or 334, 440, and 6 cr in psych and/or soc or equiv.

HEc 546 Problems in Home Mgt (2 cr). Selected topics. Prereq: 346 or equiv.

HEc 551 Tech of Supervision (2 cr).

HEc 553 Home Ec Ed (1-4 cr, max 4).

HEc 554 Curriculum in Home Ec (2 cr). Problems and planning in secondary-school homemaking ed.

HEc 570 Current Concepts in Nutrition (2 cr). Innovative concepts and tech in nutrition research; scientific investigations; nutrition problems. Prereq: 470, Zool 119, or equiv.

HEc 583 Recent Trends in Institutional Mgt (2 cr). Mgt prin applied to food service institutions.

HEc 590 Foundations of Home Ec Research (2 cr). Intro to research design in home ec; frequently used research methods and instrumentation; prep of a research proposal suitable for thesis.

HEc 597 (s) **Practicum** (cr arr). Prereq: perm.

HEc 598 (s) **Internship** (cr arr). Supervised internship in ed institutions, govt/social agencies, hospitals, or industry; geared to the ed and voc goals of students. Prereq: perm.

HEc 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

HOME ECONOMICS CORE CURRICULUM

Course	Credits
HEc 106 Individual & Family Development	3
HEc 123 Textiles or 206 Color & Design	3
HEc 205 Concepts in Human Nutrition	3
HEc 346 Family Resource Mgt or 448 Consumer Ed	3-4

CHILD DEVELOPMENT AND FAMILY RELATIONS (B.S.H.Ec or B.A.)

Required course work includes the university requirements (see regulation J-3); for the B.A., the general L & S requirements for the B.A. degree, including Psych 100; the home economics core; and,

Course	Credits
HEc 234 Infancy & Early Childhood	3
HEc 235 Prin & Methods of Child Observation	3
HEc 309 Trends & Perspectives in Home Ec	1
HEc 333 Developmental Curriculum for Young Children	3
HEc 334 Middle Childhood-Adolescence	3
HEc 340 Parent-Child Relationships	3
HEc 350 Communicating Home Ec Concepts	3
HEc 436 Theories of Child Development	3
HEc 440 Contemporary Family Relationships	3
HEc 497 Home Economics Practicum	11
CommG 134 Nonverbal Communication	2
Ed 201 Intro to Teaching	2
Stat 251 Principles of Statistics	3
ThA 381 Drama in Education	3
Computer science elective	2-3
Electives to total 132 credits for the degree	--

The flexibility of the CDFR curriculum allows students to develop individualized programs to meet personal and career goals. Consult an adviser. Some suggested career emphasis areas are: (1) human services, (2) education (double major leading to Idaho elementary teaching certification is possible—consult an adviser in the College of Education), (3) aging, and (4) child life.

CLOTHING, TEXTILES, AND HOME DESIGN (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the home economics core, and:

Course	Credits
HEc 123 Textiles or 206 Color & Design (course not selected for home ec core)	3
HEc 124 Clothing Construction Principles	3
HEc 229 Intro to Fashion Industry	3
HEc 309 Trends & Perspectives in Home Ec	1
HEc 314 Weaving	3
HEc 329 Historic Costume	3
HEc 413 Textile Dye Processes or 415 Textile Printing Processes	3
Art 101 Visual Arts	3
Art 221 Graphic Design	3
Bus 321 Marketing	3
Bus 325 Retailing	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
CommG 131 Fundamentals of Public Speaking	2
Econ 151 Principles of Economics	3
Hist 101 or 102 History of Civilization	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Anthropology elective	3
Art elective or ThA 362, 363, or 410	2-3
Computer science elective	2-3
Required courses from emphasis area	26-32
Electives to total 132 credits for the degree	--

Students, in consultation with an adviser, elect courses from one of the following career emphasis areas: (1) apparel design, (2) textile design, and (3) fashion merchandising. Students whose career emphasis is apparel design or fashion merchandising may elect to spend their sophomore or junior year at the Fashion Institute of Technology (New York City) or at a participating National Student Exchange School that offers an acceptable program. Specific information is available from CTHD advisers.

FOOD AND NUTRITION (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the home economics core, and one of the following options.

Note: Courses numbered 371, 372, 376, 385, 472, 473, 486, and 488 are taught at Eastern Washington University, Cheney. EWU is on the quarter system; however, credits are listed here in equivalent semester hours.

A. CONSORTIUM COORDINATED UNDERGRADUATE PROGRAM

Course	Credits
HEc 170 Meal Management	3
HEc 271 Food Preparation Principles	3
HEc 350 Communicating Home Ec Concepts	3
HEc 371 Diet Therapy	4
HEc 372 Clinical Dietetics I	4.6
HEc 375 Intro to Clinical Dietetics	4
HEc 376 Advanced Nutrition	3.3
HEc 384 Food Administration I	4
HEc 385 Food Administration II	4
HEc 470 Problems in Nutrition	3
HEc 472 Clinical Dietetics II	5.3
HEc 473 Community Nutrition	4
HEc 474 Investigation of Foods	3
HEc 484 Food Systems Management I	4
HEc 486 Nutrition in the Life Cycle	2.6
HEc 488 Food Systems Management II	4
HEc 498 Internship: Community Nutrition	1-2
Anthr 100 Intro to Anthropology	3
Bact 250 General Microbiology	4
Biochem 380, 382 Introductory Biochemistry & Lab	4
Bus 412 Personnel Management	3
Chem 103 Intro to Chemistry or 111 Prin of Chem	4
Chem 275 Carbon Compounds	3
Chem 276 Carbon Compounds Lab	1
CS 100 Intro to Computers & Programming	3
Econ 151 Principles of Economics	3
Eng 317 Tech & Engr Report Writing	3
Math 140 Pre-calculus Algebra & Analytic Geom	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Stat 251 Principles of Statistics	3
Zool 119 Human Anatomy & Physiology	5
Humanities electives	6

B. FOOD AND NUTRITION RESEARCH

Course	Credits
HEc 170 Meal Management	3
HEc 271 Food Preparation Principles	3
HEc 470 Problems in Nutrition	3
AnSc 305 Animal Nutrition	3
Bact 250 General Microbiology	4

Bact 402 Food & Applied Microbiology	4
Biochem 380, 382 Introductory Biochem and Lab	4
Chem 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 372, 376 Organic Chem II & Lab	5
Math 180 Analytic Geom & Calculus I	4
Zool 119 Human Anatomy & Physiology	5
Designated electives	15
Electives to total 132 credits for the degree	--

Students who wish to fulfill the requirements for a food science minor should see FN advisers. For a career emphasis in consumer foods, see an adviser in FN or GHEc.

GENERAL HOME ECONOMICS (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the home economics core, and:

Course	Credits
HEc 309 Trends & Perspectives in Home Ec	1
HEc 350 Communicating Home Ec Concepts	3
Home economics courses, 15 credits of which are at the 300- or 400-level	21

And one of the following options:

A. GENERAL OPTION

Electives to total 132 credits for the degree	--

B. BUSINESS OPTION

Course	Credits
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 301 Financial Management	3
Bus 311 Intro to Management	3
Bus 321 Marketing	3
Courses chosen from Bus 265, 325, 361, 403, 413, 415, and 420 (minimum)	6
Electives to total 132 credits for the degree	--

C. COMMUNICATIONS OPTION

Course	Credits
Comm 121 News Writing	3
Comm 140 Mass Media & Society	3
Comm 425 Feature Article Writing	3
Comm 431 Professional Presentation Tech	3
Courses chosen from Comm 222, 270, 281, 323, 352, and 354 (minimum)	9
Electives to total 132 credits for the degree	--

HOME ECONOMICS EDUCATION (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the home economics core, and:

Course	Credits
HEc 123 Textiles or 206 Color & Design (course not selected for home ec core)	3
HEc 124 Clothing Construction Principles	3
HEc 170 Meal Management	3
HEc 234 Infancy & Early Childhood	3
HEc 235 Prin & Methods of Child Observation	3
HEc 242 Household Equipment	3
HEc 271 Food Preparation Principles	3
HEc 309 Trends & Perspectives in Home Ec	1
HEc 326 Intro to Housing & Home Furnishings	4
HEc 346 Family Resource Management or 448 Consumer Ed (course not chosen for home ec core)	3-4
HEc 350 Communicating Home Ec Concepts	3
HEc 356 Experiential & Leadership Programs	1
HEc 440 Contemporary Family Relationships	3
HEc 470 Problems in Nutrition	3
AgEd 409 Adult Ed Training & Development	3
Bact 154 Elem Microbiol & Public Health or Bact 250 General Microbiol	3-4
Biol 100 Intro to Biol or Biol 201 Intro to Life Sciences	4
Chem 103 Intro to Chem or Chem 111 Prin of Chem	4
CommG 131 Fundamentals of Public Speaking	2
Econ 151 or 152 Principles of Economics	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3

And one of the following options:

A. CLASSROOM TEACHING

Course	Credits
HEc 357 Supervising FHA & Occ Home Ec Programs	2
HEc 450 Methods & Curriculum in Home Ec Ed	4
HEc 452 Classroom & Lab Management	3
HEc 457 Student Teaching in Home Ec Classes	9
Ed 201 Intro to Teaching	2
Ed 415 Educational Psychology	3
Ed 440 Methods of Teaching Content Reading	3
VocEd 351 Principles & Philosophy of Vocational Ed	2
VocEd 443 Intro to Special-Needs Ed	1
VocEd 453 Task Analysis	1
VocEd 464 Vocational Guidance	3
Electives to total 132 credits for the degree	--

B. COOPERATIVE EXTENSION

Course	Credits
HEc 497 Home Ec Practicum	3-9
AgEd 180 Intro to Agricultural Education	1
AgEd 359 Developing 4-H Youth Programs	1
AgEd 448 Prin & Practices of Extension Ed	3
Computer science elective	2-3
Electives to total 132 credits for the degree	--

Program in Interdisciplinary Studies

William B. McCroskey, Coordinator, Undergraduate Courses (112 Admin. Bldg.).
Jean'ne M. Shreeve, Coordinator, Graduate Courses (114 Morrill Hall).

Interdisciplinary Studies Courses

Inter 126 Film and International Culture (3 cr). Satisfies core requirement J-3-d. Interdisciplinary approach to diversity of modern culture as reflected in film art; comparative study of U.S. and foreign cultures; intro to film hist, tech, and criticism.

Inter 200 (s) **Seminar** (cr arr). Prereq: perm.

Inter 204 (s) **Special Topics** (cr arr).

Inter 299 (s) **Directed Study** (cr arr). Prereq: perm.

Inter 300 (s) **Seminar** (cr arr). Prereq: perm.

Inter 394 Technology and Societal Decisions (3 cr). See Engr 394.

Inter 399 (s) **Independent Study** (cr arr). Prereq: perm.

Inter 400 (s) **Seminar** (cr arr). Prereq: perm.

Inter 404 (s) **Special Topics** (cr arr).

Inter 438 Mgt of Pesticides in the Environment (3 cr). See Ent 438.

Inter 490 Technology and Human Values (2-3 cr). Ideological and value implications of technology for the future of man and his environment.

Inter 493-494 Seminar in Urban Studies (2 cr). Same as Econ 493-494. Interdisciplinary inquiry into problems of communities, physical factors, transportation, comm, housing, planning bus and industrial districts, zoning, aethestics, sociocultural and psych factors, neighborhoods, local govt and finance, urban renewal, regional planning, govt prog, and dynamics of dev; disc led by faculty members and consultants.

Inter 499 (s) **Directed Study** (cr arr). Prereq: perm.

Inter 500 Master's Research and Thesis (cr arr).

Inter 501 (s) **Seminar** (cr arr). Prereq: perm.

Inter 502 (s) **Directed Study** (cr arr). Prereq: perm.

Inter 503 (s) **Workshop** (cr arr). Prereq: perm.

Inter 504 (s) **Special Topics** (cr arr).

Inter 580 Seminar in Admin and Contemporary Issues (3 cr). Same as EdAd 580. Interdisciplinary approach to complex problems confronting administrators in ed. Prereq: perm.

Inter 589 Water Resources Seminar (1 cr). Same as AgE, CE, Fish, For, Geol, or GeolE 589. Reports by faculty members and grad students on current problems and projects; reports are organized to give maximum interchange of ideas between divisions.

Inter 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

INTERDISCIPLINARY STUDIES (B.A. or B.S.)

A student may present a curriculum not included among the ones listed elsewhere in this catalog provided the program is focused toward meeting the student's particular educational goal by combining the offerings of two or more major departments. The program normally is developed and presented during the sophomore year. It must be presented before the end of the second semester of the junior year or at the time when at least 30 credits of the proposed program remain to be taken. It must be approved by: (a) at least one faculty member from each of the participating departments of the

university, one of which must be in L & S, (b) the chair of one of the L & S departments involved, and (c) the L & S Committee on Interdisciplinary Studies. University requirements (see regulation J-3) and L & S requirements for either the B.A. or B.S. degree apply. This program requires a minimum of 128 credits, of which at least 50 credits must be in courses numbered 200 or above, including a minimum of 36 credits in courses numbered 300 or above. It is recommended, however, that majors in interdisciplinary studies complete at least 50 credits in upper-division courses.

Interested students should consult the L & S dean's office for referral to the Interdisciplinary Studies Committee for further information about this program.

INTERDISCIPLINARY STUDIES ACADEMIC MINORS

A student may present a minor curriculum not included among the ones listed elsewhere in this catalog. The program must include at least 24 credits and be approved by: (a) at least one faculty member from each of the participating departments of the university, (b) the chair of one of the departments involved, and (c) in the case of minors that involve a department in the College of Letters and Science, the L & S Committee on Interdisciplinary Studies.

Department of Landscape Architecture

James J. Kuska, Dept. Chair (206 Art and Arch. North). Faculty: Don Brigham, Katherine Grinde, James J. Kuska, Toru Otawa.

Landscape architecture is an environmental design and planning profession. It is the art and science of integrating human activities with the natural and urban environment. The profession's objective is to minimize the impact of humans on the natural processes while providing for their physical and psychological needs through design.

As a profession, landscape architecture encompasses certain design skills that enable it to resolve conflicts that arise in the complex interrelationships of physical, economic, political, and social activities of people and their use of the environment. These skills can be defined as an understanding of the natural systems and visual pattern of the land, necessitating courses in the natural sciences, such as biology, geology, and soils. In order to understand the nature of the physical, psychological, and social characteristics of mankind, studies in the behavioral and social sciences are extremely important in developing an appropriate design relationship to the landscape. In adapting development to the land, technical knowledge about site modification is gained through courses in the applied sciences, such as civil engineering and site engineering (landscape construction). Such knowledge must be balanced with studies in the visual arts to address the needs of people for an aesthetic environment.

The landscape architect's unique expertise lies in the development of a systematic and analytical approach to solving land-use problems. This knowledge is gained in the design studios under the direction of the landscape architecture faculty. Also, the faculty members and students in the program have available to them a powerful G.I.S. computer sytem (COMARC), microcomputers, and an interactive video system that makes this one of the leading departments in landscape architecture in terms of computing capabilities.

The Department of Landscape Architecture is housed with the interrelated professions of art, architecture, and interior design in the College of Art and Architecture. The department offers a professional four-year program leading to the degree of Bachelor of Landscape Architecture. The department's program is fully accredited by the American Society of Landscape Architects.

The foundation of the Landscape Architecture Department has been a strong emphasis on a "design process" as a methodology for solving various planning and design problems. The types of projects encountered within the program simulate those in professional practice: residential developments; resource planning impact assessment; community and historic preservation planning; industrial, institutional, and commercial planning; transportation and utility planning; landscape restoration and reclamation; aesthetic and visual resource management; river and shoreline planning; parks and recreation planning; site energy planning; and computer land planning.

Landscape architectural students are required to take part in at least one major (seven-day) field trip as partial fulfillment of the program requirements.

Landscape Architecture Courses

LArch 200 (s) **Seminar** (cr arr). Prereq: perm.

LArch 203 (s) **Workshop** (cr arr). Prereq: perm.

LArch 204 (s) **Special Topics** (cr arr).

LArch 247 Landscape Graphics (3 cr). Dev of tech and skills in various media used in prep of landscape arch graphic presentations both in plan and perspective renderings; incl use of computer. Selected field trips. Prereq: LArch major or perm.

LArch 259 Landscape Arch I (6 cr). Intro to landscape arch planning and design methods and processes (research, analysis, synthesis) applied to small scale pedestrian spaces such as parks, plazas, and courtyards; presentation tech (graphic and verbal) are emphasized. Selected field trips. Prereq: Art 121-122.

LArch 260 Landscape Arch II (6 cr). Integration and appl of prin acquired in plant materials, grading, and drainage, and in LArch 259 to small scale planning and design projects. Common project done with program in interior design. Selected field trips. Prereq: 259.

LArch 270 Landscape Constr (4 cr). Grading and drainage, earthwork planimeter computations, cut and fill, storm sewer design, and road layout (horizontal/vertical curves). Selected field trips. Prereq: LArch major or perm.

LArch 288 Plant Materials (3 cr). Plant ident and selection; use of plant materials in relation to soils, topography, and climate; analysis of design prin in relation to plant compositions. Selected field trips.

LArch 289 Hist of Landscape Arch (2 cr). Overview of man and the landscape from the pre-Egyptian civ through Ancient Greece and Rome, the Middle Ages, the Renaissance, the Oriental, and including contemporary styles and trends.

LArch 299 (s) **Directed Study** (cr arr). Prereq: perm.

LArch 358 Professional Office Practice in Landscape Arch (2 cr). Office org, fees, contracts, bonding, bidding specs, insurance, and relationships with subcontractors.

LArch 359 Landscape Arch II (6 cr). Intermediate scale planning and design problems that emphasize the analysis, dev, and presentation of solutions for urban, rural, and regional housing and rec projects; intro of sr critique project due in LArch 460; common project done with Dept of Arch. Selected field trips. Prereq: 260.

LArch 360 Landscape Arch II (6 cr). Intermediate scale land planning and urban design projects that emphasize various aspects of the urban environment such as central business districts, malls, housing dev, and circulation systems with appl of visual analysis tech; problem solving incorporating use of plant materials is stressed. Common project done with Dept of Art. Selected field trips. Prereq: 359.

LArch 371 Landscape Constr II (4 cr). Study of landscape constr methods and materials as applied in the dev and design of site elements such as lighting, retaining walls, paving, and irrigation systems; constr details and specifications. Selected field trips. Prereq: LArch major or perm.

LArch 387 Park and Rec Planning (3 cr). Landscape arch approach to rec planning for national, regional, state, city, and neighborhood park systems; appl of design prin to provide the experiences desired by the users in such areas.

LArch 388 Plant Materials (4 cr). Continuation of 288 with emphasis on plant design projects as they relate to small or large scale public and private use areas. Selected field trips. Prereq: 288.

LArch 400 (s) **Seminar** (cr arr). Prereq: perm.

LArch 403 (s) **Workshop** (cr arr). Prereq: perm.

LArch 404 (s) **Special Topics** (cr arr).

LArch 459 Landscape Arch III (6 cr). Various scale land planning (campus planning, rec areas) and urban design projects using ecological criteria as design determinants, incl prep of contract documents. Selected field trips. Prereq: 360.

LArch 460 Landscape Arch III (6 cr). Student critique of a professional landscape arch office project; completion of terminal project(s) comprehensive in scope, demonstrating mastery in areas of land planning and/or design, plant materials, construction, and graphics. Selected field trips. Prereq: 459.

LArch 490 Computer-Aided Regional Landscape Planning (3 cr). Open to all students. Study of tech and methods for regional-scale landscape planning using a state-of-the-art geographic info system (GIS); appl of ecological prin and land use analysis; emphasis on use of GIS as tool for landscape planning and mgt.

LArch 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

LANDSCAPE ARCHITECTURE (B.L.Arch.)

On registering for a studio course offered in the department, the student agrees that the department may retain work completed by the student.

Note: A 2.00 average must be maintained in all landscape architecture courses in order to remain in good standing in the department.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
LArch 247 Landscape Graphics	3
LArch 259-260 Landscape Architecture I	12
LArch 270, 371 Landscape Construction I-II	8
LArch 288 Plant Materials	3
LArch 289 History of Landscape Architecture	2
LArch 358 Professional Office Practice, LA	2
LArch 359-360 Landscape Architecure II	12
LArch 388 Plant Materials	4
LArch 459-460 Landscape Architecture III	12
LArch 490 Computer-Aided Regional Landscape Planning	3
Arch 483 Intro to City Planning	3
Art 111-112 Drawing I	4
Art 121-122 Visual Comm & The Design Process	6
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
CE 218 Elementary Surveying	2
Geol 101, 102 Physical Geology & Lab	4
Math 140 Pre-calculus Algebra & Analytical Geom	3
Soils 205 General Soils	3
Electives to total 133 cr for the degree, of which at least 6 cr must be from psych and/or soc and 8 cr must be from at least two of the following fields: art, anthro, econ, geog, hist, phil, political sc, and forestry	--

Recommended elective:
Geol 335 Geomorphology

College of Law

Sheldon A. Vincenti, Dean (101 Law Bldg.); Arthur D. Smith, Jr., Associate Dean. Faculty: Mark D. Anderson, Benjamin Beard, Patricia A. Cervenka, Dennis C. Colson, Neil E. Franklin, Ruth P. Funabiki, Kenneth S. Gallant, Dale D. Goble, Douglas L. Grant, James S. Heller, Joann P. Henderson, D. Craig Lewis, Monique C. Lillard, James S. Macdonald, Phillip E. Peterson, Myron Schreck, Arthur D. Smith, Jr., Sheldon A. Vincenti.

For additional information on the College of Law, see part 4 and the annual announcement of the College of Law.

Law Courses

For complete descriptions of the courses in this section (other than Law 511), see the annual announcement of the College of Law. Registration by non-law students in any course offered by the College of Law requires permission in advance by the associate dean and the instructor of the course.

Law 501 (s) **Seminar** (1-3 cr, max arr). For non-law grad students.

Law ID511 Legal Process (3 cr). Not open to J.D. candidates for cr toward the degree; will ordinarily be confined to grad students and srs with superior academic records. Designed to acquaint non-law student with legal process in general and role of the judiciary in natural resource mgt in particular; provide non-law grad students with sufficient legal research, writing, and reasoning skills to enroll in regular law courses.

Law 805-806 Procedure I-II (3 cr).

Law 807-808 Property I-II (3 cr).

Law 809-810 Torts I-II (3 cr, 2 cr).

Law 811 Constitutional Law I: Fundamentals (2 cr).

Law 812 Criminal Law and Procedure (3 cr).

Law 813-814 Contracts I-II (3 cr).

Law 815-816 Legal Research and Wrtg I-II (1 cr).

Law 901 (s) **Seminar** (cr arr).

Law 904 Federal Courts (2 cr).

Law 905 Constitutional Law II: Individual Rights (3 cr).

Law 906 Constitutional Law III: The First Amendment (3 cr).

Law 907 Adminsitrative Law (3 cr).

Law 908 Labor Law (3 cr).

Law 909 Energy Law (3 cr).

Law 910 Antitrust and Trade Regulation (3 cr).

Law 919 Business Associations I (4 cr).

Law 920 Business Associations II (3 cr).

Law 921 Basic Legal Acctg (1 cr).

Law 922 Unfair Competition (2 cr).

Law 923 Commercial Paper (3 cr).

Law 924 Sales (2 cr).

Law 925 Commercial Law and Creditors Rights I (3 cr).

Law 926 Commercial Law and Creditors Rights II (3 cr).

Law 927 Seminar, Business Planning (3 cr).

Law 930-931 Taxation I-II (3 cr).

Law 932 Estate Planning (3 cr).

Law 941 Wills, Estates, and Trusts (3 cr).

Law 942 Water Law (3 cr).

Law 943 Real Estate Finance and Tax Planning (3 cr).

Law 944 Local Govt and Land Use Planning (3 cr).

Law 945 Community Property (2 cr).

Law 946 Legal Problems in Ag (3 cr).

Law 947 Seminar, Environmental Law (3 cr).

Law 948 Seminar, Public Land Resources Law (3 cr).

Law 949 Indian Law (3 cr).

Law 950 Evidence (3 cr).

Law 952 Remedies and Restitution (3 cr).

Law 953 Seminar, Criminal Procedure (3 cr).

Law 954-955 Practice Court I-II (3 cr).

Law 956 Appellate Court (1-2 cr).

Law 957 Insurance (3 cr).

Law 958 Products Liability (3 cr).

Law 960 Conflict of Laws (2 cr).

Law 961 Seminar, Jurisprudence (2 cr).

Law 962 Professional Responsibility (2 cr).

Law 963 Family Law (2 cr).

Law 971 Lawyering Process Seminar (2 cr).

Law 972 Legal Externship (1 cr).

Law 973 Public Agency Externship (10 cr).

Law 974 Legal Aid Internship (5 cr; 3 cr).

Law 975 Problems in Litigation (3 cr).

Law 982 Law Review (1-4 cr, max 4).

Law 983 Legal Research (1-2 cr, max 4).

Boyd and Grace Martin Institute of Human Behavior

Boyd A. Martin, Director (1 Cont. Educ. Bldg.).

The two major objectives of the Boyd and Grace Martin Institute of Human Behavior are: (1) to engage in research to gain more knowledge concerning human behavior, whether economic, political, social, psychological, or physiological, for the purpose of gaining a deeper understanding of violence and war, hoping that the causes of behavior are subject to social control; and (2) to disseminate and make available to students by publications, conferences, and courses knowledge that humans now possess that will enable the students to gain an introduction to, and a deeper understanding of, current problems of violence and war. These objectives are based on the assumption that violence and war represent major threats to the continuation of organized society.

Martin Institute of Human Behavior Courses

MIHB 490 The Causes of War (3 cr). Scientific analysis of the causes of the major wars since World War I. Cr not granted for both MIHB 490 and PolSc 449.

MIHB 491 Political, Social, and Econ Conflict Resulting in Violence (3 cr). Nature and dynamics of social and econ forces resulting in political conflict strategies; threats and bargaining; resort to violence and conflict resolution. Cr not granted for both MIHB 491 and PolSc 487.

MIHB 492 Terrorism: Threat, Reality, and Response (3 cr). The terrorist arsenal, national disruption terrorism, countermeasure technology, incident mgt, prep for emergencies, potential targets, and patterns for negotiation.

MIHB 495 Technical Aspects of Modern Warfare (3 cr). Intro to nuclear arms, radiation effects, lasers, missiles, weapons in space, biol and chem weapons, telemetry and comm; use of strategic nuclear arms; disarmament strategies, verification of arms control; relation to energy resources and peaceful uses of technology.

MIHB 496 International Organizations and International Law (3 cr). See PolSc 440.

MIHB WS523 International Organization and Admin (3 cr). WSU Pol S 523.

MIHB 596 Seminar in Political Violence (3 cr). See PolSc 587.

Department of Mathematics and Statistics

James E. Calvert, Dept. Chair (300 Carol Ryrie Brink Hall).

Mathematics Faculty: Gail H. Adele, Erol Barbut, Arie Bialostocki, Larry E. Bobisud, Willy Brandal, James E. Calvert, Jr., Charles O. Christenson, John I. Cobb, Paul F. Dierker, Roy H. Goetschel, Jr., Ralph J. Neuhaus, Daniel O'Regan, Clarence J. Potratz, William D. Royalty, Samuel K. Stueckle, Mary H. Voxman, William L. Voxman.

Statistics Faculty: C. Randall Byers, John E. Carlson, Brian C. Dennis, Dale O. Everson, Richard Gill, Phillip D. Olson, Clarence J. Potratz, R. Kirk Steinhorst. Adjunct Faculty: Raymond Dacey, Judith Doerann, Edward O. Garton, Donald F. Haber, Joel R. Hamilton, R. Ashley Lyman.

The Department of Mathematics and Statistics offers a wide variety of majors and minors. In addition to the degree programs described below, many students pursue joint majors in mathematics and other disciplines that utilize mathematics. The most popular of these are mathematics/computer science and mathematics/physics. A joint major is obtained by completing the degree requirements for both majors. Minor programs are described below under "Curricular Requirements." At the graduate level, the department offers the following degrees in mathematics: M.S., M.A.T., and Ph.D. The M.S. degree is also offered in statistics. Detailed information on these programs is published in the Graduate Bulletin.

The need for persons with quantitative skills is increasing dramatically as the world grows more complex. Mathematicians and statisticians have employment opportunities in business, industry, government, and teaching. Persons planning careers in almost any field will find their opportunities enhanced by the study of mathematics and statistics. The programs are intended to provide students just such enhancement. It is generally the case that the person who develops his or her quantitative skills has increased ability to attack many of the complex problems of society. Advances in science, technology, the social sciences, business, industry, and government become more and more dependent on precise analysis and the extraction of information from large quantities of data. Environmental problems, for example, require careful analysis by persons (or teams of persons) with skills in mathematics, statistics, and computer science as well as in biology, geology, physics, and many other fields.

The demand for teachers of mathematics is greater now than ever before. Nearly every school district in the nation has a shortage of teachers trained in mathematics. UI offers a broadly based program leading to teacher certification, through enrollment either in the Department of Mathematics and Statistics or in the College of Education and completion of a major or minor in mathematics.

Mathematics. The body of mathematical knowledge that has grown over the past 2,000 years is a magnificent human achievement, and it is growing more rapidly than ever before. The habits of systematic and creative thought developed in the study of mathematics are recognized as invaluable in most areas of human endeavor. UI's B.A. and B.S. programs in mathematics are designed to introduce the student to the excitement of mathematical ideas; they allow the maximum possible freedom to explore those areas of mathematics that the study finds most interesting.

The department has a sound program in mathematics with a proven record of preparing students for successful graduate study at the very best universities in the nation. There are sequences of courses in calculus, advanced calculus, linear algebra, differential equations, number theory, abstract algebra, topology, geometry, statistics, complex analysis, and mathematical analysis. Students of mathematics who do not go on to graduate school are well prepared for industrial, governmental, or teaching jobs if they have some additional exposure to computer science, education, or one of the natural, social, or applied sciences.

Applied Mathematics. Many of the greatest achievements in mathematics were inspired by problems in the natural sciences; today mathematics has wide application in both the natural and social sciences. Applied mathematics provides a broad arena for the intellectual and creative impulses of man. The B.S. in applied mathematics allows a choice of the computation, statistics, scientific, or actuarial science options. Many students interested in applications of mathematics pursue a joint major in some other department.

Actuarial Science. An actuary applies mathematics and statistics to forecasting problems. Actuaries are employed by financial institutions, government, insurance companies, and international corporations. They address problems as diverse as economic fluctuations, population demographics, resource consumption, medical insurance rates, and retirement needs. Actuaries are in great demand and have many interesting career opportunities leading often to high management positions. Admission to the actuarial profession is governed by a series of examinations adminstered by the actuarial societies. The first two or three examinations can be taken by undergraduates, and the rest are usually taken while working in the industry. The first three examinations are given locally. Our actuarial science option, review seminars, and summer internship program with actuarial companies prepare students for these tests.

Statistics. Statistics encompasses course work in designing and analyzing experiments, planning and interpreting surveys, and exploring relationships among variables observed on social, physical, and biological phenomena. The applied nature of the program allows the student to develop data analysis tools for such diverse areas as business and economics, crop and animal production, biological sciences, human behavior, education, and natural resource management.

The statistics program at UI does not yet offer a baccalaureate degree but rather is designed to support major programs in other disciplines.

Faculty members in the Department of Mathematics and Statistics will be happy to answer questions about specific programs and courses. Such questions can also be addressed to the department chair (Brink 300; telephone 208/885-6742).

Courses

MATHEMATICS

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content are: 180-190-200-471-472.

CREDIT LIMITATIONS: Math 140 carries no credit after 160; Math 180 carries 2 credits after 160; Math 160 carries no credit after 180; Math 190 carries 2 credits after Math 161 and Math 161 carries 1 credit after Math 190.

Also see regulation J-5-e.

Math 050 Pre-College Algebra (0 cr). Intro to algebra; linear equations, factoring polynomials, rational algebraic expressions, quadratic formula, word problems, systems of equations. Three lec a wk. A special fee is charged for this course. Prereq: mastery of arithmetic.

Math 111 Finite Math (4 cr). Satisfies core requirement J-3-c. Review of algebra, including polynomials, functions, and logarithms; systems of linear inequalities; matrices; linear programming; and probability. Prereq: 1 yr high school algebra, 1 yr plane geometry, and sufficient score on SAT, ACT, or Math Placement Test.

Math 135-136 Math for Elementary Teachers (3 cr)(C). Math dev of arithmetic, informal geometry, problem solving, probability and stats as these subjects are currently taught in elem schools. Prereq: 2 yrs high school algebra (or 140), 1 yr plane geometry, and placement by test; recommended prep for 135: general ed requirement in math (111, 140, 160, or 180).

Math 140 Pre-calculus Algebra and Analytic Geometry (3 cr)(C). Satisfies core requirement J-3-c. Carries no credit after 160. Properties of real numbers; algebraic, exponential, logarithmic functions, complex numbers, and progressions. Prereq: 1½ yrs high school algebra (or 050), 1 yr high school plane geometry, and sufficient score on SAT, ACT, or Math Placement Test.

Math 160 Survey of Calculus (4 cr). Satisfies core requirement J-3-c. Carries no credit after 180. Functions, graphing, derivative, integral, exponential and logarithmic functions, functions of several variables. Prereq: One yr of high school geometry and one of the following: (1) 1½ yrs high school algebra and sufficiently high score on SAT, ACT, or Math Placement Test or (2) Math 050 or (3) Math 140.

Math 161 Survey of Calculus II (3 cr). Intended for nontechnical students. Carries 1 credit after 190. Functions of several variables, trigonometric functions; tech of integration, differential equations, Taylor polynomials, and series; applications to business, social sc, and life sc. Prereq: 160.

Math 176 Discrete Math (4 cr). Basic set theory, matrices, graph theory, number systems, Boolean algebra, and difference equations; emphasis on algorithms and intro to their analysis. Prereq: two yrs high school algebra and placement by test, or Math 140.

Math 179 Analytic Trigonometry (2 cr)(C). Not open for cr to students who have previous high school or college cr in trig. Trigonometric functions, inverse functions, appl. Prereq: 2 yrs high school algebra (or 050 or 140) and 1 yr plane geometry, and perm of dept. Concurrent enrollment in 050, 140, or 180 permitted.

Math 180 Analytic Geometry and Calculus I (4 cr)(C). Satisfies core requirement J-3-c. Carries 2 credits after 160. Functions, limits, continuity, differentiation, integration, appl, differentiation and integration of transcendental functions. Prereq: 2 yrs high school algebra (or 140) and 1 yr plane geometry and ½ yr analyt trigonometry, or placement by test.

Math R181 Analytic Geometry and Calculus I (3 cr). Functions, rate of change, limits, continuity, differentiation of algebraic functions with appl, and integration. Prereq: perm.

Math 186 Theory of Numbers (3 cr). Elem number theory, incl divisibility properties, congruences, and Diophantine equations. Prereq: 140 or perm.

Math 190 Analytic Geometry and Calculus II (4 cr). Carries 2 credits after 161. Differentiation and integration of transcendental functions, integration tech, general mean value theorem, numerical tech, and series. Prereq: 180.

Math R191 Analytic Geometry and Calculus II (3 cr). Appl of the definite integral, differentiation and integration of transcendental functions, methods of integration, and determinants and linear equations. Prereq: perm.

Math 200 Analytic Geometry and Calculus III (3 cr). Vectors, functions of several variables, and multiple integration. Prereq: 190.

Math R201 Analytic Geometry and Calculus III (3 cr). Two- and three-dimensional analytic geometry, vectors, hyperbolic functions, parametric equations, and polar coordinates. Prereq: perm.

Math 202 (s) **Seminar** (cr arr). Prereq: perm.

Math 204 (s) **Special Topics** (cr arr).

Math R211 Analytic Geometry and Calculus IV (3 cr). Partial derivatives, infinite series, and complex numbers and functions. Prereq: perm.

Math 215 Seminar in Topology of the Plane (3 cr). Carries no cr after 411 or 471. Primary goal is to teach students to prove theorems; open and closed sets, connectedness, compactness, continuity, etc. Class size limited to 15. Prereq: 180, 190, and perm.

Math 255 Applied Actuarial Science I (0 cr). Review of calculus and linear algebra in prep for actuarial exam 1. Prereq: 200, 300.

Math 299 (s) **Directed Study** (cr arr). Prereq: perm.

Math 310 Ordinary Differential Equations (3 cr). Classification, initial and boundary value problems of one variable, exact equations, methods of solving higher-order linear equations, second-order equations with constant coefficients, series solutions, systems of linear equations, Laplace transforms, and existence theorems. Prereq: 190 (200 recommended).

Math H315 Topics in Pure Math (3 cr). Carries no credit after 215. A topic selected each yr that develops skill in and appreciation for theoretical nature of math. Prereq: 160 or 180 and perm of dir of Univ Honors Prog.

Math H316 Topics in Applied Math (3 cr). Topics selected each yr that develop skill in and appreciation for application of math. Prereq: 200 and perm of dir of Univ Honors Prog.

Math 326 Linear Programming (3 cr). Alt/yrs. Geometric solutions, simplex method, duality and revised simplex method, sensitivity, integer programming, appl. Prereq: 160 or 180.

Math 330 Linear Algebra (3 cr). Linear equations, matrices, linear transformations, eigenvalues, diagonalization; applications and numerical techniques. Prereq: 160 or 180.

Math 346 Applied Combinatorics (3 cr). Elem counting methods, generating functions, recurrence relations, Polya's enumeration, enumeration of graphs, trees, and searching, combinatorial algorithms. Prereq: 190; recommended prereq: 176 or 376 or 405.

Math 376 Discrete Math II (3 cr). Selected topics from discrete math such as graph theory, modeling, and optimization. Prereq: 176 or perm.

Math 390 Postulational Geometry (3 cr). Postulates of Hilbert and Euclid; non-Euclidean geometries; the Erlanger program; projective geometry. Prereq: 180 or 160.

Math 400 (s) **Seminar** (cr arr). Prereq: perm.

Math 404 (s) **Special Topics** (cr arr). Prereq: perm.

Math 405 Analysis of Computer Algorithms (3 cr). Same as CS 495. Models of computation, measures of efficiency, set manipulations, algorithms on graphs, and appl. Prereq: CS 213, and either 160 or 180.

Math 411 Elem Topology (3 cr). Alt/yrs. Topology of metric spaces; compactness, connectedness, continuity. Prereq: 200 or perm.

Math 420 Complex Variables (3 cr). Alt/yrs. Complex numbers; elem functions; derivatives; the residue theorem; conformal mappings; contour integration; infinite series; appl. Prereq: 200.

Math 426 Optimization (3 cr). Classical optimization, convexity, one-dimensional searches, non-linear programming, numerical considerations. Prereq: 200, 330, 326, and knowledge of a computer language.

Math 432 Numerical Linear Algebra (3 cr). Analysis of efficiency and accuracy of large linear algebra problems; special emphasis on solving linear equations and finding eigenvalues. Prereq: 200, 330, and knowledge of a computer language.

Math 433 Numerical Analysis (3 cr). Analysis of numerical methods useful in solving applied problems; solution of nonlinear equations, interpolation, numerical differentiation and integration, numerical solution of differential equations. Prereq: 200, 330, and knowledge of a computer language.

Math 440 Linear Algebra (3 cr). Vector spaces, linear transformations and matrices, quadratic forms, characteristic vectors and roots.

Math ID&WS451-ID&WS452 Probability Theory and Math Stat (3 cr). Same as Stat 451-452. WSU Stat 443-444. Random variables, limit theorems, distribution of sample stat, estimation, testing hypotheses. Prereq: 200.

Math ID&WS-J453/ID&WS-J544 Stochastic Models (3 cr). Same as Stat J453/J544. Alt/yrs. Markov chains, stochastic processes, and other stochastic models; appl. Prereq: 451 or perm.

Math 461-462 Abstract Algebra (3 cr). Groups, rings, and fields. Recommended prereq for 461: at least one of the following: 186, 215, 330, 390.

Math WS464 Operations Research and Game Theory (3 cr). Prereq: 200.

Math 471-472 Adv Calculus (3 cr). Topology of Euclidean n-space, limit and continuity, differentiation, integration. Prereq: 200 and 215, or perm.

Math 480 Partial Differential Equations (3 cr). Alt/yrs. Intro to Fourier analysis, appl to solution of partial differential equations; classical partial differential equations of engr and physics. Prereq: 310.

Math 482 Adv Applied Math (3 cr). Selected topics. Prereq: 310.

Math 485 Theory of Computation (3 cr). Same as CS 490. Math models of computation, incl finite automata and Turing machines. Prereq: perm.

Math 490 Intro to Set Theory (3 cr). Alt/yrs. Set operations, functions, binary operations and relations, cardinal and ordinal numbers, axiom of choice, partially ordered sets, and Zorn's lemma. Prereq: 200.

Math 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

Math 499 (s) **Directed Study** (cr arr). Prereq: perm.

Math 500 Master's Research and Thesis (cr arr).

Math 501 (s) **Seminar** (cr arr). Prereq: perm.

Math 502 (s) **Directed Study** (cr arr). Prereq: perm.

Math 504 (s) **Special Topics** (cr arr).

Math WS507 Adv Theory of Numbers (3 cr, max 6).

Math WS508 Topics in Applied Analysis (3 cr). Prereq: 535.

Math WS509 Foundations of Math (3 cr). Alt/yrs.

Math ID&WS511-ID&WS512 Topology (3 cr). Alt/yrs. Basic concepts of point set and algebraic topology.

Math 521 (s) **Seminar in Topology** (1-3 cr, max arr). Current lit.

Math ID523-ID524 Algebraic Topology (3 cr). Alt/yrs. Basic homotopy theory, covering spaces, homology theory, and appl.

Math 526 (s) **Topics in Topology** (1-3 cr, max 12).

Math ID&WS531-532 Complex Variables (3 cr). Alt/yrs. WSU Math 503. Theory of functions of a complex variable.

Math 535 Real Variables (3 cr). Alt/yrs. Measure and integration theory for functions of one or several variables.

Math 536 Probability Theory (3 cr). Alt/yrs. Random variables, characteristic functions, convergence theorems, central limit theorem, conditional probability, and stochastic processes as developed from a measure theoretic basis. Prereq: 535 or perm.

Math ID&WS539 Theory of Ordinary Differential Equations (3 cr). Alt/yrs. WSU Math 512. First-order systems, equations with analyt coefficients, self-adjoint boundary value problems.

Math WS540 Partial Differential Equations I (3 cr). Prereq: 471.

Math ID&WS541A (s) **Seminar in Analysis** (1-3 cr, max arr). WSU Math 581. Current lit.

Math WS541B Partial Differential Equations II (3 cr). Prereq: 540.

Math ID&WS544 Stochastic Models (3 cr). See J453/J544.

Math WS545 Adv Numerical Analysis (3 cr). Prereq: 432, 433.

Math 546 (s) **Topics in Analysis** (1-3 cr, max arr).

Math ID550A Linear Algebra (3 cr). Alt/yrs. Vector spaces, direct sums, quotient spaces, similarity, Jordan forms, inner products, eigenvalues, eigenvectors, spectral theory.

Math WS550B Adv Topics in Geometry (3 cr). Alt/yrs.

Math ID551 Ring Theory (3 cr). Alt/yrs. Ideals, quotient rings, modules, radicals, semisimple Artinian rings, Noetherian rings.

Math ID552 Galois Theory (3 cr). Alt/yrs. Field extensions, automophisms, normality, splitting fields, radical extensions, finite fields, separability. (A knowledge of group theory is presumed.)

Math ID&WS553 Group Theory (3 cr). Alt/yrs. WSU Math 551. Permutation groups, isomophisms, direct products, Sylow theory, normal series, abelian groups.

Math ID&WS561 (s) **Seminar in Algebra** (1-3 cr, max arr). WSU Math 582. Current lit.

Math WS564 Topics in Optimization (3 cr, max arr). Prereq: 326, 432, 471; CS 105.

Math 566 (s) **Topics in Algebra** (1-3, max arr).

Math WS570 Math Foundations of Continuum Mechanics I (3 cr). Prereq: adv calculus and differential equations.

Math ID&WS571A-ID&WS572 Functional Analysis (3 cr). Alt/yrs. WSU Math 504-506. Linear topological spaces and linear operators. Prereq: 536.

Math WS571B Foundations of Continuum Mechanics II (3 cr). Prereq: 570.

Math 574 Topics in Applied Math (3 cr). Integral and differential equations.

Math R577-R578 Adv Math Stat (3 cr). Dev and appl of math stat to problems in the engr sc. Prereq: perm.

Math R580 Numerical Solutions of Partial Differential Equations (3 cr). Finite difference methods for elliptic, parabolic, and hyperbolic equations; solution methods suitable for digital computers; iterative methods for large scale linear systems. Prereq: perm.

Math 581 (s) **Seminar in Combinatorics** (1-3 cr, max arr).

Math 582 (s) **Topics in Combinatorics** (1-3 cr, max arr).

Math WS583 Topics in Applied Math (3 cr, max arr).

Math WS584 Seminar in Topology and Geometry (3 cr, max arr).

Math 585A-586A Recent Dev in Math (3 cr). For students with extensive background in specific phases.

Math WS585B Seminar in Number Theory (3 cr, max arr). Alt/yrs.

Math WS586B Topics in Math Modeling in Natural Sciences (3 cr, max 12).

Math 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Math 600 Doctoral Research and Dissertation (cr arr).

STATISTICS

Stat 251 Prin of Statistics (3 cr). Satisfies core requirement J-3-c. Cr not given for both 251 and 301. Intro to stat methods incl description stat, probability, confidence intervals, hypothesis testing, chi-square, analysis of variance, regression, and correlation. Prereq: Math 111 or 140 or 2 years of high school algebra.

Stat ID&WS301 Probability and Statistics (3 cr). Intended for engr, math, and physical sc. Cr not given for both 251 and 301. Intro to sample spaces, random variables, stat distributions, hypothesis testing, basic experimental design, regression, and correlation. Prereq: Math 190.

Stat 401 Statistical Analysis (3 cr). Concepts and methods of stat research incl multiple regression, contingency tables and chi-square, experimental design, analysis of variance, multiple comparisons, and analysis of covariance. Prereq: 251 or 301.

Stat WS412 Biometry (3 cr). WSU Biom 412. Equiv to Stat 401.

Stat WS-J420/WS-J520 Stat Analysis of Qualitative Data (3 cr).

Stat ID422 Sampling Methods (2 cr). Simple and stratified random sampling, systematic sampling, cluster sampling, double sampling, area sampling, analyt surveys, and estimation of sample size. Prereq: 251 or 301.

Stat 428 Intro to Geostatistics (3 cr). See GeoIE 428.

Stat 433 Intro to Econometrics (3 cr). See Econ 433.

Stat 437 Stat for Business Decisions (2 cr). See Bus 437.

Stat ID&WS451-ID&WS452 Probability Theory and Math Stat (3 cr). See Math 451-452.

Stat ID&WS-J453/ID&WS-J544 Stochastic Models (3 cr). See Math J453/J544.

Stat 455 Applied Actuarial Science II (0 cr). Review of mathematical and applied statistics in prep for actuarial exam 2. Prereq: 301 and Math 451-452.

Stat 456 Quality Control (3 cr). See Bus 456.

Stat 457 Nonparametric Stat (2 cr). Methodology of nonparametrical statistical tests. Prereq: 251 or 301.

Stat 499 (s) **Directed Study** (cr arr). Prereq: perm.

Stat 500 Master's Research and Thesis (cr arr).

Stat 502 (s) **Directed Study** (cr arr). Prereq: perm.

Stat 503 (s) **Workshop** (cr arr).

Stat 504 (s) **Special Topics** (cr arr).

Stat R505 Engr Stat (1-3 cr). See ES R505.

Stat 507 Experimental Design (3 cr). Methods of constructing and analyzing designs for experimental investigations; analysis of designs with unequal subclass numbers; concepts of blocking randomization and replication; confounding in factorial experiments; incomplete block designs; response surface methodology. Prereq: 401 or equiv.

Stat ID&WS510 Regression (3 cr). WSU Stat 535. Simple multiple and polynomial regression in matrix format; estimation, testing, and prediction; stepwise and other numerical methods, examination of residuals, weighted least squares and nonlinear models. Prereq: 301, 401, and Math 330.

Stat ID514 Nonparametrics (3 cr). Conceptual dev of nonparametric methods including one, two, and k-sample tests for location and scale, randomized complete blocks, rank correlation, and runs test; power, sample size, efficiency, and ARE. Prereq: 401 or perm.

Stat WS520 Stat Analysis of Qualitative Data (3 cr). See J420/J520.

Stat ID521 Multivariate Analysis (3 cr). The multivariate normal, Hotelling's $T2$, multivariate general linear model, discriminant analysis, covariance matrix tests, canonical correlation, and principle component analysis. Prereq: 401 or perm.

Stat 522 Stat Genetics (3 cr). See AnSc 522.

Stat WS531 Econometrics (3 cr). WSU Stat 531.

Stat ID&WS533 Theory of Linear Models (3 cr). Theory of least squares analysis of variance models and the general linear hypothesis; small sample distribution theory for regression, fixed effects models, variance components models, and mixed models. Prereq: Math 451.

Stat WS539 Time Series (3 cr). Basic concepts; ident and analysis of auto regressive and moving average processes; spectral analysis, prediction, and problems of inference. Prereq: perm.

Stat ID&WS544 Stochastic Models (3 cr). See J453/J544.

Stat R547 Applied Time Series Forecasting (3 cr). See EE 547.

Stat WS548-WS549 Statistical Theory I-II (3 cr).

Stat ID555 Statistical Ecology (3 cr). See For 555.

Stat ID&WS571 Reliability Theory (3 cr). Alt/yrs. Stat concepts; stochastic material strengths and lifetimes; strength vs. safety analysis; reliability of coherent systems; maintenance models; complex systems. Prereq: Math 451.

Stat WS572 Data Analysis (3 cr).

Stat 597 (s) **Practicum** (cr arr). Prereq: perm.

Stat 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

MATHEMATICS (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 215 Seminar in Topology of the Plane	3
Math 330 or 440 Linear Algebra	3
Math 461 Abstract Algebra	3
Math 462 Abstract Algebra or 472 Advanced Calculus	3
Math 471 Advanced Calculus	3
Math electives in courses numbered above 300, at least 6 cr of which are in courses numbered above 401	12
Phys 210, 211, Engr Physics I, II, and either Phys 222 or an upper-division physics course with a Math 180 prereq (to acquaint the student with an area in which math is systematically applied; upon approval of the dept, substitution of other courses to meet this requirement may be allowed)	9

45-Credit Teaching Major
Majors seeking certification to teach in secondary schools should consult the chair of the department for information about the 45-credit teaching major.

MATHEMATICS: APPLIED (B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 330 Linear Algebra: Appl & Numerical Methods	3
CS 112 Intro to Problem Solving & Programming	3

And one of the following options:

A. STATISTICS OPTION

Course	Credits
Math 451-452 Probability Theory & Math Statistics	6
Math 453 Stochastic Models	3
Math 499 Directed Study	2
Stat 301 Probability & Statistics	3
At least two courses from the following:	6
Math 405 Analysis of Computer Algorithms	
Math 426 Optimization	
Math 432 Numerical Linear Algebra	
Math 433 Numerical Analysis	
Math 440 Linear Algebra	
Math 471-472 Advanced Calculus	
CS 213 Data Structures	
At least two courses from the following:	5-6
Stat 401 Statistical Analysis	
Stat 422 Sampling Methods	
Stat 507 Experimental Design	
Stat 514 Nonparametrics	
Stat 521 Multivariate Analysis	
Stat 510 Regression	
Approved electives in fields where statistics is applied (not to be in stat courses)	6

B. COMPUTATION OPTION

Course	Credits
Math 405 Analysis of Computer Algorithms	3
Math 432 Numerical Linear Algebra	3
Math 433 Numerical Analysis	3
CS 213 Data Structures	3
At least three courses from the following	9
Math 310 Ordinary Differential Equations	
Math 326 Linear Programming	
Math 346 Applied Combinatorics	
Math 376 Discrete Math II	
Math 426 Optimization	
Math 485 Theory of Computation	
Two additional math courses numbered 400 or above	6

C. SCIENTIFIC OPTION

Course	Credits
Math 310 Ordinary Differential Equations	3
Math 480 Partial Differential Equations	3
Stat 301 Probability & Statistics or Math 451 Probability Theory & Math Statistics	3
At least two courses from the following:	5-6
Math 202 Seminar	
Math 420 Complex Variables	
Math 432 Numerical Linear Algebra	
Math 433 Numerical Analysis	
Five additional math courses selected from 326, 346, or courses numbered 400 or above	15

D. ACTUARIAL SCIENCE OPTION

Course	Credits
Math 326 Linear Programming	3
Math 433 Numerical Analysis	3
Math 451-452 Probability Theory & Math Stat	6
Three courses selected from the following:	8-9
Math 405 Analysis of Computer Algorithms	
Math 432 Numerical Linear Algebra	
Math 453 Stochastic Models	
Math 471 Advanced Calculus	
Math 472 Advanced Calculus	
Stat 422 Sampling Methods	
Stat 510 Regression	
Stat 521 Multivariate Analysis	
Acctg 201-202 Prin of Acctg or Acctg 395 Fund of Acctg	4
Bus 301 Financial Management	3
Bus 403 Insurance	3
Econ 151, 152 Prin of Econ or 272 Foundations of Econ	4-6
Stat 301 Probability & Statistics	3
Stat 401 Statistical Analysis	3
At least one course selected from the following:	3
Bus 401 Investments	
Bus 405 Portfolio Management	
Econ 321 Interm Microeconomic Analysis	
Econ 433 Intro to Econometrics	
Econ 436 Econ & Business Forecasting	

Academic Minor Requirements

MATHEMATICS MINOR

Course	Credits
Math 180, 190, 200 Analytic Geom & Calc	11
Five math courses numbered above 300, one of which may be Stat 301	15

STATISTICS MINOR

Course	Credits
Stat 251 Prin of Stat or 301 Prob & Stat	3
Stat 401 Statistical Analysis	3
Stat 422 Sampling Methods	2
Math 160 Survey of Calculus or 180 Analytic Geometry & Calculus	4
Math 330 Linear Algebra	3
Two of the following courses:	4-6
Stat 433 Intro to Econometrics	
Stat 437 Stat for Business Decisions	
Stat 456 Quality Control	
Stat 457 Nonparametric Stat or Stat 514 Nonparametrics	
Math 451 Probability Theory & Math Stat	

Department of Mechanical Engineering

E. Clark Lemmon, Dept. Chair (202 Gauss Lab. Bldg.). Faculty: Jasper R. Avery, Steven W. Beyerlein, Ralph Budwig, Karen R. DenBraven, Dean B. Edwards, Donald F. Elger, Ronald F. Gibson, Richard T. Gill, Richard T Jacobsen, E. Clark Lemmon, T. Alan Place, Larry A. Stauffer, Robert L. Turner.

Mechanical engineering is concerned with the application of the principles of science and technology in the creation of products and systems to benefit mankind in several areas including: (1) the conversion of energy from natural sources to provide power, light, heating and cooling, and transportation; (2) the design and development of machines to extend and to increase the efficiency of human effort; (3) the design, development, and operation of systems for utilizing energy and other resources; and (4) the production of manufactured goods.

Mechanical engineering is broad in scope and provides a wide range of careers for trained professionals in industry, business, government, and universities. Positions are available in design, testing, manufacturing, research, development, operations, system analysis, marketing, and administration. Mechanical engineers are often involved as professional team members in economic and social-humanistic matters and are responsible for the interaction of technical advances with social and environmental concerns.

The mechanical engineering program at UI is designed to prepare students for entry into professional practice and for continuing education at the master's and doctoral levels. The engineering sciences, physical sciences, mathematics, communications, humanities, and social sciences form the basis for the curriculum. The program also includes specialized courses in thermal sciences and applied mechanics. Development of creative ability in design and synthesis of machines and systems is an important part of the departmental curriculum. Computer applications are emphasized in course work. Students are encouraged to develop individual interests through the selection of technical elective courses.

The department has a variety of equipment for instruction and research applications. Among the facilities available are an industrial robot, a large electrohydraulic universal testing machine, standard metallographic facilities, vibration testing equipment, solar collector systems, engine testing equipment, wind tunnels, specialized computing equipment, and data acquisition and measurement systems. Research and laboratory equipment in other departments is also used by mechanical engineering students.

Research projects conducted by faculty members provide both experience and financial support for undergraduate and graduate students in mechanical engineering. Faculty members also perform consulting services in addition to their academic responsibilities.

Faculty members are available to discuss details of the program in their specialty areas with interested students. General questions regarding the undergraduate program should be addressed to the undergraduate adviser, Jasper R. Avery, or the deparment chair (telephone 208/885-6579).

The following graduate degrees are available in mechanical engineering: Ph.D. M.S., and M.Engr. (nonthesis degree). In addition, the M.S. and M.Engr. in nuclear engineering are offered at the UI/Idaho Falls Center for Higher Education. Minimum preparation for graduate study in mechanical engineering is a B.S. degree in a curriculum in mechanical engineering that is accredited by the Accreditation Board for Engineering and Technology (A.B.E.T.). Students entering the program with a baccalaureate degree in a major other than mechanical engineering must demonstrate proficiency in the subjects required in the B.S.M.E. program. Individual student qualifications are assessed by the departmental graduate committee, which also determines undergraduate deficiencies. The graduate adviser and chair of the Graduate Committee is E. Clark Lemmon, 202 Gauss (208/885-6579).

Courses

MECHANICAL ENGINEERING

ME 233 Mech Design Analysis (2 cr). Fundamentals of engr design, graphic representation and computer-aided design (CAD) of engr systems. Two lec a wk. Prereq: Engr 101, CS 105, or perm.

ME 253 Materials Processing (3 cr). Theory and practice of machining, casting, forming, and shaping materials; intro to numerical control (N/C) and computer-aided manufacturing (CAM) tech.

ME 261 Engr Materials (3 cr). Fundamental factors in influencing properties and selection of materials. Prereq: Chem 111.

ME 262 Engr Materials Lab (1 cr). Crystallography, mech testing, phase transformations, heat treatment and corrosion of polymers, metals, and ceramics. One 2-hr lab a wk. Coreq: 261.

ME 299 (s) **Directed Study** (cr arr). Indiv study of selected topics. Detailed report reqd. Prereq: perm.

ME 304 Materials Selection for Mech Design (2 c). Selection of engr materials related to service conditions. Prereq: 261.

ME 322 Applied Thermodynamics (3 cr). First and second laws; property relations, mixtures, irreversibility and availability, cycles, systems analysis; selected topics in applied thermodynamics. Prereq: ES 321, ES 322 or perm.

ME ID&WS324 Kinematics and Dynamics of Machines (3 cr). WSU 312. Kinematic, static, and dynamic prin and appl to analysis and synthesis of machines with emphasis on computer-aided design (CAD) tech. Two lec and one 3-hr lab a wk; one 1-day field trip. Coreq: 223.

ME 326 Mech Engr Project (1-3 cr). Indiv investigation and report. Prereq: jr standing and perm of dept.

ME 330 Experimental Methods for Engineers (3 cr). Measurement systems and their application to engr problems; topics incl generalized performance of measurement systems, measuring and control devices, data acquisition and analysis, and report writing. Two lec and one 2-hr lab a wk. Coreq: EE 207, ES 320, ES 321, ES 340.

ME 345 Heat Transfer (3 cr). Transmission by conduction of heat in steady and unsteady states, by free and forced convection, and by radiation; combined effects of conduction, convection, and radiation. Prereq: ES 321; coreq: 380.

ME 361 Applied Engr Materials (3 cr). Strengthening and surface treatment of materials; joining of metals; properties of nonmetallics; composite materials; photomicrography; failure investigation of mech engr systems. Two lec and one 2-hr lab a wk. Prereq: 261.

ME ID&WS380 Math Modeling of Mech Engr Systems (3 cr). WSU 313. Appl of math and basic engr prin in the solution of engr problems and the math modeling of engr systems; solution of problems by analytic and numerical methods; intro of computer prog for dynamic systems analysis and for data analysis. Prereq: Math 310.

ME WS402 Polymeric Materials (3 cr). WSU MSE 402. Prereq: 261 or equiv.

ME 404 (s) **Special Topics** (cr arr).

ME 410 Production Engr (3 cr). Planning, analysis, and control of engr design processes, decision models, CPS, PERT, data collection, linear programming, materials mgt, quality control, computer techniques.

ME 412 Gas Dynamics (3-4 cr). Compressible flow, one- and two-dimensional flows, normal and oblique shock waves; nozzle operation, Prandtl-Meyer flow, Fanno flow, Rayleigh flow. Three lec a wk. Registration for 4 cr requires 2-hr lab. Prereq: ES 320, Math 310.

ME 420 Fluid Dynamics (3-4 cr). Viscous flows, differential equations of fluids, boundary layer equations with appl, dimensional analysis as applied to fluids, convective correlations. Three lec a wk. Registration for 4 cr requires 2-hr lab. Prereq: ES 320, Math 310.

ME 422 Analyt Thermodynamics (3 cr). Thermodynamic properties of real fluids; computer modeling and analysis of thermodynamic systems. Prereq: 322 or perm.

ME 425 Mech Design (4 cr). Stress and strain, material failure, combined stresses, variable and impact loading, machine elements, lubrication theory, bearing design, and computer-aided design (CAD) prin. Prereq: 223, ES 340.

ME 426 Mech System Design (3 cr). Indiv or team system design, incl econ analysis and computer-aided design (CAD) tech; final report reqd. One lec, two 2-hr labs, and four hrs of independent work a wk; one 1-day field trip. Prereq: 324, 425.

ME 427 Computer Aided Design (3 cr). CAD tech incl finite element and optimum design, appl to mech systems elements with practical design constraints. Coreq: 425 or perm.

ME 430 Mech Engr Systems Lab (2 cr). Investigations involving solid-body mechanics, thermodynamics, vibrations, heat transfer, and fluid mechanics; experimental verification of math models based on theory and experimental analysis of systems; design of experiments and analysis and interp of experimental data. One 3-hr lab a week. Prereq: 330; coreq: 345.

ME 433 Combustion Engine Systems (3 cr). Theory and characteristics of combustion engines; combustion process analysis; fuels, exhaust emissions and controls; system analysis and modeling. Prereq: ES 321.

ME 435 Solar Energy Systems (3 cr). Design and appl of collector systems for heating and cooling of buildings and generation of high temperatures. Coreq: 345.

ME J439/ID&WS-J539 Adv Mechanics of Materials (3 cr). Same as ES 440. Limitations of results of ES 340, more complex situations of loading and structural geometry, appl to design of machines and structures. Additional projects/assignments reqd for grad cr. Prereq: ES 340, Math 310.

ME 441 Thermal Systems Design (3 cr). Design of integrated thermal systems; steam power plants; econ, variable output, environmental problems. Prereq: 322.

ME 444 Air Conditioning Engr (3 cr). Requirements for air conditioned spaces for human comfort; thermodynamic properties of air-water vapor mixtures; heating and cooling loads; design of systems for heating, cooling, and ventilation. Prereq: 322, 345.

ME 450 Cryogenic Engr (3 cr). Low temperature systems, gas liquefaction, cryogenic refrigeration and storage, properties of materials at low temperatures, insulation problems. Prereq: 322, 345.

ME 461 Fracture Mechanics (3 cr). Fracture mechanics approach to structural integrity, fracture control, transition temperature, microstructural and environmental effects, fatigue and failure analysis. Prereq: 261, ES 340.

ME WS470 Kinematic Synthesis (3 cr). Cr not granted for both 470 and 570. Prereq: 324 or perm.

ME ID&WS472 Mech Vibrations (3 cr). WSU 449. Free, forced, and transient vibrations with and without damping; multimass and distributed systems; single degree and two degrees of freedom; special tech; vibration control. Prereq: ES 340, Math 310.

ME 473 Applied Stress Analysis (3 cr). Stresses and strains under static and dynamic loads, photoelastic methods. Two lec and one 2-hr lab a wk. Prereq: ES 340.

ME 475 Experimental Vibration Analysis (2 cr). Vibration transducers and instrumentation; free and forced vibrations of discrete and continuous systems; damping; rotor dynamics; shock testing; frequency spectrum analysis; model analysis; individual student projects. One lec and one 2-hr lab a wk. Prereq or coreq: 472.

ME WS481 Control Systems (3 cr). Cr not granted for both 481 and 581. Prereq: 380 or perm.

ME 491-492 Seminar (0 cr). Graded P/F. Professional practice and tech topics, professional registration, presentations by practicing engineers. One 3-6 day field trip each semester may be reqd. Prereq: sr standing.

ME 499 (s) **Directed Study** (cr arr). Selected topics. Detailed report reqd. Prereq: sr standing and perm.

ME 500 Master's Research and Thesis (cr arr).

ME 501 (s) **Seminar** (cr arr). Engr and engr-related topics. Graded P/F. Prereq: perm.

ME 502 (s) **Directed Study** (cr arr). Supervised study, incl critical reading of current lit. Prereq: perm.

ME 503 (s) **Workshop** (cr arr). Prereq: perm.

ME 504 (s) **Special Topics** (cr arr).

ME ID&WS505 Dynamics (3 cr). WSU 540. Dynamic specs of solid bodies; rectangular, angular, and plane motion; three-dimension dynamics; beams. Prereq: Math 310, or perm.

ME 507 Machine Design (3 cr). Adv mech design to meet needs and interests of students; special projects. Prereq: 425 or perm.

ME 508 Adv Stress Analysis (3 cr). Eval of stress and strain by analyt and experimental methods; use of digital computer; appl to design of mech components. Prereq: 473, ES 340.

ME ID&WS512A Adv Gas Dynamics (2-3 cr). WSU 424. Compressible flow; transonic, supersonic, hypersonic flow; turbulent boundary layer and shock wave boundary layer interactions. Prereq: 322, ES 320.

ME WS512B Physical Gas Dynamics (2-3 cr). Prereq: 522 or perm.

ME 515 Transport Phenomena (3-4 cr). See ChE 515.

ME ID&WS520 Adv Fluid Dynamics (2-3 cr). WSU 522. Properties of real fluid flow, solutions of Navier-Stokes equations, concepts of the boundary layer, transition and turbulence.

ME WS521 Fundamentals of Fluid Mechanics (4 cr).

ME ID&WS522 Stat Thermodynamics (2-3 cr). WSU 511. Probability theory and quan-

tum mechanics, stat mechanics, thermodynamic probability, molecular interp of first and second laws; kinetic theories. Prereq: ES 321.

ME 523 Computational Methods for Thermal Systems (3 cr). Thermodynamic property formulations for computer modeling of thermal systems; availability and irreversibility concepts. Prereq: 422 or perm.

ME ID&WS524 Thermodynamics (2-3 cr). WSU 510. Thermodynamic laws for design and optimization of thermodynamic systems; equations of state, properties of ideal and real fluids; recent dev in experimental and theoretical thermodynamics. Prereq: 322 or perm.

ME R525A Adv Heat Transfer (2-3 cr). See ChE 525.

ME WS525B Kinematics of Ideal Fluids (2 cr). Prereq: 380 and Math 310 or perm.

ME 526 Thermodynamic Property Formulations (3 cr). Thermodynamic property formulations from experimental measurements; least squares fitting; multiple regression analysis; stat considerations; thermodynamic consistency and nonanalytic nature of critical point. Prereq: 422 or perm.

ME R528 Adv Thermodynamics (3 cr). Same as ChE 528. Laws of thermodynamics and stat thermodynamics; equations of state; thermodynamic properties of ideal and real fluids; pure components and mixtures; physical and chem equilibrium; design and optimization of thermodynamic systems. Prereq: perm.

ME WS530A Reinforced Polymer and Wood Based Composites (3 cr). WSU MSE 548.

ME WS530B Solid Mechanics (3 cr).

ME WS531 Deformation and Fracture of Solids (3 cr).

ME WS533 Experimental Methods in Materials and Manufacturing Process (3 cr). Prereq: 548.

ME WS534A Adv Manufacturing Process (3 cr). WSU 574.

ME ID534B Mechanics of Composite Materials (3 cr). Analysis of micromech and macromech behavior of composite materials with emphasis on fiber-reinforced composite; prediction of properties; stiffness and strength theories; laminated beams and plates; dynamic behavior; environmental effects. Prereq: ES 340, Math 310.

ME 535 Failure of Structural Materials (3 cr). See Met 535.

ME R537 Adv Fluid Mechanics (2-3 cr). See ChE 537.

ME ID&WS539 Adv Mechanics of Materials (3 cr). See J439/J539.

ME 540 Continuum Mechanics (3 cr). See ES 540.

ME 541 Mech Engr Analysis I (2-3 cr). See ChE 541.

ME WS542 Optimal Control of Dynamic Systems (3 cr).

ME WS543 Natural and Synthetic Polymeric Materials (3 cxr). WSU MSE 543. Prereq: 402.

ME WS544 Basic Prin of Adhesion (3 cr). WSU MSE 547. Prereq: 402.

ME ID&WS545 Conduction Heat Transfer (3 cr). WSU 513. Steady-state and transient conduction of heat; rectangular, cylindrical, and spherical coordinate systems. Prereq: 345 or perm.

ME ID&WS546 Convective Heat Transfer (3 cr). WSU 515. Energy conservation equation; laminar and turbulent forced convective heat transfer; internal and external flow; free convection. Prereq: 345 or perm.

ME ID&WS547 Thermal Radiation Processes (2-3 cr). WSU 514. Thermal radiation; radiation interchange among surfaces; radiation in absorbing-emitting gases; combined modes of heat transfer. Prereq: 345 or perm.

ME 548 Elasticity (3 cr). See CE 548.

ME 549 Finite Element Analysis (3 cr). See CE 546.

ME ID&WS550 Adv Vibration Analysis (3 cr). WSU 541. Analysis of discrete and continuous vibrating systems, finite difference and transfer matrix methods, frequency analysis, random vibrations. Prereq: 472 or perm.

ME WS552 Experimental Methods in Thermal-Fluid Sc (3 cr).

ME WS553 Two-Phase Flow (1-3 cr, max 3). Prereq: 515.

ME WS556 Numerical Modeling in Fluid Mechanics (3 cr).

ME WS561 Combustion (2-3 cr). Prereq: 522 or 524.

ME WS563 Adv Heat Transfer (3 cr). Prereq: 345.

ME WS570 Kinematic Synthesis (3 cr). Grad level counterpart of 470; additional requirements. Cr not granted for both 470 and 570.

ME WS575 Manufacturing Automation (3 cr). Prereq: 253, CS 105.

ME WS581 Control Systems (3 cr). Grad level counterpart of 481; additional requirements. Cr not granted for both 481 and 581.

ME 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

ME 600 Doctoral Research and Dissertation (cr arr).

ENGINEERING TECHNOLOGY/MECHANICAL ENGINEERING

ET/ME R222 Mech Engr Drawing (2 cr). Same as IEd 222. Dimensioning, shop drawings, fastenings; weld specs, working drawings, jigs, fixtures, piping. Prereq: Engr 101 or equiv.

ET/ME R332 Selection and Design of Machine Elements (3 cr). Same as IEd 332. Prin and characteristics of machine elements in mech design; bearings, gears, bolted joints, linkages.

ET/ME R334 Energy Analysis of Machines (3 cr). Same as IEd 334. Thermodynamics and heat transfer, properties of substances, steady flow, cycles and their appl to equipment, simple heat exchangers.

ET/ME R335 Materials Appl (3 cr). Same as IEd 335. Materials appl in design, material properties, material selection as related to service conditions.

ET/ME R336 Fluid Systems Design (3 cr). Same as IEd 336. Fluid flow in pipes, incl pressure losses, seals, series and parallel flow, measurements and control, selection of equipment.

ET/ME R337 Tool Design (3 cr). Same as IEd 337. Design of jigs, fixtures, gauges; tools are designed by the student to solve manufacturing problems.

Curricular Requirements

MECHANICAL ENGINEERING (B.S.M.E.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Courses common to engineering curricula (see part 4)	38
ME 223 Mechanical Design Analysis	2
ME 253 Materials Processing	3
ME 261 Engineering Materials	3
ME 262 Engineering Materials Laboratory	1
ME 322 Applied Thermodynamics	3
ME 324 Kinematics & Dynamics of Machines	3
ME 330 Experimental Methods for Engineers	2
ME 345 Heat Transfer	3
ME 380 Math Modeling of Mech Engr Systems	3
ME 412 Gas Dynamics or 420 Fluid Dynamics	3
ME 425 Mechanical Design	4
ME 426 Mechanical System Design	3
ME 430 Mechanical Engineering Systems Lab	2
ME 472 Mechanical Vibrations	3
ME 491-492 Seminar	0
EE 207 Intro to Electrical Engineering	3
EE 314 Electronic Systems or EE 324 Electrical Machinery	3
ES 220 Engineering Dynamics	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
ES 322 Appl of Computers in Thermodynamics	1
ES 340 Mechanics of Materials	3
Eng 317 Tech & Engr Report Writing	3
Phys 212-213 Engineering Physics Laboratory	2
Humanities and social sciences electives (incl at least one upper-div course that is the second course completed in a subject, or that has another humanities/social sc course as a prereq)	17
Technical electives	11

The minimum number of credits for the degree is 129.

Medical Education Program

Michael B. Laskowski, Director, WAMI (Washington, Alaska, Montana, Idaho) Medical Education Program (301 Student Health Services Bldg.). Faculty: Mark K. Covey, Mark E. DeSantis, Victor P. Eroschenko, Dale O. Everson, Dwain A. Leonhardt, Thomas A. McKean, Philip J. Mohan, David P. Olson, Mary P. Presol (Consultant), Stewart C. Schell, David D. Shupe, Francis K. Spain.

The following medical doctors serve as affiliate clinical professors (preceptors) of medical science: Donald E. Adams, Richard M. Alford, James R. Arthurs, John M. Ayers, Jr., Eugene M. Baldeck, Patricia A. Brady, John B. Britzmann, Constance J. Brumm, Gregory J. Burrato, Donald K. Chin, Harry Chinchinian, Robert C. Colburn, Nathan Coonrod, Colin Doyle, Ronald E. Dunn, Bruce L. Ham, Ronald R. Helm, Gerald Hendel, Cameron D. Hinman, Jay A. Hunter, Richard A. Jacobs, Kenneth L. Judy, Carl T. Koenen, Dwain A. Leonhardt, Spencer M. Long, Dean Mahoney, William Mannschreck, Robin Mariner, Carl M. Melina, Robert L. Olson, Dennis L. Peterson, Mary C. Presol (Consultant), Wayne Ruby, Kay Rusche, David Rych, David D. Shupe, Francis K. Spain, David A. Spencer, James J. Stockard, Timothy W. Toso, Dennis E. Venzon.

WAMI is a cooperative medical education program designed to enhance the training capability of the University of Washington School of Medicine (UWSM) by utilizing the facilities of Washington State University (WSU), University of Alaska, Montana State University, and the University of Idaho (UI). The WAMI program utilizes the physicians' expertise in the states by providing clinical clerkships in the four-state area via a network of 23 community training units for third- and fourth-year medical students. The WAMI program at UI offers first-year medical students an ideal opportunity to study basic medical courses. Because there is only a handful of medical students, as compared to hundreds at the medical school in Seattle, there is a splendid opportunity to interact closely with the faculty.

The WAMI program allows access to medical education for Idaho residents by providing positions at UWSM. These 60 positions, 15 for each of the four years, are reserved exclusively for Idaho residents.

The WAMI program was developed in Idaho to train Idaho residents in medical studies, to address the need for more primary care physicians practicing in rural areas, to extend the resources and facilities of an excellent medical school into Idaho, to improve the quality of patient care, and to minimize the cost of medical education by the use of existing facilities.

Eligibility for consideration as a WAMI medical student requires certification as an Idaho resident. UI's Admissions Office is responsible for residency certification.

Students interested in WAMI follow the normal application procedures of UWSM. Idaho residents (15) take their first year of medical studies at UI. First-year courses are offered conjointly by UI and WSU in parallel with courses at UWSM. All participating faculty at UI and WSU are subect to the approval of UWSM and are eminently qualified scientists and scholars.

Many of the physicians in the Moscow-Lewiston area are involved in the preceptorship program in which the students work with local physicians and observe their practice in the office and at the hospital.

For 15 years (since 1972), community clinical units in Boise and Pocatello have been training upper-division medical students in the areas of obstetrics and gynecology, pediatrics, and family medicine. A UWSM clerkship in internal medicine is also offered through the V.A. Hospital in Boise.

Special facilities are maintained for the medical students, including individual study carrels, videotapes, films, and other resource materials in a Curriculum Support Center.

Participants in the WAMI program are matriculated students of the University of Washington Medicine School. Upon completion of their studies, they receive the M.D. degree. Following graduation, a postgraduate (internship/residency) training period of three to five years is considered the normal pathway to private practice. Medical students may also be approved for graduate studies at UWSM leading to the M.S. or Ph.D. degree. The M.D.-Ph.D. curriculum usually requires a minimum of six years of study.

Medical Science Courses

Note: All courses in this subject field are open automatically only to students who have WAMI medical student status. Some of the medical science courses are also open to graduate students by permission of the instructor and the WAMI director.

MedSc 501 (s) **Seminar** (cr arr).

MedSc 502 (s) **Directed Study** (cr arr). Areas normally offered are directed dissection of the extremities, trunk, head, neck, abdomen, and pelvis; endocrinology, physiology, and other medically related studies.

MedSc 504 (s) **Special Topics** (cr arr).

MedSc 505 Preceptorship (cr arr). To provide opportunity for first-year medical students to gain personal experience with and insight into medical practice situations; the student will be stationed with physicians in their offices in accordance with the student's preference of discipline at the WAMI sites.

MedSc ID&WS510 Histology (3 cr). Microscopy of cells; tissues and organs of the human body; emphasis on function. Three lec and one 3-hr lab a wk.

MedSc ID&WS511 Anatomy of the Trunk (5 cr). Regional study of anatomy of human thorax, abdomen, pelvis, and perineum in correlation with clinical cases. Two lec and one 3-hr lab a wk.

MedSc ID&WS512 Basic Mechanisms in Cellular Physiology (4 cr). Basic physiological mechanisms, primarily at the cellular level.

MedSc 513 Intro to Clinical Medicine (1 cr). Comm skills and interview tech to form the basis for the eventual doctor-patient relationship.

MedSc ID&WS514 Molecular and Cellular Biol I (3 cr). Classical molecular and cellular biochem, cellular physiology, and molecular genetics.

MedSc ID&WS515 The Ages of Man (2 cr). Human dev from birth to senescence emphasizing disorders that occur during various life phases.

MedSc ID&WS520 Cell and Tissue Response to Injury (3 cr). Cell and tissue injury, inflammation, and neoplasia.

MedSc ID&WS521 Natural Hist of Infectious Diseases and Chemotheraphy (5 cr). Pathogenesis, resistance, epidemiology, clinical manifestations and control of bacterial, fungal, parasitic, and viral infectious diseases, prin of chemotherapy and asepsis; sterilization; nosocomial and iatrogenic infections and prevention.

MedSc 522 Intro to Clinical Medicine (2 cr). Continuation of comm skills especially as related to and dealing with effective material.

MedSc ID&WS523 Medical Immunology (2 cr). Prin of immunology and their relationship to human medicine.

MedSc ID&WS524 Molecular and Cellular Biol II (2 cr). Continuation of 514.

MedSc ID&WS530 Epidemiology (2 cr). Intro to biostatistical inference; interaction of agent, host, and environment in disease causation and transmission.

MedSc ID&WS531 Head, Neck, Ear, Nose, and Throat (4 cr). Gross anatomy, incl skull, pharynx, and larynx; audition and balance.

MedSc ID&WS532 Nervous System (5 cr). Normal structure and function of the nervous system, incl the eye.

MedSc 533 Systems of Human Behavior I (2 cr)(523). Conceptual systems and models of behavior, normality and abnormality, environment and social learning, conditioning, learning in the autonomic nervous system, catecholmines and behavior, illness behavior, feelings, emotion and cognition, physician-patient interaction, diseases and technics of behavior change.

MedSc 535 Intro to Clinical Medicine (2 cr). Screening physical exam.

Department of Metallurgical and Mining Engineering

John R. Hoskins, Dept. Head (217 Mines Bldg.).

Metallurgy Faculty: Robert W. Bartlett, Gene E. Bobeck, Batric Pesic, Keith A. Prisbrey, Lee S. Richardson, Patrick R. Taylor, T. Alan Place. Affiliate Faculty: Bill E. Mckee, J. Fred Williams, Jr.

Mining Engineering Faculty: Samuel S. M. Chan, Christopher J. Hall, Patricia L. Hautala, Robert Hautala, John R. Hoskins.

Every country in the world has mineral resources that could be of benefit to its citizens. It is only upon the addition of the technological capability to convert these resources to mineral reserves, and finally into products useful to mankind, that the resources have value. Second only to agricultural resources are the mineral resources. Our modern world is a result of the technological utilization of these mineral resources. The advancement, or even continuation, of our present standard of living is dependent upon this technology.

Mining engineering includes a wide variety of mining technologies and engineering sciences devoted to the extraction or separation of the various mineral products — fuels, metals, and nonmetals. Separation of these minerals from the ground requires knowledge of the adaptation of equipment, manpower, and economics and the application of reclamation, environmental control, legal, social, and administrative talents. Mining engineering is the coordination of all engineering fields and the administrative talents employed in extracting these materials from the earth and making them available economically.

Metallurgical engineering is the technology devoted to removing the metals, nonmetals, or fuel elements from rock and even water and putting them in a form useful to mankind. This requires enhancement of the materials, separation of the minerals, and finally separation of the metals and elements from the minerals and rock into pure or semi-pure form economically. Metallurgical engineering involves the use of all the sciences and academic information from other fields to provide these metals for the everyday products we use in our industries and homes. It is the technology behind the materials that makes communication, transportation, recreation, daily living, and a healthful environment possible. More recently, a worldwide effort to develop nontraditional materials that combine metallics and nonmetallics has been met by additional study and faculty in the materials and processing area. Coordination with other university departments provides broader training.

As technological and engineering fields, both metallurgical engineering and mining engineering offer a tremendous opportunity for the person who wishes to become involved in the application of our natural mineral resources to the preservation and enhancement of man. The department provides the technical training for the beginning of this understanding through both the mining engineering and metallurgical engineering fields.

The objectives of the department are to provide adequate training, based upon high school preparation in mathematics and science, so that the student may understand, first of all, the fields of engineering, and, secondly, how these apply to the adaptation of mineral resources to mankind. It is the goal of the department to provide first-class training so that the engineer graduating from the department will be competitive with all other engineers with equivalent degrees in the world, will be current in the technology, will have a practical orientation, and will be a broad and understanding member of the society.

History shows that the graduates from the program have been very competent citizens able to contribute to the development of the mineral resource engineering fields, have become excellent and leading members of society, and live useful and fulfilling lives.

Laboratories for the technologies of rock mechanics, surveying, ventilation, computer applications, and planning facilities are available in mining engineering. The facilities for mineral processing include comminution and pilot plant, extraction processes, hydrometallurgy (including pressure leaching), electrometallurgy, chemical metallurgy, and physical metallurgy laboratories for learning about the basic building blocks of material, as well as metallography, x-ray diffraction and fluorescence, heat treating, and other laboratories that provide understanding of converting the minerals into useful metals and products.

The staff members in both disciplines have proved their qualifications by their credentials in national and international professional societies. They are well known by their publications, research, and contract work. Exposure to these faculty members provides the students with a one-to-one interaction and an expertise that makes them truly competitive.

The program is designed to take advantage of the other excellent facilities of the university and other engineering disciplines. The program of study also includes involvement with practical aspects of day-to-day mining and metallurgy by exposure to the regional industries and research groups through field trips, guest speakers, study problems, and work time during the summer or cooperative efforts as desired. Mining and metallurgical operations in the Northwest are plentiful and modern.

In normal times, most students find employment in the summer or on a cooperative basis, so that they can become more intimately involved in the processes that they are studying. The total program enables the person to leave the university with confidence, either as a baccalaureate student or on the master's or doctoral level, with the capability of a truly competent professional.

The department offers both the Master of Science degree and the doctoral degree in both of the disciplines. These programs include a mix of theoretical and practical study most appropriate to each student. Many studies include mathematical, statistical, and computer applications to specific processes or investigations. Some students prefer to work on applied problems that are presented by industry or research establishments in the area, often with funding from outside sources. Studies may be as varied as individual effort and interests.

These studies may be financed at times by research grants, an industry sponsor, or on rare occasions by departmental funding. They are designed to train the individual in research methods and investigative procedures that will enhance his or her ability in industrial or research applications or in teaching at a later date.

The doctoral program is directed toward breaking new ground and advancing the field to maintain the competitive technological lead enjoyed in the U.S. for so many years. The master's program generally requires 12 to 18 months beyond the baccalaureate degree and the doctoral program usually entails at least three years beyond the baccalaureate degree.

Courses

METALLURGICAL ENGINEERING

Met 200 (s) **Seminar** (cr arr). Prereq: perm.

Met 201 Elements of Materials Science (3 cr). Prin relating properties of metals, ceramics, polymers, and composites to their structures. Prereq: Chem 103 or 111 or 114.

Met 202 Apparatus and Practices (2 cr). Measure and control tech and instruments, metallography, pyrometry, quality control. One 2-hr lab and one 3-hr lab a wk. Coreq: 201.

Met 204 (s) **Special Topics** (cr arr).

Met 205 Intro to Metallurgy (3 cr). Unit operation descriptions of crushing, grinding, flotation, and leaching, e.g., for maximum gold recovery from ores; survey of hydrometallurgy, pyrometallurgy, and electrometallurgy; intro to capital and operating cost alternatives.

Met 211 Metallurgical Mass and Energy Balance (3 cr). Dimensions, units, and conversion factors; stoichiometry; sampling and measurements; thermochem; calculations of material and energy balances applied to particular processes in ferrous and nonferrous metallurgy.

Met 299 (s) **Directed Study** (cr arr). Prereq: perm.

Met 305 Structure of Solids (3 cr). Crystallography, crystal properties and chem bonding, defects, amorphous solids, polymorphism and crystal growth. Prereq: Chem 103 or 111 or 114, and Phys 211.

Met 308 Intro to Met Thermodynamics (3 cr). Review of thermodynamic laws, therodynamics of solutions, appl to kinetic processes. Prereq: Chem 305.

Met 309 Met Transport Phenomena (3 cr). Intro to prin of met transport phenomena incl heat, mass, and momentum transfer. Coreq: Math 310.

Met 310 Metallurgical Reactor Design (3 cr). Fundamental prin. Prereq: Math 310.

Met 400 (s) Seminar (cr arr). Review of current lit. One 3-day field trip. Prereq: perm.

Met 404 (s) **Special Topics** (cr arr).

Met 409 Solution Mining (3 cr). Alt/yrs. Percolation leaching rubbleized heaps and in situ with emphasis on base metals and uranium; chem and biol, transport and kinetics of rock extraction, solution flow and aeration, permeability and rock alteration, simulation, environmental containment and safety, metal recovery from dilute solutions; well and reservoir technology for flooding leaching; brine evaporation and extraction. One field trip. Prereq: Chem 111.

Met 412 Mech Met (3 cr). Mech properties of solids, testing, brittle and ductile fracture, plasticity, mech processes in met. One 1-day field trip. Prereq: 201.

Met 413 Physical Met I (4 cr). Theory, structure, and properties of metals and alloys; their relation to industrial problems. Three lec and one 3-hr lab a wk. Prereq: 201, 308.

Met 414 Met Design (3 cr). Factors involved in design problems, selected problems on mineral processing plant, hydromet plant, pyromet plant; costing and the economic decision. One 1-day field trip.

Met 416 Physical Met II (3 cr). Continuation of 413 with emphasis on precipitation, diffusion, phase diagrams, and transformations in steel. Prereq: 413 or perm.

Met 417 X-Ray Diffraction (2-3 cr). Diffraction of x-rays by crystals; appl to study of polycrystalline materials. Two lec and one 3-hr lab a wk. Prereq: Phys 114 or 211.

Met WS418 Polymeric Materials (3 cr). Alt/yrs. WSU MSE 402. Prereq: 201 or jr standing in engr, chem, or physics.

Met WS420 Fracture in Solids (3 cr). WSU MSE 533. Prereq: sr standing in engr, chem, or physics.

Met 441 Mineral Processing (4 cr). Methods of comminution and concentration of ores. Three lec and one 3-hr lab a wk, two 1-day field trips. Prereq: Chem 103 or 111, Phys 210-211, and Math 200.

Met 442 Pyrometallurgy (4 cr). Extraction and refining of ferrous and nonferrous metals. Three lec and one 3-hr lab a wk; one 1-day field trip. Prereq: 308 or equiv, and Chem 103 or 111, Phys 210-211.

Met 443 Mineral Processing Examples (3 cr). Adv and new technology examined in depth.

Met 444 Hydrometallurgy (4 cr). Review of basic thermodynamics, solution chem; theoretical and empirical estimation of activity coefficients as applied to hydrometallurgy; E_h-pH diagrams; leaching kinetics; leaching of ore minerals; solution purification and concentration; electrowinning; bacterial leaching. Prereq: 308.

Met 451 Electrometallurgy (3 cr). Theoretical electrochem, technical electrochem, electrolytics, metal deposition, electrorefining, electrowinning, electrolysis of alkali halides and sulfates, electrothermics.

Met 461 Metallurgical Control and Optimization (3 cr). Basics of process control and

optimization applied to met engr.

Met 499 (s) **Directed Study** (cr arr). Prereq: perm.

Met 500 Master's Research and Thesis (cr arr).

Met 501 (s) **Seminar** (cr arr). Prereq: perm.

Met 502 (s) **Directed Study** (cr arr). Prereq: perm.

Met 503 Adv Extractive Met (3 cr). Topics in the extraction and refining of metals. Prereq: 442 or perm.

Met 504 (s) **Special Topics** (cr arr).

Met 505 Adv Rate Phenomena in Met Engr (3 cr). Prin of rate phenomena in met engr. Prereq: perm.

Met 506 Adv Ore Dressing (3 cr). Theories of comminution; flotation and related surface phenomena; elec and magnetic concentration; process control. Prereq: 441 or perm.

Met 508 Control of Met Processes (3 cr). Control variables of met processes. Prereq: perm.

Met 511 Adv Physical Met (3 cr). Alt/yrs. Theory of metals and alloys; appl to problems of structure; properties of engr metals. Prereq: perm.

Met 512 Metallurgical Thermodynamics (3 cr). Alt/yrs. Aspects of thermodynamics most used in met; appl to problems. Prereq: perm.

Met 514 Phase Rule and Phase Relations (3 cr). Alt/yrs. Phase rule constr and interp of phase diagrams; metastable and unstable phase relations. Prereq: perm.

Met 515 Unit Operations of Multiphase Separation Processes (3 cr). Mech phase separation froth flotation chem separations at room temperature, high temperature separations, solid/liquid separations.

Met 517 Kinetics of Met Reactions (3 cr). Alt/yrs. Appl of absolute rate theory; time and temperature dependence; kinetics of gas-solid reactions; corrosion, diffusion, and recrystallization. Prereq: perm.

Met 518 Adv Mech Met (3 cr). Alt/yrs. Micro- and macroscopic theories of deformation; materials-forming processes; mech tests. Prereq: perm.

Met 522 Surface Reactions of Metals (3 cr). Alt/yrs. Surface chem and physics; illustrative examples from met. Prereq: perm.

Met R525 Physical Chem of Metals (3 cr). Thermodynamics, heterogeneous equilbria, electrochem, diffusion, and kinetics. Prereq: perm.

Met R531 Behavior of Engr Materials (3 cr). Static and dynamic properties; relation of mech properties to physical properties and crystal imperfections. Prereq: perm.

Met R533 Adv X-Ray Diffraction (3 cr). Prin and appl to adv problems. Prereq: perm.

Met R534 Radiation Effects in Materials (3 cr). Interactions between radiation and solids. Prereq: perm.

Met R535 Failure of Structural Materials (3 cr). Same as ME 535. Mechanisms by which failure can occur in structural materials. Prereq: ME 261 or Met 201, ES 340.

Met R536 Theoretical Structural Met (3 cr). Structure of metals and alloys; free electron theory; zone theory; equilibrium: order-disorder; kinetics of phase changes and shear processes. Prereq: perm.

Met R538 Corrosion in Met (3 cr). Corrosion by aqueous media, gases, liquid metals, and fused salts. Prereq: physical chem, incl electrochem, or perm.

Met R539 Electron Metallography (3 cr). Alt/yrs. Operation and appl in met of the electron microscope, microprobe, and other instruments applying charged particle optics. Prereq: perm.

Met WS542 High Temperature Phenomena in Solids (3 cr). Alt/yrs. WSU MSE 542. Prereq: 416 or one sem of chem thermodynamics.

Met WS544 Adv Topics in Materials Sc (2-3 cr, max 6). WSU MSE 501.

Met 555 Adv Hydrometallurgical Kinetics (3 cr). Review of dev of chem kinetics; reaction order determination; classical definition of reaction rates; absolute reaction rate theory; random walk equation; kinetic models, linear, diffusion, mixed kinetics, nucleation; electrochem kinetics as applied on metal sulfides.

Met 597 (s) **Practicum** (cr arr). Prereq: perm.

Met 598 (s) **Internship** (cr arr). Prereq: perm.

Met 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

MINING ENGINEERING

Min 100 Nonrenewable Resources (2 cr). Intro to basic concepts of historical, present, and future world energy and mineral needs, land use, and methods of exploitation, conservation of nonrenewable resources, and environmental impact and control.

Min 103 Elements of Mining (3 cr). Open to nonmajors. Terminology and mining's role in national econ and way of life, incl mineral econ, mgt, prospecting, discovery, dev, exploitation, processing, marketing.

Min 130 Using Programmable Calculators (2 cr). Wrtg simple engr progs for desk-top calculators.

Min 200 (s) **Seminar** (cr arr). Prereq: perm.

Min 204 (s) **Special Topics** (cr arr).

Min 212 Mine Surveying (2 cr). Triangulation, trilateration, sun and star shots, shaft plumbing, auxiliary telescopes. Prereq: CE 211.

Min 218 Miner Safety Training (1 cr). A program to provide knowledge and training under Public Law CFR 30, Part 48, Health and Safety Training and Retraining of Miners.

Min 304 Explosives (2 cr). Drilling and blasting equipment, detonation; use of commercial explosives and detonators; design of blasting rounds (surface and underground). One 1-day field trip. Prereq: jr standing or perm.

Min 306 Industrial Safety (2 cr). Underground and surface environmental problems of accident and health; stats, prevention, economy, research on dusts, lighting, rock stability, air, and contaminants. One 2-day field trip.

Min 350 Mineral Econ (3 cr). Minerals as resources and commodities; importance of minerals, characteristics of their occurrence and production systems, and nature of mineral resources reserves; factors affecting supply and demand, pricing and marketing of mineral materials.

Min 352 Project Investment Analysis and Mgt (3 cr). Mine organization and mgt, econ and finan decisions, capital and production cost estimating, equipment selection tech, operation design optimization, and project selection.

Min 371 Mine Ventilation I: Psychrometrics (3 cr). First and second laws of thermodynamics; steam tables and the perfect gas; gas-vapour mixtures; psychometric chart; heat, humidity, comfort ratings, cooling; natural ventilation.

Min 372 Mine Ventilation II: Quantity and Quality Control (3 cr). Gases, dust, airflow, instrumentation, circuits, fans. Prereq: 371.

Min 380 Mining Methods Design (3 cr). Mining methods for coal, metal, and nonmetal with methods of entry and systems design.

Min 390 Mine Dev (2 cr). Ore deposits, exploration techniques, mine eval, and dev.

Min 391 Mining Prin (3 cr). Mine design, planning, problem solving; and elec distribution. One 4-day field trip. Prereq: 103, ES 210, ES 220; coreq: ES 340.

Min 400 (s) **Seminar** (cr arr). Prereq: perm.

Min 401 Rock Mechanics (3 cr). Basic mech properties of rocks and rock masses; lab and in-situ tech to obtain strength, stress distribution, and deformation behavior in rock masses; appl of analyt tech such as the finite element method to design stable mine structures and supporting systems; basic mechanism and new tech of rock fragmentation relating to drilling, blasting, and crushing. Prereq: ES 340.

Min 402 Rock Mechanics Lab (2 cr). Measuring rock sample strengths; photo elastic and finite element modeling.

Min 404 (s) **Special Topics** (cr arr).

Min 410 Mine Plant Design (2 cr). Alt/yrs. Mine structures such as headframes, buildings, ore bins, and mech devices. Two 3-hr labs a wk; one 1-day field trip. Prereq: ES 340.

Min 420 Mineral Resources Mgt and the Environment (3 cr). Factors that must be considered in the mgt, dev, or exploitation of nonrenewable natural resources. One 2-day field trip. Prereq: jr standing.

Min 421 Engr Geophysics (3 cr). Same as Geoph 421. Quantitative treatment of surface and borehole geophysics with emphasis on engr problems. Three 1-day field trips.

Min 422 Prin of General Geophysics (3 cr). See Geoph 422.

Min 425 Mineral Land Mgt (3 cr). See Geog 425.

Min 428 Intro to Geostatistics (3 cr). See GeoIE 428.

Min R431 Industrial Fire Protection I (3 cr). Appl of engr prin to industrial fire protection; analysis and use of bldg codes; mgt of industrial fire protection prog. Prereq perm.

Min R432 Industrial Fire Protection II (3 cr). Analysis of significant fire-loss experience in the U.S.; causes, lessons learned, and their relation to dev of fire codes; modern trends in fire safety research technology.

Min R433 Environmental Health I — Industrial (3 cr). Types, mechanisms, and magnitudes of toxicity and their relation to the human system as an industrial environmental problem; all types of metals, compounds, and reagents and their influence on human productivity; sampling and analysis of contaminants.

Min R434 Environmental Health II — Occupational Stress (3 cr). Intro to the human system response and susceptibility to problems of occupation originating from a/c, air cleaning, ventilation, respiratory devices, air pressure, noise, lighting, temperature, and radiation; ident, documentation, and reporting of problems and results.

Min R435 Operational Safety (3 cr). Basic concepts of industrial safety prog with respect to the more common mech problems of constr and operation within modern industry.

Min 450 Mine Planning I (3 cr). Design of systems and controls for surface mines; wrtg desk-top-computer progs and engr reports.

Min 451 Mine Planning II (3 cr). Design of systems for underground mines; wrtg engr reports. Eight hrs of lab a wk.

Min 470 Mine Services (3 cr). Movement of materials, incl prin of fluids and mechanics; ventilation fundamentals, pumping, hoisting, conveying, track, and rail haulage. One 4-day field trip. Prereq: 103, ES 320.

Min 472 Mineral Industry Case Studies (3 cr). Same as Geog 492 and Geol 472. Laws, environment, and social issues through definition, evaluation, exploitation, and production of the resource to final sales, transportation econ, and reclamation; specific

cases examined by multidisciplinary groups producing a final decision. Prereq: sr standing and perm.

Min 499 (s) **Directed Study** (cr arr). Prereq: perm.

Min 500 Master's Research and Thesis (cr arr).

Min 501 (s) **Seminar** (cr arr). Prereq: perm.

Min 502 (s) **Directed Study** (cr arr). Prereq: perm.

Min 503 Mine Stress Analysis (3 cr). Appl of tech in experimental stress analysis for structural design in all phases of the engr system; photoelastic modeling and coating; strain gauge tech; stress patterns in frameworks, rock masses, and foundations. One lec and two 3-hr labs a wk. Prereq: ES 340.

Min 504 Rock Mechanics II (3 cr). Theories of rupture of elastic and inelastic, brittle materials; mechanisms of fracture propagation and effects in engr structures and rock fragmentation; effects of nuclear blasting, earthquakes, and other dynamic stress waves. Prereq: 401 or perm.

Min 505 Design of Mine Structures (4 cr). Appl of experimental stress analysis and the prin of engr similitude in the design of stable mine structures. One lec and three 3-hr labs a wk. Prereq: 401, and 503 or 504.

Min 506 (s) **Special Topics** (cr arr).

Min 510 Mine Plant Design II (3 cr). Alt/yrs. Practical problems; system synthesis of design of headframes, bldgs, bridges, ore bins, road, railroad, and other structures; engr case methods. Three 3-hr labs a wk. Prereq: 103, 410, and ES 340, or perm.

Min 513 Adv Mine Ventilation I (3-5 cr). Thermodynamic and motive column analyses of mine airflow. Students who have taken Min 371 and 372 register for 3 cr.

Min 514 Adv Mine Ventilation II (3-5 cr). Thermodynamic network analysis; individual projects. Prereq: 513.

Min 520 Mining Geophysics (3 cr). Same as Geoph 521. Alt/yrs. Theory and appl of magnetic, elec, electromagnetic, and radioactive methods of geophysical prospecting for metallic and nonmetallic mineral deposits. Two lec and one 3-hr lab a wk; one 3-day field trip. Prereq: perm.

Min 530 Mining Exploration Tech (3 cr). Alt/yrs. Underground exploration for mining engineers; appl of geol, geochem, geophysical, and stat methods in exploration; reduction, correlation, and overall interp of data; computer appl. Two lec and one 3-hr lab a wk; one 3-day field trip. Prereq: perm.

Min 540 Mine Valuation (3 cr). Mine exam and valuation; sampling methods and calculations; determining present value of a deposit.

Min 560 Mine Mgt (3 cr). Financing, mgt labor relations, operations, and govt regulations. Prereq: perm.

Min 561 Mine Industrial Engr (3 cr). Alt/yrs. Industrial engr, operations research, and computer programming; appl to mining engr problems. Prereq: perm.

Min 570 Mine Systems Design (3-6 cr). Alt/yrs. Integration and synthesis of equipment, methods, and design; use of latest operation research tools to provide a complete mine plan of operation. Prereq: perm.

Min 573 Haulage Systems Design (3 cr). Alt/yrs. Design criteria in the specification of all pertinent aspects involved in transportation of lump ore on surface or underground. Two lec and one 3-hr lab a wk. Prereq: perm.

Min 597 (s) **Practicum** (cr arr). Prereq: perm.

Min 598 (s) **Internship** (cr arr). Prereq: perm.

Min 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

MINING ENGINEERING-METALLURGY

MinMt 110 Minerals and Man (3 cr). For nonmajors. Man's past, present, and future dependence on mineral resources; man's exploitation of the earth's nonrenewable resources. May be taken with 111.

MinMt 111 Mineral World Lab (1 cr). Designed to correlate with and to supplement 110. Five 3-hr labs a sem; four 1-day field trips. Coreq: 110.

MinMt 200 (s) **Seminar** (0 cr). Appropriate speakers and unscheduled activities relating to the mineral field. Graded P/F.

MinMt 400 (s) **Seminar** (0 cr). Appropriate speakers and unscheduled activities relating to the mineral field. Graded P/F.

MinMt 600 Doctoral Research and Dissertation (cr arr). Prereq: enrollment in the composite doctoral program in mining engr-met.

Curricular Requirements

METALLURGICAL ENGINEERING (B.S.Met.E.)

As part of a cooperative program with Oregon State University, Oregon resident students may enroll in this program and will **not** be charged out-of-state tuition by UI.

Required course work includes the university requirements (see regulation J-3) and the following.

Note: All students are encouraged to take the eight-hour EIT examination the last semester of their senior year, leading to a Professional Engineering license.

Course	Credits
Met 202 Apparatus & Practices	2
Met 211 Metallurgical Mass & Energy Balance	3
Met 308 Intro to Metallurgical Thermodynamics	3
Met 309 Metallurgical Transport Phenomena	3
Met 310 Metallurgical Reactor Design	3
Met 413 Physical Metallurgy I	4
Met 414 Metallurgical Design	3
Met 416 Physical Metallurgy II	3
Met 441 Mineral Processing	4
Met 442 Pyrometallurgy	4
Met 444 Hydrometallurgy	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis or Chem 114 General Chem	4-5
Chem 305 Physical Chemistry	3
Chem 306 Physical Chem or equiv adv sc course	3
CS 112 Intro to Problem Solving & Programming or CS 105 FORTRAN Programming for Engr	3
Econ 151, 152 Principles of Economics	6
EE 207 Intro to Electrical Engineering	3
Engr 101 Engineering Graphics	2
ES 210 Engineering Statics	3
ES 320 Fluid Mechanics	3
ES 340 Mechanics of Materials	3
Eng 317 Tech & Engr Report Writing	3
Geol 259 Minerals for Metallurgists	1
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 310 Ordinary Differential Equations	3
ME 261 Engineering Materials	3
ME 461 Fracture Mechanics	3
Min 352 Project Investment Analysis & Mgt	3
Phys 210, 211 Engr Physics I, II	6-8
Stat 301 Probability & Statistics or ES 402 Applied Numerical Methods	3
Humanities and social sc electives (a two-course sequence must be taken to conform to natl engr accred requirements)	10
Metallurgical and technical electives	4

MINING ENGINEERING (B.S.Min.E.)

As part of a cooperative program with Oregon State University, Oregon resident students may enroll in this program and will **not** be charged out-of-state tuition by UI.

Required course work includes the university requirements (see regulation J-3) and the following.

Note: Approved field experience, appropriate summer employment, or an applied course in mine surveying and geologic mapping is required before graduation.

Course	Credits
Min 103 Elements of Mining	3
Min 130 Using Programmable Calculators	2
Min 212 Mine Surveying	2
Min 218 Miner Safety Training	1
Min 352 Project Investment Analysis & Mgt	3
Min 371, 372 Mine Ventilation I, II	6
Min 390 Mine Development	2
Min 391 Mining Principles	3
Min 401 Rock Mechanics	3
Min 450 Mine Planning I	3
Min 451 Mine Planning II	3
Min 470 Mine Services	3
Chem 111 Principles of Chemistry	4
Chem 114 General Chemistry	4
CE 211 Engineering Measurements	3-4
CS 105 FORTRAN Programming for Engr	2
EE 207 Intro to Electrical Engr	3
EE 324 Electrical Machinery (or equiv)	3
Engr 101 Engineering Graphics	2
ES 210 Engineering Statics	3
ES 220 Engineering Dynamics	3
ES 301 Engr Statistics (or equiv)	3
ES 320 Fluid Mechanics	3
ES 340 Mechanics of Materials	3
Eng 317 Tech & Engr Report Wrtg	3
Geol 101, 102 Physical Geology & Lab	4
Geol 275 Earth Materials	2
Geol 345 Structural Geology	3
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 310 Ordinary Differential Equations	3
Met 201 Elements of Materials Science	3
Met 205 Intro to Metallurgy	3
Phys 210, 211 Engr Physics I, II (students are also encouraged to elect Phys 212 & 213 Engr Phys Lab)	6-8
Humanities and social sciences electives	17
Technical electives (approved by dept)	7
Electives	1

The minimum number of credits for the degree is 136.

Academic Minor Requirements

METALLURGICAL ENGINEERING MINOR

Course	Credits
Met 201 Elements of Materials Science	3

Met 309 Metallurgical Transport Phenomena 3
Met 310 Metallurgical Reactor Design 3
ES 210 Engineering Statics 3
Math 310 Ordinary Differential Equations 3
And one of the following sets of courses:

Met 202 Apparatus & Practices 2
Met 413, 416 Physical Metallurgy I and II 7
Phys 211 Engr Physics II 3
or
Met 211 Metallurgical Mass & Energy Balance 3
Met 441 Mineral Processing or Met 442 Pyrometallurgy 4
Met 444 Hydrometallurgy 4
Chem 112 Inorganic Chem & Qual Analysis
or Chem 114 General Chem 4-5

MINING ENGINEERING MINOR

Course	Credits
Min 103 Elements of Mining	3
Min 218 Miner Safety Training	1
Min 401 Rock Mechanics	3
Min 450 Mine Planning I	3
Courses selected from the following:	8
Min 304 Explosives	
Min 352 Project Investment Analysis & Mgt	
Min 372 Mine Ventilation II	
Min 391 Mining Principles	
Min 451 Mine Planning II	
Min 470 Mine Services	
Min 472 Mineral Industry Case Studies	

Department of Military Science

Donald E. Havre, Dept. Head (West End, Mem. Gym.). Faculty: Timothy W. Cannon, Michael H. Garriott, Donald E. Havre, Andrew B. Haygood, Richard Taylor.

Army ROTC as represented on campus by the Department of Military Science is the major source of commissioned officers for the Army. After successfully completing the department's program and baccalaureate-degree requirements, a student receives a commission as a second lieutenant. As a commissioned officer, selection of numerous military specialties and stationing at many geographic locations are available. All veteran benefits accrue to the officer for the years spent on active duty. Three- and two-year scholarships are available to students in the university.

At UI, the combination of classroom instruction and practical field training is the method in which learning outcomes are achieved. The basic course, consisting of a one-credit course each freshman semester and a two-credit course each sophomore semester, is designed to provide men and women with information on what it would be like to be an officer in the Army on active duty or in the National Guard or Army Reserve. The two-year curriculum covers an Army career, military history, map reading, leadership, and small unit operations. Students may voluntarily participate in one of several adventure activities. Basic-course students, other than scholarship students, do not make a military commitment during this period. These students survey Army opportunities and decide whether to continue in the program as advanced-course students. The advanced course consists of a three-credit course normally taken each semester during the last two years of university study and includes a six-week advanced camp at an Army installation. Students in the advanced course receive monthly stipends of $100 during the school year. Study centers on leadership styles and techniques with special emphasis placed on small-unit leadership.

The primary objective of the program is to develop leadership and management skills in students. Supplementary objectives include enhancement of the student's abilities in speaking and writing, goal seeking, and problem solving. Key to the program is the development of personal attributes essential to military science. Those attributes include sound situational assessment, decision making, and the ability to know, understand, and lead people. Additionally, the department hopes to cultivate within its students a strong sense of personal integrity, self-discipline, and responsibility.

Departmental members will answer questions about specific programs and courses. Contact the department by coming to the west end of Memorial Gymnasium or by calling 208/885-6528.

Military Science Courses

MS 101 Intro to Military Sc (1 cr). Provides background in role of an Army officer as a career choice in either the Active Army of the National Guard/Reserves; lec, conference, and military activities dealing with military subjects; option of participating in challenging outdoor activities such as orienteering, whitewater rafting, mountaineering, and weapons familiarization; no military obligation; texts, uniforms, and lab fees provided by dept.

MS 102 Fundamentals of Leadership and Mgt (1 cr). Continuation of MS 101. Dev of greater understanding of roles and responsibilities of Army officers; lec, conference and military activities dealing with military subjects; participation in challenging outdoor activities such as orienteering, whitewater rafting, mountaineering, and weapons qualification; uniform wear reqd; no military obligation; texts, uniforms, and lab fees provided by dept. Prereq: 101 or perm of professor of military sc.

MS 201 Applied Leadership and Mgt (2 cr). Appl of leadership and mgt skills to various case studies; appl of prin of war to past battles; organization and structure of Army units; basic first aid; practical field training in variety of outdoor skills (mountaineering, rafting, rifle marksmanship), uniform wear reqd; no military obligation; texts, uniforms, and lab fees provided by dept. Prereq: MS 102 or perm of dept.

MS 202 Applied Leadership and Mgt (2 cr). Troop leading procedures and appl of procedures to planning and conducting small unit operations; individual soldier skills, such as military comm, radio procedures, basic map reading, and survival skills; practical field training in variety of outdoor skills (mountaineering, rafting, rifle marksmanship); uniform wear reqd; no military obligation; texts, uniforms, and lab fees provided by dept. Prereq: MS 201 or perm of dept.

MS 205 Fundamentals and Applied Leadership and Mgt (Compressed) (4 cr). Compression of 101-102, 201-202. Leadership training, command experience, org and employment of basic military units, map reading, and unit leadership problems. Three lec and one 2-hr lab a wk. May not be taken for cr after 101, 102, 201, or 202. Prereq: 2nd-sem soph or 1st-sem jr standing and perm of dept.

MS 289 Basic Encampment (3 cr). Intensive six-wk summer encampment at Fort Knox, Kentucky; teach and reinforce leadership and mgt skills and other military subjects; students placed in stressful military training environment and rotated through leadership positions at squad, platoon, and company level; eval of leadership potential and military skill proficiency. Graded P/F.

MS 298 Leadership Activities (0 cr). Leadership training and dev of military-related skills intended to supplement basic military science leadership fundamentals.

MS 299 (s) **Directed Study** (cr arr). Prereq: perm.

MS 301-302 Adv Leadership and Mgt (3 cr). Practical leadership skills in light infantry environment; leadership tech practiced while learning patrolling and offensive and defensive tactics at squad and platoon level; prepares cadets for six-wk Advanced Camp at Fort Lewis, Washington. Three lec and 2 hrs of lab a wk, plus field training exercises. Prereq: Either ROTC Basic Course, Camp Challenge, or Basic Training and Advanced Individual Training with Active Army (Reserve or National Guard).

MS 401-402 Seminar in Leadership and Mgt (3 cr). Appl of leadership and mgt skills; combined arms team operations; military justice system; prep for active duty. Prereq: 301-302.

MS 489 Adv Encampment (cr arr). Intensive six-wk summer encampment at Ft. Lewis, Wash. Graded P/F. Prereq: 301-302 and perm of dept.

MS 499 (s) **Directed Study** (cr arr). Prereq: perm.

Lionel Hampton School of Music

Robert W. Miller, Director (205 Music Bldg.). Faculty: Dorothy T. Barnes, Daniel J. Bukvich, J. Roger Cole, Robert Dickow, Mary H. DuPree, Richard R. Hahn, Harry A. Johansen, Ronald J. Klimko, G. Jay Mauchley, Sandra Hahn Mauchley, Robert T. McCurdy, Robert W. Miller, Richard S. Neher, Floyd H. Peterson, Alan Rawson, James E. Reid, Lynn J. Skinner, Robert J. Spevacek, Charles W. Walton, William C. Wharton.

The Lionel Hampton School of Music, so designated in 1987 in honor of the eminent American composer, conductor, and performer, is a full member of the National Association of Schools of Music. Established as a department in 1893, it was elevated to school status in 1969.

The courses and curricula in music seek to prepare elementary, secondary, and college teachers of music; to train professional musicians; to enrich the cultural environment for the students and provide liberal-arts instruction; and to do research in music performance and teaching for the general benefit of the public and the discipline of music.

Students in this school learn by performing, listening, analyzing, and creating music. Emphasis is on the understanding of musical style and techniques of all eras, including contemporary music. Musical studies balance the aesthetic and the practical,

with ample opportunity for exploration and self-reliance.

The formal curricula of the school consist of baccalaureate-degree programs in vocal or instrumental performance, vocal or instrumental music education (including a combined degree in both), composition, and elementary music. The B.A. degree emphasizes a broad liberal education and is offered with majors in applied music (performance), music history and literature, and music theory. The B.Mus. degree is professionally oriented, and is the normal preparation for graduate study in music or for teacher certification.

The Music Building houses the Agnes Crawford Schuldt Music Library, faculty studios, ensemble rehearsal areas, classrooms, a music education materials center, a record and tape listening center, a recital hall, and a student lounge. Individual practice rooms are available in nearby Ridenbaugh Hall. Recording, radio-television, language listening lab, and computer facilities of the campus are also used by music students. In addition to organ, harpsichord, and piano practice instruments, the school maintains two performance pipe organs, three concert grand pianos, and a concert harpsichord.

The Hampton School offers degrees at the master's level — M.Mus. and M.A. Master of Music degrees are available in performance (vocal and instrumental), composition, theory-composition, music literature, music education, and piano pedagogy and performance studies. The Master of Arts option is in music history.

Courses

APPLIED PERFORMANCE STUDIES

MusA 114 (s) **Individual Instruction** (1 cr, max arr). For secondary or minor instrument, nonmajors, and undeclared majors; may not be taken for audit. One-half hour of private instruction a wk. Instruction offered in piano, organ, harpsichord, voice, flute, oboe, clarinet, saxophone, bassoon, trumpet, horn, euphonium, trombone, tuba, percussion, violin, viola, cello, contrabass, guitar, or harp. Prereq: audition by committee.

MusA 124 (s) **Individual Instruction** (2 cr, max arr). For music majors in music degree programs other than performance; may not be taken for audit. One hour of private instruction a wk plus convocation studio class; final exam conducted by jury. Instruction offered in piano, organ, harpsichord, voice, flute, oboe, clarinet, saxophone, bassoon, trumpet, horn, euphonium, trombone, tuba, percussion, violin, viola, cello, contrabass, guitar, or harp. Prereq: placement audition by committee.

MusA 134 (s) **Individual Instruction** (3 cr, max arr). For applied music majors in the B.Mus. performance degree; may not be taken for audit. One hour of private instruction a wk plus convocation studio class; final exam conducted by jury. Instruction offered in piano, organ, harpsichord, voice, flute, oboe, clarinet, saxophone, bassoon, trumpet, horn, euphonium, trombone, tuba, percussion, violin, viola, cello, contrabass, guitar, or harp. Prereq: placement audition by committee.

MusA 145-146/245-246 Piano Class (1 cr). May not be taken for audit. Four-semester beginning piano sequence. Two lec-labs a wk. Prereq: perm of dept.

MusA 147-148 Voice Class (1 cr). May not be taken for audit. Two-semester sequence for beginning singers. Two lec-labs a wk. Prereq: MusA 147 (for 148) or perm of dept.

MusA J149-J150/J349-J350 Voice for Actors (1 cr, max arr). Group voice instruction based on theatre and musical theatre materials. Prereq: audition and perm of dept.

MusA 151-152 Guitar Class (1 cr). Two lec-labs a wk. May not be taken for audit. Prereq: perm of dept.

MusA 153 Guitar Class for Nonmajors (2 cr). Group instruction in guitar and basic musicianship. May not be taken for audit.

MusA 200 (s) **Seminar** (cr arr). Prereq: perm.

MusA 203 (s) **Workshop** (cr arr). Prereq: perm.

MusA 204 (s) **Special Topics** (cr arr).

MusA 245-246 Piano Class (1 cr). See 145-146/245-246.

MusA 299 (s) **Directed Study** (cr arr). Prereq: perm.

MusA 314 (s) **Individual Instruction** (1 cr, max arr). See MusA 114 for description and areas.

MusA J315/J515 Accompanying (1 cr, max arr). Prin of accompanying with use of keyboard instruments; lab assignments under supervision. Two lec-labs a wk. Prereq: audition and completion of semester of MusA 124 or MusA 134.

MusA J316/J516 Concert Choir — Vandaleers (1 cr, max arr). Open to all students. Four rehearsals a wk. Prereq: audition and perm.

MusA J317/J517 (s) **University Choir** (1 cr, max arr). Open to all students. One 2½-hr night rehearsal a wk. Prereq: perm.

MusA J318/J518 (s) **Jazz Choir** (1 cr, max arr). Open to all students. Three rehearsals a wk. Prereq: audition and perm.

MusA J319/J519 (s) **Marching Band** (1 cr, max arr). Open to all students. Performance at home football games and other events and travel to selected away football games; separate sections for marching band and Vandal Brass. Prereq: audition and perm.

MusA J320/J520 (s) **Wind Ensemble** (1 cr, max arr). Open to all students. Four rehearsals a wk. Prereq: audition and perm.

MusA J321/J521 (s) **Concert Band** (1 cr, max arr). Open to all students. Three rehearsals a wk. Prereq: audition and perm.

MusA J322/J522 (s) **Orchestra** (1 cr, max arr). Open to all students. Four rehearsals a wk. Prereq: audition and perm.

MusA J323/J523 (s) **Jazz Ensemble** (1 cr, max arr). Open to all students. Three rehearsals a wk. Prereq: audition and perm.

MusA 324 (s) **Individual Instruction** (2 cr, max arr). See MusA 124 for description and areas.

MusA 334 (s) **Individual Instruction** (3 cr, max arr). See MusA 134 for description and areas.

MusA 349-350 Voice for Actors (1 cr, max arr). See J149-J150/J349-J350.

MusA J365/J565 (s) **Chamber Ensemble** (1 cr, max arr) (MusA J265/J365/J565). Open to all students. Performance opportunities in chamber music ensembles: string, brass, woodwind, percussion, keyboard, vocal and mixed including Chamber Singers, Collegium Musicum, brass choir, percussion ensemble. Two rehearsals a wk. Prereq: audition and perm.

MusA J380/J580 (s) **Opera Workshop** (1-3 cr, max arr) (J280/J480). Analysis, rehearsal, and performance of operatic lit. Prereq: audition and perm.

MusA 387 Conducting I (2 cr). Conducting tech, score reading, and interpretation of scores for large choral and instrumental ensembles. Prereq: MusC 141.

MusA 400 (s) **Seminar** (cr arr). Prereq: perm.

MusA 403 (s) **Workshop** (cr arr). Prereq: perm.

MusA 404 (s) **Special Topics** (cr arr).

MusA J454/J554 Performance Practices (2 cr). Performance practices of music from Renaissance to present. Prereq: perm.

MusA 487 Conducting II (2 cr). Prereq: 387 or perm.

MusA 490 Recital (0 cr). For students required to have one-half recital. Graded P/F. Prereq: perm of dept; coreq: 324 or 334.

MusA 491 Recital (0 cr). For students required to have a full recital. Graded P/F. Prereq: perm of dept; coreq: 334.

MusA 498 Proseminar (2 cr). Prereq: perm.

MusA 499 (s) **Directed Study** (cr arr). Prereq: perm.

MusA 500 Master's Research and Thesis (cr arr).

MusA 501 (s) **Seminar** (cr arr). Prereq: perm.

MusA 502 (s) **Directed Study** (cr arr). Prereq: perm.

MusA 503 (s) **Workshop** (cr arr). Prereq: perm.

MusA 504 (s) **Special Topics** (cr arr).

MusA 514 (s) **Individual Instruction** (1 cr, max arr). See 114 for description and areas.

MusA 515 Accompanying (1 cr, max arr). See J315/J515.

MusA J516 Concert Choir — Vandaleers (1 cr, max arr). See J316/J516.

MusA J517 (s) **University Chorus** (1 cr, max arr). See J317/J517.

MusA J518 (s) **Jazz Choir** (1 cr, max arr). See J318/J518.

MusA J519 (s) **Marching Band** (1 cr, max arr). See J319/J519.

MusA J520 (s) **Wind Ensemble** (1 cr, max arr). See J320/J520.

MusA J521 (s) **Concert Band** (1 cr, max arr). See J321/J521.

MusA J522 (s) **Orchestra** (1 cr, max arr). See J322/J522.

MusA J523 (s) **Jazz Ensemble** (1 cr, max arr). See J323/J523.

MusA 524 (s) **Individual Instruction** (2-3 cr, max arr). See 124 for description and areas.

MusA 534 (s) **Individual Instruction** (3-6 cr, max arr). See 134 for description and areas.

MusA J554 Performance Practices (2 cr). See J454/J554.

MusA J565 (s) **Chamber Ensemble** (1 cr, max arr). See J365/J565.

MusA J580 Opera Workshop (1-3 cr, max arr). See J380/J580.

MusA 587 Adv Conducting (3 cr). Adv tech of conducting incl baton tech and score reading analysis. Prereq: 387 or equiv.

MusA 590 (s) **Master's Recital** (0 cr). For students whose emphasis is other than performance. May be repeated. Graded P/F. Prereq: audition and perm of committee; coreq: 524.

MusA 591 (s) **Master's Recital** (0 cr). For students whose emphasis is in performance. May be repeated. Graded P/F. Prereq: audition and perm of committee; coreq: 534.

MusA 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

THEORY AND COMPOSITION

MusC 120 Fundamentals of Music (2 cr). For students in fields other than music. Not open to students who have taken 141.

MusC 139-140 Aural Skills I-II (1 cr). Exercises and drill in sight-singing and ear training.

MusC 141 Theory of Music (3 cr). For majors and minors. Melodic and harmonic materials, aprt-writing skills, and analysis. Prereq: perm of dept.

MusC 142 Theory of Music II (3 cr). For majors and minors. Harmonic materials, part-writing skills, and analysis. Prereq: 141.

MusC 200 (s) **Seminar** (cr arr). Prereq: perm.

MusC 203 (s) **Workshop** (cr arr). Prereq: perm.

MusC 204 (s) **Special Topics** (cr arr).

MusC 239-240 Aural Skills III-IV (1 cr). Continuation of 140.

MusC 241 Theory of Music III (3 cr). For majors and minors. Prereq: 142.

MusC 242 Theory of Music IV (3 cr). For majors and minors. Prereq: 241.

MusC 299 (s) **Directed Study** (cr arr). Prereq: perm.

MusC 324 Composition for Noncomposition Majors (2 cr, max 4). Study of tech of composition; phrase and period structure, melodic composition and accompaniment, composition of small forms. Prereq: 242.

MusC 325 Composition (2 cr, max arr). Creative writing. Prereq: 240, 242.

MusC 327 Orchestration (3 cr). Prin of instrumentation and transcription with emphasis on idiomatic instrumental writing leading to projects in scoring for chamber groups, orchestra, and band. Prereq: 242 or perm.

MusC 329 Theoretical Basis of Jazz (2 cr). Harmonic, melodic, rhythmic, and stylistic analysis of principal trends. Prereq: perm.

MusC 331 Counterpoint (3 cr). Style and technique of polyphonic 16th century vocal music through 18th century instrumental music, with emphasis on two- to three-part writing; motet, canon, invention, and fugue. Prereq: 242 or perm.

MusC 400 (s) **Seminar** (cr arr). Prereq: perm.

MusC 403 (s) **Workshop** (cr arr). Prereq: perm.

MusC 404 (s) **Special Topics** (cr arr).

MusC 425 Adv Composition (2 cr, max arr)(423-424). Continuation of 325. Increasing emphasis on varied media and larger forms, but with value being placed on creativity and originality. Prereq: 325.

MusC 426 Electronic Music (2 cr). Tech of musical composition using electronic media. Prereq: 242 or perm.

MusC 428 Choral Arranging (2 cr). Tech and devices used in arranging for voice ensembles. Prereq: 242 or perm.

MusC J423/J532 Adv Counterpoint (2 cr). Adv contrapuntal writing, incl canon and fugue. Prereq: 331.

MusC 441 20th-Century Tech (2 cr). Compositional tech of 20th century; composition and analytical projects. Prereq: 242.

MusC 442 Musical Analysis (2 cr). Study of traditional forms and analyt tech. Prereq: 242.

MusC 461 Band Arranging (2-4 cr, max 4). Alt/yrs. Scoring for wind and percussion instruments; range, transposition, and tone color. Prereq: 242 or perm.

MusC 490 Sr Recital (0 cr). For students in composition required to have one-half recital. Prereq: perm of dept; coreq: 425.

MusC 498 Proseminar (2 cr). Prereq: perm.

MusC 499 (s) **Directed Study** (cr arr). Prereq: perm.

MusC 500 Master's Research and Thesis (cr arr).

MusC 501 (s) **Seminar** (cr arr). Prereq: perm.

MusC 502 (s) **Directed Study** (cr arr). Prereq: perm.

MusC 503 (s) **Workshop** (cr arr). Prereq: perm.

MusC 504 (s) **Special Topics** (cr arr).

MusC 507 Indiv Instruction: Composition (cr arr). Prereq: 525 or perm.

MusC 521 Musical Analysis (3 cr). Analysis of selected musical compositions. Prereq: perm.

MusC 525 Composition (2 cr, max arr). Creative writing.

MusC 527 Adv Orchestration (2 cr, max arr). Orchestral scoring; recent trends. Prereq: 327 or perm.

MusC J532 Adv Counterpoint (2 cr). See J432/J532.

MusC 590 (s) **Master's Recital** (0 cr). For students whose degree requires a composition recital as part of the degree requirements. Graded P/F. Prereq: audition and perm of committee; coreq: 507 or 525.

MusC 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

HISTORY AND LITERATURE

MusH 100 (s) **Survey of Music** (2-3 cr). Satisfies core requirement J-3-d. Not open for cr to majors or to those who have taken MusC 141. Intro to the art and nature of music; emphasis of aural skills, hist styles, musical forms, and the lit of music.

MusH 101 Intro to Music (2 cr). Intro to art and nature of music; representative world musical cultures and overview of Western vernacular and cultivated traditions.

MusH 200 (s) **Seminar** (cr arr). Prereq: perm.

MusH 203 (s) **Workshop** (cr arr). Prereq: perm.

MusH 204 (s) **Special Topics** (cr arr).

MusH 299 (s) **Directed Study** (cr arr). Prereq: perm.

MusH 304 Special Topics in Music Hist (2-3 cr). Primarily for nonmajors. Music in context of general cultural hist; studies of genres or style periods.

MusH 321 Music in Western Civ I (3 cr)(221). Musical culture, styles, and genres from the Middle Ages through 1750. Prereq: 100, 101, or perm.

MusH 322 Music in Western Civ II (3 cr)(222). European and American musical culture, styles, and genres from 1750 to World War I. Prereq: 100, 101, or perm.

MusH 323 Music in Western Civ III (3 cr). European and American musical cultures, styles, and genres, including jazz, from World War I to the present. Prereq: 100, 101, or perm.

MusH 400 (s) **Seminar** (cr arr). Prereq: perm.

MusH 403 (s) **Workshop** (cr arr). Prereq: perm.

MusH 404 (s) **Special Topics** (cr arr).

MusH J410/J510 (s) **Studies in Jazz History** (3 cr). Selected topics in jazz. Prereq: 321-323 or perm.

MusH J416/J516 (s) **Studies in Renaissance Music** (3 cr)(J412/J512). Selected topics in Renaissance music. Prereq: 321-323 or perm.

MusH J417/J517 (s) **Studies in Baroque Music** (3 cr)(J413/J511). Selected topics in Baroque music. Prereq: 321-323 or perm.

MusH J418/J518 (s) **Studies in Classic/Romantic Music** (3 cr)(J415/J515). Selected topics in Classic/Romantic music. Prereq: 321-323 or perm.

MusH J419/J519 (s) **Studies in 20th-Century Music** (3 cr). Selected topics in 20th-century music. Prereq: 321-323 or perm.

MusH J440/J540 (s) **Studies in American Music** (3 cr). Selected topics in American music. Prereq: 321-323 or perm.

MusH J451/J551 (s) **Repertoire** (2 cr, max arr). May be repeated for cr as content changes. Historical and analytical survey of lit available in all performing media. Prereq: jr standing and perm.

MusH J459/J559 (s) **Studies in Opera Lit** (3 cr). Open to all students. Selected masterworks of opera lit. Prereq: perm.

MusH 498 Proseminar (2 cr). Prereq: perm.

MusH 499 (s) **Directed Study** (cr arr). Prereq: perm.

MusH 500 Master's Research and Thesis (cr arr).

MusH 501 (s) **Seminar** (cr arr). Prereq: perm.

MusH 502 (s) **Directed Study** (cr arr). Prereq: perm.

MusH 503 (s) **Workshop** (cr arr). Prereq: perm.

MusH 504 (s) **Special Topics** (cr arr).

MusH J510 (s) **Studies in Jazz History** (3 cr). See J410/J510.

MusH 516 (s) **Studies in Renaissance Music** (3 cr). See J416/J516.

MusH 517 (s) **Studies in Baroque Music** (3 cr). See J417/J517.

MusH J518 (s) **Studies in Classic/Romantic Music** (3 cr). See J418/J518.

MusH J519 (s) **Studies in 20th-Century Music** (3 cr). See J419/J519.

MusH J540 (s) **Studies in American Music** (3 cr). See J440/J540.

MusH J551 (s) **Repertoire** (2 cr, max arr). See J451/J551.

MusH J559 (s) **Studies in Opera Lit** (3 cr). See J459/J559.

MusH 559 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

MUSIC TEACHING

MusT 200 (s) **Seminar** (cr arr). Prereq: perm.

MusT 203 (s) **Workshop** (cr arr). Prereq: perm.

MusT 204 (s) **Special Topics** (cr arr).

MusT 251 String Instrument Tech (1 cr). Group instruction. Problems of playing and teaching stringed instruments in elem and secondary schools. Prereq: perm.

MusT 252 Clarinet Tech (1 cr). Group instruction. Problems of playing and teaching clarinet in elem and secondary schools. Prereq: perm.

MusT 253 Brass Instrument Tech (1 cr). Group instruction. Problems of playing and teaching brass instruments in elem and secondary schools. Prereq: perm.

MusT 254 Percussion Tech (1 cr). Group instruction. Problems of playing and teaching percussion instruments in elem and secondary schools. Prereq: perm.

MusT 299 (s) **Directed Study** (cr arr). Prereq: perm.

MusT 351 Adv String Tech (1 cr). Group instruction. Prereq: 251 or perm.

MusT 352 Double Reed Tech (1 cr). Group instruction. Prereq: 252 or perm.

MusT 353 Adv Brass Tech (1 cr). Group instruction. Prereq: 253 or perm.

MusT 354 Flute and Saxophone Tech (1 cr). Group instruction. Prereq: 252 or perm.

MusT 381 Elem School Music Methods I (3 cr). Same as Ed 381. Curriculum, organization, and instructional materials for teaching general classroom music. Two lec and one lab a wk. Must be taken before enrolling in Ed 432. Prereq: perm.

MusT 383 Prin of Music Teaching (3 cr). Students in the School of Music take this course in lieu of Ed 468. Phil, prin, curriculum, and organization of the school music program. Must be taken before enrolling in Ed 432. Prereq: MusC 142.

MusT 385 Choral Music in the Secondary School (2 cr). Methods, instructional materials, and tech for teaching choral music in grades 7-12. Two lec and one lab a wk. Must be taken before enrolling in Ed 432. Prereq: 2 cr in MusA 316 or MusA 317, MusC 142; prereq or coreq: MusT 383, MusA 387, or perm.

MusT 386 Instrumental Music in the Secondary School (2 cr). Methods, instructional materials, and tech for teaching instrumental music in grades 7-12. Two lec and one lab a wk. Must be taken before enrolling in Ed 432. Prereq: MusC 142; prereq or coreq: MusT 383, MusA 387, or perm.

MusT 387 Orff Schulwerk (2 cr). Philosophies and music teaching tech attributed to Carl Orff with emphasis on creative movement, singing, improvisation, and percussion instruments. Prereq: perm.

MusT 388 Kodaly Method (2 cr). Philosophies and teaching sequence (based on the dev of the child) of Zoltan Kodaly with emphasis on solfege singing, folk songs, child dev lesson planning, and dev of personal musicianship. Prereq: perm.

MusT 400 (s) **Seminar** (cr arr). Prereq: perm.

MusT 403 (s) **Workshop** (cr arr). Prereq: perm.

MusT 404 (s) **Special Topics** (cr arr).

MusT J435/J535 (s) **Pedagogy and Materials** (2 cr, max arr) (MusT J433/J533). Methods and materials of performance tech for each performance field. Prereq: jr standing and perm.

MusT 438 (s) **Practicum** (cr arr). Studio and classroom teaching of secondary music majors, minors, or electives. Prereq: perm.

MusT 465 Jazz Band Rehearsal Tech (1 cr). Methods, materials, and lit for jazz bands in public schools. Coreq: 466, 467.

MusT 466 Marching Band Tech (1 cr). Tech of drilling; materials for field and street maneuvers; prep of shows. Prereq: MusC 242; coreq: MusT 465, 467.

MusT 467 Instrumental Lit for Public Schools (1 cr). Music and materials suitable for instrumental ensembles in schools. Prereq: 465, 466.

MusT 468 Lit for Vocal Ensembles (2 cr). Chamber music materials suitable for use in schools.

MusT 481 Elem School Music Methods II (3 cr). Prereq: 381 or perm.

MusT 485 Choral Ensemble Rehearsal Tech (1 cr, max arr). Various tech of rehearsing singers in an ensemble. Coreq: 385.

MusT 486 Instrumental Ensemble Rehearsal Tech (1 cr, max arr). Various tech of rehearsing string, wind, and percussion players in an ensemble. Coreq: 386.

MusT 498 Proseminar (2 cr). Prereq: perm.

MusT 499 (s) **Directed Study** (cr arr). Prereq: perm.

MusT 500 Master's Research and Thesis (cr arr).

MusT 501 (s) **Seminar** (cr arr). Prereq: perm.

MusT 502 (s) **Directed Study** (cr arr). Prereq: perm.

MusT 503 (s) **Workshop** (cr arr). Prereq: perm.

MusT 504 (s) **Special Topics** (cr arr).

MusT 505 Curriculum Development (3 cr). Scope and sequence of musical experience in public schools through curriculum development.

MusT 506 Teaching Systems (3 cr). For experienced teachers. Survey of Orff, Kodaly, Gordon, and Manhattanville and their relationship to teaching music at all levels. Prereq: one yr teaching exper or perm.

MusT 507 Evaluation in Music (3 cr). Study and development of evaluation instruments for use in teaching music.

MusT J535 (s) **Pedagogy and Materials** (2 cr, max arr). See J435/J535.

MusT 538 (s) **Practicum** (cr arr). Studio and classroom teaching of secondary music majors, minors, or electives. Prereq: perm.

MusT 562 Choral Lit and Tech (2 cr). Prereq: 385, MusA 387, or perm.

MusT 563 Orchestral Lit and Tech (2 cr). Prereq: 386, MusA 387, or perm.

MusT 564 Band Lit and Tech (2 cr). Prereq: 386, MusA 387, or perm.

MusT 581 (s) **College Music Teaching** (1 cr, max 3). Contemporary teaching tech in one or more of the following fields: theory, music lit, music ed, piano, voice, woodwinds, strings, brass, and percussion. Prereq: perm.

MusT 583 School Music Admin (2 cr). Prin underlying sound policies in the supervision and admin of school music. Prereq: one yr of teaching exper or perm.

MusT 597 (s) **Practicum** (cr arr). Prereq: perm.

MusT 598 (s) **Internship** (cr arr). Prereq: perm.

MusT 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GENERAL

MusX 140 Convocation (0 cr). Required of all music majors for seven semesters and music minors for two semesters (minimum of 10 recitals a semester). Graded P/F.

MusX 200 (s) **Seminar** (cr arr). Prereq: perm.

MusX 203 (s) **Workshop** (cr arr). Prereq: perm.

MusX 204 (s) **Special Topics** (cr arr).

MusX 283-284 Diction for Singers (2 cr). Two-semester sequence (English/Italian and German/French) in study of language sounds as represented by the International Phonetic Assoc.

MusX 299 (s) **Directed Study** (cr arr). Prereq: perm.

MusX 400 (s) **Seminar** (cr arr). Prereq: perm.

MusX 403 (s) **Workshop** (cr arr). Prereq: perm.

MusX 404 (s) **Special Topics** (cr arr). Prereq: perm.

MusX 469 Research Tech in Music (2 cr). Prin of research design and tech. Prereq: perm.

MusX 498 Proseminar (2 cr). Prereq: perm.

MusX 499 (s) **Directed Study** (cr arr). Prereq: perm.

MusX 500 Master's Research and Thesis (cr arr).

MusX 501 (s) **Seminar** (cr arr). Prereq: perm.

MusX 502 (s) **Directed Study** (cr arr). Prereq: perm.

MusX 503 (s) **Workshop** (cr arr). Prereq: perm.

MusX 504 (s) **Special Topics** (cr arr).

MusX 511 Bibliography and Research (3 cr). Orientation to grad study; bibliography and research procedures.

MusX 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

General Requirements for All B.A. and B.Mus. Degrees

Ensemble Participation. An undergraduate major in the School of Music is required to enroll in an ensemble during each semester. Various requirements are contained in the specific curricula, depending on the performance specialty. Consult the School of Music Handbook for further details.

Keyboard Proficiency. Minimum keyboard proficiency for all B.Mus. majors is met by satisfactory completion of MusA 145-146, 245-246, Piano Class, or by passing a keyboard proficiency examination or for B.A. majors by satisfactory completion of MusA 145 or by passing a keyboard proficiency test.

Academic Junior Standing (AJS). Each major in the School of Music must be admitted to AJS by the music faculty before he or she will be permitted to enroll in music courses at the 300 level. Normally, this occurs during the first semester of the sophomore year, when the music faculty will meet to determine a list of students who have achieved satisfactory levels in music academic course work and may be admitted to AJS. Unsatisfactory achievement will result in probationary status and/or a recommendation to drop the major. Transfer students may not be admitted into AJS until 12 hours have been completed at the university, during which time the student was enrolled as a major in the School of Music; however, a transfer student may enroll in 300-level courses before being admitted to AJS if the normal sequence of courses would justify this procedure.

Upper-Division Standing (UDS). For an undergraduate music education or music performance major to enroll in MusA 324 or MusA 334 respectively, or for a composition major to enroll in MusC 325, the student must have passed the requirements of the major area; this involves a special jury examination and demonstration of mastery of the fundamentals of the student's major area of performance/composition and the potential to continue improving in a manner that will lead to the successful completion of performance/composition requirements of the degree and major emphasis.

Convocation-Recital Attendance. Because listening experiences constitute an area of major importance in the study of music, all music majors and music minors are required to register for MusX 140, Convocation; music majors must attend 10 recitals a semester for seven semesters and music minors must attend 10 recitals for two semesters. Recital credit will not be granted for those performances in which a student participates. In addition, music majors must attend the weekly convocation series

(studio, area, and convocation). Students will not be admitted to academic junior standing until they have passed three semesters of convocation. (Admittance to AJS normally occurs after the first semester of the sophomore year.) Transfer students are expected to enroll in MusX 140 during their first registration, and to receive a passing grade in a specific number of semesters (to be determined when the student's program is set up). Students must attend a full concert or program in order for it to be counted toward convocation-recital requirements.

MUSIC: APPLIED MUSIC (B.A.)

Required course work includes the university requirements (see regulation J-3), the L & S requirements for the B.A. degree, and:

Course	Credits
MusA 124 Individual Instruction	8
MusA 145 Class Piano	1
MusA 324 Individual Instruction	8
MusA 490 Recital (half)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusX 140 Convocation (seven semesters)	0
Music theory or history electives (upper-div)	2-3
Electives to complete 50 cr in music	3-4
Electives to total 128 cr for the degree (incl at least 78 cr in nonmusic courses)	--

MUSIC: HISTORY AND LITERATURE (B.A.)

Required course work includes the university requirements (see regulation J-3), the L & S requirements for the B.A. degree, and:

Course	Credits
MusA 114 Individual Instruction	4
MusA 145 Class Piano	1
MusA 314 Individual Instruction	4
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusX 140 Convocation (seven semesters)	0
Music history electives (upper-div)	4-6
Music theory electives (upper-div)	4
Electives to complete 50 cr in music	4-6
Electives to total 128 cr for the degree (incl at least 78 cr in nonmusic courses)	--

MUSIC: THEORY (B.A.)

Required course work includes the university requirements (see regulation J-3), the L & S requirements for the B.A. degree, and:

Course	Credits
MusA 114 Individual Instruction	4
MusA 145 Class Piano	1
MusA 314 Individual Instruction	4
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusX 140 Convocation (seven semesters)	0
Music theory electives (upper-div)	10
Electives to complete 50 cr in music	4
Electives to total 128 cr for the degree (incl at least 78 cr in nonmusic courses)	--

MUSIC: INSTRUMENTAL PERFORMANCE (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and the specific requirements in one of the two sections below. It is strongly recommended that instrumentalists elect literature or pedagogy courses appropriate to their major fields.

A. KEYBOARD

Note: Keyboard majors must pass the class piano proficiency exam or register for the appropriate level of class piano until the proficiency exam is passed.

Course	Credits
MusA 134 Individual Instruction	12
MusA 334 Individual Instruction	12
MusA 315 Accompanying	4
MusA 365 Chamber Ensemble	2
MusA 387 Conducting	2
MusA 454 Performance Practices	2
MusA 490 Recital (half)	0
MusA 491 Recital (full)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 331 Counterpoint	3
MusC 442 Musical Analysis	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusH 451 Repertoire	2
MusT 435 Pedagogy & Materials	4
MusX 140 Convocation (seven semesters)	0
Music history electives	3
Large ensemble (two different semesters chosen from MusA 316, 317, 318, 319, 320, 321, 322)	2
Music electives to complete 84 cr in music	5
Electives to total 128 cr for the degree	--

A. ORCHESTRAL INSTRUMENTS OR GUITAR

Course	Credits
MusA 134 Individual Instruction	12
MusA 145-146, 245-246 Piano Class	4
MusA 334 Individual Instruction	12
MusA 387 Conducting	2
MusA 454 Performance Practices	2
MusA 490 Recital (half)	0
MusA 491 Recital (full)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 331 Counterpoint	3
MusC 442 Musical Analysis	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusH 451 Repertoire	2
MusX 140 Convocation (seven semesters)	0
Music history electives	3
Large ensemble (eight different semesters chosen from MusA 320, 321, 322) (4 cr in four different semesters reqd for guitar majors)	8
Chamber music (two different semesters chosen from MusA 323, 365) (4 cr in four different semesters of MusA 365, Guitar Ensemble, reqd for guitar majors)	2
Music electives to complete 84 cr in music	5
Electives to total 128 cr for the degree	--

B. ORCHESTRAL INSTRUMENTS OR GUITAR

Course	Credits
MusA 134 Individual Instruction	12
MusA 145-146, 245-246 Piano Class	4
MusA 334 Individual Instruction	12
MusA 387 Conducting	2
MusA 454 Performance Practices	2
MusA 490 Recital (half)	0
MusA 491 Recital (full)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 331 Counterpoint	3
MusC 442 Musical Analysis	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Musical in Western Civ	9
MusH 451 Repertoire	2
MusX 140 Convocation (seven semesters)	0
Music history elective	3
Large ensemble (eight different semesters chosen from MusA 320, 321, 322) (4 cr in four different semesters reqd for guitar majors)	8
Chamber music (two different semesters chosen from MusA 323, 365) (4 cr in four different semesters of MusA 365, Guitar Ensemble, read for guitar majors)	2
Music electives to complete 84 cr in music	5
Electives to total 128 cr for the degree	--

MUSIC: VOCAL PERFORMANCE (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
MusA 134 Individual Instruction	12
MusA 145-146, 245-246 Piano Class	4
MusA 334 Individual Instruction	12
MusA 380 Opera Workshop	2
MusA 387 Conducting	2
MusA 454 Performance Practices	2
MusA 490 Recital (half)	0
MusA 491 Recital (full)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 331 Counterpoint	3
MusC 442 Musical Analysis	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusH 451 Repertoire	4
MusT 435 Pedagogy & Materials	4
MusX 140 Convocation (seven semesters)	0
Music history electives	3
Large ensemble (six different semesters chosen from MusA 316, 317)	6
Chamber music (two different semesters chosen from MusA 318, 365)	2
Music electives to complete 84 cr in music	3
Electives to total 128 cr for the degree	--

MUSIC: COMPOSITION (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
MusA 114 Individual Instruction (if major performing medium is other than piano, piano is suggested for this minor area)	2
MusA 124 Individual Instruction	8
MusA 145-146, 245-246 Piano Class	4
MusA 324 Individual Instruction	4
MusA 387 Conducting	2
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 325 Composition	4
MusC 327 Orchestration	3
MusC 331 Counterpoint	3
MusC 425 Adv Composition	4
MusC 426 Electronic Music	2
MusC 428 Choral Arranging	2
MusC 442 Musical Analysis	2
MusC 490 Recital	0
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusX 140 Convocation (seven semesters)	0
Music history elective	3
Large ensemble (eight different semesters chosen from MusA 316, 317, 319, 320, 321, 322)	8
Chamber music (two different semesters chosen from MusA 318, 323, 365) (one semester of MusA 315, Accompanying, is reqd of students whose major applied medium is keyboard)	2
Music electives to complete 84 cr in music	4
Electives to total 128 cr for the degree	--

MUSIC EDUCATION: VOCAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and completion of one of the two sections below:

A. PREPARATION FOR JR.-SR. HIGH SCHOOL MUSIC TEACHING

Course	Credits
MusA 114 Individual Instruction (voice for piano majors; piano for voice majors)*	4
MusA 314 Individual Instruction (voice for piano majors; piano for voice majors)*	2
MusA 124 Individual Instruction	8
MusA 151 or 152 Guitar Class	1
MusA 324 Individual Instruction	6
MusA 380 Opera Workshop	1
MusA 387, 487 Conducting	4
MusA 490 Recital (half)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 428 Choral Arranging	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusT 381 Elem School Music Methods	3
MusT 383 Prin of Music Teaching	3
MusT 385 Choral Music in Secondary School	2
MusT 435 Pedagogy & Materials	2
MusT 485 Choral Ensemble Rehearsal Tech	1
MusX 140 Convocation (seven semesters)	0
MusX 283-284 Diction for Singers	4
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
Ed 415 Educational Psychology	3
Ed 432 Practicum: Music Teaching	9
Ed 440 Methods of Teaching Content Reading	3
Ed 445 Proseminar in Teaching	1
Psych 100 Intro to Psychology	3
Large ensemble (six different semesters chosen from MusA 316, 317)	6
Other ensemble (one semester chosen from MusA 316, 317, 318, 365, 380)	1
Music electives to complete 84 cr in music (students whose major performing medium is keyboard must register for two semesters of MusA 315, Accompanying)	7
Electives to total 128 cr for the degree	--

*Keyboard majors must pass the piano class proficiency exam or register for the appropriate level of piano class until the piano class proficiency exam is passed. Voice majors must register for piano class (or pass the proficiency exam) before enrolling in applied piano instruction; any combination of piano class or applied piano (MusA 114/314) should equal a minimum of six credits.

B. PREPARATION FOR ELEMENTARY SCHOOL MUSIC TEACHING

Course	Credits
MusA 114 Individual Instruction (voice for piano majors; piano for voice majors)*	4
MusA 314 Individual Instruction (voice for piano majors; piano for voice majors)*	2
MusA 124 Individual Instruction	8
MusA 324 Individual Instruction	6
MusA 145-146, 245-246 Piano Class	4
MusA 151 or 152 Guitar Class	1
MusA 387 Conducting	2
MusA 490 Recital (half)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 428 Choral Arranging	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusT 381, 481 Elem School Music Methods	6
MusT 383 Prin of Music Teaching	3
MusT 387 Orff Schulwerk	2
MusT 388 Kodaly Method	2
MusX 140 Convocation (seven semesters)	0
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
Ed 328 Audiovisual Aids	1
Ed 432 Practicum: Music Teaching	9
Ed 436 Reading: Alternatives to Basals	2
Ed 445 Proseminar in Teaching	1
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Large ensemble (six different semesters)**	6
Other ensemble (two different semesters chosen from MusA 316, 317, 318, 319, 320 321, 322, 323, 380) (two semesters of MusA 315, Accompanying, is reqd of students whose major applied medium is keyboard)	2
Music electives to complete 84 cr in music	7
Electives to total 128 cr for the degree	--

*Keyboard majors must pass the piano class proficiency exam or register for the appropriate level of piano class until the piano class proficiency exam is passed. Voice majors must register for piano class (or pass the proficiency exam) before enrolling in applied piano instruction; any combination of piano class or applied piano should equal a minimum of six credits. If the major instrument is other than voice, a minimum of six credits is required in any combination of class voice (MusA 147-148) or applied voice (MusA 114).

**Students must register for a large ensemble in accordance with their respective major performing medium as follows: wind and percussion — MusA 319, 320, 321; strings —MusA 322; voice — MusA 316, 317; keyboard — MusA 316, 317.

MUSIC EDUCATION: INSTRUMENTAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
MusA 124 Individual Instruction	8
MusA 145-146, 245-246 Piano Class	4
MusA 324 Individual Instruction	6
MusA 387, 487 Conducting	4
MusA 490 Recital (half)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 327 Orchestration or MusC 461 Band Arranging	3
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusH 251, 252, 253, 254, 351, 352, 353, 354 Instrumental Techniques	8
MusT 381 Elem School Music Methods	3
MusT 383 Prin of Music Teaching	3
MusT 386 Instrumental Music in Sec School	2
MusT 465 Jazz Band Rehearsal Tech	1
MusT 466 Marching Band Tech	1
MusT 467 Instrumental Lit for Public Schools	1
MusT 486 Instrumental Ensemble Rehearsal Tech	1
MusX 140 Convocation (seven semesters)	0
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
Ed 415 Educational Psychology	3
Ed 432 Practicum: Music Teaching	9
Ed 440 Methods of Teaching Content Reading	3
Ed 445 Proseminar in Teaching	1
Psych 100 Intro to Psychology	3
Large ensembles (six different semesters)*	6
Other ensembles (two different semesters chosen from MusA 319, 320, 321, 322, 323, 365) (students whose major applied medium is keyboard must select MusA 315 to satisfy this requirement)	2
Music electives to complete 84 cr of music	4
Electives to total 128 cr for the degree	--

*The large ensemble requirement must be completed in six different semesters; wind and percussion majors must register for three different semesters of MusA 319 and three different semesters of MusA 320 or 321. Wind and percussion majors may, by audition, substitute two semesters of MusA 322 for MusA 320 or 321. String majors must register for six different semesters of MusA 322. Wind, percussion, and string majors must have a total of four semesters of large ensemble participation (as defined above) at UI.

MUSIC EDUCATION: VOCAL-INSTRUMENTAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
MusA 114 Individual Instruction (voice)	4
MusA 124 Individual Instruction	8
MusA 145-146, 245-246 Piano Class	4
MusA 147-148 Voice Class	2
MusA 324 individual Instruction	6
MusA 387, 487 Conducting	4
MusA 490 Recital (half)	0
MusC 139-140, 239-240 Aural Skills	4
MusC 141, 142, 241, 242 Theory of Music	12
MusC 327 Orchestration or MusC 461 Band Arranging	3
MusC 428 Choral Arranging	2
MusH 101 Intro to Music	2
MusH 321, 322, 323 Music in Western Civ	9
MusT 251, 252, 253, 254, 351, 352, 353, 354 Instrumental Techniques	8
MusT 381 Elem School Music Methods	3
MusT 383 Prin of Music Teaching	3
MusT 385 Choral Music in Secondary School	2
MusT 386 Instrumental Music in Sec School	2
MusT 465 Jazz Band Rehearsal Tech	1
MusT 466 Marching Band Tech	1
MusT 467 Instrumental Lit for Public Schools	1
MusT 485 Choral Ensemble Rehearsal Tech	1
MusT 486 Instrumental Ensemble Rehearsal Tech	1
MusX 140 Convocation (seven semesters)	0
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
Ed 415 Educational Psychology	3
Ed 432 Practicum: Music Teaching	9
Ed 440 Methods of Teaching Content Reading	3
Ed 445 Proseminar in Teaching	1
Psych 100 Intro to Psychology	3
Large ensembles (six different semesters*)	6
Large ensembles (two different semesters chosen from MusA 316, 317)	2
Other ensembles (two different semesters chosen from MusA 319, 320, 321, 322, 323, 365) (students whose major applied medium is keyboard must select MusA 315 to satisfy this requirement)	2
Music electives to complete 84 cr of music	4
Electives to total 128 cr for the degree	--

*The large ensemble requirement must be completed in six different semesters; wind and percussion majors must register for three different semesters of MusA 319 and three different semesters of MusA 320 or 321. Wind and percussion majors may, by audition, substitute two semesters of MusA 322 for MusA 320 or 321. String majors must register for six different semesters of MusA 322. Wind, percussion, and string majors must have a total of four semesters of large ensemble participation (as defined above) at UI.

Academic Minor Requirements

MUSIC MINOR

Course	Credits
MusA 145-146 Class Piano (coreq for MusC 139-239/141-241)	2
MusC 139-140 Aural Skills I-II	2
MusC 141-142 Theory of Music I-II	6
MusH 101 Intro to Music	2
MusH 321, 322 Music in Western Civ	6
Music electives (to be selected in the following proportions: Ensembles, 0-3 cr; MusC 300-499, 0-3 cr; MusH 300-499, 0-3 cr; MusT 300-499, 0-3 cr)	4
And one of the following emphasis areas:	
Performance Emphasis	
MusA 114 Indiv Instruction (1 cr a semester) (coreq for lessons for minors is enrollment in a MusC or MusH course)	4
Performance proficiency exam	
Theory/Composition Emphasis	
MusC 239 Aural Skills III	1
MusC 241 Theory of Music III	3
History Emphasis	
Elective courses in lit, directed study, etc	4

Department of Naval Science

Janice C. Scott, Dept. Head (101 Navy Bldg.). Faculty: Douglas J. Asbjornsen, Kenneth N. Firoved, William H. Goesling, Gerald L. Lahr, Stephen M. McGrath, Janice C. Scott.

The President and the Congress of the United States have charged the Department of the Navy with the responsibility of maintaining freedom of passage on the world's seas. This task has become increasingly important in recent years because our country has become more and more dependent on importing a multitude of raw materials to support our industries, along with many manufactured products and foodstuffs. In turn, we are also economically dependent on exporting our products to foreign nations. Transportation by sea has risen in importance because it is by far the most economical means to date.

Protection of these sea lanes is paramount to our country's survival, and it is incumbent on the Department of the Navy to have as its leaders men and women who are highly educated in a variety of fields. For this reason, UI offers a Navy/Marine Corps Officer Education Program, the main goal of which is to prepare students for commissions as ensigns in the Navy or as second lieutenants in the Marine Corps.

Besides the academic program, students have the opportunity to participate in a variety of social and athletic events. Additionally, field trips to Navy and Marine Corps facilities are arranged periodically in order to allow members the opportunity of learning more about the naval service.

Students in NOEP are in either the college program or the scholarship program. College-program students are fully integrated within the battalion. College-program students in advanced standing (junior year) receive a monthly stipend for four semesters. Scholarship programs are varied.

The Navy-Marine OEP offers full and part scholarships leading to commissions as Navy or Marine Corps officers. Normally, students enter the program at the beginning of the freshman year; however, selected students may enter later, up to the beginning of the junior year. Students take 20 credits of professional courses taught by Navy and Marine Corps officers. Special provision for meeting freshman and sophomore requirements is made for students who enter the program in their junior year. Following graduation, a broad variety of duty assignments is available to the newly commissioned officer, including duty on nuclear submarines and surface ships, in naval aviation, supply corps, civil engineering corps, and ground or aviation assignments in the Marine Corps. All commissionees go on active duty at full pay and allowances immediately upon graduation.

Full Scholarship Program. Application for this program is normally made during the fall of the student's senior year of high school or freshman year of college. Initial selections are based on college entrance examination scores (SAT or ACT) and high school academic performance. A student on full scholarship participates in three summer training cruises of four to six weeks' duration. The first and third cruises are aboard ships of the Pacific or Atlantic Fleet and often include travel to Europe or the Far East. During the second cruise, students are introduced to submarine, amphibious warfare, and aviation specialties. Full scholarship benefits include tuition, fees, books, and a $100-per-month retainer. During summer cruises, the students receive one-half the pay of an ensign, in addition to room and board. Graduates of this program are commissioned as regular officers in the Navy or Marine Corps.

Part Scholarship Program. Application for this program is made directly to the head of the Department of Naval Science. Students receive their uniforms and naval science textbooks at no cost and begin receiving monthly subsistence pay of $100 per month at the beginning of the junior year. Part scholarship students may be nominated by the professor of naval science to the chief of naval education and training for a full scholarship, if their grades and military aptitude marks are sufficient. The program requires one training cruise during the summer following the junior year. It is an afloat cruise of the same type and with the same pay as described for the full scholarship program. Graduates of this program are ordered to active duty with regular commissions.

Marine Corps Option. Both full and part scholarship students

who desire a Marine Corps commission may apply for the Marine Corps option during their first two years in college. Students taking this option enroll in specialized classes on Marine Corps subjects during their junior and senior years and participate in summer training at the Officer Candidate School at Quantico, Virginia, during the summer following the junior year.

Two-Year Program. Navy-Marine Corps full and part scholarship applicants entering the program after completion of their sophomore year will be required to attend the Naval Science Institute (NSI) during the summer between their sophomore and junior years. At the NSI they will study the material taken by the four-year candidates during their freshman and sophomore years. On completion of the NSI, candidates return to the university and complete the junior and senior years of the naval science curriculum with their peers. Candidates in the two-year program will participate in one afloat cruise between their junior and senior years. Applications must be submitted early in the second semester of the sophomore year. The top NSI graduates are awarded full scholarships for their last two years of college. The remaining graduates receive part scholarships.

Naval Science Courses

NS ID100 Drill/Lab (0 cr). Reqd of all Navy-Marine Corps OEP students. Two 1-hr labs a wk.

NS ID101 Intro to Naval Science (2 cr). Intro to the Navy: customs, structure, career paths, ship and aircraft of the U.S. Fleet.

NS ID102 Ship Systems I (3 cr). Intro to Naval shipboard engineering systems; propulsion systems; nuclear, gas turbine, and conventional; auxiliary systems and shipboard damage control; basic concepts in ship design.

NS 200 (s) **Seminar** (cr arr). Prereq: perm.

NS ID201 Ship Systems II (3 cr). Naval weapons systems; theory and process of detection (radar and sonar), evaluation; weapons: delivery, guidance, and explosives; integration of weapons systems with command, control, and communications systems.

NS ID202 Seapower and Maritime Affairs (2 cr). Survey of U.S. Naval history; seapower and maritime affairs emphasizing present-day concerns; comparisons of U.S. and Russian Naval strategies.

NS 299 (s) **Directed Study** (cr arr). Prereq: perm.

NS ID301 Navigation (3 cr). Theory, prin, and procedures of terrestrial, celestial, and electronic navigation.

NS ID302 Naval Operations (3 cr). Naval operations and tactics, relative motion, and "rules of the nautical road." Prereq: enrolled in NOEP.

NS ID311 Evolution of Warfare (3 cr). Evolution of war through tactics; strategy from Sun Tzu to J.F.C. Fuller.

NS 400 (s) **Seminar** (cr arr). Prereq: perm.

NS ID401 Naval Organization and Management (2 cr). Theories of management and management resources, motivational theories, and leadership.

NS ID402 Naval Leadership (2 cr). Naval administration, emphasizing the U.C.M.J., human resource management, material management, and supply systems.

NS ID412 Amphibious Operations (3 cr). Amphibious doctrine from Gallipoli to the Mayaguez.

NS ID451 Navy Flight Indoctrination (3 cr). Intro to Naval aviation emphasizing navigation, aerodynamics, engineering, weather, flight safety, and duties of naval aviators and flight officers.

NS 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

NAVAL SCIENCE (B.N.S.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
NS 101 Intro to Naval Science	2
NS 102 Ship Systems I	3
NS 201 Ship Systems II	3
NS 202 Seapower & Maritime Affairs	2
NS 301 Navigation	3
NS 302 Naval Operations	3
NS 401 Naval Organization & Management	2
NS 402 Naval Leadership	2
CS 112 Intro to Problem Solving & Programming	3
Hist 455 20th Century Europe	3
Math 180, 190 Analytic Geom & Calculus I, II	8
Phys 113-114 General Physics	6
Phys 115 or 116 General Physics Lab	1

A naval science student must complete at least 80 percent of the requirements toward another university degree, as approved by the dean of the college concerned.

A student in naval science who concurrently qualifies for both the B.N.S. degree and another university degree will be awarded only the other university degree.

The awarding of the B.N.S. degree is administered through the College of Letters and Science; however, the academic records of the student concerned remain with the college in which he or she is registered for the regular baccalaureate degree.

Academic Minor Requirements

NAVAL SCIENCE MINOR

Course	Credits
NS 101 Intro to Naval Science	2
NS 102, 201 Ships Systems I, II	6
NS 202 Seapower & Maritime Affairs	2
Four to six courses from the following	10
NS 301 Navigation	
NS 302 Naval Operations	
NS 311 Evolution of Warfare	
NS 401 Naval Organization & Mgt	
NS 402 Naval Leadership	
NS 412 Amphibious Operations	
NS 451 Naval Flight Indoctrination Program	

Nuclear Engineering

E. Clark Lemmon, Program Director (202 Gauss Lab.). Faculty Jasper R. Avery, Donald F. Elger, E. Clark Lemmon.

RELATED FIELDS: For other courses offered in the nuclear field, see Chem 416, Chem 513, Phys 465, and Phys 566.

Nuclear Engineering Courses

NE R120 Fundamental Concepts of Nuclear Engr (3 cr). Basic concepts; intro to atomic structure, nuclear reactions, fission process, nuclear reactor fundamentals and types.

NE R220 Analysis of Nuclear Engr Systems I (3 cr). Primarily for technologists. Elem quantitative analysis, with emphasis on the qual aspects of nuclear engr systems; ore processing, fuel element fabrication, materials selection, shielding, and control. Prereq: 120 or perm.

NE R221 Analysis of Nuclear Engr Systems II (3 cr). Primarily for technologists. Continuation of R220. Heat removal, reactor design, fuel recycle, and waste disposal. Prereq: 220 or perm.

NE 223 Intro to Nuclear Engr (2-3 cr). For students in all fields, particularly nonengineers. Broad nonquantitative survey of nuclear engr: production of useful energy from nuclear fuel, disposal of nuclear wastes, and economical and social aspects.

NE 360 Nuclear Nuclear Engr I (3 cr). Nuclear and atomic physics, measurements, health physics, nuclear reactor theory, shielding, and control. Two lec and one 2-hr lab a wk. Prereq: perm.

NE 380 Fallout Shelter Analysis (2 cr). Primarily for practicing engineers and architects. Determination of radiological protection of buildings when subjected to nuclear fallout. Prereq: perm.

NE 404 (s) **Special Topics** (cr arr).

NE 460 Nuclear Reactor Engr II (3 cr). Nuclear reactor design problems in thermodynamics, fluid flow, heat transfer, fuel prep, waste disposal, and materials selection; disc of reactor types. Prereq: 360 or perm.

NE R462 Nuclear Reactor Codes and Standards (3 cr). Same as IEd 464. ASME nuclear codes and standards; their contribution to nuclear power plant design and operation. (Cr in this course may not be counted toward a degree.)

NE R470 Nuclear Reactor Safety (3 cr). Light water reactor safety: eval methods, system disturbances, safety criteria, containment, NRC licensing process, and computer codes for nuclear safety analysis; intro to liquid metal safety. Prereq: perm.

NE 473 Nuclear Instrumentation (3 cr). Alt/yrs. Radiation detection instruments and associated circuitry as applied to nuclear engr. Prereq: EE 314 or equiv.

NE R500 Master's Research and Thesis (cr arr).

NE R501 (s) **Seminar** (cr arr). Prereq: perm.

NE 502 (s) **Directed Study** (cr arr). Prereq: perm.

NE R530 Two-Phase Flow (3 cr). Treatment of fluid mechanics and heat transfer in conjunction with nuclear reactors where two-phase flow problems are found.

NE R540 Fusion Energy (3 cr). Basic concepts and experimental approaches to fusion,

elem plasma theory, plasma oscillations, heating; fusion reactor technology dev and long range prospects.

NE R550 Topics in Adv Nuclear Engr (3 cr). Prereq: perm.

NE R565 Reactor Engr (3 cr). Radiation shielding, materials, instrumentation and controls, separation of stable isotopes, chem separation and processing, special tech. Prereq: Phys 566 or perm.

NE R580 Waste Mgt and Nuclear Fuel Reprocessing (3 cr). Head-end processing, solvent extraction processes, ion exchange processes, precipitation processes, and effluent disposal.

Department of Philosophy

Marvin C. Henberg, Dept. Chair (111 Admin. Bldg.). Faculty: Nicholas F. Gier, Marvin C. Henberg, Francis Seaman.

Philosophy examines the grounds of knowledge, the nature of reality, and the nature of value, justice, and morality. It asks fundamental questions about how we reason and how we ought to reason. Its subject matter encompasses all the other academic disciplines, indeed all areas of human experience—society, values, mind, language, art, and science.

The main value of philosophy, then, lies in its contributions to a liberal education. Its vocational value (except for philosophy teachers) depends on its connections with other fields: formal logic is close to mathematics; ethics, social philosophy, and logic are useful to prospective students of business, law, and the social sciences; aesthetics, ethics, and the history of philosophy are of interest to students of literature and the other arts; metaphysics is related to both religion and science; and theory of knowledge and philosophy of science have a bearing on psychology and the natural sciences.

Philosophy Courses

Phil 101 Ethics (3 cr)(C). Satisfies core requirement J-3-d. Dev of ethical thought.

Phil 103 Problems of Phil (3 cr). Nature of phil through critical exam of basic beliefs in such areas as foundations of knowledge, nature of reality, existence of God, and conduct of life.

Phil 111 World Religions (2-3 cr). Overview of major world religions with special attention to similarities and differences in their conceptions of man and his relation to nature and to the divine.

Phil 204 (s) **Special Topics** (cr arr).

Phil 206 Death and Dying (2-3 cr). The ways philosophical outlooks and belief systems affect attitudes toward death and the treatment of the dying.

Phil 207 Biomedical Ethics (2-3 cr). Consideration of problems posed by the dev of new medical technology and legal rights assigned persons from the view of major relevant moral traditions such as Aristotlean, Utilitarian, Kantian, and Natural Law theories.

Phil 211 Logic (3 cr). Methods of reasoning; function of logic in the methods of sc. Prereq: 103 or soph standing.

Phil 305 Phil of Religion (3 cr). Phil investigation of religious issues such as the existence and attributes of God, the problems of free will and evil, nature of religious language, creation and evolution.

Phil 306 Hinduism, Jainism, and Zoroastrianism (3 cr). Phil and religion of Zoroaster, the Vedas, the Upanishads, the Bhagavad Gita, Jainism, and later Hindu thought.

Phil 307 Buddhism (3 cr). Phil and religion of Gautama Buddha as it developed in India, Tibet, China, and Japan.

Phil 308 Confucianism and Taoism (3 cr). Historical survey of two major philosophies.

Phil ID&WS309 Hist of Ancient Phil (3 cr)(C). WSU 300. Phil thought from the early Greeks through the Middle Ages; concentration on metaphysics and theory of knowledge.

Phil ID&WS310 Hist of Modern Phil (3 cr)(C). WSU 305. Phil and political thought from Descartes through Kant.

Phil 400 (s) **Seminar** (cr arr). Prereq: perm.

Phil 401 Phil of the Arts (3 cr). Chief conceptions of the nature of the arts and their interpretation.

Phil WS402 Seminar in Symbolic Logic (3 cr). WSU 401. Alt/yrs. Prereq: 211.

Phil 403 Adv Logic (3 cr). Ideas and tech of contemporary logic.

Phil 404 (s) **Special Topics** (cr arr).

Phil ID410 Phil of Law (3 cr). Exam of selected topics pertaining to moral and philosophical eval of law.

Phil ID&WS411 Social Phil (3 cr). WSU 445. Phil theories of the origin and nature of society and of the state.

Phil ID&WS412 Phil of Science (3 cr). WSU 425. Basic concepts of modern sc.

Phil ID&WS414 Ethical Theory (3 cr). WSU 460. Main points of view.

Phil 415-416 (s) **Twentieth Century Phil** (3 cr). Movements and figures of the 20th century such as logical positivism, linguistic analysis, Russell, Wittengenstein, Heidegger, and Merleau-Ponty.

Phil WS420 Existentialism (3 cr). Alt/yrs. Prereq: 3 hrs of phil.

Phil 421 Existentialism (3 cr) (221). Readings in such writings as Kierkegaard, Nietzsche, Camus, and Sartre.

Phil 422 Phil Ideas in Recent Lit (3 cr). Ethical, social, and political trends; Nietzsche, Stein, Sartre, Maugham, Joyce, Hardy.

Phil 425 American Phil (3 cr). Phil ideas of the U.S.; emphasis on period since 1875.

Phil ID431 Theory of Knowledge (3 cr). Analysis of the nature of knowledge; survey of various phil positions on the sources and extent of what we know.

Phil ID&WS442 Phil of Mind (3 cr). WSU 450. Recent disc of the concept of mind, action, emotion, and private language; identity theory.

Phil WS445 Seminar on Social and Political Philosophy (3 cr). Alt/yrs. Prereq: 3 hrs of phil.

Phil 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

PHILSOPHY (B.A. or B.S.)

Note: Students who intend to do graduate work are advised to take the Bachelor of Arts degree.

The electives in philosophy and related fields are to be selected with the approval of the chair of philosophy.

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
Phil 101 Ethics	3
Phil 211 Logic	3
Phil 309 History of Ancient Philosophy	3
Phil 310 History of Modern Philosophy	3
Philosophy electives (upper-division)	15
Related fields (humanities, social sc, and sc)	20

Academic Minor Requirements

PHILOSOPHY MINOR

Course	Credits
Phil 101 Ethics or Phil 211 Logic	3
Phil 309 Hist of Ancient Philosophy	3
Phil 310 Hist of Modern Philosophy	3
Three upper-div philosophy courses	9

Department of Physics

Robert J. Kearney, Dept. Chair (13 Malcolm M. Renfrew Hall). Faculty: Michael E. Browne, Philip A. Deutchman, Lawrence H. Johnston, Robert J. Kearney, James F. Kelly, George Patsakos, Everett F. Sleckmann, Henry Willmes.

Physics is the scientific study of the nature and behavior of matter and energy. On the basis of quantitative observations, physicists develop theories to describe the observed behavior. Further experiments and observations are used to verify or refine the theories. The scientific method demands logical and mathematical rigor. The wealth of applications of physics to technology appeals to pragmatic persons, yet physics has much greater similarity to the arts and humanities than is commonly realized, because of the intellectual curiosity and creativity on which it is built.

The physics program at UI introduces students in technical and nontechnical curricula alike to the scientific method and to physical laws. Majors in physics can choose between traditional B.A. and B.S. curricula and the B.Appl.Phys. curriculum. The former emphasize a broad liberal-arts education and the core subjects in physics. Many B.A. and B.S. recipients go on to graduate study in physics or related disciplines. The B.Appl. Phys. curriculum includes a larger number of specialized courses, and more experience in electronics, computing, and research. It

is intended primarily as preparation for a career in a physics-related applied discipline.

Training in the theory, history, and philosophy of physics is provided by the required core courses and electives in most of the major areas of specialization. Formal laboratory courses and directed research familiarize students with experimental techniques, modern instrumentation, and computers. Facilities include a number of lasers, spectrometers, optical telescopes, nuclear radiation detectors, and microprocessors. The program is supported by a machine shop and an electronics shop. Collaborations with other universities and research institutes provide access to an even wider range of facilities.

The department offers graduate curricula leading to the M.S., M.A.T., and Ph.D. degrees. These programs are described in detail in the Graduate Bulletin. A bachelor's degree in physics is normally required as preparation for graduate study. Students with a bachelor's degree in another physical science, engineering, or mathematics will generally qualify after removal of a few upper-division-level deficiencies. A major in secondary education with specialization in physical science and mathematics is suitable preparation for the M.A.T. curriculum.

Faculty members in the department will be happy to discuss programs in detail with interested persons. Requests for information or a tour of the facilities can be made by a letter or telephone call (208/885-6745) to the department.

Physics Courses

CREDIT LIMITATIONS: Phys 113 carries no credit after Phys 210; Phys 114 carries no credit after Phys 211; PHys 115 carries no credit after Phys 212; Phys 116 carries no credit after Phys 213.

Phys 101 Fundamentals of Physics (4 cr). For students in nontechnical fields. Satisfies core requirement J-3-b. Conceptual study of laws of nature and their application, incl mechanics, heat, electricity and magnetism, light, and modern physics. Three lec and one 2-hr lab a wk.

Phys 103 General Astronomy (3 cr). Nonmath descriptive and physical astronomy; dev of astronomical thought; properties and evolution of the solar system, stars, galaxies, and the universe.

Phys 104 Astronomy Lab (1 cr). Naked eye, telescopic, and photographic observations of constellations, stars, and planets. One 2-hr lab a wk; some evening meetings. Prereq or coreq: 103.

Phys 105 Physics and Society (3 cr). Nonmath investigation of the interaction of sc and society; emphasis on current topics, incl radioactivity, pollution, transportation, comm, weapons, power generation, and ecology; exploration of the ethical, technological, and econ impact of sc. Recommended companion course: 106.

Phys 106 Physics and Society Lab (1 cr). Lab to accompany 107. One 2-hr lab a wk.

Phys 107 Physics of Music and Sound (3 cr). Physical prin in production of musical tones of various sound systems; physical bases of musical instrumentation, synthesizers, microphone, amplifiers, recording systems, AM-FM modulation, stereophonic and quadraphonic systems. No background reqd beyond high school math.

Phys 108 Physics of Music and Sound Lab (1 cr). Lab to accompany 107. One 3-hr lab a wk. Coreq: 107.

Phys 113-114 General Physics (3 cr)(C, 113 only). 113 satisfies core requirement J-3-b. Phys 113: mechanics, sound, and heat. Phys 114: electricity, magnetism, light, and modern physics. Three lec and one recitation a wk. Prereq: Math 140; 113 for 114.

Phys 115-116 General Physics Lab (1 cr). 115 satisfies core requirement J-3-b. Lab to accompany 113-114. One 2-hr lab a wk.

Phys 210 Engr Physics I (3 cr). Satisfies core requirement J-3-b. Kinematics and dynamics, work and energy, Newton's laws, oscillations, sound, geometric optics, physical optics, optical instruments. Three lec and one recitation a wk. Prereq or coreq: Math 180.

Phys 211 Engr Physics II (3 cr). Electricity, magnetism, electromagnetic waves, intro to atoms and nuclei. Three lec and one recitation a wk. Prereq: 210; coreq: Math 190.

Phys 212-213 Engr Physics Lab (1 cr). 212 satisfies core requirement J-3-b. Lab to accompany 210-211. One 2-hr lab a wk.

Phys 222 Engr Physics III (3 cr). Waves in elastic media, sound waves, temperature, heat and thermodynamics, kinetic theory, Newton's laws as applied to rotation dynamics, gravity and central forces, conservation laws of energy, linear and angular momentum, collisions. Three lec and one recitation a wk. Prereq: 210, 211 or perm; prereq or coreq: Math 190.

Phys 225 Intro Physics Lab (1 cr). Lab to accompany 222. One 2-hr lab a wk.

Phys 301-302 Junior Physics Lab (1-2 cr). Experimental tech in modern physics, incl optics, atomic and nuclear physics, and astronomy; computer uses, error analysis, lit searches. One 2-hr lab a wk per cr. Prereq: 213 or perm.

Phys ID307 Sound Waves and Acoustics (3 cr). Sources of sound, propagation of sound waves through elastic media, and arch acoustics. Prereq: 114 or 211 or 222, Math 200, or perm.

Phys R309 Fundamentals of Radiation Biophysics (3 cr). Nuclear physics, interaction of radiation with matter, detection of radiation, radiation dose limits, theory of ionization, dosimetry, dosimetry tech, biol and medical effects of radiation, radiation shielding, radiation protection standards, counting stats, and related topics. Prereq: perm.

Phys R311 Health Physics in Industry Safety (3 cr). Basic concepts of physics, biol, and radiation control as related to personnel protection from ionizing radiation.

Phys ID315 Biophysics (3 cr). Intro to the physics of biol processes and photobiology; interaction of radiation with biol systems; intramolecular and intermolecular forces and their relation to biol structure; methods of investigating living matter, incl x-ray diffraction, fluorescence and magnetic resonance. Prereq: 113-114 or equiv; Biol 201 recommended.

Phys 321-322 Analyt Mechanics (3 cr). Stats; kinematics and dynamics of a particle; systems of particles; rigid continuous media; intro to Lagrange's equations. Prereq: 114 or 211 or 222, and Math 200.

Phys ID330 Energy Sources (3 cr). Physics of existing and ultimate sources of energy; emphasis on solar and wind energy. Prereq: 113-114, or 210-211, and Math 180.

Phys 341-342 Electricity and Magnetism (3 cr). Theory using vector calculus; electrostatics; magnetostatics, electromagnetism, analysis of AC and DC circuits; Maxwell's equations; radiation and propagation of electromagnetic waves. Prereq: 114 or 211 or 222, and Math 200.

Phys 351 Elem Quantum Mechanics (3 cr). Methods; one-dimensional harmonic oscillator, free particle, rectangular potential barrier, hydrogen atom, and perturbation theory. Prereq: 360; coreq: 321.

Phys 360 Intro to Modern Physics (3 cr). Fundamentals of qual and quantitative description of atomic and nuclear physics, quantum theory, radioactivity, relativity, fusion and fission, spectra, x-rays, neutron physics, elem particles, and solid state. Prereq: 114 or coreq: 211 or 222.

Phys 400 (s) **Seminar** (cr arr). Prereq: perm.

Phys 401-402 Seniors Physics Lab (1-2 cr). Adv experimental tech in modern physics, incl optics, atomic and nuclear physics, and astronomy; computer uses, error analysis, lit searches. One 2-hr lab a wk per cr. Prereq: 301 or perm.

Phys 403 (s) **Workshop** (cr arr). Prereq: perm.

Phys 404 (s) **Special Topics** (cr arr).

Phys 411-412 Physical Instrumentation I-II (3 cr). Methods and instruments used in experimental physics; electronic tech; design problems in electronic measurement of physical quantities encountered in research. Two lec and one 3-hr lab a wk. Prereq: 211 or 222 and Math 200 for 411; 411 for 412.

Phys 431-432 Thermodynamics and Kinetic Theory (3 cr). Laws of thermodynamics, kinetic theory, and their appl to topics in physics. Coreq: 360.

Phys ID443 Optics (3 cr). Geometrical optics and photometry, interference, diffraction, double refraction, and polarization; appl to modern optical instruments. Prereq: 211 or 222, Math 190, and sr standing or perm.

Phys ID444 Quantum Optics (3 cr). Theory and appl of lasers, optical spectrum analyzers, electro-optic modulators, and detectors; modern optical concepts and tech; Gaussian beams and optical resonators, interaction of radiation and quantized matter, nonlinear optical effects, and laser spectroscopy. Prereq: 211 or 222, Math 190, and sr standing or perm.

Phys ID463 Intro to Solid State (3 cr). Physics of bulk matter; structure and types of solids, elastic and thermal properties of solids, elec and magnetic properties of solids, theory of conduction in metals and semiconductors. Prereq: 321, 360.

Phys ID465 Nuclear and Particle Physics (3 cr). Structure of elem particles, quark models; nuclear liquid drop, Fermi gas, shell and collective models; symmetries and cons laws; E and M, weak and strong interactions; accelerators and detectors. Prereq: 360.

Phys R471 Intro to Theoretical Physics (3 cr). Vector and tensor methods in conjunction with Newtonian and Lagrangian methods in solving problems in mech systems. Prereq: general physics, differential equations, and perm.

Phys ID485 Astrophysics (3 cr). Structure and evolution of stars and star systems; celestial mechanics; special and general relativity; cosmology. Prereq: 103, 360, Math 200, or perm.

Phys 491 Proseminar (1 cr). Recent dev. Prereq: sr standing in physics.

Phys 497 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Phys 498 Research (1-6 cr, max 6). Undergrad thesis. Prereq: jr standing in physics and perm of dept.

Phys 499 (s) **Directed Study** (cr arr). Prereq: perm.

Phys 500 Master's Research and Thesis (cr arr).

Phys 501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

Phys 502 (s) **Directed Study** (cr arr). Prereq: perm.

Phys 503 (s) **Workshop** (cr arr). Prereq: perm.

Phys 504 (s) **Special Topics** (cr arr).

Phys 507-508 Modern Tech of Sc Instruction in Physics (2 cr). Emphasis on extent and nature of subject-matter material for secondary schools and colleges.

Phys 511-512 Tech of Experimental Physics (3 cr). Dev of experimental tech and skills in active research fields; foundation for any field of physics. Nine hrs of lab a wk.

Phys R518 Radiation Biol (3 cr). Mechanisms and patterns of energy deposition by ionizing radiation in biol systems.

Phys R519 Radiation Physiology (3 cr). Selected topics from human physiology and methods of internal dosimetry. Prereq: radiation biol and calculus.

Phys ID521 Adv Mechanics (3 cr). Classical mechanics; Lagrange's and Hamilton's prin, two-body problem, rigid body motion, special relativity, canonical transformation, Hamilton-Jacobi theory, small oscillations, and Lagrangian and Hamiltonian formulations for continuous systems and fields. Prereq: 322.

Phys ID531 Stat Mechanics (3 cr). Classical stat mechanics of Maxwell, Boltzmann, and Gibbs; Maxwell-Boltzmann distribution law; Boltzmann's H-theorem, quantum stat mechanics; Bose-Einstein and Fermi-Dirac stat; appl to problems in thermodynamics. Prereq: 431, 551, or perm.

Phys ID541-ID542 Electromagnetic Theory (3 cr). Incl Maxwell's equations, electrostatics, magnetostatics, currents and their interactions, general theory of emission, propagation and absorption of electromagnetic waves, boundary value problems, relativistic formulation of electrodynamics. Prereq: 322, 342.

Phys ID551-ID552; ID553 Quantum Mechanics (3 cr). Phys 551-552: physical basis; Schroedinger wave formulation, Heisenberg matrix formulation, transformation theory, approximation methods, radiation theory, theory of scattering; appl to atomic systems. Phys 553: relativistic quantum mechanics, second quantization field theory and appl. Prereq: 322, 360 for 551-552; 552 for 553.

Phys ID561 Atomic Spectra and Atomic Structure (3 cr). Experimental methods for the production and investigation of spectra, interp of special series, stationary states, spinning electrons and fine-line structure, and vector models; Zeeman and Stark effects; intensity of spectral lines. Prereq: 351 or 551.

Phys ID&WS562 Molecular Spectra (3 cr). WSU 564. Molecular spectra and their relations to molecular structure; emphasis on diatomic and triatomic molecules. Prereq: 561 or perm.

Phys ID563-ID564 Solid State Physics (3 cr). Modern theory of metals, semiconductors, and insulators; crystal structure, thermal, elec, and magnetic properties of solids, band theory of solids, crystal imperfections, semiconductors, superconductivity, and photoconductivity. Prereq: 342; prereq or coreq: 551.

Phys ID566 Nuclear Physics (3 cr). Nuclei and nuclear interactions from a theoretical and experimental viewpoint, properties of nuclei, two-body problems, complex nuclei, nuclear spectroscopy, nuclear reactions, interaction of nuclei with radiation, nuclear models, theory of nuclear forces; topics in high energy physics; nucleus-nucleus collisions. Prereq: 465, and 351 or 551.

Phys ID571-ID572 Theoretical Physics (3 cr). Methods and problems. Prereq: 322 or perm.

Phys ID573 Physical Appl of Group Theory (3 cr). Intro to group theory with appl to atoms, molecules, solids, and elementary particles; no previous knowledge of group theory assumed. Prereq: 551 or equiv.

Phys ID&WS581 (s) **Topics in Adv Physics** (1-9 cr, max 9). Topics of interest to students and staff.

Phys R585-R586 Fundamental Reactor Kinetics (3 cr). Complex plane transformations, transfer functions for various systems; derivation of reactor kinetics equations; analysis of nuclear feedback systems; stat control theory applied to nuclear systems. Prereq: perm.

Phys R587 Reactor Physics for Engineers (3 cr). Review of nuclear physics, nuclear fission, chain reaction, and reactor theory. Prereq: Math 310 or equiv.

Phys R588 Experimental Nuclear Physics (3 cr). Experimental methods of interp of experimental measurements to determine the static and dynamic properties of nuclei. Prereq: 360 and perm.

Phys 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

PHYSICS (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Intro to Physics Lab	1
Phys 321-322 Analytical Mechanics	6
Phys 341-342 Electricity & Magnetism	6
Phys 351 Elementary Quantum Mechanics	3
Phys 360 Intro to Modern Physics	3
Chem 111 Principles of Chemistry	4
CHem 112 Inorganic Chem & Qual Analysis or 114 General Chemistry	4-5
Math 180, 190, 200 Analytic Geom & Calculus	11
Mathematics (upper-division)	6

And, for the B.A. only:

Upper-div physics courses (incl at least 4 cr of lab)	9

And, for the B.S. only:

Upper-div physics courses (incl at least 4 cr of lab)	15

PHYSICS (B.Appl.Phys.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Phys 210, 211, 222 Engineering Physics I, II, III	9
Phys 212, 213 Engineering Physics Lab	2
Phys 225 Intro Physics Lab	1
Phys 321 Analytical Mechanics	3
Phys 341-342 Electricity & Magnetism	6
Phys 351 Elementary Quantum Mechanics	3
Phys 360 Intro to Modern Physics	3
Phys 411-412 Physical Instrumentation I-II	6
Phys 443 Optics	3
Phys 444 Quantum Optics	3
Phys 498 Research	6
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis or 114 General Chemistry	4-5
CS 105 FORTRAN Programming for Engr or CS 112 Intro to Problem Solving & Programming	2-3
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 310 Ordinary Differential Equations	3
Physics, applied math, or computer sc courses (upper-div), incl at least 3 cr of lab	9
Applied science or engineering courses	6
Social science or humanities electives	12

Recommended courses:
Phys 463 Intro to Solid State
Eng 317 Technical & Engr Report Writing

Note: Required theses (Phys 498) will generally be in the subject area of applied optics and optoelectronics. The decision as to the suitability of a proposed thesis topic must be made by the department's Applied Physics Committee no later than 1½ semesters before graduation. Because of this requirement, students who wish to finish the requirements for this degree within four years are advised to begin discussion concerning possible topics with appropriate professors during the second semester of their junior year.

Academic Minor Requirements

PHYSICS MINOR

Course	Credits
Phys 210, 211, 212-213 Engineering Physics and Lab	8
ES 210 Engineering Statics	3
Physics courses numbered 300 or above (usual prerequisites are Math 180, 190, and 200)	12

Physiology

Faculty: Richard C. Bull, James E. Butler, Joseph G. Cloud, Donald L. Crawford, Henry Daniell, Mark DeSantis, Dennis G. Dolny, Robert B. Dwelle, Victor P. Eroschenko, Carl W. Hunt, Rolf L. Ingermann, Marc J. Klowden, Duane J. LeTourneau, Robert L. Mahler, Thomas A. McKean, Rodney A. Mead, Glen A. Murray, Robert C. Ritter, Lorin W. Roberts, Richard A. Roeder, Robert E. Roffler, Arthur W. Rourke, R. Garth Sasser, Peter J. South, Donald C. Thill, Robert R. Tripepi, Edmund E. Tylutki, Curtis R. Youngs.

Teaching and research programs in physiology are available in several colleges and departments of the university. Master's and doctoral programs with concentration in animal or plant physiology are available through the Departments of Animal Science, Biological Sciences, and Plant, Soil, and Entomological Sciences, and the WAMI Program.

The following courses are available for those students interested in animal and plant physiology and related areas. Full course descriptions are found under the designated departmental/program sections.

ANIMAL PHYSIOLOGY

AnSc WS413 Physiology of Lactation (3 cr).

AnSc J451/J551 Endocrine Physiology (3 cr).

AnSc 452 Physiology of Reproduction and Lactation (3 cr).

AnSc 453 Physiology of Reproduction and Lactation Lab (1 cr).

AnSc 454 Artificial Insemination and Pregnancy Detection (2 cr).

AnSc 513 Microbiol and Physiology of Ruminant Nutrition 3 cr).

AnSc 514 Physiology of Nonruminant Nutrition (3 cr).

AnSc ID&WS520 Seminar in Animal Physiology (1 cr, max arr).

AnSc WS526 Adv Reproduction (4 cr).

AnSc 551 Endocrine Physiology (3 cr).

AnSc 552 Adv Endocrine Physiology (3 cr).

Bact ID460 Microbial Physiology (5 cr).

Bact 503 Adv Microbial Physiology (2-4 cr).

Ent ID484 Insect Anatomy and Physiology (4 cr).

Ent ID-J496/ID-J596 Developmental Systems in Insects (3 cr).

Ent ID582 Insect Physiological Ecology (2 cr).

MedSc ID&WS512 Basic Mechanisms in Cellular Physiology (4 cr).

MedSc ID&WS532 Nervous System (5 cr).

PE 418 Physiology of Exercise (3 cr).

PE J493/J593 Fitness Assessment and Prescription (3 cr).

PE 518 Adv Physiology of Exercise (3 cr).

Psych 441 Physiological Psych (3 cr).

VS 371 Anatomy and Physiology (4 cr).

VS WS517 Mammalian Neuroscience (4 cr).

VS WS518 Physiology II (5 cr).

VS WS520 Tech in Mammalian Physiology (2 cr).

VS WS529 Neurochemistry (3 cr).

Zool 119 Human Anatomy and Physiology (5 cr).

Zool ID-J411/ID-J511 Comparative Vertebrate Reproduction (3 cr).

Zool 412 Comparative Vertebrate Reproduction Lab (2 cr).

Zool J414/J514 Cell Physiology (3 cr).

Zool J415 Cell Physiology Lab (2 cr).

Zool J417/J517 Endocrine Physiology (3 cr).

Zool J423/J523 Comparative Vertebrate Physiology (4 cr).

Zool ID511 Comparative Vertebrate Reproduction (3 cr).

Zool 517 Endocrine Physiology (3 cr).

PLANT PHYSIOLOGY

Biochem 486 Plant Biochem (3 cr).

Bot 311 Plant Physiology (3 cr).

Bot 312 Plant Physiology Lab (2 cr).

Bot J413/J515 Mineral Nutrition (3 cr).

Bot 512 Plant Growth Substances (3 cr).

Bot 515 Mineral Nutrition (3 cr).

PISc 401 Crop Physiology (3 cr).

PISc J410/J510 Biol of Weeds (3 cr).

PISc 461 Pomology (3 cr).

PISc WS535 Physiology and Genetics of Parasitism (3 cr).

PISc ID538 Properties and Functions of Herbicides (2 cr).

PISc ID569 Seed Physiology (2 cr).

Soils 446 Soil Fertility (3 cr).

Soils 448 Mineral Nutrition (3 cr).

Soils WS541 Soil-Plant Relationships in Mineral Nutrition (3 cr).

Department of Plant, Soil, and Entomological Sciences

Lawrence E. O'Keeffe, Dept. Head (242 Iddings Wing, Ag. Sc. Bldg.).

Entomology Division: Marc J. Klowden, Acting Division Chair; Craig R. Baird, Merlyn A. Brusven, Gene P. Carpenter, Malcolm M. Furniss, Arthur R. Gittins, Hugh W. Homan, James B. Johnson, Leslie P. Kish, Joseph P. McCaffrey, Lawrence E. O'Keeffe, Larry E. Sandvol, Robert L. Stoltz.

Plant Pathology Division: Maurice V. Wiese, Division Chair; James R. Davis, Robert L. Forster, John J. Gallian, Saad L. Hafez, Guy R. Knudsen, S. Krishna Mohan, Norman W. Schaad.

Plant Science Division: Robert B. Dwelle, Division Chair; Dick L. Auld, R. Gary Beaver, Robert H. Callihan, William M. Colt, Harold R. Guenthner, Lloyd C. Haderlie, Kenneth D. Kephart, Daniel W. Kidder, Gale E. Kleinkopf, Gary D. Kleinschmidt, Thomas J. Koehler, Gary A Lee, C.T. Liu, Stephen L. Love, Glen A Murray, James R. Myers, John C. Ojala, R. Robert Romanko, Jeffrey C. Stark, Donald W. Sunderman, Donald C. Thill, Robert R. Tripepi, Dale O. Wilson, Jr., Robert S. Zemetra.

Soil Science Division: Robert E. McDole, Division Chair; Bradford D. Brown, Maynard A. Fosberg, Raymond G. Gavlak, John E. Hammel, Robert L. Mahler, Steven L. McGeehan, Matthew J. Morra, Denny V. Naylor.

Efficient food and fiber production, human and animal health, and conservation of natural resources will continue to be important factors that will allow our ever-growing population to maintain a high standard of living. Technological advances in agricultural production and crop protection have directly contributed to the abundant supply of high-quality food, feed, and fiber produced by the American farmer. Persons interested in pursuing careers in crop production, soil science, plant protection, landscape and horticultural sciences, or entomology will find opportunities that are both challenging and exciting. There will be a continuing need for well-trained agriculturists to develop and apply new technology in the future.

The Department of Plant, Soil, and Entomological Sciences, within the College of Agriculture, offers B.S. degrees in entomology, plant protection, plant science, and soil science.

The entomology major emphasizes both basic and applied aspects of the study of insects and how they influence human activities. The program provides a broad entomological education with opportunities to specialize in such areas as agricultural and aquatic entomology, biological control, insect ecology, pathology and physiology, and insect-plant relations. The curriculum is designed for students pursuing professional careers in the basic and applied fields of entomology, or for those interested in continuing their education at the graduate level.

The plant protection curriculum offers students an education in the broad area of plant pest protection and in the related field of entomology. Students take a diverse array of applied natural-science courses including plant diseases, entomology, weeds, crop production, and botanical sciences.

Under the plant science degree, students can major in crop management, crop science, horticultural science, or landscape horticulture. The crop management major is for students who are interested in field crop management. The curriculum includes courses in basic sciences with emphasis on the production and management of crops that are economically significant to Idaho and the nation. Courses in plant science, soils, agricultural mechanization, and agricultural economics provide the general knowledge necessary for positions in the chemical, fertilizer, and seed industries or as farm managers, farm operators, and cooperative extension agents.

The crop science major is designed for students who are interested in professional careers in the sciences of plant physiology, pathology, breeding, weed control, and crop production. This major is recommended for students interested in further study in plant sciences at the graduate level.

The horticultural sciences and landscape horticulture majors are designed for students interested in professional careers in the management and operation of commerical nurseries, greenhouses, recreational parks, and related industries.

The soil science degree program is offered for students who are interested in careers in the businesses and industries associated with soils and farm chemicals or are interested in a career as a professional soil scientist working with the formation, classification, chemistry, physics, and fertility of the valuable soil resources. Courses in geology, botany, chemistry, and physics, in addition to soils, are stressed to prepare students for professional careers.

The degree offerings are designed to prepare students for a variety of rewarding career opportunities. Each of these degree programs is based on a curriculum designed to provide students with fundamental training necessary for present and future

employment. The department offers students the opportunity to work closely with faculty in classroom and field situations. The faculty members provide considerable breadth in educational experiences for students who major in this department. Formal courses are offered as needed to serve the students in the various degree programs, and additional specialization may be obtained by enrolling in directed study, special topics, seminar, and other courses of similar nature, with faculty members that have expertise in a particular area.

Faculty members are concerned with the needs and interests of individual students. Questions regarding specific programs or arrangements to tour facilities are most welcome. Prospective majors in entomology, plant protection, plant science, or soil science can consult the department head in Room 242, Agricultural Science Building, or telephone 208/885-6276.

Courses

ENTOMOLOGY

Ent 115 Insects and Man (2 cr). Insects and man compared as to structure, biol, and behavior; emphasis on competition between them.

Ent 211 General Ent (4 cr). Satisfies core requirement J-3-b. Structure, dev, classification, habits, and ecology of insects. Three lec and one 3-hr lab a wk.

Ent 217 Intro to Integrated Pest Mgt (2 cr). Same as PISc 217. Prin, theory, and methodology of regulating populations of organisms detrimental to ag.

Ent 322 Economic Ent (2 cr). Ident, biol, and importance of insects and related arthropods to humans and ag; basic prin of arthropod pest mgt. Two lec and one 3-hr lab a wk. Prereq: 211 or perm.

Ent 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

Ent 400 (s) **Seminar** (cr arr). Prereq: perm.

Ent 438 Mgt of Pesticides in the Environment (3 cr). Same as Inter 438 and PISc 438. Prin of pesticide technology and environmental impact; pesticide dev and registration, pesticide labels, safety, storage, disposal, classification, formulations, spray equipment, environmental factors, pesticide metabolism, and pesticide laws and regulations. Prereq: Chem 275.

Ent J440/J540 Insect Ident (4 cr). Survey of approx 200 major families; collecting and preservation tech. For grad cr, an additional 50 families and selected subfamilies and genera will be covered and a term paper is reqd. Two lec and two 2-hr labs a wk; two 1-day field trips. Prereq: 211 or perm.

Ent J442/J532 Immature Insects (3 cr). Alt/yrs. Structure, behavior, and ident of immature insects. For grad cr, taxonomy of selected families at generic and species levels will be studied. One lec and two 2-hr labs a wk. one 1-day field trip. Prereq: 211.

Ent WS443 Insect Ecology (3 cr). Alt/yrs. Prereq: 211 or 322.

Ent WS444 Insect Morphology (4 cr). Alt/yrs. Prereq: 211 or 322.

Ent J446/J546 Host Plant Resistance and Cultural Suppression of Insect Pests (2 cr). Alt/yrs. Use of plant resistance; environmental manipulation, and cultural practices for suppression of important insect pests; mechanisms of plant resistance and insect-plant associations. Requirements for grad cr incl comprehensive term paper and class presentation on plant-insect relationships or related topic. Prereq: Ent or PISc 217, or perm.

Ent ID-J447/ID-J547 Biol Control of Arthropod Pests and Weeds (4 cr). Alt/yrs. Intro to hist and dev of biol control and biol and ecological factors involved; emphasis on entomophagous and phytophagous insects. For grad cr, a "grant proposal" for presentation and critique and a semester project reqd. Prereq: 211 and general ecology or perm.

Ent WS448 Medical Ent (4 cr). Prereq: adv standing in ent.

Ent H450 Insect-Borne Diseases: Epidemiology and Implications (2 cr). Socioeconomic impact of pathogens transmitted to humans and animals by insects; political and economic considerations for the control of insect-borne disease. Prereq: perm of dir of Univ Honors Prog.

Ent ID472 Aquatic Ent (1 cr). Ident and biol of insects associated with aquatic and subaquatic environments. Prereq: perm.

Ent ID474 Aquatic Ent Lab (2 cr). Lab to accompany 472. Two 3-hr labs a wk; two 1-day field trips. Coreq: 472.

Ent ID-J484/J584 Insect Anatomy and Physiology (4 cr). Same as Zool 494. Alt/yrs. Organ systems of insects and their functions. A comprehensive term paper and research project reqd for grad cr. Three lec and one 3-hr lab a wk. Prereq: 211.

Ent J491/J591 Prin of Integrated Pest Mgt (3 cr). Ecological, biological, econ, and soc considerations involved in pest mgt decisions. For grad cr, written grant proposal related to research/extension and oral defense of proposal reqd. Prereq: sr standing.

Ent ID-J496/ID-J596 Developmental Systems in Insects (3 cr). Same as Zool J496/J596. Alt/yrs. Physiology and endocrinology of insect dev; hormones and their mode of action; reproductive systems; embryology; metamorphosis. Term paper reqd for grad cr. Prereq: course in insect physiology.

Ent 499 (s) **Directed Study** (cr arr). Prereq: perm.

Ent 500 Master's Research and Thesis (cr arr).

Ent 501 (s) **Seminar** (cr arr). Prereq: perm.

Ent 502 (s) **Directed Study** (cr arr). Prereq: perm.

Ent ID517 Entomological Lit (2 cr). Survey of lit and bibliographic aids.

Ent 532 Immature Insects (3 cr). See J442/J532.

Ent 540 Insect Ident (4 cr). See J440/J540.

Ent ID541 Adv Insect Ecology (3 cr). Alt/yrs. Population and community dynamics; theory and appl in natural and artificial systems. Two lec and one 3-hr lab a wk; two 1-day field trips. Prereq: 211 and general ecology or perm.

Ent WS542 Insect Behavior (4 cr). Alt/yrs. Prereq: 10 cr of ent.

Ent WS543 Population Mgt (2 cr). Alt/yrs. Prereq: perm.

Ent 544 Systematic Ent (3 cr). Alt/yrs. Prin and concepts of insect classification; taxonomic procedures and rules of zoological nomenclature.

Ent WS545 Toxicology of Insecticides (4 cr). Alt/yrs. Prereq: perm.

Ent 546 Host Plant Resistance and Cultural Suppression of Insect Pests (2 cr). See J446/J546.

Ent ID547 Biol Control of Arthropod Pests and Weeds (4 cr). See J447/J547.

Ent WS548 Acarology (3 cr). Alt/yrs. WSU 544.

Ent WS550 Insect Physiology (4 cr). Alt/yrs. Prereq: perm.

Ent WS560 Photography for Entomologists (2 cr). Alt/yrs. Prereq: perm.

Ent WS561 Quantitative Methods in Entomological Research (4 cr). Alt/yrs. Prereq: perm.

Ent 568 Systems Analysis in Integrated Pest Mgt (2 cr). Alt/yrs. Appl of systems sc and methodology to integrated pest mgt in ag, forest, and urban situations. Prereq: perm.

Ent 582 Insect Physiological Ecology (2 cr). Alt/yrs. Interrelationships of environment with selected metabolic functions, structure, and behavior of insects. Prereq: 484 or perm.

Ent 584 Insect Anatomy and Physiology (4 cr). See J484/J584.

Ent 591 Prin of Integrated Pest Mgt (3 cr). See J491/J591.

Ent ID596 Developmental Systems in Insects (3 cr). See J496/J596.

Ent 597 (s) **Practicum** (cr arr). Prereq: perm.

Ent 598 (s) **Internship** (cr arr). Prereq: perm.

Ent 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Ent 600 Doctoral Research and Dissertation (cr arr).

PLANT SCIENCE

PISc 102 Intro to Plant Sc (3 cr). Propagation, growth, reproduction, and culture of crop and ornamental plants. Two lec and one 2-hr lab a wk.

PISc 201 Turfgrass Sc and Culture (3 cr). Kinds, adaptation, characteristics, and use of turfgrasses, mgt prin and physiological bases for the establishment and maintenance of turf. Two lec and one 2-hr lab a wk; two 1-day field trips.

PISc 202 Plant Propagation (3 cr). Alt/yrs. Sexual and asexual propagation tech of herbaceous and woody ornamental plants; propagation methods covered incl seed, cuttings, layering, grafting, and cloning/tissue culture. Two lec and one 3-hr lab a wk. Prereq: 102 or Biol 201, or perm.

PISc 217 Intro to Integrated Pest Mgt (2 cr). See Ent 217.

PISc 305 Intro to Plant Pathology (3 cr). Lab exercises and disc on symptoms, causes, effects, and control of diseases of major crop plant species. Two 1-hr lec and one 2-hr lab a wk. Prereq: 102 or Biol 203.

PISc 308 Forage Crops (3 cr). Production, mgt, and use of forage plants for livestock feed as pasture, hay, silage, and greenchop, and for soil and water conservation. Two lec and one 2-hr lab a wk.

PISc 338 Weed Control (3 cr). Nature and scope of weed problems, ident and biol of weeds; prin and practice of cultural, chem, and biol control of weeds. Two lec and one 2-hr lab a wk.

PISc 340 Nursery Mgt (3 cr). Alt/yrs. Mgt of commercial nurseries from plant propagation through sale of the plants. Two lec and one 2-hr lab a wk; one 1-day field trip.

PISc 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

PISc 399 (s) **Directed Study** (1-2 cr, max 2). Prereq: perm.

PISc 400 (s) **Seminar** (1 cr). Prereq: perm.

PISc 401 Crop Physiology (3 cr). Appl of physiology to crop mgt. Prereq: Bot 311.

PISc 404 Plant Disease Recognition and Control (3 cr). Characteristics and control of representative plant diseases; symptomatology stressed via extensive visual aids. Two 2-hr meetings a wk. Prereq: 305 or equiv.

PISc 406 (s) **Special Topics** (cr arr).

PISc 407 Field Crop Production (3 cr). Mgt and use of crops in Idaho and the Northwest.

PlSc ID-J410/ID-J510 Biology of Weeds (3 cr). WSU Agron 413. Biol, ecology, and physiology of weeds with emphasis on crop and weed interactions. Requirements for grad cr incl comprehensive term paper and class presentation on weed-crop interaction. Two lec and one 3-hr lab a wk. Prereq: Bot 311 or perm.

PlSc WS-J420/WS-J570 Potato Physiology and Production Technology (2 cr). Alt/yrs. WSU Hort 420/520. Prereq: Bot 311, Soils 205.

PlSc WS421 General Mycology (4 cr). WSU Pl P 421. Alt/yrs. Prereq: Biol 203.

PlSc 438 Mgt of Pesticides in the Environment (3 cr). See Ent 438.

PlSc ID440 Econ Nematology (3 cr). Alt/yrs. Tech of isolation, ident, crop loss assessment, and control of plant parasitic nematodes. Five hrs lec/lab a wk. Prereq: 305.

PlSc J446/J546 Plant Breeding (3 cr). Alt/yrs. Appl of genetic prin to improvement of crop plants. Grad students reqd to complete additional term paper. Prereq: Genet 314 or equiv.

PlSc 461 Pomology (3 cr). Alt/yrs. Production and mgt of tree fruit, physiology of the trees and stored fruit. One 2-day field trip.

PlSc 462 Greenhouse Mgt (3 cr). Alt/yrs. Greenhouse structures and heating; culture of greenhouse crops. Two lec and one 2-hr lab a wk; one 1-day field trip.

PlSc 463 Vegetable Crops (3 cr). Alt/yrs. Prin of commerical and home garden vegetable production; culture, marketing, storage, and use. Prereq: 102 or equiv.

PlSc 464 Ornamental Plants and Landscape Horticulture (3 cr). Alt/yrs. Use and culture of landscape plants to enhance man's environment. Two lec and one 2-hr lab a wk; one 1-day field trip. Prereq: 102, LArch 288, Soils 205.

PlSc ID&WS469 Vegetable Seed Production (1 cr). Alt/yrs. WSU Agron 469. Crops indigenous to the Northwest; seedhouse operations and seed regulation. Prereq: perm.

PlSc ID475 Postharvest Pathology (3 cr). Survey of pathologic conditions responsible for postharvest losses of food crops; visual aids and fresh specimen material emphasized; environmental and chem control methods studied for each class example. Prereq: 305.

PlSc 480 Field Trip (1 cr). Five-day field trip to production areas. Prereq: perm.

PlSc ID-J490/ID-J590 Potato Science (3 cr)(ID470). Alt/yrs. History, botanical characteristics, seed physiology and production, plant population, physiology of growth, and pest mgt; factors influencing maturation, harvest, yield, grade, bruise control, storage, and quality maintenance; econ of production and research on a global basis. Req for grad cr incl comprehensive term paper and class presentation on selected topic.

PlSc 500 Master's Research and Thesis (cr arr).

PlSc 501 (s) **Seminar** (cr arr). Prereq: perm.

PlSc 502 (s) **Directed Study** (cr arr). Prereq: perm.

PlSc 504 (s) **Special Topics** (cr arr).

PlSc WS505 Adv Plant Breeding (4 cr). WSU Agron 504. Alt/yrs. Prereq: J446/J546 or equiv.

PlSc WS506 Diseases of Plants (4 cr). WSU Pl P 501. Prereq: 305.

PlSc WS507 Herbicide Dev and Appl (3 cr). Alt/yrs. WSU Agron 507.

PlSc WS508 Seed Physiology (3 cr). Alt/yrs. WSU Agron 508. Prereq: perm.

PlSc WS509 Physiology in Plant Breeding (3 cr). Alt/yrs. WSU Agron 509. Prereq: Bot 311 and Genet 314.

PlSc ID510 Biology of Weeds (3 cr). See J410/J510.

PlSc WS511 Viruses and Virus Diseases of Plants (4 cr). WSU Pl P 511. Nature of plant viruses, vector-virus relationships, and virus diseases of plants. Prereq: perm.

PlSc WS514 Phytobacteriology (4 cr). WSU Pl P 514. Prereq: Biochem 380, Bact 250.

PlSc WS515 Improvement of Crop Quality (3 cr). WSU Agron 505.

PlSc ID519 Physiology of Flowering (2 cr). Alt/yrs. Vernalization, photoperiodism, and biochem of flowering; models.

PlSc 532 Adv Weed Studies (1-3 cr, max 6). Alt/yrs. Specialized training in selected phases.

PlSc WS535 Physiology and Genetics of Parasitism (3 cr). Alt/yrs. WSU Pl P 535. Prereq: perm.

PlSc ID538 Properties and Functions of Herbicides (2 cr). Alt/yrs. Physical and chem properties and mode of action of herbicides; their effect on plant structure, internal mechanisms, processes, and sites of action. Prereq: 338, Bot 311, and Biochem 380 or perm.

PlSc ID540 Seed Pathology (3 cr). Alt/yrs. Seed-borne pathogens, incl fungi, bacteria, and viruses; influence on disease spread.

PlSc 546 Plant Breeding (3 cr). See J446/J546.

PlSc WS550 Adv Cell Biology (3 cr). WSU GenCB 550.

PlSc ID569 Seed Physiology (2 cr). Alt/yrs. Effect of environment on developmental aspects of commercially important seed species, storage, longevity, dormancy, seed and seedling vigor, and early events in germination. Prereq: Bot 311 or equiv.

PlSc WS570 Potato Physiology and Product Technology (2 cr). See J420/J570.

PlSc WS571 Plant Molecular Genetics (3 cr). WSU GenCB 570.

PlSc ID590 Potato Science (3 cr). See J490/J590.

PlSc WS592 Adv Topics in Cell Biology (1-3 cr, max 7). WSU GenCB 592.

PlSc 600 Doctoral Research and Dissertation (cr arr).

SOILS

Soils 205 General Soils (3 cr). Intro to chem, physical, and biol nature of soils. Prereq: Chem 111 or equiv.

Soils 206 General Soils Lab (1 cr). Lab study relevant to 205. Experiments and demonstrations on basic and applied aspects of soil science. One 3-hr lab a wk. Coreq: 205.

Soils 344 Soil Conservation and Mgt (3 cr). Alt/yrs. Relationships of soil type, slope, climate, and erosion to land capability; conservation and mgt practices for erosion control. Two 1-day field trips. Prereq: 205.

Soils 354 Soil Resources and Land Use Planning (2 cr). Soil surveys, guides and methods in making soil interp; use of soils data and interp in land use and environmental decisions.

Soils 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

Soils 401 Undergrad Research (1-2 cr, max 4). Indiv study. Prereq: sr standing and perm.

Soils 404 (s) **Special Topics** (cr arr).

Soils 417 Soil Clay Mineralogy (2 cr). Alt/yrs. Structure, chem, and physical properties of clay minerals found in soils. Prereq: Chem 112 or 114.

Soils 422 Soil Chemistry (3 cr). Alt/yrs. Chemical processes in soil environment. Prereq: 205, 206, and Chem 112 or 114.

Soils 423 Soil-Plant Analysis (2 cr). Alt/yrs. Quantitative inorganic chemical analysis of soil-water-plant system. One lec and one 3-hr lab a wk. Prereq: 205, 206, and Chem 112 or perm.

Soils 425 Soil and Aquatic Microbiol (3 cr). See Bact 425.

Soils 435 Soil Physics (3 cr). Physical properties of soils and their relationships to moisture, aeration, and temperature; cultural practices and erosion problems. Two lec and one 3-hr lab a wk. Prereq: 205, 206, and Phys 113.

Soils 446 Soil Fertility (3 cr). Prin of soil fertility mgt; availability of plant nutrients and their relationship to plant growth and fertilization practices. Prereq: 205, 206.

Soils 447 Fertilizer Technology and Use (2 cr). Alt/yrs. Manufacture, use, placement, and factors influencing choice of fertilizers. Prereq: 446 or perm.

Soils 448 Mineral Nutrition (3 cr). Alt/yrs. See Bot 413.

Soils 454 Soil Dev and Classification (3 cr). Relationship of soil dev to soil properties; soil profile descriptions and classification. Two lec and one 2-hr lab a wk; two 1-day or one 2-day field trips. Prereq: 205, 206.

Soils 490 Proseminar (1 cr, max 2). Prereq: jr standing or perm.

Soils 499 (s) **Directed Study** (cr arr). Prereq: perm.

Soils 500 Master's Research and Thesis (cr arr).

Soils 501 (s) **Seminar** (cr arr). Prereq: perm.

Soils 502 (s) **Directed Study** (cr arr). Prereq: perm.

Soils 504 (s) **Special Topics** (cr arr).

Soils ID&WS505 Adv Soil Analysis (1-3 cr, max 6). WSU 503. Soils research tech and appl of modern instrumentation to soil analysis. Prereq: perm.

Soils WS513 Adv Soil Physics (2 cr). Alt/yrs. Prereq: 435 or perm.

Soils ID&WS522 Adv Soil Chem (3 cr). Alt/yrs. Chem properties of soil colloidal systems. Prereq: 422, Chem 253, or perm.

Soils WS524 Soil Mineralogy (3 cr). Alt/yrs. Prereq: perm.

Soils ID527 Soil Humus Chemistry (3 cr). Alt/yrs. Formation, chem properties, and significance of the soil organic fraction. Prereq: 422, Bact 425, and course in organic chem, or perm.

Soils WS531 Adv Soil Biochem and Microbiology (2 cr, max 4). Prereq: 422, 425, Biochem 380, or perm.

Soils ID537 Soil Biochem (3 cr). Alt/yrs. Origin, chem structure, and significance of soil biochem compounds. Two lec and one 3-hr lab a wk. Prereq: 422, Biochem 380, Bact 250 or perm.

Soils WS541 Soil-Plant Relationships in Mineral Nutrition (3 cr). Alt/yrs. Prereq: 446 or perm.

Soils ID547 Fertilizer Sc (1 or 3 cr). Alt/yrs. Fertilizer technology, forms, and field uses; project reqd. Prereq: 446 or perm.

Soils ID557 Adv Soil Genesis and Classification (3 cr). Alt/yrs. Field study of interrelationship of soil properties, classification, and land-use interp. One lec and one 4-hr lab a wk; one 8-day or eight 1-day field trips. Prereq: 454 or perm.

Soils 598 (s) **Internship** (cr arr). Graded P/F. Prereq: perm.

Soils 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

ENTOMOLOGY (B.S.Ent.)

Designed for students who desire professional careers in the basic and applied fields of

entomology (insect taxonomy, ecology, physiology, and agricultural, aquatic, and forest entomology).

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Ent 211 General Entomology	4
Ent 322 Economic Entomology	3
Ent 440 Insect Identification	4
Ent 484 Insect Anatomy & Physiology	4
Bact 250 General Microbiology	4
Biol 201 Intro to Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 332 Methods in Ecology & Field Biol	2
Biol 351 General Genetics	3
Biol 352 Experimental Genetics	1
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 277 Organic Chemistry I	3
CommG 131 Fundamentals of Public Speaking	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
PlSc 305 Intro to Plant Pathology	3
Stat 251 Principles of Statistics	3
Entomology electives	5
Life sciences electives	11
Mathematics electives	4
Physics electives	3
Humanities and social sciences electives	14
Electives to total 132 cr for the degree	--

Courses strongly recommended

Ent 217 Intro to Integrated Pest Mgt	2
Ent 491 Prin of Integrated Pest Mgt	3
Biochem 380 Intro Biochemistry	3
Bot 241 Systematic Botany	3
CS 100 Intro to Computers & Programming	3
Math 180 Analytic Geometry & Calculus I	4
Zool 484 Invertebrate Zoology	4

Plant Sciences

The plant science area offers four programs designed to prepare students for a wide variety of professional careers in agriculture, which may include either crop production, processing, merchandising, research, or extension. The crop science major emphasizes a strong scientific background for careers involving agronomic food and forage crops. The horticultural science major provides a strong science background for careers involving horticultural food and ornamental crops. The crop management major is designed to prepare students for more applied careers with agronomic crops. The landscape horticulture major is designed for careers in management of commercial nurseries, greenhouses, recreational parks, and related businesses. Students who wish to prepare for graduate study are encouraged to major in either crop science or horticultural science; however, the other degrees do not preclude graduate training.

CORE COURSES FOR B.S.PL.SC.

Course	Credits
PlSc 102 Intro to Plant Science	3
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
PlSc 400 Seminar	1
AgMech 315, 316 Irrigation & Drainage and Lab	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
Chem 275 Carbon Compounds	3
CommG 131 Fundamentals of Public Speaking	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Genet 314 General Genetics	3
Math 111 Finite Math or 140 Pre-calculus Algebra & Analytic Geom	3-4
Soils 205, 206 General Soils & Lab	4
Humanities and social sciences electives	14

CROP MANAGEMENT (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3), the plant science core, and:

Course	Credits
Acctg 201 Principles of Accounting	3
AgEc 278 Prin of Farm & Ranch Mgt	4
AgEc 289 Ag Markets & Prices	3
AgMech 112 Intro to Ag Mech	3
AnSc 109 Science of Animals that Serve Mankind or 205 Intro to Animal Nutrition	3
Econ 152 Principles of Economics	3
Ent 211 General Ent or 322 Economic Ent	3-4
Soils 446 Soil Fertility	3
Plant science approved electives	13-14
Electives to total 132 cr for the degree	--

CROP SCIENCE (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3), the plant science core, and:

Course	Credits
Bact 250 General Microbiology	4
Bot 311 Plant Physiology	3
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 276 Carbon Compounds Lab	1
Ent 211 General Ent or 322 Economic Ent	3-4
Phys 113-114 General Physics	6
Soils 446 Soil Fertility	3
Ag economics or economics electives	3
Plant science approved electives	13-15
Electives to total 132 cr for the degree	--

HORTICULTURAL SCIENCE (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3), the plant science core, and:

Course	Credits
Bact 250 General Microbiology	4
Biochem 380 Introductory Biochemistry	3
Bot 311 Plant Physiology	3
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 276 Carbon Compounds Lab	1
Ent 322 Economic Entomology	3
Phys 113-114 General Physics	6
Soils 446 Soil Fertility	3
Plant science approved electives	17-22
Electives to total 132 cr for the degree	--

LANDSCAPE HORTICULTURE (B.S.Pl.Sc.)

Required course work includes the university requirements (see regulation J-3), the plant science core, and:

Course	Credits
AgMech 112 Intro to Ag Mech	3
AgMech 115 Graphical Representation	2
Art 111-112 Drawing I	4
Bot 311 Plant Physiology	3
Ent 322 Economic Entomology	3
LArch 288, 388 Plant Materials	7
Business and accounting electives	6
Plant science approved electives	11-13
Electives to total 132 cr for the degree	--

PLANT PROTECTION (B.S.Pl.Prot.)

Designed to prepare students for professional careers in the broad field of plant protection. This program integrates the fields of entomology, plant pathology, and weed science to provide students with a broad understanding of our agricultural, food, and environmental problems. Students so trained should have wide choices in selecting careers.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
AgMech 112 Intro to Ag Mech	3
Bact 250 General Microbiology	4
Biochem 380, 382 Introductory Biochem & Lab	4
Biol 201 Intro to Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Bot 241 Systematic Botany	3
Bot 311 Plant Physiology	3
Chem 103 Intro to Chemistry	4
Chem 275, 276 Carbon Compounds & Lab	4
CommG 131 Fundamentals of Public Speaking	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Ent 211 General Entomology	4
Ent 322 Economic Entomology	3
Math 111 Finite Mathematics or Math 140 Precalculus Algebra & Analytic Geom	3-4
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
PlSc 404 Plant Disease Recognition & Control	3
PlSc 410 Biology of Weeds	3
PlSc 440 Economic Nematology	3
PlSc/Ent 217 Intro to Integrated Pest Mgt	2
PlSc/Ent 438 Mgt of Pesticides in Environment	3
Soils 205 General Soils	3
Agricultural economics electives	3
Plant protection approved electives	13-14
Electives to total 136 cr for the degree	--

SOIL SCIENCE (B.S.Soil Sc.)

This degree prepares students for a variety of professional careers such as industry field representative, soil classifier, soil conservationist, for technical positions in public and private organizations, or for graduate studies. Completion of either option satisfies the minimum requirements for certification as a soil scientist, soil specialist, or soil classifier and the technology option satisfies requirements for certification as an agronomist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils (ARCPACS).

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Soils 205, 206 General Soils and Lab	4
Soils 422 Soil Chemistry	3
Soils 435 Soil Physics	3
Soils 446 Soil Fertility	3
Soils 454 Soil Development & Classification	3
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Bot 311 Plant Physiology	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 275 Carbon Compounds or 277 Organic Chem I	3
CommG 131 Fundamentals of Public Speaking	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Geol 101 Physical Geology	3
Phys 113 General Physics	3
PlSc 102 Intro to Plant Science	3
PlSc 407 Field Crop Production	3
Stat 251 Principles of Statistics	3
Computer science electives	2-3
Engineering electives	3
Economics or agricultural econ electives	3

And one of the following options:

A. SCIENCE OPTION

Course	Credits
Soils 423 Soil-Plant Analysis	2
Soils 425 Soil & Aquatic Microbiology	3
Bact 250 General Microbiology	4
Chem 253 Quantitative Analysis	5
Geol 102 Physical Geology Lab	1
Phys 114, 116 General Physics and Lab	4
One of the following:	7-8
Math 111 Finite Math and 160 Survey of Calc	
Math 180 Analy Geom & Calc I and math elective	
Electives to total 128 cr for the degree	--

B. TECHNOLOGY OPTION

Course	Credits
Soils 447 Fertilizer Technology & Use	2
Bot 241 Systematic Botany	3
Ent 211 General Entomology	4
Genet 314 General Genetics	3
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
Economics or agricultural econ electives	3
Math electives	7
Electives to total 128 cr for the degree	--

Academic Minor Requirements

CROP SCIENCE MINOR

Course	Credits
Ent 211 General Entomology	4
PlSc 102 Intro to Plant Science	3
PlSc 305 Intro to Plant Pathology	3
PlSc 407 Field Crop Production	3
Soils 205, 206 General Soils & Lab	4
Courses selected from the following	3
PlSc 217 Intro to Integrated Pest Mgt	
PlSc 308 Forage Crops	
PlSc 401 Crop Physiology	
PlSc 446 Plant Breeding	
PlSc 469 Vegetable Seed Production	
PlSc 490 Potato Science	

ENTOMOLOGY MINOR

Course	Credits
Ent 211 General Entomology	4
Ent 322 Economic Entomology	3
Ent 440 Insect Identification	4
Ent 484 Insect Anatomy & Physiology	4
Courses selected from the following	3
Ent 442 Immature Insects	
Ent 443 Insect Ecology	
Ent 444 Insect Morphology	
Ent 446 Host Plant Resist & Cultural Suppression	
Ent 447 Biol Control of Arthropod Pests & Weeds	
Ent 448 Medical Entomology	
Ent 472 Aquatic Entomology	
Ent 474 Aquatic Entomology Lab	
Ent 491 Prin of Integrated Pest Mgt	
Ent 496 Developmental Systems in Insects	

HORTICULTURE MINOR

Course	Credits
PlSc 102 Intro to Plant Science	3
PlSc 202 Plant Propagation	3
Three of the following courses	9
PlSc 340 Nursery Mgt	
PlSc 461 Pomology	
PlSc 463 Vegetable Crops	
PlSc 464 Ornamental Plants & Landscape Hort	
Two of the following courses	5-7
PlSc 201 Turfgrass Science & Culture	
PlSc 305 Intro to Plant Pathology	
PlSc 462 Greenhouse Mgt	
Ent 217 Intro to Integrated Pest Mgt	
Genet 314 General Genetics	
LArch 288 Plant Materials	
Soils 205, 206 General Soils & Lab	

PLANT PROTECTION MINOR

Course	Credits
Ent 211 General Entomology	4
Ent/PlSc 217 Intro to Integrated Pest Mgt	2
Ent 491 Prin of Integrated Pest Mgt	3
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
PlSc 440 Economic Nematology	3
One of the following courses	2-3
Ent 322 Economic Ecology	
Ent 447 Biol Control of Arthropod Pests & Weeds	
PlSc 404 Plant Disease Recog & Control	
PlSc 410 Biology of Weeds	
PlSc 475 Postharvest Pathology	

SOIL SCIENCE MINOR

Course	Credits
Soils 205, 206 General Soils & Lab	4
At least four of the following courses	12-16
Soils 422 Soil Chemistry	
Soils 425 Soil & Aquatic Microbiology	
Soils 435 Soil Physics	
Soils 446 Soil Fertility	
Soils 454 Soil Dev & Classification	
Courses selected from the following to total at least 18 cr for the minor	0-2
Soils 344 Soil Conservation & Mgt	
Soils 354 Soil Resources & Land Use Planning	
Soils 417 Soil Clay Mineralogy	
Soils 447 Fertilizer Technology & Use	
Soils 448 Mineral Nutrition	

Department of Political Science

Alwyn R. Rouyer, Head, Dept. of Political Science and Public Affairs Research (205 Admin. Bldg.). Faculty: Donald W. Crowley, H. Sydney Duncombe, Florence A. Heffron, Raymond L. Miller, Alwyn R. Rouyer, Amos Yoder, Daniel G. Zirker.

Most decisions in modern society depend to some extent on the workings of the political process. Debate over the role of government vis-a-vis the individual has continued since the time of Plato and Aristotle. Political science as a discipline encompasses a broad range of subfields that attempt to describe and explain the political process, politics, and the relationships among governments. The general areas of study in political science include American government and politics, political theory, public administration, public law, comparative politics, and international relations.

The political science program at UI is designed to provide students with a comprehensive selection of introductory and advanced courses in the above areas in order to give them the background necessary to pursue a variety of potential career objectives. Students have a choice of either a Bachelor of Arts or a Bachelor of Science degree. The B.S. degree places emphasis on computer science and statistics; the B.A. provides a more

traditional liberal-arts track. All students are required to take a course in political theory and one in research methods. Students are also expected to take at least three courses in both the domestic (American) politics area and the foreign politics area. Beyond this, the student normally will specialize in one or two of the general subfields depending on his or her career plans. For instance, a prelaw major would take a heavier load in public law courses while a student interested in the foreign service would take more courses in international relations and foreign policy.

The department encourages students to gain practical experience in government by awarding up to nine credits for internships. Here the student works either in the legislature, the executive branch, or on a political campaign. In the past, students have interned in most of the state executive agencies, including the governor's office, with congressmen and senators in Washington, D.C., and on political campaigns from the local to the national level.

The department places emphasis both on solid classroom preparation for a variety of career objectives and practical research and internship experience. Students benefit from close contact with instructors both in and out of the classroom and are given individual attention in designing programs of study to fit best their interests. The department encourages innovative teaching techniques among its faculty and in-class participation of its students. Recent examples include a Model United Nations program, conference calls with officials in Washington, D.C., and a variety of games and simulations designed to involve the student directly in decision making.

The Bureau of Public Affairs Research is an integral part of the department. Since its founding, the bureau has completed many research projects concerned with a broad spectrum of state and local government activities in Idaho, such as city and county government, state legislature, state and local politics, election statistics, and special taxing districts.

In addition to its research function, the bureau offers training services on a large scale. Since 1968, the bureau has conducted statewide seminars for both state and local governmental officials. These include training institutes for city and county elected officials, city clerks and treasurers, special taxing district officials, state legislators, and state agency fiscal officers. The bureau also provides services to state and local agencies. Bureau personnel have assisted personnel of the Idaho Division of Financial Management, Joint Finance-Appropriations Committee, Idaho Department of Employment, Association of Idaho Cities, and Idaho Association of Counties.

In its training and research activities, the bureau has maintained close cooperative relationships with similar agencies in other institutions of higher learning in the state. The bureau has sponsored a number of training programs in cooperation with the Government Research Institute at Idaho State University, and has also worked closely with the Departments of Political Science at Boise State University, the College of Idaho, Ricks College, and Northwest Nazarene College.

Inquiries from public and private sources are continually directed to the bureau. Bureau staff members respond to all inquiries and provide information in response to specific questions when the information is available. The bureau has developed a current library of publications form Idaho and other states that it maintains through reciprocal exchange agreements with other bureaus and state agencies throughout the nation.

Three graduate degrees are offered by the department: Master of Arts, Master of Public Administration, and Doctor of Philosophy. More information about these programs may be found in the Graduate Bulletin. Graduates holding the B.S. or B.A. in political science have attended graduate schools and law schools throughout the country.

Political Science Courses

PREREQUISITES. Two-semester courses in this field may be taken in either order. Students may enroll in second-semester courses without having had the first.

PolSc 101 U.S. Govt: Structure and Functions (3 cr)(C). Basic concepts, processes, and major structural elements of the national govt.

PolSc C102 U.S. Govt: Policies and Issues (3 cr). Survey of major policies and issues conflicts in the U.S.

PolSc 105 Intro to Political Sc (3 cr). Satisfies core requirement J-3-d. Prin of political sc and nature of the discipline; comparative processes in political systems; ideas and theories of politics; problems of govts; international politics.

PolSc C152 Politics and Pollution (1 cr)(C). Political, govt, and admin aspects of overcoming air, water, and other types of pollution of our environment.

PolSc 200 (s) **Seminar** (cr arr). Prereq: perm.

PolSc 203 (s) **Workshop** (cr arr). Prereq: perm.

PolSc 204 (s) **Special Topics** (cr arr).

PolSc 237 International Politics (3 cr). Survey of major issues and approaches to international politics by major powers; eval of concepts such as power politics, internationalism, and communism; intro to other courses in the area.

PolSc 275 American State Govt (3 cr)(C). State politics, parties, interest groups, constitutions, legislative, executive, and judicial branches, federal-state relations; key issues of state politics.

PolSc 276 American Local Govt (3 cr)(C). Org and problems of cities, counties, school districts, and other local units, community power; key functions and issues in local govt.

PolSc 299 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

PolSc 360 Law and Society (3 cr). Overview of dev and functions of law in society; emphasis on capacity of law to affect social change as well as ways in which law responds to social change.

PolSc C376 Community Politics (3 cr). Strategy and tactics of community leaders and groups, power relationships, and issues such as planning and zoning.

PolSc 380 Canadian Political System (3 cr). General exam of Canadian cultural identity, constitutional prin, federalism, govt structure, political process, and electoral behavior.

PolSc 381 Politics of Western Europe (3 cr). Different approaches used by the discipline of political sc to try to understand political process of Britain and selected European nations; emphasis on appl of theory to current problems and issues to the recent past (since 1945).

PolSc 382 Communist Politics (3 cr). Politics in the Soviet Union and other Communist nations; emphasis on applying scholarship to recent dev; Eurocommunism and competition among Communist elites in developing nations.

PolSc 400 (s) **Seminar** (cr arr). Prereq: perm.

PolSc 403 (s) **Workshop** (cr arr). Prereq: perm.

PolSc 404 (s) **Special Topics** (cr arr).

PolSc ID&WS405 Israel Program (3 cr). WSU 420. Cooperative program between UI/WSU and the Israel Studies Institute in Jerusalem; offered during summer session: various topics related to Israel and Middle Eastern politics and society in Jerusalem. Orientation at UI or WSU and 15-21 days of study and travel in Israel.

PolSc WS422 Public Admin and Program Mgt in Developing Countries (3 cr).

PolSc 425 Hist of Political Philosophy I (3 cr). Perennial problems of politics examined through study of seminal authors of classical antiquity (Plato, Aristotle, Cicero); medieval confrontation of theology with classical political philosophy (Augustine, Aquinas, Marsilius).

PolSc 426 History of Political Philosophy II (3 cr). Foundations of modern liberalism in severing of the problem of political order from that of the order of the soul, collectivist attack on liberalism as based on radicalization of that same project; study of authors incl Machiavelli, Hobbes, Locke, Rousseau, and Marx.

PolSc 428 American Political Thought (3 cr). Representative democracy as understood by the Founders, Lincoln, the Progressives, New Deal writers, the New Left, and contemporary liberalism and conservatism.

PolSc 429 Religion and Politics in America (3 cr). Current controversies concerning political status of religion illuminated through study of political importance of religion in American history.

PolSc 430 Political Participant Internship (1-9 cr, max 9). Directed student internship as a participant-observer in the political process, work during a campaign with a candidate, party, or interest group. Graded P/F. Prereq: perm.

PolSc 431 American Political Parties and Elections (3 cr). Dev and present character of American political parties and of electoral system, functions of parties in periods of relative consensus and of critical choice regarding fundamental prin, party reform, and future prospects for party system.

PolSc 432 American Congress (3 cr). Theories of representation, recruitment of legislators, legislative org and behavior, structure of power, relationship to the executive, lobbying, and role in the political system.

PolSc 433 American Political Culture (3 cr). Relation of public opinion and political action and affiliation to broad econ, social, religious, and intellectual developments.

PolSc 435 Political Research Methods and Approaches (3 cr). Dev of research designs; methods of data collection; measurement of political phenomena; data analysis and the use of stat; data processing tech.

PolSc 437 American Presidency (3 cr). Roles, power, and functions of the presidency; relationships with other structures and institutions in the U.S. political system.

PolSc 438 Conduct of American Foreign Policy (3 cr). Foreign policy, incl roles of Dept of State and its missions, the President, National Security Council, Congress, military, public opinion and interest groups.

PolSc 439 Public Policy (3 cr). Processes by which domestic politics are formulated and administered; analysis of intentional and unintentional impact of these policies on society.

PolSc 440 International Organizations and International Law (3 cr). Same as MIHB 496. League of Nations, United Nations, and role of international law in international relations; the UN's contribution to international security and econ and social dev.

PolSc WS-J445/WS-J545 Public Personnel Admin (3 cr).

PolSc 446 Admin of the Criminal Justice System (3 cr). Admin of components of criminal justice system: police, prosecutor, courts, corrections; discretion in arrest, plea bargaining and sentencing, and political aspects of American system.

PolSc 447 Political Systems of East Asia (3 cr). Chinese and Southeast Asian govts.

PolSc 449 World Politics and War (3 cr). Problems of war; arms limitation attempts, incl Strategic Arms Limitation Talks (SALT), since 1914. Cr not granted for both PolSc 449 and MIHB 490.

PolSc 451 Public Admin (3 cr)(C). Environment of public admin, politics of org, public decision-making, public relations, leadership, personnel admin, financial admin, admin morality; related topics.

PolSc 452 Admin Law and Regulation (3 cr). Rule-making, adjudication, and other modes of regulation of admin agencies; judicial review and Congressional oversight of admin acts.

PolSc 453 Public Mgt Tech (3 cr). Staff tech important to persons entering many types of admin work in govt and other agencies: personnel, mgt, surveys, data processing, budgeting, purchasing, and public relations.

PolSc 454 Public Organization Theory (3 cr). Organization theory and behavior in public and nonprofit sector, organization structure and environment, individual behavior in organizations.

PolSc 458 Mgt Internship (1-9 cr, max 9). Directed internship in an agency of federal, state, or local govt or special projects involving federal, state, or local govt. One cr for each week of internship work. Graded P/F. Prereq: perm.

PolSc 459 Legislative Internship (1-9 cr, max 9). Directed internship in a national, state, municipal, or corporate legislative body. Supervised work experience. Report required. Graded P/F. Prereq: perm.

PolSc C461 Local Govt and Intergovt Relations in Idaho (3 cr)(C). Organization, functions, financing, and intergovt relations in city, county, and other units of local govt in Idaho; emphasis on info of value to planning commission members and other local officials.

PolSc WS462 Human Issues and Development (3 cr). WSU Pol S 418.

PolSc 464 Politics of the Environment (3 cr). Political factors that influence formation, implementation, and impact of public policies aimed at protecting the environment.

PolSc 467 Constitutional Law (3 cr). The Supreme Court as a constitutional policy-maker; federal jurisdiction; constitutional prin concerning judicial review, federalism, implied powers, separation of powers, and due process.

PolSc 468 Civil Liberties (3 cr). The Supreme Court and its role in protecting civil liberties; freedom of speech, press, and religion; due process, the Bill of Rights, and its appl to the states; criminal justice.

PolSc 469 The Judicial Process (3 cr). Judicial and legal processes, court structure, procedures; judicial behavior and decision-making; selection of judges.

PolSc 471 Intergovt Relations (3 cr). Relationships among federal, state, and local units of govt; legal and fiscal relationships, grant admin, forms of cooperation, the council-of-govt movement, transfers of power, and policy making.

PolSc C476 County Govt (3 cr). County govt org, finance, intergovt relations, politics, historic dev, services, such as criminal justice, planning, transportation, manpower, public welfare, health, ed, and environmental protection.

PolSc 480 Politics of Development (3 cr). Role of the state in dev, political economy of change, transition to democracy in the Third World, problems of ethnic conflict, overpopulation, and poverty.

PolSc J482/ID-J582 Latin American Politics (3 cr). Comparative description and analysis of distinctive Latin American political institutions and processes; cultural influences; basic institutions; dependency and dev; authoritarianism and democratization; internatl dimensions.

PolSc 483 Middle Eastern Politics (3 cr). Comparative analyses of political processes in Middle East and North Africa, Islam and politics, role of the military, and Arab-Israeli conflict.

PolSc ID484 Politics of India and the Subcontinent (3 cr). Comparative anslysis of the political process in India, Pakistan, Bangladesh, Sri Lanka, and Nepal; hist dev; cultural and social influences on politics; political institutions and behavior.

PolSc 485 African Politics (3 cr). Comparative description and analysis of politics of Africa south of the Sahara, colonialism, nationalism, and econ problems; politics of selected African countries examined incl South Africa and apartheid.

PolSc 487 Political Violence and Revolution (3 cr). Comparative analyses of causes of revolutions and other forms of violent civil conflict; exam of nature of guerilla warfare, terrorism, and military intervention in politics with special emphasis on the Third World. Cr not granted for both PolSc 487 and MIHB 491.

PolSc 499 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

PolSc 500 Master's Research and Thesis (cr arr). Graded P/F.

PolSc 501 (s) **Seminar** (cr arr). Areas normally offered incl U.S. politics, U.S. foreign policy, African and Asian politics, community power and politics, U.S. political thought, public law, public admin, and political dev. One 2-day field trip is authorized for the seminar in public admin. Prereq: perm.

PolSc 502 (s) **Directed Study** (cr arr). Prereq: perm.

PolSc 503 (s) **Workshop** (cr arr). Prereq: perm.

PolSc 504 (s) **Special Topics** (cr arr).

PolSc WS530 Scope of Political Sc (3 cr). Historical dev and present status of discipline; contemporary issues and future trends.

PolSc WS531 Research Methods in Political Sc (3 cr). Dev of research designs; methods of data collection; analysis of data; data processing and computer applications.

PolSc WS545 Public Personnel Admin (3 cr). See J445/J545.

PolSc 551 Seminar in Public Admin (3 cr). Review of significant issues and methodological problems in the field.

PolSc ID552 Seminar in Administrative Theory (3 cr). Alt/yrs. Major writers in political theory and concepts such as leadership, supervision, authority, decision-making, and human relations.

PolSc ID556 Govt Policy and Program Analysis (3 cr). Tech used to analyze policy alternatives and to evaluate prog; developing prog objectives, mgt by objectives, productivity analysis, prog eval, and policy analysis.

PolSc ID557 Govt Budgeting (3 cr). Theory and tech of govt budget prep and analysis; line item budgeting, performance budgets, PPB, and zero base budgeting.

PolSc WS561 Seminar in U.S. National Security Policy (3 cr). U.S. defense and arms control policies; current strategies and weapons issues.

PolSc 575 Public Personnel Admin (3 cr). Personnel admin in public agencies; hist of the personnel and merit systems; recruitment, selection, training, and eval of administrators; collective bargaining and political activity in public service; personnel admin and democracy.

PolSc ID582 Latin American Politics (3 cr). See J482/J582.

PolSc ID587 Seminar in Political Violence (3 cr). Same as MIHB 596. Comparative analysis of causes of revolutionary upheaval and other forms of violent civil conflict; methods and approaches to study of political violence.

PolSc ID&WS590 Seminar in U.S. Foreign Policy (3 cr). Methodology, decision-making institutions and processes, principal instruments; emphasis on U.S. and Middle East.

PolSc ID&WS591 Seminar in Public Policy Formation (3 cr).

PolSc ID&WS592 Topics in Public Administration (3 cr).

PolSc ID&WS593 Seminar in Public Law (3 cr). Emphasis on substantive law or judicial process.

PolSc ID&WS594 Seminar in Political Theory (3 cr).

PolSc ID&WS595 Seminar in Comparative Politics (3 cr).

PolSc 598 (s) **Internship** (cr arr). Prereq: perm.

PolSc 600 Doctoral Research and Dissertation (cr arr). Graded P/F.

Curricular Requirements

POLITICAL SCIENCE (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
PolSc 101 U.S. Govt: Structures & Functions or PolSc 105 Intro to Political Science	3
Intro courses in other social sciences	6
Additional political sc courses numbered 150 or above (minimum of 23 cr required in upper-div courses; total to incl PolSc 435, at least 3 cr in PolSc 425 or 426, and at least two courses in American govt area and two in foreign politics area—one in international relations and one in comparative politics)	29
Upper-division related field courses	20

Note: A maximum of 9 credits of political science internship courses may be counted toward meeting the political science credit requirements. The choice of specific electives must be approved by the department.

POLITICAL SCIENCE (B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
PolSc 105 Intro to Political Science	3
Math 111 Finite Math or 140 Pre-calculus Algebra & Analytic Geom or 180 Analytic Geom & Calculus I	3-4
Intro courses in other social sciences	6
Additional political sc courses numbered 150 or above (minimum of 23 cr required in upper-div courses; total to incl PolSc 435, and at least 3 cr in PolSc 425 or 426)	29
Research methods in the behavioral sc, stat, data processing, or computer programming (may be counted as related field cr if upper-division)	5
Upper-division related field courses	20

Note: A maximum of 9 credits of political science internship courses may be counted toward meeting the political science credit requirements. The choice of specific electives must be approved by the department.

Academic Minor Requirements

AMERICAN GOVERNMENT/PUBLIC LAW MINOR

Note: Approved political science seminars may be substituted in this minor.

Course	Credits
PolSc 101 U.S. Govt: Structures & Functions or PolSc 105 Intro to Political Science	3
Two courses from the following (American Institutions)	6
PolSc 275 American State Govt or 276 American Local Govt	
PolSc 431 American Political Parties & Elections	
PolSc 432 American Congress	
PolSc 433 American Political Culture	
PolSc 437 American Presidency	
PolSc 439 Public Policy	
PolSc 464 Politics of the Environment	
PolSc 471 Intergovt Relations	
Two courses from the following (Public Law)	6
PolSc 360 Law & Society	
PolSc 446 Admin of Criminal Justice System	
PolSc 452 Admin Law & Regulation	
PolSc 467 Constitutional Law	
PolSc 468 Civil Liberties	
PolSc 469 The Judicial Process	
Additional courses from American Institutions or Public Law listed above	6

FOREIGN AND INTERNATIONAL POLITICS MINOR

Note: Approved political science seminars may be substituted in this minor. Either Econ 474 or Econ 477 may be used for credit in this minor.

Course	Credits
PolSc 105 Intro to Political Science	3
PolSc 237 International Politics	3
Courses in the following two areas (at least 3 cr in each area)	15

International Relations
PolSc 438 Conduct of American Foreign Policy
PolSc 440 Internatl Organization & Internatl Law
PolSc 449 World Politics & War

Comparative Politics
PolSc 380 Canadian Political System
PolSc 381 Politics of Western Europe
PolSc 382 Communist Politics
PolSc 447 Political Systems of East Asia
PolSc 482 Latin American Politics
PolSc 483 Middle Eastern Politics
PolSc 484 Politics of India & Subcontinent
PolSc 485 African Politics

POLITICAL SCIENCE MINOR

Note: Approved political science seminars may be substituted in this minor.

Course	Credits
PolSc 101 U.S. Govt: Structure & Functions or PolSc 105 Intro to Political Science	3
PolSc 425 History of Political Philosophy I or PolSc 426 Hist of Political Philosophy II or PolSc 428 American Political Thought	3
Three courses in American government/policy (only one course may be numbered below 300)	9
Two courses in international relations/comparative government (only one course may be numbered below 300)	6

PUBLIC ADMINISTRATION MINOR

Note: Approved political science seminars may be substituted in this minor.

Course	Credits
PolSc 101 U.S. Govt: Structure & Functions or PolSc 105 Intro to Political Science	3
PolSc 275 American State Govt or 276 American Local Govt	3
PolSc 451 Public Adminstration	3
Four courses from the following	12
PolSc 275 or 276 (not taken above)	
PolSc 439 Public Policy	
PolSc 452 Admin Law & Regulation	
PolSc 453 Public Management Tech	
PolSc 454 Public Organization Theory	
PolSc 464 Politics of the Environment	
PolSc 471 Intergovt Relations	
PolSc 556 Govt Policy & Prog Analysis	
PolSc 557 Govt Budgeting	

Department of Psychology

James E. Crandall, Dept. Chair (103 Psych. Bldg.). Faculty: Kevin J. Corcoran, Mark K. Covey, James E. Crandall, Thomas A. Dingus, W. Harold Godwin, Sallie E. Gordon, Robert J. Gregory, Maria Krasnec, Steven E. Meier, Philip J. Mohan, Mark F. Yama.

Psychology involves the study of thinking, feeling, and behavior. These broad categories include such things as how we perceive and process information from the environment, principles of learning and higher thought processes, emotion and motivation, physiological factors, social behavior, personality, adjustment and abnormality, and developmental processes. The focus is on understanding the varieties of behavior and experience and how they come about. Knowledge of methods of investigation and current research findings are important to this understanding.

A basic understanding of the factors influencing human behavior and experience is highly desirable for effective functioning in our increasingly complex and sometimes puzzling society. The major in psychology (leading to either a B.A. or a B.S. degree) is designed to provide a worthwhile focus for a liberal-arts education. The major can also provide a valuable background for a variety of careers in business, industry, government, or the helping professions. It is also designed to prepare interested students for graduate training that can lead to a professional degree in psychology. The focus of the department is on human psychology. Laboratory equipment includes a variety of devices for studying perception and learning, several microcomputers, and apparatus for physiological recording and biofeedback training. Several research spaces and interviewing or therapy rooms are available.

The department offers an M.S. in clinical psychology and in human factors. The B.S. degree in psychology is the recommended preparation for study, though related study or experience in the field will also be recognized. Each of the graduate specialties normally requires two years for completion of the degree. The first year is devoted to extensive preparatory course work; the second year emphasizes practicum and thesis work.

Psychology Courses

PREREQUISITE: Unless otherwise stated, Psych 100 is a prerequisite to all other courses in this field. Unless a prerequisite is specifically stated, the prerequisite to all graduate courses is permission of department and instructor.

Psych 100 Intro to Psych (3 cr)(C). Satisfies core requirement J-3-d. Intro to psych topics, incl sensation and perception, learning and thinking, motivation, personality and adjustment, social processes, psych testing; emphasis on fundamental prin.

Psych 200 (s) **Seminar** (cr arr). Prereq: perm.

Psych 203 (s) **Workshop** (cr arr). Prereq: perm.

Psych 204 (s) **Special Topics** (cr arr).

Psych 205 Developmental Psych (3 cr)(C). Conception to preadolescence; genetics, anatomy, physiology, biol changes during dev, learning, socialization, cognition, and personality.

Psych 210 Human Sexuality (2 cr)(C). Intro to the fundamentals of human sexuality; emphasis on current trends and research. No prereq.

Psych 218 Intro to Research in the Behavioral Sc (4 cr). Primarily for majors in psych. Logic and method of empirical research in the behavior sc; design, execution, and reporting of psych experimentation and research. Three lec and one 2-hr lab a wk. Prereq: Stat 251.

Psych 299 (s) **Directed Study** (cr arr). Prereq: perm.

Psych 309 Personality and Social Dev in Children (3 cr)(C). Personality and social dev from birth to adolescence, incl areas of attachment, aggression, impulse control, sex differences, dev of a sense of self, conscience dev, and effects of parental childrearing styles upon child. Prereq: 205.

Psych 310 Psych of Personality (3 cr)(C). Theories of personality, basic concepts, tech of measurement, and experimental methods; the normal personality.

Psych 311 Abnormal Psych (3 cr)(C). Nature, causes, treatment, and prevention of patterns of emotional disturbances and personality disorders, incl neuroses and psychoses.

Psych 316 Industrial Psych (3 cr). Contributions of experimental, social, counseling, and clinical psych to the everyday problems of organization; emphasis on industrial organizations.

Psych 320 Intro to Social Psych (3 cr)(C). Theories, concepts, and research on the social bases of behavior and social interaction; topics of personal and social relevance, aggression, prejudice, altruism and helping behavior, interpersonal attraction, behavior in groups, conformity, attitudes, authoritarianism, and obedience to authority.

Psych J325/J525 Cognitive Psych (3 cr). Survey and analysis of major topics in field; emphasis on contemporary research and theory; related topics in perception, memory, and info processing and transformation.

Psych 340 Parapsychology (3 cr). Critical exam of methods of inquiry and evidence relating to such topics as extrasensory perception, psychokinesis, precognition, and survival of death.

Psych 400 (s) **Seminar** (cr arr). Prereq: perm.

Psych 403 (s) **Workshop** (cr arr). Prereq: perm.

Psych 404 (s) **Special Topics** (cr arr).

Psych 409 Cognitive Dev (3 cr). Intellectual dev of child from birth to maturity, mechanisms of intellectual growth, relationship between language and cognitive dev. Prereq: 205.

Psych 411 Psychotherapy: Theory and Practice (3 cr) Critical exam of what components make psychotherapy effective; eval of current theories of therapy and historical influences; additional emphasis on requisite skills necessary for psychotherapist.

Psych WS412 Psychological Testing and Measurement (3 cr). Prereq: Stat 251 or equiv.

Psych 419 Psychology of Aging (3 cr). Analysis of intellectual and memory changes with aging; diagnosis of senile dementia and pseudodementia; study of psychological problems of aging, plasticity of functioning, and ingredients of successful aging.

Psych ID422 Aggression (3 cr). Theories, concepts, and research on aggression at indiv and group levels; origin of aggression; murder; effects of mass media; deindividuation; sex differences; social, cognitive, learning, and environmental influences.

Psych 441 Physiological Psych (3 cr). Physiological bases of animal and normal human behavior. Prereq: Biol 201-202, Zool 119, or perm.

Psych 444 Sensation and Perception (3 cr). Fundamental processes and variables in sensory perceptual and congnitive experiences of man.

Psych 446 Engr Psychology (3 cr). Application of prin of experimental psych to analysis of interaction of the human operator with machine systems and work environments; emphasis on psych aspects of human performance.

Psych 455 Psych of Motivation (3 cr). Biol and social variables influencing the activation, direction, and self-maintenance of behavior. Prereq: 6 cr in psych.

Psych 490 Psych of Learning (3 cr). Experimental lit of the nature and conditions of classical and operant conditioning, verbal learning, and cognition. Prereq: 12 cr in psych.

Psych J495/J595 Professional Issues and Ethics in Psychology (3 cr). In-depth analysis of professional and ethical issues faced by psychologists in their roles as practitioners, researchers, consultants, teachers, etc.; exploration of controversies, political and logistic problems facing psychologists, and the helping professions in general. Two hrs of "Case Review Board" a month reqd for graduate credit.

Psych 496 Applied Behavior Analysis (3 cr). Analysis and assessment of behavior in real-life settings, e.g., home, business, industry, and institutions such as prisons and psychiatric hospitals; structured programs of intervention and assessment of behavior change; special emphasis on self-mgt of behavior.

Psych 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Psych 499 (s) **Directed Study** (cr arr). Prereq: perm.

Psych 500 Master's Research and Thesis (cr arr).

Psych 501 (s) **Seminar** (cr arr). Prereq: perm.

Psych 502 (s) **Directed Study** (cr arr). Prereq: perm.

Psych 503 (s) **Workshop** (cr arr). Prereq: perm.

Psych 504 (s) **Special Topics** (cr arr).

Psych 505 Current Topics in Developmental Psych (3 cr). Recent research in selected area. Prereq: perm.

Psych 511 Intellectual Assessment (3 cr). Assessment of intellectual ability and brain impairment in the indiv; relevant hist, concepts, and supervised practice in test admin; interp and report writing. Prereq: perm.

Psych 513 Community Psych (3 cr). Theory, research, and issues, incl strategies and intervention for the mental health professional.

Psych 520 Adv Social Psych (3 cr). Theory and research on current social psych topics; social psych perspectives as complementary to other perspectives.

Psych 525 Cognitive Psych (3 cr). See J325/J525.

Psych 528 Descriptive Psychpathology (3 cr). Assessment, description, and classification of adult psychopathology; supervised practice in admin and interp of objective tests of psych disturbance.

Psych 530 Intro to Clinical Psych (3 cr). Practical, theoretical, social-professional, and ethical aspects of psychotherapy.

Psych 540 Projective Tech (3 cr). Issues and supervised practice in admin, scoring, and interp of the most frequently used devices. Prereq: 511, 528, 530, and perm of dept.

Psych 545 Adv Clinical Psych (3 cr). Theory, research, and tech of psychotheraphy. Prereq: 530 and perm.

Psych 550 Training and Skill Acquisition (3 cr). Appl of learning theory to real-world training problems; review of current research and techniques for training and skill acquisition.

Psych 553 Human-Computer Interaction (3 cr). Physiological and psychological aspects of human-computer interface.

Psych 555 Safety and Work Physiology (3 cr). Human physiology as applied to workplace environment; effect of environmental, job, and personal stressors on work performance; concepts of safety analysis and accident prevention.

Psych 560 Manual Controls and Displays (3 cr). Manual control theory and application; physiology and performance of the eye and ear: visual and auditory display design, eval, and selection.

Psych 565 Adv Man-Machine Design (3 cr). Concepts and techniques for design and eval of complex man/machine systems.

Psych 585 Research Methods (3 cr). Phil of research, types of design, data analysis, research report. Prereq: Stat 401 or equiv.

Psych 590 Child Clinical Psych (3 cr). Etiology and description of psychopathology and behavior disorders in children; treatment philosophies and tech; disc of case studies, research, and adolescence. Prereq: perm.

Psych 595 Professional Issues and Ethics in Psych (3 cr). See J495/J595.

Psych 597 (s) **Practicum** (cr arr). Prereq: perm.

Psych 598 (s) **Internship** (cr arr). Prereq: perm.

Psych 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

PSYCHOLOGY (B.A. or B.S.)

Note: The alternatives for the math requirements will be determined on the basis of high school math courses and aptitude scores in consultation with departmental advisers. Alternatives in the major area and related courses should be selected in consultation with the departmental adviser.

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
Psych 100 Intro to Psychology	3
Psych 218 Intro to Research in Behavioral Sciences	4
Stat 251 Principles of Statistics	3
Mathematics (minimum)	3
One course with lab in biol or zool	4
At least two courses in each of the following four categories or other approved seminars or special topics courses (a list of approved courses is available from dept office)	24

Developmental Psychology
- Psych 309 Personality & Soc Dev in Children
- Psych 409 Cognitive Development
- Psych 419 Psychology of Aging

Personality/Social Psychology
- Psych 310 Psychology of Personality
- Psych 311 Abnormal Psychology
- Psych 320 Intro to Social Psychology
- Psych 411 Psychotherapy: Theory & Practice
- Psych 422 Aggression

Experimental Psychology
- Psych 325 Cognitive Psychology
- Psych 441 Physiological Psychology
- Psych 444 Sensation and Perception
- Psych 455 Psychology of Motivation
- Psych 490 Psychology of Learning

Applied Psychology
- Psych 316 Industrial Psychology
- Psych 400 Seminar: Organizational Psych
- Psych 446 Engineering Psychology
- Psych 496 Applied Behavior Analysis

Academic Minor Requirements

PSYCHOLOGY MINOR

Course	Credits
Psych 100 Intro to Psychology	3

A minimum of five courses from the following categories, with at least one course in each category or other approved seminars or special topics courses (a list of approved courses is available from dept office) 15

Developmental Psychology
Psych 309 Personality & Soc Dev in Children
Psych 409 Cognitive Development
Psych 419 Psychology of Aging

Personality/Social Psychology
Psych 310 Psych of Personality
Psych 311 Abnormal Psychology
Psych 320 Intro to Social Psychology
Psych 411 Psychotherapy: Theory & Practice
Psych 422 Aggression

Experimental Psychology
Psych 325 Cognitive Psychology
Psych 441 Physiological Psychology
Psych 444 Sensation & Perception
Psych 455 Psych of Motivation
Psych 490 Psych of Learning

Applied Psychology
Psych 316 Industrial Psychology
Psych 400 Seminar: Organizational Psych
Psych 446 Engineering Psychology
Psych 496 Applied Behavior Analysis

Department of Range Resources

Minoru Hironaka, Acting Dept. Head (205C FWR Bldg.). Faculty: Stephen C. Bunting, John H. Ehrenreich, Minoru Hironaka, James L. Kingery, Leon F. Neuenschwander, Ronald Robberecht, Kenneth D. Sanders, Lee A. Sharp, Edwin W. Tisdale, R. Gerald Wright, Jr.

Rangelands are those lands that have vegetation that is predominantly grasses, grass-like plants, forbs, or shrubs suitable for grazing or browsing use by domestic and wild animals. Such lands occupy about 47 percent of the global land area. The proportion of rangeland in the U.S. is approximately the same as for the world as a whole. Idaho's rangelands, however, comprise nearly 70 percent of the total land area of the state, thus emphasizing the geographic and economic importance of these lands to the citizens of Idaho.

Rangelands provide habitat for countless species of plants and animals, contain minerals for a variety of uses necessary to maintain and enhance the nation's productive capacity and quality of life, produce forage for domestic livestock and game species, yield water for irrigation and domestic use, and provide open space for a broad spectrum of outdoor recreational activities.

Sound management of rangelands based on ecological principles is required if society is to gain the full measure of benefits, values, and products that these resources offer. The range resources curriculum at UI prepares students for the scientific management of rangelands and a variety of career opportunities. The Department of Rnage Resources in the College of Forestry, Wildlife and Range Sciences offers a program leading to the Bachelor of Science in Range Resources. The range program provides ample opportunity for students to broaden their knowledge and skills in other areas of natural resource management, such as wildlife, forestry, watershed, recreation, soils, agricultural economics, and animal science. Field study and evaluation of plant and animal communities is an integral part of the curriculum in range resources. Internships with public land management agencies and livestock enterprises add to the educational opportunities in the program. On-campus computer terminal availability and modern library facilities also enhance the teaching and learning processes available to students.

The M.S. degree is offered in the department and the Doctor of Philosophy degree with a major in forestry, wildlife, and range sciences is available. Degree applicants should normally have completed an undergraduate major in range resources management with training in the biological, physical, and social sciences equivalent to that required for the bachelor's degree at UI. Applicants lacking these prerequisites will be required to make up deficiencies as needed.

A library orientation session during the first semester on campus is required for all undergraduates.

Prospective students in range resources are urged to consult the departmental office for further information (208/885-6536).

Range Resources Courses

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

Range 200 (s) **Seminar** (cr arr). Prereq: perm.

Range 203 (s) **Workshop** (cr arr). Prereq: perm.

Range 204 (s) **Special Topics** (cr arr).

Range 221 Forest Ecology (3 cr). See For 221.

Range 299 (s) **Directed Study** (cr arr). Prereq: perm.

Range 301 Wildland Ecology (4 cr). See For 301.

Range 351 Elements of Range Mgt (3 cr). Range industry, grazing regions, production and use of forage, improvement and reseeding, surveys and mgt plans; relation to other phases of wildland mgt. Prereq: general bot or perm.

Range 358 Natural Resources of the World (2 cr). Status, current uses, future demands, and conservation strategies for forest, range, wildlife, fisheries, recreation, soil, and water resources of the world. Recommended to be taken in sequence with For 498.

Range 367 Wildland Fire Mgt (2 cr). See For 367.

Range 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

Range 400 (s) **Seminar** (cr arr). Prereq: perm.

Range 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Range 403 (s) **Workshop** (cr arr). Prereq: perm.

Range 404 (s) **Special Topics** (cr arr).

Range 426 Fire Ecology (2 cr). See For 426.

Range 427 Prescribed Burning Lab (2 cr). See For 427.

Range 452 Range Communities (4 cr). Species ident, vegetational composition, physical characteristics, grazing reactions, and mgt of plant communities in the major range regions. Two lec and two 2-hr labs a wk; two days of field trips. Prereq: general bot; prereq or coreq: systematic bot.

Range 453 Range Inventory and Analysis (3 cr). Methods for describing and analyzing rangeland ecosystems; incl concepts of site description, production, utilization, condition and trend, and carrying capacity. Two lec and one lab a wk; two days of field trips. Prereq: 351, Stat 251.

Range 454 Range Improvement and Mgt Planning (3 cr). Objectives, methods, and benefits of range-improvement practices and their impact on mgt; fundamentals of mgt planning for use of rangeland resources. Two lec and one lab-disc a wk; one 1-wk field trip. Prereq: 351, 453.

Range 455-456 Integrated Range Resource Mgt (4 cr). Integration and appl of prin learned in previous courses to resource mgt and mgt planning. Four 2-hr sessions a wk; 7-10 days of field trips. Prereq: 351, 452, 453, and For 494 or perm; coreq: 454 and For 383.

Range 457 Rangeland Rehabilitation (2 cr). Hist aspects of rangeland rehabilitation; criteria for proper plant selection; integration of concepts, tech, and mgt for effective rangeland seeding. One 5-day field trip. Prereq: Bot 311 or perm.

Range J458/ID-J558 Agroforestry (2 cr). Same as For J458/J558. WSU FRM 504. Interdisciplinary approach to sustainable land mgt that involves ecological, social, and econ integration of forest and woodland production with grazing and/or ag crops. Particularly suited to students from less-developed countries.

Range 459 Rangeland Ecology (3 cr). Appl of ecological prin in rangeland mgt; stressing response and behavior of range ecosystems to various kinds and intensity of disturbance and mgt practice. Two 1-day field trips. Prereq: 452 and Biol 331.

Range 484 Forest Policy and Admin (2 cr). See For 484.

Range 498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

Range 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5 and perm.

Range 500 Master's Research and Thesis (cr arr).

Range 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

Range 502 (s) **Directed Study** (cr arr). Prereq: perm.

Range 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

Range 504 (s) **Special Topics** (cr arr).

Range WS525 Experimental Plant Ecology (3 cr). WSU FRM 525.

Range 526 Fire Mgt and Ecology (3 cr). See For 526.

Range ID551 Range Ecology: Concepts (3 cr). WSU FRM 551. Alt/yrs. Ecological concepts of the nature, dynamics, and distribution of plant communities; secondary successional processes, soil-vegetation relations, and dev of vegetation-classification schemes for better land mgt. Prereq: plant ecology and perm.

Range 552 Range Ecology: Quantitative (2 cr). Alt/yrs. Quantitative treatment of ecological data to show species interaction, soil-vegetation relations, and classification and characterization of plant communities. Prereq: 551, Stat 251.

Range 553 Range Forage Productivity and Mgt (3 cr). Alt/yrs. Measurement of forage productivity and factors that influence production; eval of animal response under various mgt systems. Prereq: animal nutrition, two courses in range mgt incl range methods.

Range WS554 International Range Mgt (3 cr). WSU FRM 555.

Range 555 Current Issues in Range Resource Mgt (1-3, max 3). Alt/yrs. Investigation and disc of current issues in range resources and closely related fields.

Range ID558 Agroforestry (2 cr). See J458/J558.

Range ID560 Range Autecology (3 cr). Adaptations of individual species in rangeland and forest communities; emphasizing morphological and physiological mechanisms that influence plant establishment, below- and above-ground productivity, plant competition, and grazing sensitivity. Two days of field trips. Prereq: 221, Bot 311 or perm.

Range 595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

Range 597 (s) **Practicum** (cr arr). Prereq: perm.

Range 598 (s) **Internship** (cr arr). Prereq: perm.

Range 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Range 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Curricular Requirements

RANGE RESOURCES (B.S.Range Res.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Range 351 Elements of Range Management	3
Range 452 Range Communities	4
Range 453 Range Inventory & Analysis	3
Range 454 Range Improvement & Mgt Planning	3
Range 456 Integrated Range Resource Mgt	4
Range 459 Rangeland Ecology	3
AnSc 205 Intro to Animal Nutrition	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology or Range 221 Forest Ecology	3
Bot 241 Systematic Botany	3
Bot 311 Plant Physiology	3
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
CommG 131 Fundamentals of Public Speaking	2
CS 105 FORTRAN Programming for Engineers	2
Econ 151, 152, Prin of Econ or Econ 272 Foundations of Econ Analysis	4-6
Eng 317 Tech & Engr Report Writing or Eng 313 Business Writing	3
For 274 Forest Measurement Techniques	1
For 301 Wildland Ecology	4
For 383 Econ for Natural Resource Mgrs or AgEc 451 Land & Natural Resource Econ	3
For 494 Models for Resource Decisions	4
FWR 101 Forestry Orientation	1
Math 180 Analytic Geometry & Calculus I or Math 160 Survey of Calculus	4
Soils 205 General Soils	3
Soils 454 Soil Development & Classification	3
Stat 251 Principles of Statistics	3
Library orientation	0

And one of the following emphasis areas:

RANGE SCIENCE EMPHASIS

Designed for students who want to emphasize an understanding of the biological and ecological aspects of range ecosystems and develop the technical abilities to manage rangelands.

AnSc 321 Beef Cattle Sc or AnSc 322 Sheep Sc	3
Bot 441 Agrostology	3
ForPr 230 Forest Land Measurements	2
For 275 Aerial Photo Interpretation	2
For 370 Prin of Forest Management	2
For 462 Watershed Management	2
Geol 101, 102 Physical Geology & Lab	4
WLF 390 Prin of Fish & Wildlife Ecology	3
Electives to total 136 cr for the degree	--

RANGE MANAGEMENT EMPHASIS

Designed for students who want the basic principles in range resource management but also wish to develop additional expertise in another area such as soil science, fire management, ranch management, business administration, animal science, forest management, or wildlife management. This emphasis area is designed for maximum flexibility by allowing students to achieve specifically stated educational objectives. Entry into the management emphasis requires a 2.5 GPA, at least one semester of enrollment in the department, and a petition to a departmental committee. The emphasis area is developed individually by the student after consultation with his or her adviser.

Three of the following:	
AnSc 321 Beef Cattle Sc or AnSc 322 Sheep Sc	3
Bot 441 Agrostology	3
ForPr 230 Forest Land Measurements	2
For 275 Aerial Photo Interpretation	2
Geol 101, 102 Physical Geology & Lab	4
One of the following:	
For 370 Prin of Forest Management	2
For 462 Watershed Management	2
WLF 390 Prin of Fish & Wildlife Ecology	3
Approved electives to total 136 cr for the degree	--

Religious Studies

Nicholas F. Gier, Coordinator (Admin. 305C).

The following nonsectarian courses are offered by three privately sponsored institutes adjacent to the campus: St. Augustine's Center, the Campus Christian Center, and the L.D.S. Institute of Religion. While these teaching centers are not part of the university, they secure the university's approval of courses and instructors.

Religious Studies Courses

RelSt 101 Intro to Religious Studies (3 cr). Intro to religion in today's world; emphasis upon its social and psych implications for the indiv.

RelSt 104 Biblical Hist and Thought: Old Testament (3 cr). Hist and dev of religious thought and practices of the Hebrew, Israelite and Jewish people as reflected in the writings of the Hebrew Scriptures.

RelSt 105 Biblical Hist and Thought: New Testament (3 cr). Dev of religious and theological thought of the Christian Scriptures as manifested in the writings of the New Testament.

RelSt 133 Religion and Marriage (2 cr). Religious viewpoints as they relate to dating, courtship, and family life.

RelSt 321 Twentieth Century Theology (3 cr). Recent dev in Christian, evangelical, and process theology; writings of such authorities as Teilhard de Chardin, Dietrich Bonhoeffer, Paul Tillich, and Karl Barth.

Course List

Admission to a school of theology involves meeting satisfactorily its entrance requirements, acceptable scholastic records, and possession of personal qualifications essential for effective leadership. The American Association of Theological Schools recommends a broad liberal arts background as the primary preparation for theological studies, along with such appropriate courses in religious studies as may be available at the student's undergraduate institution.

UI does not offer a major in religious studies. The following courses are suggested for students who (1) plan to transfer into a religious studies major at another institution, (2) plan to go to a seminary or theological school, or (3) wish to be introduced to the field of religious studies. The list is divided between "core" courses and "collateral" courses, and is not intended to be exhaustive.

Core Courses	Credits
RelSt 101 Intro to Religious Studies	3
RelSt 104 Biblical History & Thought: Old Testament	3
RelSt 105 Biblical History & Thought: New Testament	3
RelSt 204 Special Topics: Bible Studies	3
RelSt 321 Twentieth Century Theology	3
RelSt 404 Special Topics: Bible Studies	3
Anthr 327 Belief Systems	3
Eng 375 The Bible as Literature	3
Phil 111 World Religions	3
Phil 305 Philosophy of Religion	3
Phil 306 Hinduism, Jainism, & Zoroastrianism	3
Phil 307 Buddhism	3
Phil 308 Confucianism & Taoism	3

Collateral Courses	Credits
RelSt 133 Religion & Marriage	2
Art 101 Visual Art	3
Art 102 Survey of Art	2
FL/EN 211-212 Classical Mythology	4
FL/GK 341-342 Elementary Greek	8

FL/GK 404 Speical Topics: Koine Greek 1-3
Hist 101-102 History of Civilization 6
Hist 441 Greek History 3
Hist 442 Roman History 3
Hist 446 Medieval Europe 3
Hist 457 History of the Middle East 3
Phil 101 Ethics 3
Phil 103 Problems of Phil 3
Psych 320 Intro to Social Psychology 3
Soc 321 The Community 3

Department of Sociology and Anthropology

Richard W. Beeson, Dept. Head (101 Phinney Hall).

Anthropology Faculty: G. Ellis Burcaw, Frank C. Leonhardy, Roderick Sprague. Adjunct Faculty: David H. Chance, Leo L. Flynn.

Criminal Justice Faculty: Richard W. Beeson, Raymond L. Miller.

Sociology Faculty: Richard W. Beeson, Zaye Chapin (social work), Jurg Gerber, Eric L. Jensen, Marie L. Lassey. Adjunct Faculty: John E. Carlson, Gary E. Machlis, Corinne M. Rowe.

Sociology and anthropology are the two social sciences that seek to understand and explain the shared behavior of people in organized groups or societies. Sociology is largely concerned with the study of western civilization as a system, particularly as regards a description of American society and how it operates today. Social work courses in the deparment deal with the application of social and behavioral sciences. Anthropology is concerned with the study of humanity as a part of the natural world, and of culture that developed to cope with that world. Anthropologists have dealt largely with prehistoric and primitive or simple societies and cultures in an effort to arrive at an understanding of universal cultural laws. Increasingly, anthropologists are applying basic concepts to the study of modern, complex societies.

Majors in this department take courses in both fields and are encouraged to take courses in the other social sciences (economics, cultural geography, political science, and psychology) and in the humanities (history, philosophy, and the arts) as well.

The department offers the B.A. and B.S. degrees in anthropology and in sociology. Sociology majors may choose a social work emphasis. Artifact collections, laboratories, and other facilities are conveniently available to anthropology majors. Graduates of the department can consider a wide range of employment possibilities, about which information can be obtained from the faculty.

While intending to embrace the fields of sociology and anthropology in their entirety, the department has major strengths in particular areas. Students are encouraged to seek these out in consultation with the faculty. This is especially important for graduate students wishing to pursue the M.A. degree, about which more information will be found in the Graduate Bulletin. Questions concerning courses and degree programs should be addressed to the department head, Archie Phinney Hall, Room 101 (208/885-6751).

Courses

ANTHROPOLOGY

PREREQUISITE: Ordinarily three credits in lower-division courses in anthropology are required for registration in upper-division courses in this field, 301 excepted; other exceptions by permission.

Anthr 100 Intro to Anthropology (3 cr). Satisfies core requirement J-3-d. Basic theories, methods, and findings of human paleontology, prehistory, and culture.

Anthr 200 (s) **Seminar** (cr arr). Prereq: perm.

Anthr 203 (s) **Workshop** (cr arr). Prereq: perm.

Anthr 204 (s) **Special Topics** (cr arr).

Anthr 213 Introductory Social Theory (3 cr). See Soc 213.

Anthr 220 Peoples of the World (3 cr). Societies of Eurasia, Africa, Americas, Australia, and islands of the Pacific.

Anthr 225 North American Indians (3 cr)(C). Origins, physical types, languages, and cultures of North American Indians.

Anthr 230 World Prehistory (3 cr). Prehistoric cultures of Old and New Worlds; tech of excavation; methods of archaeological analysis.

Anthr 299 (s) **Directed Study** (cr arr). Prereq: perm.

Anthr 301 Study of Man (3 cr)(C). Not open for cr to majors in the Dept of Soc/Anthro or to students who have taken 100 or equiv. Nontech intro to anthro. Three 1-day field trips.

Anthr 321 Culture and Personality (3 cr). Method and theory of the interrelationships between the indiv and culture.

Anthr 322 Racial and Ethnic Relations (3 cr). See Soc 322.

Anthr 324 Intro to Museology (3 cr)(C). Theory and practice of sc, hist, and art museums. One 1-day and two ½-day field trips.

Anthr 325 Indians of Idaho (3 cr). Aboriginial American Indian societies of northwestern North America; emphasis on Idaho.

Anthr 327 Belief Systems (3 cr). Method and theory of comparative anthro study of religion.

Anthr 332 Ancient Civ (3 cr). Lit, phil, sc, and society in ancient Mesopotamia and ancient Egypt.

Anthr 335 North American Prehist (3 cr). Theories, methods, and findings of prehistoric North American archaeology.

Anthr 400 (s) **Seminar** (cr arr). Prereq: perm.

Anthr 403 (s) **Workshop** (cr arr). Prereq: perm.

Anthr 404 (s) **Special Topics** (cr arr).

Anthr 409 Anthro Field Methods (1-8 cr, max 8). Field training in archaeology and/or social anthro.

Anthr J413/J513 Early Social Theory (3 cr). See Soc J413/J513.

Anthr J414/J514 Modern Social Theory (3 cr). See Soc J414/J514.

Anthr 419 Museum Admin (3 cr). Admin of the total museum program. Prereq: 324.

Anthr 420 Ethnological Issues (3 cr, max 9). Theoretical debates as presented in the classical anthro lit. Prereq: upper-div standing.

Anthr J422/J522 Northwest Ethnography (3 cr). Readings in standing ethnographic lit of native peoples of Pacific Northwest.

Anthr ID&WS425 Contemporary North American Indian (3 cr). WSU 320. Current state of American Indian societies.

Anthr J428/J528 Social and Political Organization (3 cr). Bases of social and political organization; kin based units; non-kin units; political units through primitive states. Prereq: upper-div standing.

Anthr J431/ID-J531 Hist Archaeology (3 cr). Excavation and analysis of hist archaeological sites. Three 1-day field trips. Prereq: perm.

Anthr WS435 Cultural Resource Mgt (3 cr).

Anthr 441 Intro to the Study of Language (3 cr). Same as Eng 441.

Anthr WS-J450/WS-J550 Descriptive Linguistics (3 cr).

Anthr 497 (s) **Practicum** (cr arr).

Anthr 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

Anthr 499 (s) **Directed Study** (cr arr). Prereq: perm.

Anthr 500 Master's Research and Thesis (cr arr).

Anthr 501 (s) **Seminar** (cr arr). Prereq: perm.

Anthr 502 (s) **Directed Study** (cr arr). Prereq: perm.

Anthr 503 (s) **Workshop** (cr arr). Prereq: perm.

Anthr 504 (s) **Special Topics** (cr arr).

Anthr 509 Anthro Field Methods (1-8 cr, max 8). Indiv field work in approved areas. Prereq: perm.

Anthr 513 Early Social Theory (3 cr). See Soc J413/J513.

Anthr 514 Modern Social Theory (3 cr). See Soc J414/J514.

Anthr 522 Northwest Ethnography (3 cr). See J422/J522.

Anthr 523 Environmental Archaeology (3 cr). Theoretical and empirical bases for reconstructing past environments as framework for interpreting prehistoric cultures.

Anthr 528 Social and Political Organization (3 cr). See J428/J528.

Anthr ID531 Hist Archaeology (3 cr). See J431/ID-J531.

Anthr WS550 Descriptive Linguistics (3 cr). See WS-J450/WS-J550.

Anthr WS573 Ident of Faunal Remains (4 cr). Field trip.

Anthr 597 (s) **Practicum** (cr arr). Prereq: perm.

Anthr 598 (s) **Internship** (cr arr). Prereq: perm.

Anthr 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

CRIMINAL JUSTICE

Courses in this subject field that have an LC prefix are taught at Lewis-Clark State College and are open only to students majoring in criminal justice. Courses with a WS prefix are taught at Washington State University.

CJ WS101 Intro to Administration of Criminal Justice (3 cr).

CJ 103 Intro to Criminal Justice (3 cr). Survey of criminal justice organizations and procedures incl hist and function of law enforcement, probation, and parole agencies.

CJ LC110 Functional Law Enforcement (4 cr).

CJ WS150 Organizational Environment of Criminal Justice (3 cr).

CJ 200 (s) **Seminar** (cr arr).

CJ 201 Law Enforcement in America (3 cr). Impact of organizational structures and dynamics on processes of decision-making and the performance of American criminal justice agencies.

CJ ID&WS210 Criminal Investigation (3 cr).

CJ LC225 Law of Criminal Procedure (3 cr).

CJ LC280 Prin of Criminal Investigation (3 cr).

CJ 299 (s) **Directed Study** (cr arr).

CJ LC310 Police Organization and Administration (3 cr).

CJ LC320 Police Community Relations (3 cr).

CJ ID&LC325 Criminal Law (3 cr). Sources and purpose of criminal law, meaning of criminal responsibility, and elements of crime; taught by College of Law faculty members.

CJ WS330 Strategies of Crime Control (3 cr). Prereq: 101 or 103.

CJ 400 (s) **Seminar** (cr arr).

CJ ID&WS401 Justice Issues and Public Policy (3 cr). WSU 400. Criminal justice issues and their processes in the context of social, political, and econ environments.

CJ WS405 Comparative Criminal Justice Systems (3 cr). Cr not granted for both 405 and 505. Prereq: 101 or 103.

CJ LC410 Correctional System (4 cr).

CJ WS420 Law of Evidence and Criminal Procedure (3 cr).

CJ WS465 Juvenile Justice and Corrections (3 cr).

CJ WS470 The Police and Society (3 cr). Prereq: 101 or 103.

CJ ID495 Criminal Justice Practicum (3-6 cr, max 6). Supervised field exper in local or regional professional criminal justice agencies. Graded P/F, except that 3 cr may be assigned letter grades if approved by the program director.

CJ 499 (s) **Directed Study** (cr arr).

CJ WS505 Comparative Criminal Justice Systems (3 cr).

CJ WS530 Criminal Justice: Process and Institutions (3 cr).

CJ WS535 Planned Change in Criminal Justice (3 cr). WSU 550.

CJ WS540 Seminar in Criminal Justice Intervention (3 cr).

CJ WS570 The Police and Society (3 cr).

CJ WS591 Seminar in Admin of Criminal Justice (3 cr).

SOCIAL WORK

SW 140 Intro to Social Services (3 cr). Survey of the field of social welfare, contemporary social services, and the social work profession. One field trip.

SW 340 Social Welfare Policy (3 cr). Hist analysis of the social issues and policies that have led to current social welfare practices. One field trip. Prereq: 140, Soc 110 & 230.

SW 342 Child Welfare (3 cr). Analysis of social policies affecting children; laws, prog, and services in child welfare. One field trip. Prereq: 140 or 340 and Psych 205 or HEc 234.

SW 345 Human Behavior in the Social Environment (3 cr). Ecological framework to gain assessment skills according to dev stages in life cycle, life events, and societal influences.

SW 409 Field Methods in Social Work (3-15 cr, max 15). Supervised field training in social work methods. Prereq: perm.

SW 440 Methods of Social Work (3 cr). The profession of social work; basic knowledge, values, and skills necessary for working with individuals, families, groups, and communities. Prereq: 340 or perm.

SW 445 Social Group Work (3 cr). Social work processes for working with groups and dynamics of group behavior. Prereq: 440 or perm.

SOCIOLOGY

PREREQUISITE: Ordinarily three cr in lower-div courses in sociology are reqd for registration in upper-div courses in this field; exceptions by permission.

Soc 110 Intro to Soc (3 cr)(C). Satisfies core requirement J-3-d. Basic theories, concepts, and processes involved in scientific study of society; incl socialization process, social inequality, the family, religion, deviance, population, the environment, and social change.

Soc 200 (s) **Seminar** (cr arr). Prereq: perm.

Soc 203 (s) **Workshop** (cr arr). Prereq: perm.

Soc 204 (s) **Special Topics** (cr arr).

Soc 213 Introductory Social Theory (3 cr). Elements of scientific explanation and structure of theory in social sc; theoretical schools in soc and anthro; use of midrange theory in practical research.

Soc 220 Marriage and the Family (3 cr). Intro to basic components and prin of marriage and the family incl status of these institutions in American life.

Soc 230 Social Problems (3 cr)(C). Contemporary social issues and personal deviations; crime and delinquency, poverty and wealth, drugs, sexual variations, racism, sexism, and the environment.

Soc 235 Soc of Natural Resources (2 cr). See RcMgt 235.

Soc 299 (s) **Directed Study** (cr arr). Prereq: perm.

Soc 310 Rural Soc (3 cr)(C). Exploration of contemporary issues and trends as they relate to rural America; incl interaction of soc, econ, and demographic factors with environmental issues. Two 1-day field trips.

Soc 311 Urban Soc (3 cr). Population, spatial, social patterns characteristic of urban communities. One 1-day field trip.

Soc 312 Soc of Organizations (3 cr). Analysis of positions, roles, norms, and authority structures in orgs.

Soc 313 Collective Behavior (3 cr). Analysis of such episodes of behavior as riots, demonstrations, panics, hysteria, as well as interaction of soc, political, and comm processes involved in public acceptance of fashion, fads, and ideology in a mass society.

Soc 321 The Community (3 cr)(C). Origins, types, patterns, and processes of the community. Two 1-day field trips.

Soc 322 Racial and Ethnic Relations (3 cr). Same as Anthr 322. Theories of race relations, hist and contemporary exper of minority groups in U.S.

Soc 323 Societal Stratification (3 cr). Major dimensions of status and power in modern society with emphasis on the American social class structure.

Soc 324 Comparative Family Systems (3 cr). Cultural and evolutionary basis of family institutions utilizing current comparative research and theory.

Soc 330 Juvenile Delinquency (3 cr)(C). Extent, causes, and control of juvenile delinquent behavior.

Soc 331 Criminology (3 cr). Extent, criminal patterns, causes, correctional institutions, alternatives to incarceration. One 1-day field trip.

Soc 332 Corrections (3 cr). History, facilities, processes, and strategies for correction and punishment of offenders; analysis of concepts of prevention and control of crime.

Soc 341 Practicum in Aging (2-4 cr). Social and psych needs, behavior, and treatment of the aged in institutions., 1½ hr seminar a wk; 24 hrs field work a sem per cr. Prereq: major in soc, psych, rec, or prephysical therapy, or perm.

Soc 360 Population Dynamics and Distribution (3 cr). See Geog 360.

Soc 390 Political Soc (3 cr). Sources and consequences of power in the U.S., relationships between political and other institutions of society.

Soc WS393 Community Organization I: Political Processes (3 cr).

Soc WS394 Community Organization II: Creative Process (3 cr). Prereq: 393.

Soc 400 (s) **Seminar** (cr arr). Prereq: perm.

Soc 403 (s) **Workshop** (cr arr). Prereq: perm.

Soc 404 (s) **Special Topics** (cr arr).

Soc 409 Field Methods in Soc (3-15 cr, max 15). Supervised field training in soc research methods. Prereq: perm.

Soc 410 Intro to Social Research (3 cr). Principal methods of data collection, analysis, and interp. Prereq: Stat 251 or comparable introductory stat.

Soc 412 Society and Personality (3 cr). Dev of self concept from social interaction; how perception, learning, thinking, motivation, and attitude formation relate to social structure. Prereq: upper-div status and 110 or equiv.

Soc J413/J513 Early Social Theory (3 cr). Same as Anthr J413/J513. Sociological and anthropological thought from the ancient Greeks to the evolutionists.

Soc J414/J514 Modern Social Theory (3 cr). Same as Anthr J414/J514. Modern sociological and anthropological theory primarily from a conceptual and systemic perspective; incl functionalism, symbolic interactionism, structuralism, exchange conflict, and sociobiological theories.

Soc 430 Deviance (3 cr). Analysis and critique of theories of deviant behavior as applied to delinquency, prostitution, chem dependencies, mental disorders, etc. Prereq: 330 or 331 or perm.

Soc 431 Personal and Social Issues in Aging (3-4 cr). Social psychological and physical impacts of aging on the individual and on society. Incl 24 hrs field work with the aging when taken for 4 cr.

Soc 432 Juvenile Corrections (3 cr). Seminar dealing with issues in juvenile corrections, incl deinstitutionalization, diversion, and community based prog. Two field trips. Prereq: 330 or 331 and/or perm.

Soc 434 Family Violence (3 cr). Explanations, patterns, and treatment of spouse abuse, child abuse, sexual exploitation of family members, and elder abuse.

Soc 443 Medical Soc (3 cr). Social and organizational characteristics and dynamics of health care system; social roles, social status, and interpersonal relationships of patients and various health care professionals incl physicians and nurses.

Soc J491/J591 Theories of Rec Behavior (2-3 cr). Same as RcMgt J491/J591. Appl of social sc perspectives to the analysis of rec behavior in wildland environments; pertinent social and social-psychological frameworks.

Soc 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

Soc 499 (s) **Directed Study** (cr arr). Intended to accommodate a wide variety of soc topics. Prereq: perm.

Soc 501 (s) **Seminar** (cr arr). Subjects normally offered: soc research, social problems, and social theory. Prereq: perm.

Soc 502 (s) **Directed Study** (cr arr). Subjects normally offered: soc theory, human ecology, and race relations. Prereq: perm.

Soc 504 (s) **Special Topics** (cr arr).

Soc 507 (s) **Research Methodology** (3 cr). See AgEc 507.

Soc 512 Soc of Organizations (3 cr, max 9). Soc analysis of bureaucracies and other organizations; topics incl authority, comm, informal networks, leadership, legitimacy, medical, and rural.

Soc 513 Early Social Theory (3 cr). See J413/J513.

Soc 514 Modern Social Theory (3 cr). See J414/J514.

Soc 530 Seminar in Deviance (3 cr). Theoretical perspectives on deviant behavior incl functionalism, strain and control, interactionism, and social learning.

Soc 531 Aging and Retirement (3 cr). Analysis of social-psych theories of aging, retirement, and leisure.

Soc 591 Theories of Rec Behavior (2-3 cr). See J491/J591.

Curricular Requirements

ANTHROPOLOGY (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
Anthr 100 Intro to Anthropology	3
Anthr 213 Introductory Social Theory	3
Anthr 220 Peoples of the World	3
Anthr 230 World Prehistory	3
Anthr 414 Modern Social Theory	3
Anthr 420 Ethnological Issues	3
Anthr 428 Social & Political Organization	3
Anthr 441 Intro to Study of Language	3
Soc 110 Intro to Sociology	3
Soc 410 Intro to Social Research	3
Stat 251 Principles of Statistics	3
Anthropology electives (upper-division)	9
Related fields as approved by the department	15

CRIMINAL JUSTICE (B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and:

Course	Credits
CJ 103 Intro to Criminal Justice	3
CJ 201 Police in America or CJ 150 Organizational Environment of Criminal Justice	3
CJ 210 Criminal Investigation	3
CJ 320 Police Community Relations	3
CJ 325 Criminal Law	3
CJ 401 Justice Issues & Public Policy	3
CJ 405 Comparative Criminal Justice Systems	3
CJ 495 Practicum	3-6
PolSc 101 U.S. Govt: Structures & Functions	3
Soc 110 Intro to Sociology	3
Soc 322 Racial & Ethnic Relations or Anthr 220 Peoples of the World or Soc 324 Comparative Family Systems	3
Soc 330 Juvenile Delinquency or Soc 331 Criminology	3
Soc 332 Corrections	3
Soc 410 Intro to Social Research	3
Soc 430 Deviance or Soc 313 Collective Behavior	3
Stat 251 Principles of Statistics	3
Electives chosen from the following	9
MIHB 492 Terrorism	
Phil 410 Philosophy of Law	
PolSc 446 Admin of Criminal Justice System	
PolSc 468 Civil Liberties	
PolSc 469 The Judicial Process	
Psych 210 Human Sexuality	
Psych 311 Abnormal Psychology	
Psych 422 Aggression	
RcMgt 288 Law Enforcement in Natural Resource Mgt	
Soc 220 Marriage & the Family	
Soc 230 Social Problems	
SW 140 Intro to Social Services	

SOCIOLOGY (B.A.)

Required course work includes the university requirements (see regulation J-3), the general requirements for the B.A. degree, and the following courses (electives must be approved by the head of the Department of Sociology and Anthropology).

Course	Credits
Soc 110 Intro to Sociology	3
Soc 213 Introductory Social Theory	3
Soc 230 Social Problems	3
Soc 410 Intro to Social Research	3
Soc 412 Society & Personality	3
Soc 414 Modern Social Theory	3
Anthr 100 Intro to Anthropology	3
Stat 251 Principles of Statistics	3
Soc electives (upper-division)	21
Related fields (the more common areas incl anthro, econ, geog, hist, political sc, and psych)	18

SOCIAL WORK EMPHASIS

UI offers an emphasis (not a degree) in social work. Sociology majors with an interest in social work may choose this emphasis, which is designed to prepare students for either a career in social services at the B.A./B.S. entry level or for graduate professional schools of social work. This emphasis meets the course requirements of the Idaho State Board of Social Work Examiners for licensing application. Nonmajors may also take social work courses after prerequisites have been met.

Course	Credits
Soc 110 Intro to Sociology	3
Soc 230 Social Problems	3
Soc 410 Intro to Social Research	3
Soc 413 or 414 Early or Modern Social Theory	3
Soc 440 Methods of Social Work	3
SW 140 Intro to Social Services	3
SW 340 Social Welfare Policy	3
SW 409 Field Methods in Social Work	3-15
Anthr 100 Intro to Anthropology	3
Stat 251 Principles of Statistics	3
Sociology electives (upper-division)	12
Related fields (to include Psych 205, 310, and 311)	18

SOCIOLOGY (B.S.)

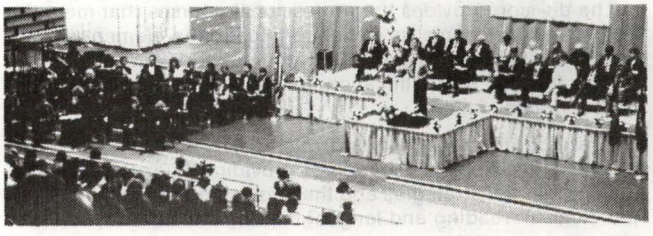
Required course work includes the university requirements (see regulation J-3), the general requirements for the B.S. degree, and the following courses (electives must be approved by the head of the Department of Sociology and Anthropology):

Course	Credits
All requirements listed for the B.A. in sociology or social work emphasis	60-72
Math electives (excluding Math 135-136)	3-4
Two courses from the following	5-7
Bact 154 Elem Microbiology & Public Health	
Biol 100 Intro to Biology	
Biol 150 Heredity & Man	
Biol 201 Intro to the Life Sciences	
Biol 351 General Genetics	
CS 100 Intro to Computers & Programming	
Phil 412 Philosophy of Science	
Phys 105, 106 Physics & Society and Lab	
Stat 401 Statistical Analysis (or adv stat course)	
Zool 119 Human Anatomy & Physiology	

Academic Minor Requirements

ANTHROPOLOGY MINOR

Course	Credits
Anthr 100 Intro to Anthropology or Anthr 220 Peoples of the World	3
Anthr 225 North American Indians or Anthr 325 Indians of Idaho	3
Anthr 230 World Prehistory or Anthr 335 North American Prehistory	3
Anthr 327 Belief Systems or Anthr 420 Ethnological Issues	3
Additional courses from the following	6
Anthr 322 Racial & Ethnic Relations	
Anthr 332 Ancient Civilizations	
Anthr 409 Anthro Field Methods	



Anthr 414 Modern Social Theory
Anthr 425 Contemp North Amer Indian
Anthr 428 Social & Political Organization
Anthr 441 Intro to Study of Language

CRIMINAL JUSTICE MINOR

Course	Credits
CJ 103 Intro to Criminal Justice	3
CJ 325 Criminal Law	3
CJ 404 Special Topics (3 cr of CJ 495, Practicum, may be substituted with perm)	3
Soc 313 Collective Behavior or RcMgt 288 Law Enforcement in Natural Resource Mgt	3
Soc 330 Juvenile Delinquency or Soc 331 Criminology	3
One or more of the following to total at least 18 cr for the minor:	
PolSc 446 Admin of the Criminal Justice Sys	
PolSc 468 Civil Liberties	
PolSc 469 Judicial Process	
Psych 422 Aggression	
Soc/RcMgt 235 Soc of Natural Resources	

SOCIOLOGY MINOR

Course	Credits
Soc 110 Intro to Sociology	3
Soc 410 Intro to Social Research or research methods course acceptable to student's major field	3
Soc 230 Social Problems or SW 140 Intro to Social Services	3
Sociology electives (other than CJ 103 and CJ 495; 9 cr must be in upper-division courses)	12

SOCIAL WORK MINOR

This minor is designed to fulfill the minimum requirements in social work courses (18 credits) to qualify for application for social work licensure in the state of Idaho. Other related courses in human behavior and the social environment are also required for licensure.

Course	Credits
SW 340 Social Welfare Policy	3
SW 409 Field Methods in Social Work*	3-6
SW 440 Methods of Social Work	3
Soc 110 Intro to Sociology or Soc 230 Social Problems	3
Soc 410 Intro to Social Research (or research methods course acceptable to student's major field)	3
One of the following courses	3
SW 140 Intro to Social Services	
SW 342 Child Welfare	
Soc 341 Practicum in Aging	
Soc 431 Personal & Social Issues in Aging	

*A minimum of 6 credits in field methods is required by the Idaho Board of Social Work Examiners.

Division of Teacher Education

Judith Doerann, Div. Director (301 Educ. Bldg.).

Faculty: Terry R. Armstrong, Thomas O. Bell, George F. Canney, Jack L. Dawson, Judith Doerann, Sid Eder, Zeph H. Foster, Mark L. Freer, Michael L. Heikkinen, Gwendolyn N. Kelly, Joseph T. Kelly, Elinor L. Michel, Raymond B. Miller, Lewis B. Smith, Florence A. White, Edward C. Woolums, Larry K. Wriggle, Maynard F. Yutzy.

The Division of Teacher Education offers programs in elementary and secondary education and library science at the undergraduate level.

Effective schools require teachers at the elementary and secondary levels who are skilled instructors of children and youth, and who can adapt instruction to the educational and cultural background, motivation, and individual capabilities or impairments of students. The preparation of a teacher involves substantial knowledge of instructional content and general instructional strategies, as well as special methods for teaching specific content or students with special needs.

The division provides the professional courses that meet the general requirements for initial certification in elementary and secondary teaching. Specialized course work and field experience leading to certification in elementary education and secondary education.

The undergraduate program in elementary education prepares teachers for elementary schools by providing theory and practice in instructional strategies and the acquisition of teaching competencies in reading and language arts, mathematics, science, social studies, art, and music. Professional preparation also emphasizes the study of the child and an understanding of psychological foundations. A specialization in early childhood education is available within the B.S.Ed. degree program in elementary education.

The undergraduate program in secondary education prepares teachers for secondary schools by providing theory and practice in instructional strategies and the acquisition of teaching competencies in the following subjects as currently taught in secondary schools: English, social studies, sciences, mathematics, art, and foreign languages. Students also complete teaching majors or minors in the subject area(s) in which teaching certification is desired. A student in secondary education may earn either a B.S.Ed. degree through the College of Education or, alternatively, a B.A. or B.S. degree through the department and college administering the academic major.

Professional education coursework is conducted in the Education Building and in the public schools. The Education Building houses preschool and kindergarten classrooms; specialized facilities for microteaching; laboratories for special methods courses in mathematics, art, language arts, social science, and natural sciences; and the Instructional Materials Center, which contains a comprehensive curriculum library as well as children's literature and special education materials.

Advanced programs in the Division of Teacher Education are (a) the Advanced Certification (planned fifth year) program, which results in an Advanced Elementary or Secondary Certificate; (b) master's degree programs (either Master of Education or Master of Science) in elementary education and secondary education; (c) specialist degree programs in education, with emphases in elementary education, secondary education, and supervision and instructional leadership; and (d) doctoral degree programs (either Doctor of Education or Doctor of Philosophy) with concentrations in elementary education and secondary education (teacher education, including supervision and instructional leadership).

Courses

RELATED AREAS: For other offerings in the field of education, see: agricultural education, art, business education, counseling, educational adminstration, home economics, music, physical education, special education, and vocational teacher education.

EDUCATION

PREREQUISITE: For registration in upper-division courses in education, students must have been admitted to the teacher-education program and have a GPA of 2.25, unless a higher average is stated as a prerequisite in the course description.

Ed 200 (s) **Seminar** (cr arr). Prereq: perm.

Ed 201 Intro to Teaching (2 cr). Interpersonal comm, human relations incl multicultural concerns, discipline, classroom eval tech, and clinical exper in K-12 classroom. Prereq: sophomore standing.

Ed 203 (s) **Workshop** (cr arr). Prereq: perm.

Ed 204 (s) **Special Topics** (cr arr).

Ed 273 International Ed Scene (1-9 cr, max 9). Also offered as 473. Study-tour conducted by a UI faculty member to observe selected ed systems and procedures in foreign countries. One cr a wk.

Ed 299 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

Ed C302 The Child and Society (3 cr). Child in the social milieu; family, social group, community, school; social pressures and conditioning upon the child and the ed process.

Ed 314 Strategies for Teaching (2-3 cr). Problems and methods of teaching common to all subject and grade levels. Two lec and two hrs of microteaching lab a wk.

Ed 315 Secondary School English Methods (3 cr). Specific methods, research, curricula, and media in teaching secondary-school English.

Ed 316 Secondary School Social Studies Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school social studies.

Ed 317 Secondary School Science Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school science.

Ed 318 Secondary School Math Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school math.

Ed 319 Secondary School Art Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school art.

Ed 320 Language Arts Methods (3 cr). Strategies for teaching oral language, listening, and composition; all topics dealing with language except reading and lit; incl clinical exper in K-6 classroom. Prereq: 314 (434 recommended).

Ed ID-J322/ID-J522 Early Childhood and Kindergarten Ed (2-4 cr). Historical dev, theoretical and practical applications in early childhood and kindergarten ed. Two lec and 3-6 hrs of lab a wk.

Ed 326 Elem School Math Ed (3 cr). Specific methods, research, curricula, and media in teaching elementary-school math.

Ed 328 (s) **AV Aids** (1-3 cr, max 3). Prin and methods of AV instruction. Areas of instruction include equipment operation, display tech, television, photography, and microcomputers for the teacher.

Ed 336 Intro to Reading (4 cr). Basic prin and tech for teaching reading in the elem school; emphasis on content, methods, and materials.

Ed 341 Secondary School Foreign Language Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school foreign language.

Ed 375 Elem School Art Methods (3 cr). Tech, materials, and processes used in teaching elem art; relationship of art to the elem curricula.

Ed 381 Elem School Music Methods I (3 cr). See MusT 381.

Ed 400 (s) **Seminar** (cr arr). Prereq: perm.

Ed 402 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

Ed 403 (s) **Workshop** (cr arr). Prereq: perm.

Ed 404 (s) **Special Topics** (cr arr).

Ed J405/J505 (s) **Professional Development** (cr arr). Professional dev and enrichment of certificated school personnel. Cr earned will not be accepted toward grad degree programs, but may be used in a fifth-yr program.

Ed 406 Elem School Team Teaching (3 cr). Phil; org; trends in bldg constr for team teaching; curriculum materials; role of teacher, pupils, and auxiliary personnel.

Ed 411 The Jr High School (3 cr). Prin, org, admin, and methods of instruction.

Ed 415 Ed Psych (3 cr). Processes of human growth, dev, and learning, and the practical appl of this knowledge to teaching.

Ed J416/J516 College Teaching (1-2 cr, max 2). Tech for effective teaching at college level. Additional projects/assignments reqd for grad cr.

Ed 418 Identifying and Correcting Math Deficiencies (3 cr). Study of teaching arithmetic incl appropriate diagnostic-prescriptive strategies for correcting arithmetic deficiencies; microcomputers and calculators as instructional tools; consumer math as an area of appl.

Ed 419 Microcomputers in Math Teaching (1-2 cr). Review of software appropriate for teaching math. Prereq: perm; coreq: math methods course (unless offered independently to cover specific topics or prog).

Ed 421 Elem School Social Studies Methods (2-3 cr). Specific methods, research, curricula, and media in teaching elementary-school social studies.

Ed 426 Organization and Admin of School Media Centers (3 cr). Standards for media prog, physical facilities, staffing, budget, media services, and in-service prog.

Ed 430 Practicum: Elem School Teaching (3-9 cr, max 9). Offered each nine wks. Supervised teaching in elem schools. Graded P/F. Prereq: 320, 326, 445, Psych 205 or Ed 415, cumulative GPA of 2.25, and perm of dept. (Submit appl to director of clinical experiences in teacher ed by December 1 of school yr before enrolling.)

Ed 431 Practicum: Secondary School Teaching (3-9 cr, max 9). Offered each nine wks. Supervised teaching in secondary schools. Graded P/F. Prereq: 314, 415, 445, cumulative GPA of 2.25, and perm of dept. (Submit appl to director of clinical experiences in teacher ed by December 1 of school yr before enrolling.)

Ed 432 Practicum: Music Teaching (3-9 cr, max 9). Supervised music teaching in public schools. Graded P/F. Prereq: 314, 415, 445, cumulative GPA of 2.25, and perm of dept. (Submit appl via coordinator of music ed to the director of clinical experiences in teacher ed by December 1 of school yr before enrolling.)

Ed 433 Practicum: Dance Teaching (3-9 cr, max 9). Supervised teaching in grades 1-12; two-thirds of experience in secondary schools. Graded P/F. Prereq: 314, 445, special methods in subject area, cumulative GPA of 2.25, and perm of dept. (Submit appl via director of Center for Dance to the director of clinical experiences in teacher ed by December 1 of school yr before enrolling.)

Ed 434 Children's Lit (3 cr)(C). For each grade level; story plays, dramatizations, effective reading and telling children's stories, and their place in elem school.

Ed 435 Practicum: Elem School Teaching (Special) (3 cr). For secondary ed students majoring in art or physical ed who wish to qualify for Idaho endorsement to teach these subjects at the elem level. Graded P/F. Prereq: special methods in the subject area. (Submit appl to director of clinical experiences in teacher ed by December 1 of school yr before enrolling.)

Ed 436 Reading: Alternatives to Basals (2-3 cr). The language experience approach to reading in primary and indiv reading program at interm grades; rationale and methods. Prereq: 336.

Ed 438 Elem School Math Lab (3 cr). Constr and solution of problems based on experiments that may be easily performed in elem schools.

Ed 439 Comparative Ed (3 cr). Ed systems in relation to the cultural backgrounds that give rise to them.

Ed J440/J563 Methods of Teaching Content Reading (3 cr). Strategies to extend reading skills in content-area textbooks and to extend writing skills related to paragraphing and essay tests in content classes.

Ed 443 Teaching of Geog (3 cr). Trends, methods, AV materials, planning the prog, specialized skills and forces contributing to change in geographic ed.

Ed 444 Elem School Science Methods (2-3 cr). Specific methods, research, curricula and media in teaching elementary-school sc.

Ed 445 Proseminar in Teaching (1 cr). Offered each nine wks. Orientation to practicum. Graded P/F.

Ed 448 Production and Use of Media in Ed (3 cr). Production, use, and org of media in the student's field of interest. Prereq: experience in teaching.

Ed 468 Contemporary Ed (3 cr). Role of ed and problems of the profession in society as related to hist and philosophical backgrounds.

Ed 473 International Ed Scene (1-9 cr, max 9). See 273.

Ed 499 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

Ed 500 Master's Research and Thesis (cr arr).

Ed 501 (s) **Seminar** (cr arr). Prereq: perm.

Ed 502 (s) **Directed Study** (cr arr). Prereq: perm.

Ed 503 (s) **Workshop** (cr arr). Prereq: perm.

Ed 504 (s) **Special Topics** (cr arr).

Ed 505 (s) **Professional Development** (cr arr). See J405/J505.

Ed 507 Supervision of Instruction (3 cr). Prep of supervisors to aid teachers in the improvement of instruction.

Ed 510 Philosophy of Ed (3 cr). Analysis of ed objectives, concepts, and theories.

Ed 511 Planning and Administering the Curriculum (3 cr). Processes of systematic curriculum dev, decision-making roles, processes in curriculum planning, supporting admin patterns and instructional arrangements; trends, issues, strategies in subject-matter fields.

Ed 512 Prog Dev and Eval (3 cr). Types of instructional systems, systematic ed prog dev; eval methods, issues in measurement and eval design.

Ed 513 Hist of Ed Thought (3 cr). Writings that have influenced ed theory and practice.

Ed 514 The Logic of Teaching (3 cr). Different kinds of statements (e.g. synthetic, analytic, and value) and different logical operations (e.g., defining, describing, evaluating and justifying, comparing and contrasting, conditional inferring and explaining), particularly as these occur in classroom situations in a teaching context.

Ed 515 Logic of New Media (3 cr). Technological dev in ed; adv forms that influence learning, teaching, and curriculum content and organization.

Ed 516 College Teaching (1-2 cr, max 2). See J416/J516.

Ed 517 Adv Elem School Math Ed (3 cr). Recently developed methods and materials in elem school math. Prereq: qualified for a standard elem certificate.

Ed 520 Elem School Sc and Social Studies (3 cr). Methods and tech; foundations of the unit as a means of instruction. Prereq: qualifed for a standard elem certificate.

Ed 521 Adv Language Arts (3 cr). Research and implications of data related to modern tech of teaching.

Ed ID522 Early Childhood and Kindergarten Ed (2-4 cr). See J322/J522.

Ed 523 Creative Arts and Creative Teaching (3 cr). Creativity in children; art, music, socio-drama-creative writing. Prereq: qualified for a standard elem certificate.

Ed 524 Models of Teaching (3 cr). Exam of info processing, social interaction, personal, and behavioral models of teaching; emphasis on practical implementation of these models in teaching situations.

Ed 525 Problems in Secondary Social Studies (3 cr). Recent research and interp in social studies content, methods, and materials.

Ed 526 Adv Ed Psych (3 cr). Selected psych theories and their appl to instruction, classroom mgt, reading, testing, and related ed research.

Ed 527 Instructional Theory into Practice (3 cr). Applications of instructional theory to the areas: teaching to an objective; diagnostic and prescriptive teaching; teaching to enhance motivation; reinforcement, transfer, retention, and rate and degree of learning; enhancement of pupil self-concept; and critical decisions underlying such techniques.

Ed 530 Ed Law (3 cr). Statutory and case materials; prin applied to all states.

Ed 531 Elem School Math Ed Research (3 cr). Classic and contemporary research; experimental studies; rationale for position of specialist; objectives; coordination of services. Prereq: perm.

Ed 538 Student Teaching Supervision (3 cr). Nature and scope of student teaching; role of cooperating agencies; role of participants; tech; planning; eval.

Ed 551 Children's Lit and the Curriculum (3 cr). How all phases of lit fit into and become a part of the curriculum; developing various areas of the curriculum based on lit; eval of lit, authors, and illustrators.

Ed 560 Research and Wrtg (3 cr). Tech of research in ed.

Ed 561 Issues in Reading (3 cr). Current issues in reading and their impact on classroom instructional practice. Prereq: 336 and perm.

Ed 562 Adv Reading Tech (3 cr). Consideration of the research basis for current instructional practices in reading and dev of more effective tech for teaching reading. Prereq: 336 or perm.

Ed 563 Methods of Teaching Content Reading (3 cr). See J440/J563.

Ed 565 Psycholinguistics and Reading (3 cr). Contributions of psych and linguistics, readings, disc, and activities to broaden the instructional base.

Ed 566 Corrective Reading (3 cr). Nature, causes, and diagnosis of moderate reading difficulties; translation of diagnostic info into instructional practice. Prereq: 336, 562, or equiv.

Ed 567 Clinical Practicum in Reading (3 cr). Exercise of diagnostic procedures and indiv instructional tech with small groups of children who have moderate reading difficulties. Prereq: 566.

Ed 568 Seminar: Research in Reading (3 cr). Exam of significant research problems in reading and the procedures used to study such problems. Prereq: doctoral standing or perm.

Ed 569 Teaching of Reading Methods (3 cr). Exam of content, instructional methodologies, and eval tech employed in teacher ed in reading. Prereq: doctoral standing or perm.

Ed 572 Measurement and Eval (3 cr). Improvement of testing, exam, and eval in schools; practice in making, giving, scoring, and interpreting tests; use of results in counseling.

Ed 581 Systematic and Objective Analysis of Instruction (4 cr). Supervision as a change process and analysis of supervisory cycle; appl of supervisory cycle in K-12 classroom situations; designed to improve individual skill in analysis of instruction and to relate theory to practice. Graded P/F. Preregistration reqd; enrollment limited to 14 per section.

Ed 586 Planning and Design of Ed Research (2-4 cr, max 6). Planning ed inquiry projects appropriate for Ph.D. or Ed.D. dissertation; formulation of conceptual framework relative to analyt process; inquiry design; constructs and variables; sampling; variance control; types of inquiry; measurement instrumentation; data collection and analysis. Prereq: Stat 251 or equiv, and perm.

Ed 590 Hist of Ed (3 cr). Dev and influence of ed ideals and practices.

Ed 597 (s) **Practicum** (cr arr). Graded P/F. Prereq: perm.

Ed 598 (s) **Internship** (cr arr). Currently offered in public school teaching, college teaching, ed admin, and higher ed. Graded P/F. Prereq: perm.

Ed 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Ed 600 Doctoral Research and Dissertation (cr arr).

LIBRARY SCIENCE

LibSc 299 (s) **Directed Study** (cr arr). Prereq: perm.

LibSc 400 (s) **Seminar** (cr arr). Prereq: perm.

LibSc 404 (s) **Special Topics** (cr arr).

LibSc C420 Classification and Cataloging (4 cr). Org of library materials, prin of cataloging, subject analysis, classification, bibliographic methods, Dewey decimal system.

LibSc C421 Acquisitions and Collection Dev in Libraries (3 cr). Eval and selection of books and other materials for libraries; analysis of community library needs and interests.

LibSc C422 Use of the School Library (2 cr). Methods of interesting students in the library and using it to best advantage.

LibSc C423 Intro to Reference Work (3 cr). Reference books in school and public libraries; selecting reference collections.

LibSc C425 Organization and Mgt of Libraries (4 cr). Org and mgt of school libraries.

LibSc 427 Library and Media Center Practicum (1-3 cr, max 6). Practical experience in libraries and other info centers under professional supervision. Prereq: perm of dept.

LibSc 499 (s) **Directed Study** (cr arr). Prereq: perm.

Curricular Requirements

ELEMENTARY EDUCATION (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the elementary level (see College of Education section in part 4), and:

Course	Credits
Ed 320 Language Arts Methods	3
Ed 326 Elementary School Mathematics Ed	3
Ed 336 Intro to Reading	4
Ed 375 Elementary School Art Methods	3
Ed 421 Elementary School Social Studies Methods	2
Ed 434 Children's Literature	3
Ed 436 Reading: Alternatives to Basals	2
Ed 444 Elementary School Science Methods	2
MusT 381 (Ed 381) Elem School Music Methods I	3
PE 250 Elementary Physical & Health Ed	3

And one of the following:

Dance 220 Children's Dance	2
ThA 381 Drama in Education	3

And completion of one of the following options:

A. One 20-credit, single-subject or composite minor and one 15-credit, single-subject minor.

B. One 30-credit, single-subject major. Grade point average of 2.5 required in majors.

C. One 40-credit composite major. Grade point average of 2.5 required in majors.

SECONDARY EDUCATION (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level (see College of Education section in part 4), one course in special methods applicable to secondary schools (Ed 315, 316, 317, 318, 341, H&S 323, or another approved special methods course), Methods of Teaching Content Reading (Ed 440), and the satisfactory completion of one of the following options selected from the list headed "Teaching Majors and Minors" in the College of Education section, part 4:

A. Two 30-credit teaching majors.

B. One 40-credit teaching major and one 20-credit teaching minor.

C. One 30-credit teaching major and two 20-credit teaching minors.

D. One 60-credit teaching major.

Department of Theatre Arts

Bruce C. Brockman, Dept. Chair (U-Hut 102). Faculty: Bruce C. Brockman, Frederick L. Chapman, Roy S. Fluhrer, Dean F. Panttaja, Forrest E. Sears, William D. Watson, Nancy J. Zaremski.

The study of theatre encourages the development of the whole person. Through performance, students gain a deeper understanding of themselves and human behavior; through design, students learn how to manipulate space, lighting, color, and texture; through the study of drama as an educational tool, students learn how to use the elements of theatre as performance, as well as drama as process. Because theatre encompasses so many disciplines, it is an excellent way of enhancing a general education, encouraging artistic sensitivity, and teaching students to work in collaboration with fellow artists.

The theatre curriculum at UI leads to a B.A., B.S., or B.F.A. degree and provides a broad base from which students may pursue a number of different career options. All students are required to complete a core of courses ensuring general competency in all areas of theatre. Those wishing to specialize in a particular aspect of theatre are able to do so through the use of electives. The Bachelor of Fine Arts degree is offered to those students who wish to embark on professional careers in theatre. Requirements are stringent and include constant monitoring of the student's progress. The student is an integral part of the department production process, fostering a close relationship with the theatre faculty and enabling the student to experience the kind of growth that comes through working with professional artists.

In the Hartung Theatre, UI has one of the finest theatre facilities in the Northwest. The 419-seat, semithrust auditorium is complemented by one of the best equipped shops, costume inventories, and lighting and sound systems in the region. Additionally, the Jean Collette Theatre, with 89 seats, is equipped with a new lighting and sound system and is the primary space in which student actors, directors, and technicians may experiment and develop their skills.

Graduate study at UI emphasizes acting, directing, design, and technical theatre. The department's size permits graduate students to take an active part in the process of theatre production. If qualified, students may be asked to assist the instructors in the teaching of basic skills to undergraduate students. The department emphasizes the creative thesis for the degree and graduate

students have designed and directed major productions at the university.

Students interested in pursuing a degree in theatre and who have further questions about the program should feel free to consult the department chair (telephone 208/885-6465).

Theatre Arts Courses

ADVANCEMENT PLACEMENT: Courses in this subject field that are vertical in content are: 105-106-272-372-305-306-407-408; 103-104-301-302.

ThA 100 Theatre Process and Production (3 cr). Open only to majors. Intro to theatre with emphasis on creative processes, organizational structures, and collaborative systems inherent in production and performance of theatre events. Prereq: Art 121.

ThA 101 Intro to the Theatre (3 cr). Satisfies core requirement J-3-d. For nonmajors. Building an appreciation for theatre as an art form through understanding the creative process of the playwright, the director, the designer, and the actor. Three lec and 2 hrs of recitation a wk.

ThA 102 Theatrical Makeup (2 cr). Creation of the make-up mask through sculpting with paint. One lec and 3 hrs of lab a wk. Limited to 20 students. Prereq: perm.

ThA 103 Intro to Stagecrafts (3 cr). Intro to theatre production spaces, shop tools, construction materials, and stage equipment; theories and methods used in the constr of scenery and props. Three lec and 6 hrs of lab a wk.

ThA 104 Adv Stagecrafts (3 cr). Continued study of stagecraft incorporating plastics, steel useage, hand and set prop construction, basic scene painting tech, costumes, electricity and lighting equipment. Three lec and 6 hrs of lab a wk. Prereq: 103 or perm.

ThA 105-106 Basics of Performance (2 cr). Intro to performance tech of relaxation, concentration, observation, and justification; work in improvisation, sensory exploration, and beginning textual analysis; section for nonmajor incl exploration of creative process to enable each participant to create imaginative and original work through elements of silouettes, movement, rhythm, texture, sound, and color.

ThA 125 Summer Theatre (2-4 cr, max 4). Theatre production, incl public presentation of several plays. Max 10 cr in 125 and 395 combined. Prereq: perm of dept.

ThA 150 Performance Lab (1 cr, max arr). Warm-up procedures, skills and tech in stage movement, voice production; special dept events and labs. Two labs a wk.

ThA 190 Theatre Practice I (1 cr, max 4). Open to nonmajors. Practical experience in all aspects.

ThA 200 (s) **Seminar** (cr arr). Prereq: perm.

ThA 203 (s) **Workshop** (cr arr). Prereq: perm.

ThA 204 (s) **Special Topics** (cr arr).

ThA 265 Children's Theatre (3 cr). Alt/yrs. Selection, prep, and presentation of theatre for children; story telling; rec and special occasion prog.

ThA 271 Play Analysis (3 cr). Critical intro to plays as drama and theatre; an approach to tragic and comic genres; major dramatists of the 20th century culminating in an analysis of contemporary theatre styles.

ThA 272 Interm Acting (3 cr). Work in emotional memory, sensory recall, and life study; scene work and analysis in inner monologue and personal imagery; extensive work in group improvisation and theatre games. Three lec and 1 hr of lab a wk.

ThA 299 (s) **Directed Study** (cr arr). Prereq: perm.

ThA 301-302 Visual Theatre and Design (3 cr). Development of basic skills in visualization, period research, theatrical graphics tech, and script interpretation with emphasis in areas of costumes, scenery, and lighting design. Three lec and 1 hr of lab a wk. Prereq for 302: 301.

ThA 305 Methods in Characterization (3 cr). Alt/yrs. "Physicalizing" the actor's body and emotions through rehearsal tech, incl animals, paintings, props, transformational characterization.

ThA J306 Adv Acting (3 cr). Alt/yrs. Intensive work in auditioning; theory and practice in major stage dialects.

ThA 361 Tech Production (3 cr)(J263/J563A). Tech planning for single and multiple set theatre productions; incl drafting, scheduling, budgets, etc.

ThA J362 Costume for the Stage (3 cr). Historical overview of costume from Greek to the 19th century; costume design and rendering emphasized.

ThA J363 Costume Constr (3 cr). Methods of pattern drafting, fitting, and constr of theatrical costumes.

ThA 364 Scene Design I (3 cr). Dev of stage designs emphasizing basic production schemes and exploring adv rendering and drawing tech. Prereq: 271 or perm.

ThA 372 Interm Acting (3-4 cr). Intensive work in scene study and script analysis; coaching of indiv actor problems. Three lec a wk; B.F.A. students must register for 4 cr, which incl 1 hr of lab a wk. Prereq: 272.

ThA 373 Stage Lighting (3 cr)(273). Basic equipment and lighting methods for theatrical production; basic drafting and design of a realistic production.

ThA 381-382 Drama in Ed (3 cr). Rationalization and clarification of the means and purposes of drama as an ed tool in the teaching/learning process. ThA 381: theory and tech through film, lec, and dem. ThA 382: analogy, role, mantle of the expert, simulation, movement, planning, supervised fieldwork.

ThA 390 Theatre Practice II (1 cr, max 4). Open to nonmajors. Continuation of 190. Set constr, costumes, lights, and properties.

ThA 395 Summer Theatre II (2-8 cr, max 8). Continuation of 125. Max 10 cr in 125 and 395 combined. Prereq: perm of dept.

ThA 400 (s) **Seminar** (cr arr). Prereq: perm.

ThA 403 (s) **Workshop** (cr arr). Prereq: perm.

ThA 404 (s) **Special Topics** (cr arr).

ThA 405 Individual Instruction in Performance (cr arr). Individualized coaching in performance. One hr of lab a wk per cr. Prereq: perm of dept.

ThA 406 Individual Instruction in Production (cr arr). Individualized and research study in technical production and design. One hr of lab a wk per cr. Prereq: perm of dept.

ThA J407-J408/J507-J508 Styles of Acting (3-4 cr). Alt/yrs. ThA J407/J507: cultural backgrounds, manners, and customs in classic acting styles from the Greeks through Shakespeare. ThA J408/J508: restoration theatre through 20th-century styles. Three lec a wk; B.F.A. students must register for 4 cr, which incl 1 hr of lab a wk; additional effort reqd for grad cr. Prereq: perm.

ThA J410/J510 Costume Design and Rendering Techniques (3 cr, max 12). Emphasis on developing chracterization, stylization, and rendering tech applicable to costume design; continuation of portfolio development. Additional effort reqd for grad cr. Prereq: J362.

ThA J464 Scene Design II: Evolution of Design (3 cr). Dev of a conceptual approach to design through assorted design projects. Prereq: 364.

ThA J467-J468/J567-J568 The Theatre (3 cr). Alt/yrs. Survey of European and American theatres, dramatists, and actors from the Greeks to Ibsen. Additional effort reqd for grad cr.

ThA J469/J569 Modern Theatre (3 cr). Hist of the movements, personalities, and representative plays of the modern theatre from Ibsen, Strindberg, and Chekhov through Pirandello to 1930.

ThA J470/J570 Modern Theatre (3 cr). Alt/yrs. Epic theatre, theatre of the absurd, theatre of cruelty, contemporary trends in drama, directing, and design; seminar approach.

ThA J471-J472/J571-J572 Directing (3 cr). ThA J471/J571: prep of a play from casting to performance. ThA J472/J572: staging and interp of a play; developing a production concept; coaching actors. Additional effort reqd for grad cr. Prereq: perm of dept.

ThA 480 Drama in Ed Practicum (3-9 cr, max 9). Directed process work on selected levels in local classrooms with all age groups, performance planned in conjunction with inservice teachers.

ThA J484/J584 Adv Stage Lighting (3 cr). Adv lighting design theories and practice through design of assorted productions in realistic drama, dance, arena, thrust, and mystical theatre. Additional effort reqd for grad cr. Prereq: 373 or perm.

ThA 498 (s) **Internship** (cr arr). Prereq: perm.

ThA 499 (s) **Directed Study** (cr arr). Prereq: perm.

ThA 500 Master's Research and Thesis (cr arr).

ThA 501 (s) **Seminar** (cr arr). Prereq: perm.

ThA 502 (s) **Directed Study** (cr arr). Prereq: perm.

ThA 503 (s) **Workshop** (cr arr). Prereq: perm.

ThA 504 (s) **Special Topics** (cr arr).

ThA 507-508 Styles of Acting (3-4 cr). See J407-J408/J507-J508.

ThA 509 Summer Theatre III (2-8 cr, max 8). Theatre production, incl public presentation of several plays; emphasis on responsibilities of the grad student incl assisting the director, serving as crewhead, and acting. Prereq: 20 cr in the theatre arts and perm of dept.

ThA 510 Costume Design and Rendering Techniques (3 cr, max 12). See J410/J510.

ThA 511 MFA Acting Studio (3 cr, max 18). Adv individual study in performance. One lec and 2 hrs of lab a wk.

ThA 512 MFA Directing Studio (3 cr, max 18). Adv individual study in directing incl work in staging, styles, and interpretation. One lec and 2 hrs of lab a wk.

ThA 513 MFA Design Studio (3 cr, max 18). Adv individual study in all areas of theatrical design with emphasis on portfolio development. One lec and 2 hrs of lab a wk.

ThA 514 MFA Production Studio (3 cr, max 18). Adv individual study in all areas of technical theatre production and mgt with emphasis on portfolio development. One lec and 2 hrs of lab a wk.

ThA 520 Adv Directing (3 cr). Tech and styles of major 20th-century directors; work in directing genres of tragedy, drama, melodrama, comedy, and the absurd.

ThA 522 Directing the Period Play (3 cr). Interp and staging of classical texts in major dramatic periods; social and cultural view of each period.

ThA 530 Graduate Design: Theatrical Arch and Decor (3 cr, max 12). Adv design problems emphasizing research and design in various hist styles of decorative art, arch, and furniture; continuation of portfolio development. Prereq: 464 or perm.

ThA 535 Production Design (3 cr, max 12). Design responsibility for a mainstage production. Prereq: perm of dept.

ThA 567-568 The Theatre (3 cr). See J467-J468/J567-J568.

ThA 569 Modern Theatre (3 cr). See J469/J569.

ThA 570 Modern Theatre (3 cr). See J470/J570.

ThA 571-572 Directing (3 cr). See J471-J472/J571-J572.

ThA 584 Adv Stage Lighting (3 cr). See J484/J584.

ThA 596 MFA Exit Project (3 cr). Culminating creative project for MFA candidates. Prereq: perm of dept.

ThA 597 (s) **Practicum** (cr arr). Prereq: perm.

ThA 598 (s) **Internship** (cr arr). Prereq: perm.

ThA 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

THEATRE ARTS (B.F.A.)

The Bachelor of Fine Arts degree is an intense training program for students wishing to pursue a career in the professional theatre. It is divided into four specific areas of study within an area of concentration. Areas of concentration include but are not limited to: acting, directing, technical production, and scenery, lighting, or costume design. Individual courses are chosen by the student and his or her adviser within those categories, allowing the degree to be tailored to the student's specific needs. Student progress is monitored each semester through performance juries and portfolio reviews. Students in the B.F.A. program are encouraged to take internships with professional theatre companies in the region as part of their program of study.

Required course work includes the university requirements (see regulation J-3) and the departmental requirements for the B.S. or B.A., except that an approved related field or established minor is not required for the B.F.A. degree. Additional requirements include:

STUDIO AREA - 15 credits
A minimum of 15 credits is taken in course work directly related to an area of specialization. Studio areas include acting, directing, design, and technical production. Up to 6 credits of ThA 498, Internship, or ThA 395, Summer Theatre II, may be used toward completion of this requirement.

RELATED STUDIO - 9 credits
A minimum of 9 credits is taken in a related studio area that generally pertains directly to the student's area of specialization.

CRAFT AREA - 11 credits
A minimum of 11 credits is taken in courses to develop specific craft skills associated with the studio area.

HISTORY/LITERATURE/CRITICISM - 3 credits
A minimum of 3 credits is taken in history or literature courses that relate directly to the studio area. Courses used to fulfill university and department core requirements may not be used to satisfy this requirement.

THEATRE ARTS (B.A. or B.S.)

Required course work includes the university requirements (see regulation J-3), the general requirements for either the B.A. or B.S. degree, and:

Course	Credits
ThA 100 Theatre Process & Production	3
ThA 102 Theatrical Makeup	2
ThA 103 Intro to Stagecrafts	3
ThA 104 Advanced Stagecrafts	3
ThA 105-106 Basics of Performance	4
ThA 271 Play Analysis	3
ThA 301-302 Visual Theatre & Design	6
ThA 467-468 The Theatre	6
ThA 471 Directing	3
Art 121 Visual Comm & the Design Process	3
Courses in a related field approved by dept chair or established minor	20

Academic Minor Requirements

TECHNICAL THEATRE MINOR

Course	Credits
ThA 103 Intro to Stagecrafts	3
ThA 104 Advanced Stagecrafts	3
ThA 301-302 Visual Theatre & Design	6
ThA 364 Scene Design I	3
ThA 373 Stage Lighting	3
ThA 390 Theatre Practice II	2

THEATRE ARTS MINOR

Course	Credits
ThA 102 Theatrical Makeup	2
ThA 103 Intro to Stagecrafts	3
ThA 104 Advanced Stagecrafts	3
ThA 105-106 Basics of Performance	4
ThA 301-302 Visual Theatre & Design	6
ThA 471-472 Directing	6

THEATRE ARTS PERFORMANCE MINOR

Course	Credits
ThA 105-106 Basics of Performance	4
ThA 272-372 Intermediate Acting	6
Courses chosen from the following	12
ThA 150 Performance Lab (max 3)	
ThA 271 Play Analysis	
ThA 305 Methods in Characterization	
ThA 306 Advanced Acting	
ThA 407 Styles of Acting	
ThA 408 Styles of Acting	
ThA 471 Directing	

Department of Veterinary Science

David P. Olson, Acting Dept. Head (22 Vet. Sc. Bldg.). Faculty: Bruce C. Anderson, Dannie P. Barrett, Marie S. Bulgin, Lynn Churchill, Victor P. Eroschenko, Jerry H. Exon, V. Michael Lane, Stuart D. Lincoln, David P. Olson, Kathleen A. Potter, Robert C. Ritter, Peter J. South, Erik H. Stauber, David Stiller, Alton C. S. Ward, Jerry Zaugg. Affiliate Faculty: William P. Cheevers, Norman L. Gates, John Gorham, Sue W. Ritter, Gordon Woods.

A pre-veterinary medical education program is offered by the Department of Veterinary Science for those students preparing for admission to a college of veterinary medicine. Students with majors other than veterinary science may participate and receive extensive counseling. If, after successful completion of 99 credits, a student majoring in veterinary science is admitted to a recognized college of veterinary medicine, the successful completion of the first year of study at the college of veterinary medicine (at least 33 credits in approved courses) will constitute the senior year toward the degree of B.S.Vet.Sc. at UI. Students under this option must complete their junior year (at least 33 credits) in residence on the Moscow campus.

Support courses in biological sciences, animal disease and health, and electron microscopy are offered to students in other departments of the university.

The Department of Veterinary Science and the Washington, Oregon, Idaho (WOI) Regional Program in Veterinary Medical Education, University of Idaho, offers a program of graduate study leading to an M.S. degree at the UI or the Ph.D. degree at Washington State University. Prospective students for the M.S. degree in veterinary science should have the D.V.M. degree or have completed the requirements for a B.S. degree in biology, bacteriology, animal science, or other biological science. For more detailed information, see the Graduate Bulletin.

VETERINARY SCIENCE

Courses in this subject field that have a WS prefix are open only to students who have veterinary science graduate student status or by permission of the director of the Idaho faculty of the WOI Regional Program in Veterinary Medical Education.

VS 200 (s) **Seminar** (cr arr). Prereq: perm.

VS 203 (s) **Workshop** (cr arr). Prereq: perm.

VS 204 (s) **Special Topics** (cr arr).

VS 205 Vet Medical Orientation (1 cr). Prereq: perm.

VS 299 (s) **Directed Study** (cr arr). Prereq: perm.

VS 371 Anatomy and Physiology (4 cr). Structure and function of tissues and organ systems of domestic and wild animals. Three lec and one 2-hr lab a wk.

VS 389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

VS 400 (s) **Seminar** (cr arr). Prereq: perm.

VS WS401 Gross Anatomy (5 cr). WSU V M 401. Grad cr not granted to those who have DVM degree. Prereq: admission to vet med or grad student in vet sc.

VS WS402 Vet Anatomy (2 cr). WSU V M 402. Grad cr not granted to those who have DVM degree. Prereq: 401.

VS 404 (s) **Special Topics** (cr arr).

VS WS405 Microanatomy (5 cr). WSU V M 405. Grad cr not granted to those who have DVM degree. Prereq: admission to vet med or grad student in vet sc.

VS WS-J408/WS-J508 (s) **WOI Topics** (cr arr). Used for WSU courses that have not been cross-listed. Consult the Time Schedule for courses offered.

VS WS413 Adv Anatomy (3 cr, max 6). WSU V An 413. Prereq: 402 and 405.

VS J427/J527 Transmission Electron Microscopy (3 cr). Discussion and application of basic skills reqd in use of transmission electron microscope, incl simple specimen preparation tech and photographic darkroom skills.

VS WS430 Vet Immunology (3 cr). WSU V M 430. Prereq: major in vet med or grad student in vet sc.

VS WS431 Vet Virology (3 cr). WSU V M 431. Prereq: major in vet med or grad student in vet sc.

VS WS432 Vet Bact (4 cr). WSU V M 432. Prereq: 431 or perm.

VS WS435 Disease Concepts for Wildlife Biologists (3 cr). WSU V Mic 435. Note: Students on the Idaho campus who need this course enroll in VS 446A.

VS WS436 Disease of Commercial Fowl (3 cr). WSU V M 436. One lec and two 3-hr labs a wk. Prereq: 512A, Bact 304.

VS J440/J540 Biological Electron Microscopy (4 cr). Application of biological specimen preparation tech in EM, incl ultramicrotomy and use of specific stains. Registration for 540 requires completion of a written report. Prereq: J427/J527.

VS WS444 Small Animal Pathology (3 cr). WSU V M 444. Prereq: 446B.

VS WS445 Pathology I (3 cr). WSU V M 445. Prereq: 371 or equiv, 405.

VS 446A Diseases of Wild Birds and Mammals (2 cr). See WLF 446.

VS WS446B Pathology II (6 cr). WSU V M 446. Prereq: 445.

VS WS449 Pathology of Large Animal Diseases (3 cr). WSU V M 449. Prereq: 446B.

VS WS451 Veterinary Parasitology (5 cr). WSU V M 451. Prereq: perm.

VS 452 Diseases and Care of Lab Animals (3 cr). Alt/yrs. Vertebrate animal species commonly employed as lab animals; diseases, sanitation, environmental control, and general care. Two lec and one 2-hr lab a wk.

VS WS454 Special Animal Medicine (3 cr). WSU V M 454. Prereq: soph standing in vet med.

VS WS471 Chem Pharmacology (4 cr). WSU Phar 471. Coreq: 473B.

VS WS472 Pharmacodynamics (5 cr). WSU Phar 472. Prereq: 471 or perm.

VS 473A Herd Health Mgt (2 cr). Impact of immunity, sanitation, housing, chemotherapy, quarantine, and stress on livestock disease prevention. Prereq: AnSc 205 and/or AnSc 305 and jr standing.

VS WS473B Pharmacology Lab (1 cr). WSU Phar 473. Coreq: 471.

VS 474 Animal Disease (3 cr). Causes, transmission, susceptibility, symptoms, diagnosis, prevention, and control of major infectious diseases and parasites of domestic animals. Prereq: 371, Bact 250.

VS 481 Virology (3 cr). See Bact 481.

VS 483 Virology Lab (1 cr). Same as Bact 483. Familiarization with tissue culture tech used in virology; infection of cultures with selected viruses; observation and eval of infected cultures by different diagnostic tech. One 3-hr lab a wk. Prereq or coreq: 481.

VS WS490 Prin of Animal Research (2 cr).

VS 499 (s) **Directed Study** (cr arr). Prereq: perm.

VS 500 Master's Research and Thesis (cr arr).

VS 501A (s) **Seminar** (cr arr). Prereq: perm.

VS WS501B Phil of Pharmacology and Toxicology (1 cr). WSU P/T 501.

VS 502 (s) **Directed Study** (cr arr). Prereq: perm.

VS 504 (s) **Special Topics** (cr arr).

VS WS505 Prin of Toxicology (3 cr). WSU P/T 505. Prereq: grad standing and perm.

VS WS506 Prin of Pharmacology (4 cr). WSU P/T 506.

VS WS507 Pharmacodynamics (5 cr). WSU Phar 472.

VS WS508 (s) **WOI Topics** (cr arr). See J408/J508.

VS WS510A Pharmacokinetics (2 cr). WSU P/T 510. Alt/yrs.

VS WS510B Adv Food Chem (3 cr). WSU FSHN 510. Alt/yrs.

VS WS511A Applied Anatomy of Large Animals (2 cr). WSU V M 511. Prereq: 402.

VS WS511B Selected Topics in Toxicology (1-4 cr). WSU P/T 511.

VS ID512A Prin of Comparative Pathology (4 cr). Alt/yrs. Gross and micro pathology, histological tech, neoplasia. Prereq: Zool 324, Zool 427 or equiv, or perm.

VS WS512B Applied Anatomy of Small Animals (2 cr). WSU V M 512. Prereq: 402.

VS WS512C Selected Topics in Pharmacology (1-4 cr). WSU P/T 512.

VS WS513 Adv Neuroanatomy (3 cr). WSU V An 513. Alt/yrs.

VS WS517 Neuroscience (4 cr). WSU V M 517. For nonvet med majors.

VS WS518 Physiology II (5 cr). WSU V M 518.

VS WS520 Tech in Mammalian Physiology (2 cr). WSU V Ph 520. Alt/yrs.

VS WS521 Cardiorespiratory Systems (3 cr). WSU V Ph 521. Alt/yrs.

VS WS525 Instrumental Methods in Pharmacology/Toxicology (2 cr). WSU P/T 525. Prereq: Chem 372 or perm.

VS 527 Transmission Electron Microscopy (3 cr). See J427/J527.

VS WS529 Neurochemistry (3 cr). WSU V Ph 529. Alt/yrs. Prereq: biochem or perm.

VS WS531A Pharmacology and Toxicology I (5 cr). WSU V M 531. Prereq: 518.

VS WS531B Adv Immunology and Immunogenetics (3 cr). WSU V Mic 531. Alt/yrs. Prereq: Bact 409, or equiv, or perm.

VS WS532A Metabolism of Drugs and Toxins (3 cr). WSU P/T 532.

VS WS532B Virology (4 cr). WSU V Mic 531. Alt/yrs. Prereq: 481 and Biochem 380 or equiv, or perm.

VS WS533 Pharmacology and Toxicology II (4 cr). WSU V M 533.

VS WS534 Viral and Rickettsial Disease of Animals (3 cr). WSU V Mic 534. Alt/yrs. Prereq: 481, Bact 409 or equiv.

VS WS535A Adv Readings in Vet Microbiology (1 cr, max arr). WSU V Mic 535. Prereq: sr in vet med or grad student in vet sc.

VS WS535B Pathophysiology of Blood (3 cr). WSU V Ph 535. Alt/yrs.

VS WS536 Diagnostic Microbiologic Conference (1 cr, max arr). WSU V Mic 536.

VS WS537A Diagnosis of Viral and Rickettsial Diseases of Domestic Animals (3 cr). WSU V Mic 537. Prereq: 481, Bact 304.

VS WS537B Neuropeptides (3 cr). WSU P/T and VPh 537.

VS 540 Biological Electron Microscopy (4 cr). See J440/J540.

VS 541 Scanning Electron Microscopy (3 cr). Theory and prin of scanning electron microscopy as investigative tool; incl operation and maintenance of electron microscope, specimen prep, and photographic darkroom procedure.

VS WS542A Adv Diagnostic Pathology (1-4 cr, max 8). WSU V Pa 542. Prereq: 445, 446B, or equiv, or perm.

VS WS42B Diseases of Wildlife (2 cr). WSU V M 542. Prereq: jr standing in vet med.

VS WS543 Lab Animal Pathology (3 cr, max 6). WSU V Pa 543. Alt/yrs. Prereq: 454.

VS WS544 Immunopathology (3 cr). WSU V Pa 544. Alt/yrs. Prereq: a course in general pathology or an adv course in immunology.

VS WS545A Mechanisms of Disease (5 cr). WSU V Pa 545.

VS WS545B Toxicology of Insecticides (3 cr). WSU Entom 545. Alt/yrs.

VS WS546 Adv Readings in Vet Parasitology (1 cr, max arr). WSU V Pa 546. Prereq: grad or adv undergrad status.

VS WS548 Seminar in Experimental Pathology (1 cr, max arr). WSU V Pa 548.

VS WS560 Molecular Genetics (3 cr). WSU Micro 560. Prereq: a course in genetics or microbiol.

VS WS561 Receptorology (2 cr). WSU P/T 561. Prereq: a course in pharmacology.

VS WS563 General Biochem (3 cr). WSU BC/BP. 563 Prereq: one course each in analyt chem and organic chem. Note: Students on the Idaho campus enroll in Biochem J481/J541 or Chem J481/J541.

VS WS564 General Biochem (3 cr). WSU BC/BP 564. Prereq: Biochem J481/J541 or Chem J481/J541. Note: Students on the Idaho campus enroll in Biochem J482/J542 or Chem J482/J542.

VS WS565 Teratogenesis, Mutagenesis, and Carcinogenesis (2 cr). WSU P/T 565.

VS WS566 Target Organ Toxicity (2 cr). WSU P/T 566.

VS WS567 Toxicologic Testing Strategies (2 cr). WSU P/T 567.

VS WS570 Adv Immunology (3 cr). WSU Micro 570. Prereq: Biochem J481/J541 or Chem J481/J541, and a course in immunology.

VS WS587 Hospital Rotation (3 cr, max 6). WSU V MS 587. Prereq: DVM degree.

VS WS592 (s) **Seminar** (1 cr, max arr). V An, V Ph. V MS, V Mic, V Pa 592.

VS WS597 Pharmacology and Toxicology Seminar (1 cr, max 4). WSU P/T 597. Graded P/F.

VS 598 (s) **Internship** (cr arr). Prereq: perm.

VETERINARY SCIENCE (B.S.Vet.Sc.)

Students in the College of Agriculture who successfully complete a minimum of 99 credits with a major in animal sciences, bacteriology, or veterinary science, who complete all major requirements in the specified major, and who are admitted to a recognized college of veterinary medicine will, upon successful completion of the first year at the college of veterinary medicine (at least 33 credits), be awarded the appropriate UI baccalaureate degree (B.S.An.Sc., B.S.Bact., or B.S.Vet.Sc.). Students who choose this option must be enrolled for their junior year (at least 33 credits) in the major in which they will receive their degree.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
VS 205 Vet Medical Orientation	1
Biochem 380, 382 Introductory Biochemistry & Lab	4
Biol 201 Intro to the Life Sciences	4
Biol 202 General Zoology	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5

Chem 277, 278 Organic Chem I & Lab 4
Math 111 Finite Math or 140 Pre-calculus Algebra & Analytic Geom or 180 Analytic Geom & Calculus I 3-4
Phys 113-114 General Physics 6
Advanced writing electives 3
Agricultural electives 18-20
Approved electives (1st yr of vet med) 33
Humanities and social sciences electives (a minimum of 6 credits in each area) 14
Speech electives 2
Electives in total 132 cr for the degree . . . . . --

Division of Vocational Teacher and Adult Education

James A. Bikkie, Div. Director (210 Educ. Bldg.).

Business Education Faculty: Geraldine F. Dacres, John P. Holup, Martha C. Yopp.

Industrial Education Faculty: James M. Cassetto, Melvin J. Pedras (chair), John A. Ristow.

Vocational Education Faculty: James A. Bikkie (vocational teacher education), Glenn A. Edmison (trade and industrial education), Thomas E. Hipple (counselor education), John P. Holup (distributive education), Virginia Junk (home economics), Jack J. Kaufman (vocational special needs), Laura J. Miller (home economics), Douglas A. Pals (agricultural education), Louis E. Riesenberg (agricultural education), G. Cleve Taylor (adult education), Gerald L. Tuchscherer (guidance and counseling), Martha C. Yopp (business education).

The professional degree majors in vocational education provide both the opportunity and skills to enable vocational teachers to work effectively with today's youth and adults. Students benefit from the realistic relationship between course work and occupational competencies prospective teachers have acquired, or are acquiring, in business, industry, farming, or the home.

Preservice teaching degree majors are offered in: agricultural education (B.S.Ag.Ed., College of Agriculture); business education (B.S.Bus.Ed), distributive education (B.S.Bus.Ed.), office occupations education (B.S.Bus.Ed.), and trade and industrial/technical education (B.S.Ed.) in the College of Education; and home economics education (B.S.H.Ec.) in the College of Agriculture.

A nonteaching major is available in office administration (B.S.O.Ad.) through the College of Education for students who wish to capitalize on their secretarial and office skills.

The undergraduate program in industrial education includes two degree programs. One is the Bachelor of Technology degree in industrial technology, which prepares students for technical and professional careers in industry or business. The B.S.Ed. degree, with majors in industrial education or technical education, provides opportunities for students to develop skills in several technical areas and also prepares them for certification as industrial education or technical education teachers in the secondary schools.

Sequential inservice undergraduate trade and industrial/technical education degree courses, as well as selected graduate vocational courses, are offered each semester at area vocational/technical schools located at Coeur d'Alene, Lewiston, Boise, and Twin Falls.

The graduate program is designed with flexibility to permit each student to pursue an individualized concentration in vocational education. Certification regulations permit permanent certification for certain occupational subjects taught at the undergraduate level. The graduate program offers these teachers an opportunity to prepare for other staff responsibilities. Among the various career objectives a graduate student may choose are positions as curriculum coordinator, cooperative coordinator, supervisor of instruction, and administrator of vocational programs. In addition to seeking these local staff opportunities, many graduates of the vocational education program prepare for master-teacher assignments at the secondary level or as postsecondary (two-year college) instructors.

The graduate degrees of Master of Science, Master of Education, and Specialist in Vocational Education (sixth year) are offered through the division. Doctoral programs in the division are offered under the major in "education."

A student with a baccalaureate degree from an approved college or university with a major in one of the following related areas may apply for graduate study in vocational education: adult education, agriculture, business occupations, guidance and counseling, health occupations, home economics, industrial arts, marketing and distributive education, technology (engineering), trade and industrial/technical education, or vocational special needs.

A student with a baccalaureate degree with a major in a nonrelated area must have work experience appropriate to a related area in order to apply for graduate study in vocational education and/or (1) certification by the State Division of Vocational Education as a vocational teacher in Idaho, (2) baccalaureate degree in a recognized vocational field (3), a baccalaureate degree, occupational experience, and current employment as a vocational teacher, or (4) a baccalaureate degree, occupational experience, and current work towards employment as a vocational teacher—with approval of the division's graduate committee.

Of special interest at the graduate level is the opportunity to concentrate studies in adult education, guidance and counseling, and vocational special needs.

Courses

BUSINESS EDUCATION

BusEd 101-102-103 Typewriting I-II-II (2 cr). BusEd 101: dev of skill sufficient for personal use. BusEd 102: speed and control to occupational competence levels. BusEd 103: occupational competence, incl correspondence, manuscripts, legal documents, and special problems.

BusEd 104 Keyboarding (1 cr). Microcomputer keyboarding skills dev. Accelerated 9-wk course. Two lec and 2 hrs of lab a wk.

BusEd 115-116 Shorthand I-II (4 cr). BusEd 115: theory of Gregg shorthand simplified. BusEd 116: dictation and intro to transcription.

BusEd 185 Machine Calculation (2 cr). Operation of commonly used office adding-calculation machines for the solution of bus problems.

BusEd 200 (s) **Seminar** (cr arr). Prereq: perm.

BusEd 203 (s) **Workshop** (cr arr). Prereq: perm.

BusEd 204 (s) **Special Topics** (cr arr).

BusEd J210/J410 Alpha Shorthand (1 or 2 cr). Alphabetic shorthand theory, practice, dictation, and transcription (1 cr, ½ sem); comparative analysis of alphabetic shorthand systems and methods of teaching alpha shorthand (1 cr, ½ sem). Additional projects/assignments reqd for upper-div cr. Two lec and 2 hrs of lab a wk.

BusEd 271 Shorthand III (3 cr). Speed dev. Prereq: perm.

BusEd 299 (s) **Directed Study** (cr arr). Prereq: perm.

BusEd C312 Local Govt Records Mgt (2 cr)(C). Primarily for city clerks and other city officials. Records mgt, microfilming, filing, and filing equipment useful in city govt record-keeping functions; legal requirements of destruction and disposal of city records in Idaho; practice of a number of city officials in Idaho in indexing city council meetings and maintaining city council files.

BusEd 313 Office Mgt (2 cr). Appl of generally accepted prin to admin services.

BusEd 395 Administrative Office Procedures (3 cr). Administrative office procedures, components, and responsibilities.

BusEd 396 Information Processing (3 cr). Information processing concepts and applications.

BusEd 400 (s) **Seminar** (cr arr). Prereq: perm.

BusEd 403 (s) **Workshop** (cr arr). Prereq: perm.

BusEd 404 (s) **Special Topics** (cr arr).

BusEd 410 Alpha Shorthand (1 or 2 cr). See J210/J410.

BusEd J415/J515 Microcomputer Applications (2-3 cr). Computer applications course designed primarily for office admin and business teacher ed students; incl hands-on exper using word processing, spreadsheet, and data base mgt software packages; incl some methodology, curriculum dev, and classroom mgt tech. If taken for 2 cr involves learning and applying the software; if taken for 3 cr incl sizable curriculum dev project. Grad students do an adv project. Three lec and 2 hrs of lab a wk.

BusEd 418 Teaching Consumer Econ (2 cr). Methods and materials for teaching consumer econ. Prereq: Econ 151 or 100 or equiv.

BusEd J419/J519 Word Processing (3 cr). Word processing concepts and applications for non-office occupation majors. Additional projects/assignments reqd for grad cr. Three lec and 3 hrs of lab a wk.

BusEd 491-492 Teaching Business Ed I-II (2-3 cr). Methods and materials. BusEd 491: office occupations. BusEd 492: basic bus subjects. Prereq: perm.

BusEd 493 Teaching Distributive Ed (3 cr). Same as VocEd 493. Selection, org, and presentation of subject matter pertaining to preparatory distributive ed progs at the secondary-school level; emphasis on teaching methods and tech.

BusEd 494 Distributive Ed Materials (2 cr). Same as VocEd 494. Exam, dev, and appl of instructional materials in distributive ed.

BusEd 495 Supervising DECA Programs (2 cr). Same as VocEd 495. Role of DECA in distributive ed; org and implementation of youth activities.

BusEd 496 Directed Work Experience (2 cr). Same as VocEd 496. Job analysis and descriptions; weekly work-experience reports and analysis coordinated with problems related to the student's employment in an approved distributive occupation. Prereq: perm.

BusEd 497 Coordination Tech (3 cr). Same as VocEd 497. Problems of coordinator in cooperative part-time prog; guidance and selection; placing students in work stations; assisting job adjustment; developing training prog.

BusEd 498 (s) **Practicum in Tutoring** (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

BusEd 499 (s) **Directed Study** (cr arr). Prereq: perm.

BusEd 500 Master's Research and Thesis (cr arr).

BusEd 501 (s) **Seminar** (cr arr). Prereq: perm.

BusEd 502 (s) **Directed Study** (cr arr). Prereq: perm.

BusEd 503 (s) **Workshop** (cr arr). Prereq: perm.

BusEd 504 (s) **Special Topics** (cr arr).

BusEd 515 Microcomputer Applications (2-3 cr). See J415/J515.

BusEd 519 Word Processing (3 cr). See J419/J519.

BusEd 520 Office Occupations Subjects (3 cr). Methods and materials; achievement standards; review of lit and research. Prereq: perm.

BusEd 521 Basic Business Subjects (3 cr). Methods and materials: achievement standards; review of lit and research. Prereq: perm.

BusEd 522 Issues in Business Ed (3 cr). Philosophies, objectives, trends, and organization patterns of bus ed in secondary schools. Prereq: perm.

BusEd 523 Adult Distributive Ed (3 cr). Establishing and developing adult prog in distributive ed. Prereq: perm.

BusEd 524 Issues in Distributive Ed (3 cr). Same as VocEd 524. Philosophies, objectives, trends, and organization patterns of distributive ed in secondary schools. Prereq: perm.

BusEd 597 (s) **Practicum** (cr arr). Prereq: perm.

BusEd 598 (s) **Internship** (cr arr). Prereq: perm.

BusEd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

INDUSTRIAL EDUCATION

IEd ID130 Basic Electronics I (3 cr). For beginning students with no exper in electricity; properties of resistors, capacitors, and inductors in electrical circuit; basics of power distribution system and house wiring; use of meters and oscilloscopes in lab. Three 1-hr lec and one 2-hr lab a wk. Enrollment per section limited to lab stations available. Knowledge of algebra recommended.

IEd ID131 Basic Electronics II (3 cr). Continuation of 130. Fundamentals of diodes, power supplies, transistor amplifiers, oscillators, and communication devices. Three 1-hr lec and one 2-hr lab a wk. Enrollment per section limited to lab stations available. Prereq: 130 or equiv; knowledge of algebra recommended.

IEd R132 Basic Electronics II (3 cr). Continuation of IEd 131. Basics of AC circuits; reactance, impedance, power, time constraint, resonance, coupling networks, and filters. Prereq: 131 or perm.

IEd R135 Elec Systems (3 cr). See ET/EE R135.

IEd 140 Wood Technics (3 cr). Basic fabricating skills in machine and tool processing of wood material and products; tech info on a wide range of wood and allied products; selection and fabrication of wood products. Enrollment per section limited to lab stations available.

IEd 170 Wood Product Design and Fabrication (3 cr). Prin of design appl to a wide variety of wood products and fabrication processes; furniture, cabinetwork, laminated products, molding, wood turning, silicon rubber mold production. Enrollment per section limited to lab stations available. Prereq: 140.

IEd 200 (s) **Seminar** (cr arr). Prereq: perm.

IEd 203 (s) **Workshop** (cr arr). Prereq: perm.

IEd R210 Intro to Industrial Efficiency (3 cr). Industrial engr tech and approaches for supervisors.

IEd R211 Intro to Quality Assurance (3 cr). Overview; emphasis on nuclear industry; planning, managing, conducting, and evaluating quality assurance prog.

IEd R212 Elements of Quality Assurance (3 cr). Continuation of 211.

IEd R215 Electronic Components (3 cr). See ET/EE 215.

IEd R216 Interp of Engr Drawings and Specs (3 cr). System of conveying tech directions by means of engr drawings and specs; dev of an evaluation capability for approving and incorporating these directions into QA documents and activities.

IEd R217 Prin of Dimensional Inspection (3 cr). Concepts, prin, classification, and control in dimensional inspection for quality assurance.

IEd 218 Power Technology (3 cr). Internal-external combustion engines; solar, wind, water, biomass, and nuclear energy; lab exper in generating, transporting, and converting energy forms. Enrollment per section limited to lab stations available.

IEd R222 Mech Engr Drawing (2 cr). See ET/ME 222.

IEd 235 Comm Electronics (3 cr). See ET/EE 235.

IEd 236 Industrial Electronics (3 cr). Continuation of 235. Theory and test procedures common to industrial control and automatic processing; computer electronics. Prereq: 235.

IEd 237 Integrated Circuits and Semiconductor Devices (3 cr). Basic theory and application of field effects transistors, integrated circuits, op-amps, optoelectronic devices, and miscellaneous semiconductor devices. Enrollment per section limited to lab stations available. Prereq: 130, 131, or equiv.

IEd 238 Digital Electronics (3 cr). Basic logic circuits used in digital devices; incl AND/OR gates, NAND, NOR, Exclusive-or gates, and application of the gates to construct flip-flops, counters, adders, and converters; incl characteristics of logic families and memory devices. Enrollment per section limited to lab stations available. Prereq: 237 or equiv.

IEd R240 Electronics and Control Systems (3 cr). See ET/EE 240.

IEd R245 Minicomputer Fundamentals (3 cr). See ET/EE 245.

IEd 250 General Metals (3 cr). Materials, machines, and fabricating processes; methods and tech of fabricating products from sheet metal, wrought iron, bar stock; prin of layout, forging. Enrollment per section limited to lab stations available.

IEd 251 Plastic (2 cr). Materials and industrial methods of fabrication; vacuum, blow, and pressure forming; laminating; extrusion; plastisol and injection molding.

IEd 253 Machining Technology (3 cr). Use of machine tools and selected processes in fabricating metal and metal products. Enrollment per section limited to lab stations available.

IEd 254 Casting Technology (2 cr). Theory and practice of casting metals, incl sand-, shell-, lost-wax process, plaster-, full mold, and CO_2 casting, and core making. Enrollment per section limited to lab stations available.

IEd R260 Statics and Dynamics (3 cr). Study of forces on structures at rest or moving at uniform or non-uniform velocity; basic concepts of stress analysis, machine design, hydraulics, and structure design.

IEd R261 Strength of Materials for Mech Technology (3 cr). Relationship between loads applied to non-rigid bodies and the resultant internal forces and induced deformations. Note: Will not substitute for engr degree requirement.

IEd R262 Piping Design (3 cr). Piping schedules, pressure ratings, specifications, pipe stress calculations, and hanger selection; system component selection and specification. Prereq: 261, 336.

IEd R263 Structures and Concrete Design (3 cr). Column and beams design and selection; use of steel construction handbook joint design; simple concrete slab and wall design. Note: Will not substitute for engr degree requirement.

IEd R265 Computer Aided Design/Drafting (3 cr). Appl of fundamental prin of computer aided design and drafting; upon completion student will demonstrate basic skills in file creation, digitizing, plotting, scaling, info retrieval, and interactive problem solving in mech, elec, arch, and piping drawing creation.

IEd 270 Tech Competence (1-12 cr, max 12). Cr awarded for tech competence gained from experience in area of concentration for degree being sought. IEd 270, 370, and 470 are graded P/F and are credited to the student's prog as follows: 1/3 with soph-level standing and completion of 15 cr of formal course work in the prog; 1/3 upon completion of the jr yr; and 1/3 upon completion of all other degree requirements. Max 36 cr in any combination of 270, 370, 470, 490, 491, and 492.

IEd 280 Bldg Constr Technology (3 cr). Systems approach to bldg constr technology, incl footings, foundations, floor, wall, ceiling and roof systems; bldg materials and their use in constr. Enrollment per section limited to lab stations available. Prereq: 140, 170.

IEd 299 (s) **Directed Study** (cr arr). Prereq: perm.

IEd 300 Finishing Materials and Methods (2 cr). Alt/yrs. Methods and materials for finishing wood, metal, composition board, plastics, and other industrial products. Enrollment per section limited to lab stations available.

IEd 303 Adv Machining Technology (2-3 cr). Practice in fabrication of metals beyond that covered in 253-254; extra cr for indiv project. Charge for materials payable at Controller's Office. One lec and one 3-hr lab a wk. Enrollment per section limited to lab stations available. Prereq: 254 or perm.

IEd 310 Maintenance of Tools and Equipment (3 cr). Selection, care, and maintenance of hand tools and machines common to industrial arts and vo-tech shops. Prereq: 170 or perm.

IEd 315 Industrial Design (2 cr). Alt/yrs. Planning, designing, and fabricating products from a variety of industrial materials; period furniture and prin of product design. Prereq: 170 or perm.

IEd R320 Electronic Drafting (3 cr). See ET/EE 320.

IEd 328 Computer Applications for Industrial Ed (3 cr). BASIC programming and industrial ed software; applications incl computer numerical control, computer aided drafting, computer aided manufacturing, and robotics. Enrollment per section limited to computer stations available. Prereq: intro computer course or perm.

IEd R330 Industrial Instrumentation I (3 cr). See ET/EE 330.

IEd R331 Industrial Instrumentation II (3 cr). See ET/EE 331.

IEd R332 Selection and Design of Machine Elements (3 cr). See ET/ME 332.

IEd R333 Computer Electronics (3 cr). See ET/EE 333.

IEd R334 Energy Analysis of Machines (3 cr). See ET/ME 334.

IEd R335 Materials Appl (3 cr). See ET/ME 335.

IEd R336 Fluid Systems Design (3 cr). See ET/ME 336.

IEd R337 Tool Design (3 cr). See ET/ME 337.

IEd R340 Nondestructive Exam Tech and Methods (3 cr). Intro to nondestructive testing, liquid penetrant exam, magnetic particle exam, and radiography in modern industry.

IEd 350 Alternative Energy Technology (3 cr). Survey course for both nonmajors and majors in industrial ed who wish to explore sources and industrial and commercial appl of alternate forms of energy. Enrollment per section limited to lab stations available.

IEd 360-361 Graphic Arts (3 cr). Study of information and skills relative to graphic reproduction; using tools, materials, and processes pertaining to the printing-graphic arts industry. Enrollment per section limited to lab stations available.

IEd R362 Environmental Health (1 cr). Types, mechanism, and magnitude of toxicity as applied to fire protection and fire suppression, incl breathing air and protective clothing.

IEd R363 Fire Protection Safety (1 cr). Basic industrial safety practices as applied to fire protection services and inspection of facilities.

IEd R364 Hazardous Materials (1 cr). Handling, transportation, and storage of hazardous materials; how to protect and suppress fires that occur in hazardous materials.

IEd 365 Industrial Supervision (2-3 cr). Alt/yrs. Prin and practices; duties and responsibilities of plant supervisors; use of rating scales and other employee eval devices; supervisory methods used in on-the-job and in-plant training prog; methods of conducting job analysis; prep and use of job descriptions.

IEd R366 Fire Dept Organization and Mgt (3 cr). Theory of fire dept org for full-time, part-time, and volunteer depts; mgt philosophies, dealing with the public, assessing and defining goals, budgeting, codes and standards.

IEd R368 Fire Investigation (3 cr). Investigation tech in determining the source and contributing factors in fire losses; analysis of hist as it relates to present-day codes and standards. Prereq: perm.

IEd R369 Airport Fire Protection (3 cr). Prin and practices of fire protection and fire suppression for small- to medium-sized municipal and private airports.

IEd 370 Tech Competence (1-6 cr, max 12). See IEd 270.

IEd 375 Heat Treatment of Metals (2 cr). Properties of metals, annealing and normalizing, hardening, tempering, surface hardening, stress relief of welds; equipment and methods. One lec and one 3-hr lab a wk. Enrollment per section limited to lab stations available. Prereq: perm.

IEd 380 High Technology Manufacturing (3 cr). Overview; adv computer aided drafting, computer aided manufacturing, computer numerical control, and robotics, with lab applications. Enrollment per section limited to lab stations available. Prereq: 328 or equiv.

IEd 400 (s) **Seminar** (cr arr). Prereq: perm.

IEd R401 Prin of Quality Assurance (3 cr). Prep for Quality Engr Certificate Exam offered by American Society for Quality Control.

IEd R402 Prin of Reliability Assurance (3 cr). Dev of prin and methods of analyzing, testing, and predicting probability of successful performance of parts, components, and systems.

IEd 403 (s) **Workshop** (cr arr). Prereq: perm.

IEd 405 Adv Woodwork (3 cr). Alt/yrs. Design and constr; use of fixtures, jigs, and templates; structural details of cabinet constr; fastening devices; materials and processes. Enrollment per section limited to lab stations available. Prereq: 140, 170, or perm.

IEd 410 Metalworking Design and Manufacturing (3 cr). Materials, tools, and processes of metal technology; students may specialize in one or several areas. Enrollment per section limited to lab stations available. Prereq: 250, 253, 254, 303, or perm.

IEd 420 Industrial Ed Curriculum and Evaluation (3 cr). Methods and tech; curriculum dev, use, and application in industrial arts ed; eval methods, tech use of objective and subjective testing for ed and industry.

IEd R424 Computer Hardware Organization and Control (3 cr). Arithmetic and related hardware; timing and control of computers; description of computer hardware/software interface.

IEd 425 Adv Electricity-Electronics (3 cr). Independent readings, research, and lab experimentation. Enrollment per section limited to lab stations available. Prereq: 235, 236, or perm.

IEd R430 Systems Safety Analysis (3 cr). Prin of system safety; analyt trees; hazard and risk analyses; accident investigation.

IEd R431-R432 Reactor and Nuclear Instruments (3 cr). Nuclear electronics, incl detection, appl of instruments for reactor control and for experimental data acquisition.

IEd R434 Quality Assurance Organization and Mgt (3 cr) Industrial mgt prin applied to effective econ control of quality assurance activities.

IEd R435 Industrial Transportation Safety (3 cr). Prin of safety in all aspects of industrial transportation; roads, railroads, air, water, pipeline.

IEd R436 Quality Assurance Appl (3 cr). Prin of quality assurance applied in a morphological manner to industrial operations.

IEd R445 Digital Process Control (3 cr). Appl of digital computers for process control; use of digital control circuits and comparison of digital and analog signals; multiple computer control.

IEd 450 Industrial Safety (3 cr). Same as VocEd 450. Org and admin of safety prog in industry and vo-tech ed shops; materials, research, lit, methods, and tech for industrial safety ed.

IEd 451 School Shop Planning and Admin (3 cr). Same as VocEd 451. Tech shops and labs; selecting, purchasing, and storage of shop supplies and equipment; organizing shop personnel system, safety prog, and records.

IEd R452 Fire Protection System Design (3 cr). Methods and practical design of fire protection systems (water, gas, chemicals); testing amd maintenance of systems. Prereq: perm.

IEd R456 Industrial Fire Protection Hazards (3 cr). Investigation, analysis, and protection of industrial processes that require specialized fire protection. Prereq: perm.

IEd R458 Thermodynamics of Fire (3 cr). Thermodynamic properties of fire; dev of fire resistance testing; radiation, convection, and heat transfer of fires; eval of effects of fire suppression of fires. Prereq: perm.

IEd R464 Nuclear Reactor Codes and Standards (3 cr). See NE 462.

IEd 470 Tech Competence (1-6 cr, max 12). See 270.

IEd 472 Industrial Ed Methods (3 cr). Same as VocEd 472. Dem, lec, and problem solving; prep and use of instructional aids, indiv instruction sheets, and programmed instructional materials.

IEd 480 Hist and Phil of Industrial Ed (3 cr). Dev of voc and general ed phases of industrial ed; comparative and conflicting philosophies; leaders and their contributions.

IEd 490-491-492 Adv Tech Competence (1-12 cr, max 36). Supervised practicum or on-the-job experience designed to enable the student to gain further depth in tech competence as well as in current industrial technology. Graded P/F. Max 36 cr in any combination of 270, 370, 470, 490, 491, and 492.

IEd 499 (s) **Directed Study** (cr arr). Prereq: perm.

IEd 500 Master's Research and Thesis (cr arr).

IEd 501 (s) **Seminar** (cr arr). Prereq: perm.

IEd 502 (s) **Directed Study** (cr arr). Prereq: perm.

IEd 503 (s) **Workshop** (cr arr). Prereq: perm.

IEd 510 Professional Problems (1-3 cr, max 6). Prereq: perm.

IEd 511 Tech Problems (1-3 cr, max 6). Prereq: perm.

IEd 530 Admin and Supervision of Industrial Ed Programs (3 cr). Prin and practices; secondary-school and post-high-school levels; federal and state legislation concerning industrial ed prog.

IEd 540 Instructional Media for Industrial Ed (3 cr). Prep and use of new industrial media and systems for industrial-tech arts and vo-tec subjects.

IEd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

VOCATIONAL TEACHER EDUCATION

MAJORS: Trade and industrial/technical education, and vocational-technical education majors fulfill their major requirements from the courses listed in this section.

RELATED FIELDS: For those course offerings in vocational teacher education, see agricultural education, guidance and counseling, and home economics.

VocEd 200 (s) **Seminar** (cr arr). Prereq: perm.

VocEd 203 (s) **Workshop** (cr arr). Prereq: perm.

VocEd 204 (s) **Special Topics** (cr arr).

VocEd 270 Tech Competence I (1-15 cr, max 15). Cr may be awarded to students who are recommended by the State Dept of Voc Ed, in cooperation with UI, as qualified to teach in the tech phase of a voc subject matter. Cr for tech competency will not qualify toward fulfilling sr residency requirements. Grades for successful completion of 270, 370, and 470 will be entered as P (pass). Prereq: 9 cr in residence in voc teacher ed.

VocEd 299 (s) **Directed Study** (cr arr). Prereq: perm.

VocEd J351/J551 Prin and Philosophy of Voc Ed (2-3 cr). VocEd 351 same as AgEd 351. The interpretation of phil, social, and econ factors that influence voc ed; current issues

and trends. Students who take course for 3 cr or at the grad level are reqd to complete additional assignments, papers, and/or presentations.

VocEd 370 Tech Competence II (1-15 cr, max 15). See 270. Prereq: completion of jr yr in voc teacher ed.

VocEd 400 (s) **Seminar** (cr arr). Prereq: perm.

VocEd 403 (s) **Workshop** (cr arr). Graded P/F. Prereq: perm.

VocEd 404 (s) **Special Topics** (cr arr).

VocEd J405/J505 Professional Development (cr arr). Professional dev and enrichment of certificated school personnel. Additional projects/assignments reqd for grad cr.

VocEd 420 Eval in Voc Ed (3 cr). Methods and tech; construction and use of objective tests, performance tests, rating scales, check lists.

VocEd 443 Intro to Special-Needs Ed (1 cr). History, background, and concept of special needs.

VocEd 444 Identifying Special-Needs Students (2 cr). Emphasis on methods of assessment and eval. Prereq or coreq: 443.

VocEd 450 Industrial Safety (3 cr). See IEd 450.

VocEd 451 School Shop Planning and Admin (3 cr). See IEd 451.

VocEd 453 Task Analysis (1 cr). Intro to task analysis methods, tech, and procedures.

VocEd 454 Occupational and Job Analysis (2 cr). Methods, tech, and procedures in analyzing occupations and jobs into their basic elements. Prereq: 453.

VocEd 460 Occupational-Ed Info (3 cr). See Couns 460.

VocEd 462 Voc Ed Curriculum (3 cr). Prin of occupational analysis and course constr; subject content; curriculum patterns; trends and new concepts.

VocEd 464 Voc Guidance (3 cr). See Couns 464.

VocEd 470 Tech Competence III (1-15 cr, max 15). See 270. Prereq: enrollment in the final sem of the degree prog in voc teacher ed.

VocEd 471 Practicum: Voc Ed (3-9 cr, max 9). Offered each nine wks. Supervised teaching in approved vocational programs at secondary schools and area voc-tech schools. Graded P/F. Prereq: Ed 314, 445, or VocEd 462, 472, GPA of 2.25, and perm of dept. (Submit appl via director of voc and adult ed to director of clinical experiences in teacher ed.)

VocEd 472 Voc Ed Methods (3 cr). See IEd 472.

VocEd 473 Intro to Adult Ed (1-2 cr)(C). Orientation to adult ed; adult populations, prog, and importance. Registration of 2 cr requires prep of a research paper.

VocEd C474 Psych of Adult Learners (3 cr). Psych, social, and physiological characteristics of adult learners; relationships to family, friends, and fellow citizens.

VocEd 475 Prog Dev in Adult Ed (3 cr). Adult ed prog dev, org, and instructional prog; problems and trends.

VocEd J476/J576 Comm Skills for Teachers of Adults (3 cr). Dev of comm skills for use with culturally diverse adults; verbal and nonverbal tech for improving comm skills.

VocEd 480 Adv Tech Competence (1-6 cr, max 6). Experiences to enable the indiv to gain depth in tech competency beyond the basic certification requirements, and to maintain skills in harmony with current industrial practice. Prereq: perm.

VocEd 493 Teaching Distributive Ed (3 cr). See BusEd 493.

VocEd 494 Distributive Ed Materials (2 cr). See BusEd 494.

VocEd 495 Supervising DECA Programs (2 cr). See BusEd 495.

VocEd 496 Directed Work Experience (2 cr, max 7). See BusEd 496.

VocEd 497 Coordination Tech (3 cr). See BusEd 497.

VocEd 498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

VocEd 499 (s) **Directed Study** (cr arr). Prereq: perm.

VocEd 500 Master's Research and Thesis (cr arr).

VocEd 501 (s) **Seminar** (cr arr). Prereq: perm.

VocEd 502 (s) **Directed Study** (cr arr). Prereq: perm.

VocEd 503 (s) **Workshop** (cr arr). Prereq: perm.

VocEd 504 (s) **Special Topics** (cr arr).

VocEd 505 Professional Development (cr arr). See J405/J505.

VocEd 512 Curriculum Dev in Voc Ed (3 cr). Curriculum construction; occupational analysis; selection and organization of instructional materials.

VocEd 515 Instructional Strategies (3 cr). Prin, concepts, aims and appl of prog and teaching strategies.

VocEd 524 Issues in Distributive Ed (3 cr). See BusEd 524.

VocEd 530 Career Ed (2 cr). Trends and new perspectives in career ed.

VocEd 543 Admin and Supervision in Voc Ed (3 cr). Theory and practice of administering and supervising voc ed prog at all levels.

VocEd ID544 Modifying Voc Prog for Students with Special Needs (3 cr). Product oriented course aimed at skills of voc ed teachers in dev courses for students with voc special needs. Prereq: 443, 444.

VocEd 545 Facility Planning (3 cr). Prin and procedures in planning secondary and postsecondary voc facilities.

VocEd 551 Prin and Philosophy of Voc Ed (2-3 cr). See J351/J551.

VocEd 555 Prog Eval in Voc Ed (3 cr). Prin and procedures used in the eval of voc prog.

VocEd 560 Theories of Voc Choice (3 cr). See Couns 560.

VocEd 564 Special Needs Comm Skills (3 cr). Dev of comm skills for use in mainstreaming handicapped and disadvantaged voc students; makes use of simulations.

VocEd ID571 Accessing, Organizing, and Synthesizing Data (3 cr). Uses of computer-based stat packages, document retrieval services, and text-editing systems in research. Prereq: Stat 251 or perm.

VocEd 573 Foundations of Adult Ed (3 cr). Phil, econ, soc, and psych bases of adult ed; roles, limitations, and coord of adult ed, domestic and internatl programs—public and private sector.

VocEd 574 Psych of Adult Learners (3 cr). Psych, social, and physiological characteristics of adult learners; relationships to family, friends, and fellow citizens.

VocEd 575 Strategies for Teaching Adults (3 cr). Design and appl of teaching strategies for learning domains and learning styles appropriate for adult learners.

VocEd 576 Comm Skills for Teachers of Adults (3 cr). See J476/J576.

VocEd 597 (s) **Practicum** (cr arr). Appl of theories and tech; supervised field experiences in selected settings. Graded P/F. Prereq: perm.

VocEd 598 (s) **Internship** (cr arr). Supervised experience in teacher ed, admin, supervision, or ancillary services in voc ed. Graded P/F. Prereq: perm.

VocEd 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

VocEd 600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

BUSINESS EDUCATION (B.S.Bus.Ed.)

This major is for students whose primary interest is in teaching basic business subjects and economics. Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level, and:

Course	Credits
BusEd 103 Typewriting III	2
BusEd 185 Machine Calculation	2
BusEd 418 Teaching Consumer Economics	2
BusEd 491-492 Teaching Business Education II	6
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 265 Legal Environment of Business	3
Bus 301 Financial Management	3
CS 100 Intro to Computers and Programming	3
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing	3
Geog 240 Economic Geography	3
HEc 448 Consumer Education	3
One of the following sequences	6
Acctg 301-302 Financial Acctg & Reporting I-II	
Bus 407 Financial Institutions and 401 Investments	
Bus 418 Organization Theory and 412 Personnel Mgt	
Econ 321 Intermediate Micro Analysis and 372 Intermediate Macro Analysis	
Accounting, business, or economics electives	9

Note: Business education majors are urged to check with their advisers for vocational endorsement information.

DISTRIBUTIVE EDUCATION (B.S.Bus.Ed.)

The distributive education major is for students who are interested in teaching marketing, merchandising, and management at the high-school or postsecondary level. Students electing this major should consult the distributive education adviser concerning state requirements for the vocational education certificate.

Required course work includes the university requirements (see regulation J-3), the general requirements for the student preparing to teach at the secondary level, and:

Course	Credits
Acctg 201 Principles of Accounting	3
Bus 321 Marketing	3
Bus 325 Retailing	3
Bus 420 Promotional Strategy	3
Bus 422 Sales Force Management	3
BusEd 493 Teaching Distributive Ed	3
BusEd 497 Coordination Techniques	3
Econ 151 Principles of Economics	3
VocEd 351 Principles & Philosophy of Vocational Ed	2
VocEd 453 Task Analysis	1
VocEd 464 Vocational Guidance	3
VocEd 494 Distributive Ed Materials	2

And the completion of a 20-credit teaching minor or the following:

Additional requirements for a 60-credit concentration:

Econ 152 Principles of Economics	3
Eng 313 Business Writing	3
VocEd 200 Seminar or 499 Directed Study	3
Electives (approved by distributive ed teacher educator)	11

INDUSTRIAL EDUCATION (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level (see College of Education section in part 4), and:

Course	Credits
IEd 130, 131 Basic Electronics I, II	6
IEd 140 Wood Technics	3
IEd 218 Power Technology	3
IEd 250 General Metals	3
IEd 253 Machining Technology	3
IEd 254 Casting Technology	2
IEd 310 Maintenance of Tools & Equipment	3
IEd 328 Computer Applications for Industrial Ed	3
IEd 360 Graphic Arts	3
IEd 380 High Technology Manufacturing	3
IEd 420 Industrial Ed Curriculum & Evaluation	3
IEd 451 School Shop Planning & Admin	3
IEd 472 Industrial Ed Methods	3
AgMech 101 Oxy-acetylene Welding	2
AgMech 107 Arc Welding	2
Engr 101 Engineering Graphics	2

And one of the following options:

A. General Industrial Education Option: 13 credits in approved IEd courses distributed throughout several technical fields.

B. Industrial Education Specialization Option: 13 additional credits in a specialized area of technical shopwork. Students may specialize in one of the following technical areas: electricity-electronics, metals, drafting, woods, building construction, power-energy, graphics, and computers. Consult the chair of the department for a list of approved courses that may be applied toward each area.

C. Twenty-credit teaching minor to be selected from the list headed "Teaching Majors and Minors" in the College of Education section, part 4.

INDUSTRIAL TECHNOLOGY (B.Tech.)

Designed to prepare students for both technical and professional careers in industry and business, particularly for supervisory and other mid-management level positions.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Bus 265 Legal Environment of Business	3
Bus 311 Intro to Management	3
Bus 370 Production/Operations Management	3
Bus 441 Labor Relations	3
Bus 456 Quality Control	3
CS 100 Intro to Computers and Programming	3
Engr 101 Engineering Graphics	2
Eng 317 Tech & Engr Report Writing	3
Hist 111 Intro to U.S. History or PolSc 101 U.S. Govt: Structures & Functions	3
IEd 270, 370, 470 Technical Competence and/or IEd 490, 491, 492 Advanced Technical Competence and/or approved technical electives	29
IEd 328 Computer Applications for Industrial Ed	3
Psych 100 Introduction to Psychology	3
Stat 251 Prin of Stat or Stat 301 Probability & Stat	3
Business electives	8
Mathematics and/or science electives	12
Social science electives	9

And 30 cr in one of the following technical specialization blocks: (1) material processing—woods, (2) material processing—metals, (3) electronics applications, (4) graphic arts management, (5) computer management, or (6) industrial generalist. For a listing of the specific courses required in each of these blocks, consult the chair of the department.

OFFICE ADMINISTRATION (B.S.O.Ad.)

This degree is for students whose primary interest is in secretarial administration and related office and business positions. Required course work includes the university requirements (see regulation J-3) and the following, including at least 52 credits in courses in Bus, Econ, Acctg, and BusEd and at least 52 credits in courses outside those areas:

Course	Credits
BusEd 103 Typewriting III	2
BusEd 116 Shorthand II	4
BusEd 185 Machine Calculation	2
BusEd 271 Shorthand III	3
BusEd 395 Administrative Office Procedures	3
BusEd 396 Information Processing	3
BusEd 400 Seminar	1
BusEd 496 Directed Work Experience	2
Acctg 201-202 Prin of Acctg and Managerial Acctg	6
Bus 265 Legal Environment of Business	3
Bus 311 Intro to Management	3
Bus 321 Marketing	3
Bus 412 Personnel Mgt or 413 Human Relations in Business	3
Bus 418 Organization Theory	3
CommG 131 Fundamentals of Public Speaking	2
CS 100 Intro to Computers and Programming	3
Econ 151, 152 Principles of Econ or equiv	6
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Math 111 & 160 Finite Math and Survey of Calculus or 140 & 160 (or 180)	7-8
Stat 251 Principles of Statistics	3
Upper-division bus or econ electives	3
Electives to complete 128 cr for the degree (incl at least 9 cr in additional upper-div courses)	--

OFFICE OCCUPATIONS EDUCATION (B.S.Bus.Ed.)

Students whose primary interest is in teaching secretarial and clerical subjects and who wish to qualify for vocational certification elect this major. Consult the office occupations education adviser concerning state requirements for the vocational education certificate.

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level, and:

Course	Credits
BusEd 103 Typewriting III	2
BusEd 116 Shorthand II	4
BusEd 185 Machine Calculation	2
BusEd 271 Shorthand III	3
BusEd 395 Administrative Office Procedures	3
BusEd 418 Teaching Consumer Economics	2
BusEd 491-492 Teaching Business Education I-II	6
BusEd 497 Coordination Techniques	3
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 265 Legal Environment of Business	3
CS 100 Intro to Computers and Programming	3
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing	3
Geog 240 Economic Geography	3
HEc 448 Consumer Education	3
VocEd 351 Principles & Philosophy of Vocational Education	2
VocEd 453 Task Analysis	1
VocEd 454 Occupational & Job Analysis	2
VocEd 464 Vocational Guidance	3
Business or economics electives	6

TECHNICAL EDUCATION (B.S.Ed.)

Required course work includes the university requirements (see regulation J-3), the general requirements for students preparing to teach at the secondary level (see College of Education section in part 4), and:

Course	Credits
Engr 101 Engineering Graphics	2
IEd 130, 131 Basic Electronics I, II	6
IEd 140 Wood Technics	3
IEd 250 General Metals	3
IEd 310 Maintenance of Tools & Equipment	3
IEd 365 Industrial Supervision	2
IEd 420 Industrial Ed Curriculum & Evaluation	3
IEd 450 Industrial Safety	3
IEd 451 School Shop Planning & Admin	3
IEd 472 Industrial Ed Methods	3
Psych 316 Industrial Psychology	3
Technical area of specialization (electricity, electronics, drafting, wood, or metals)	15-18

Students completing fewer than 60 credits in technical education and closely related courses must complete one 20-credit teaching minor.

TRADE AND INDUSTRIAL/TECHNICAL EDUCATION (B.S.Ed.)

While serving preservice teachers in trade and industrial education, this degree is designed primarily for those teachers in area vocational schools and in secondary trade and industrial programs who do not hold degrees. Admission to the program is limited to those who can meet initial certification requirements for an Idaho type "A" vocational specialist certificate.

Required course work includes the university requirements (see regulation J-3), and:

Course	Credits
VocEd 270, 370, 470 Technical Competence	45
VocEd 351 Principles & Philosophy of Vocational Education	2
VocEd 420 Evaluation in Vocational Ed	3
VocEd 450 Industrial Safety	3
VocEd 453 Task Analysis	1
VocEd 454 Occupational & Job Analysis	2
VocEd 462 Vocational Ed Curriculum	3
VocEd 464 Vocational Guidance	3
VocEd 471 Practicum in Voc Ed or Ed 431 Secondary School Teaching*	3-9
VocEd 472 Vocational Ed Methods	3
VocEd 497 Coordination Techniques	3

CommG 131 Fundamentals of Public Speaking or CommG 132 Oral Interp 2
Hist 111 or 112 Intro to U.S. Hist or PolSc
101 U.S. Govt: Structures & Functions 3
Psych 100 Intro to Psychology 3
English or literature electives 6
Science-mathematics electives 12
Social science electives 6
Electives in general studies (to be selected from humanities, social sciences, and natural sciences) 4
VocEd electives 9-12
VocEd 200, 400 Seminar (3-6 cr)
VocEd 203, 403 Workshop (1-6 cr)
VocEd 204, 404 Special Topics (3-6 cr)
VocEd 299, 499 Directed Study (3-9 cr)
VocEd 443 Intro to Special-Needs Ed
VocEd 444 Identifying Special-Needs Students
VocEd 473 Intro to Adult Ed

*If the student wishes to receive a standard secondary certificate, the requirement is Ed 431 and the following courses:

Ed 201 Intro to Teaching (if the student has no teaching experience) 2
Ed 314 Strategies for Teaching 3
Ed 415 Educational Psychology 3
Ed 440 Methods of Teaching Content Reading 3
Ed 445 Proseminar in Teaching 1
Ed 468 Contemporary Education 3

Department of Wildland Recreation Management

William J. McLaughlin, Dept. Head (19F FWR Bldg.). Faculty: James R. Fazio, Sam H. Ham, Charles C. Harris, John C. Hendee, Edwin E. Krumpe, William J. McLaughlin. Adjunct Faculty: Gary E. Machlis, George H. Savage. Affiliate Faculty: David N. Cole, LuVerne D. Grussing, Guy G. Hurlbutt, Craig G. MacFarland, John H. Schomaker.

Wildland recreation management involves the study of land and its natural resources, the people who use resources for recreational purposes, and the private and governmental institutions that determine how land will be managed. Wildland recreation management is an outgrowth of increasing public interest in outdoor recreation and resource-based tourism that ranges from wilderness backpacking and river floating to hang-gliding, cruise ships, and the use of off-road vehicles. The ever-increasing variety of demands and conflicts, and the growing numbers of recreationists in all age and cultural groups, has created unprecedented pressures on recreation resources. At the same time outstanding opportunities are being created for the tourism industry. Modern recreation management attempts to reconcile conflicts and ensure high-quality recreational opportunities of all kinds while at the same time protecting resources for the future.

The educational objective of this curriculum is to provide men and women with the knowledge, skills, and confidence needed to handle a wide array of problems associated with recreation and tourism management. Students receive a solid educational foundation by studying natural resources and their management. This is coupled with courses in the human dimensions of resource use, including a strong emphasis in communication theory and practice. In addition, experiencing outdoor recreation is emphasized, as well as learning firsthand about its management in the field.

Graduates find employment in private business, county, state, and national parks, educational institutions, and a variety of resource-management agencies such as the U.S. Forest Service, Bureau of Land Management, National Park Service, and others. Some students combine their education in wildland recreation management with a second degree in forest, wildlife, or range management to broaden their employability even further. Still others select a foreign language to prepare for the international tourism profession.

It is department philosophy that graduates should be prepared for the entire spectrum of recreation resource career opportunities. Careers, however, usually begin in one of four general areas: national resource communication, wilderness and nature conservation, tourism and leisure enterprises, and outdoor recreation leadership. Students are therefore encouraged to select one of the four departmental minors corresponding to these specializations or to develop a block of carefully selected electives to provide depth in one of these areas.

Faculty members in the department have been chosen to ensure that students can receive instruction and counsel in the entire spectrum of wildland recreation management. Advisers are matched, accordingly, with students' career interests.

The B.S.Wildland Rec.Mgmt. prepares qualified students for advanced degrees in most recreation resource or park and recreation graduate programs. The department offers the M.S., M.F., and Ph.D. degrees, with concentrations in the same areas as the undergraduate options, with the addition of international studies and other highly interdisciplinary areas of research and education related to recreation resources.

For additional information, consult the department head (telephone 208/885-7911).

Wildland Recreation Management Courses

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

RcMgt 102 Intro to Rec Professions (1 cr). Same as Rec 102. Intro to rec and its related mgt problems, resources, and professional opportunities. Graded P/F.

RcMgt WS181 Introduction to Hospitality Services Industries (3 cr). WSU H A 181.

RcMgt 200 (s) **Seminar** (cr arr). Prereq: perm.

RcMgt 203 (s) **Workshop** (cr arr). Prereq: perm.

RcMgt 204 (s) **Special Topics** (cr arr).

RcMgt 235 Soc of Natural Resources (2 cr). Same as For and Soc 235. Sociological perspective applied to natural resources mgt; relationship between natural resources and human social systems; analysis of resource issues.

RcMgt WS236 Prin of Tourism (3 cr). WSU H A 235.

RcMgt 287 Prin of Wildland Rec Mgt (2 cr). Overview of role of wildland rec resources in society; integration of wildland rec mgt into an overall multiple-use mgt framework.

RcMgt 288 Law Enforcment in Natural Resource Mgt (3 cr). Legal considerations, tech, and ways of handling law enforcement situations in the mgt of natural resources, especially wildland rec, fisheries, and wildlife mgt.

RcMgt 299 (s) **Directed Study** (cr arr). Prereq: perm.

RcMgt 302 Wildland Rec Field Studies (3 cr). Specialized tech used in wildland measurements; field trips, case studies, and site eval. Three wks of all-day summer camp.

RcMgt 310 Leisure Services Research and Eval (3 cr). Empirical research methods used in leisure service delivery programs; how to choose and apply selective research methods and software packages; design, collection, and analysis of info; program eval; reporting results; interpreting research lit. Prereq: basic computer skills and Stat 251, or perm.

RcMgt 311 Leisure Services Research and Eval Lab (1 cr). Lab exercises for exper in designing research; collecting data; using computer technology to collect, analyze, and present info; various research methods. Two hrs of lab a wk. Coreq: 310.

RcMgt WS381 Hospitality Mgt and Organization (3 cr). WSU H A 381.

RcMgt J383/J583 Natural Resource Tourism (2-3 cr). Alt/yrs. Current methods and approaches to natural resource tourism and its social, econ, and resource impacts; organizations involved and mgt styles used by travel and tourism industry. Three credits may be earned in 583 by completing additional reading and a research paper, and by attending 1 additional hr of seminar a wk.

RcMgt 384 Rec Operations and Facilities Mgt (2 cr). Functions of a park mgr; workload analysis and scheduling, personnel, fiscal planning, permits, and other operations and maintenance tasks. Prereq: 287.

RcMgt 385 Resource Rec and Tourism Mgt (3 cr). Alt/yrs. Comprehensive intro to theory, processes, and tech for managing natural resources rec and tourism systems; tourist, resource/attraction, and program mgt strategies demonstrating budgeting, contracting, and human resource mgt stressed. Prereq: 287, 310, or perm.

RcMgt 386 Resource Rec and Tourism Planning (3 cr). Alt/yrs. Integration of regional area aspects of land use planning relevant to provision of natural resource rec and tourism opportunities; applied case studies in private and public sector used to demonstrate styles of planning, planning frameworks, and analysis tech. Prereq: 287, 310, or perm.

RcMgt 387 Environmental Interpretive Methods (3 cr). Alt/yrs. Comm of natural resource messages by interpreters, naturalists, tour guides, and other wildland mgrs to user publics. Prereq: 287, 310, or perm.

RcMgt 388 State Parks and Related Rec Systems (2 cr). Organization and mgt prog of state park and related systems; ident of agencies, policies, mgt objectives, unique rec prog, and criteria for selection of outdoor rec areas.

RcMgt 396 Monitoring Human Impacts in Wilderness (2 cr). Theoretical and applied

concepts of identifying, measuring, and monitoring changes in wilderness ecosystems caused by human influences, incl recreation use, mgt practices, and both on-site and off-site dev. Field trips may be reqd.

RcMgt 397-398 Renewable Natural Resources Internship I-II (cr arr). Supervised field experience with an appropriate public or private agency. Reqd for coop ed students. Graded P/F. Prereq: perm of dept.

RcMgt 400 (s) **Seminar** (cr arr). Prereq: perm.

RcMgt 401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

RcMgt 403 (s) **Workshop** (cr arr). Prereq: perm.

RcMgt 404 (s) **Special Topics** (cr arr).

RcMgt 486 Public Involvement in Natural Resource Mgt (3 cr). Theoretical and applied concepts of public involvement in both public and private sectors of natural resource mgt; historical and legal mandates, govt agency responsibilities, applied methods and tech, case studies, and practical experience. Three lec and three hrs of lab a wk; field trip may be reqd.

RcMgt 487 Intro to Field Environment Ed (2 cr). Design and admin of environmental ed programs for natural resource oriented organizations, camps, and programs such as Youth Conservation Corps; cooperation between resource specialists and educators stressed.

RcMgt 488 Interpretive Methods Lab (3 cr). Dev and appl of interpretive materials and tech; concentration on equipment and methods commonly used by natural resource agencies for communicating mgt prog and interpreting natural environments to visitors. One 3-day field trip. Prereq: 387 or perm.

RcMgt 489 Personalities and Philosophies in Conservation (2 cr). Same as WLF 489. Lives and thinking of people who have significantly influenced conservation practice or issues surrounding it.

RcMgt 490 Wildness Mgt (3 cr). Hist and legal aspects of the wilderness concept; conceptual and applied approaches, considering both ecological and soc elements; recent research.

RcMgt J491/J591 Theories of Rec Behavior (2-3 cr). Same as Soc J491/J591. Appl of social sc perspectives to the analysis of rec behavior in wildland environments; pertinent social and social-psychological frameworks.

RcMgt 492 International Land Preservation Systems (3 cr). Growth and scope of internatl land preservation systems from early to recent times; worldwide application of concepts of natl parks, nature reserves, wilderness reserves, nature sanctuaries, biosphere reserves, refuges, and other protective designations.

RcMgt 498 International Issues in Nature Conservation (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

RcMgt 499 (s) **Directed Study** (cr arr). For the indiv student; conferences, library, field, or lab work. Prereq: sr standing in the College of FWR, GPA 2.5, and perm

RcMgt 500 Master's Research and Thesis (cr arr).

RcMgt 501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

RcMgt 502 (s) **Directed Study** (cr arr). Prereq: perm.

RcMgt 503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

RcMgt 504 (s) **Special Topics** (cr arr).

RcMgt 505 Fundamentals of Research (2-3 cr). See For 505.

RcMgt 583 Natural Resource Tourism (2-3 cr). See J383/J583.

RcMgt 586 Social Ecology of Natural Resources (3 cr). Social theory and methods relevant to resource mgt; interdisciplinary exam of specific natural resource issues such as fire mgt, wilderness, fisheries disputes, energy policy; emphasis on understanding social aspects of natural resources within an ecological perspective.

RcMgt 587 Adv Wildland Rec Mgt (3 cr). Adv readings in research lit of problems, practices, and theory of recreational use and mgt of wildlands. Two days of field trips.

RcMgt 588 Visual Resource Analysis and Mgt (3 cr). Visual resource inventory, analysis, computer modeling, and measurement tech, in conjunction with theories of perception; assessing the visual environment and developing visual guidelines. Two lec and one 3-hr lab a wk. Prereq: 486 or For 470 or LArch 459 or perm.

RcMgt 591 Theories of Rec Behavior (2-3 cr). See J491/J591.

RcMgt 595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

RcMgt 597 (s) **Practicum** (cr arr). Prereq: perm.

RcMgt 598 (s) **Internship** (cr arr). Prereq: perm.

RcMgt 599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

RcMgt 600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Curricular Requirements

WILDLAND RECREATION MANAGEMENT (B.S.Wildland Rec.Mgmt.)

A total of 136 credits is required for the degree. This includes the university requirements (see regulation J-3) and the course work listed below. Students may select any academic minor (including those in the Department of Wildland Recreation Management) or adviser-approved electives to complete credits requirements.

Course	Credits
RcMgt 102 Intro to Rec Professions	1
RcMgt 287 Prin of Wildland Recreation Mgt	2
RcMgt 302 Wildland Rec Field Studies	3
RcMgt 310, 311 Leisure Services Research & Eval and Lab	4
RcMgt 384 Rec Operations & Facilities Mgt	2
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 103 Intro to Chemistry	4
CommG 131 Fundamentals of Public Speaking	2
CS 100 Intro to Computers & Programming or CS 105 FORTRAN Programming for Engrs or CS 112 Intro to Problem Solving & Programming	2-3
ForPr 230 Forest Land Measurements	2
For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geology & Lab	4
Math 180 Analytic Geometry & Calculus I or Math 160 Survey of Calculus	4
Psych 100 Intro to Psychology	3
Rec 260 Leisure & Society	3
Soc 110 Intro to Sociology or RcMgt 235 Sociology of Natural Resources	2-3
Stat 251 Principles of Statistics or Stat 301 Probability & Stat	3
Electives or courses in minor	7-8
Forestry Summer Camp or Alternative Course Work	
For 103 Wildland Ecology or Biol 331 General Ecology and one of the following: Fish 413 Fish Ecology; For 370 Principles of Forest Mgt; Range 351 Elements of Range Mgt; WLF 314 Wildlife Ecology	4-6
Third and Fourth Years	
RcMgt 383 Natural Resource Tourism	2
RcMgt 385 Resource Rec & Tourism Mgt	3
RcMgt 386 Resource Rec & Tourism Planning	3
RcMgt 387 Environmental Interpretive Methods	3
RcMgt 489 Personalities & Phil in Conservation	2
Econ 272 Foundations of Econ Analysis or 151, 152 Prin of Econ	4-6
CommG 332 Communication & the Small Group	3
Eng 317 Technical & Engr Report Writing	3
For 383 Econ for Natural Resource Managers	3
For 484 Forest Policy & Administration	2
For 494 Models for Resource Decisions	4
WLF 390 Prin of Fish & Wildlife Ecology	3
Upper-division course in soc or psych	3
Approved electives from one of the specialty areas listed below	12-15
Electives or courses in minor to total 136 cr for the degree	--

Academic Minor Requirements

NATURAL RESOURCE COMMUNICATION MINOR

Course	Credits
Comm 121 News Writing	3
RcMgt 387 Environmental Interpretive Methods	3
RcMgt 486 Public Involvement in Nat Res Mgt	3
RcMgt 487 Intro to Field Environmental Ed	2
RcMgt 488 Interpretive Methods Lab	3
An elective in public relations	3
At least one course from the following: CommG 347 Persuasion; Comm 265 Advertising & Society; Comm 278 Intro to Radio/TV Production; Comm 281 Understanding Photography; Comm 360 Broadcast Media Advertising; Comm 362 Print Media Advertising; Comm 371 Basics of TV Production; Comm 425 Feature Article Writing	3

OUTDOOR RECREATION LEADERSHIP MINOR

Course	Credits
RcMgt 287 Prin of Wildland Rec Mgt	2
RcMgt 387 Environmental Interpretive Methods or RcMgt 488 Interpretive Methods Lab	3
RcMgt 397 Renewable Natural Resource Internship or Rec 280 Recreation Practicum	1-3
RcMgt 490 Wilderness Mgt or RcMgt 487 Intro to Field Environmental Education	2-3
Rec 320 Outdoor Recreation Leadership	3
Rec 321 Wilderness Medicine & Evacuation	1
Rec 420 Experiential Education	2
Courses selected from the following: Rec 220 Rock Climbing; Rec 221 Mountaineering; Rec 222 Cross-Country Skiing	7

Rec 223 Winter Camping
Rec 224 Whitewater Rafting
Rec 225 Kayaking
Rec 255 Backpacking & Camping Skills
Rec 270 Big Game Hunting Tech & Safety
One of the following courses 1-2
Rec 498 Practicum in Tutoring (1 cr)
RcMgt 401 Practicum in Tutoring (1-2 cr)

TOURISM AND LEISURE ENTERPRISES MINOR

Courses	Credits
Bus 321 Marketing	3
RcMgt/Rec 181 Intro to Hospitality Services Industries	3
RcMgt 236/Rec 235 Principles of Tourism	3
RcMgt 381/Rec 382 Hospitality Mgt & Organization	3
RcMgt 397/Rec 280 Practicum/Internship	2
RcMgt/Rec 400 Seminar	1
RcMgt 383 Natural Resource Tourism	3
Rec 340 Leisure & Tourism Organization	3
One course selected from the following	3
Bus 420 Promotional Strategy	
Geog 447 Recreation & Tourism	
Rec 486 Recreation Program Planning	
RcMgt 386 Resource Rec & Tourism Planning	

WILDERNESS AND NATURE CONSERVATION MINOR

Course	Credits
For 205 Wilderness Resource Conservation	3
For 206 Wilderness Resource Conservation Lab or (for majors) For 301 Wildland Ecology	1-4
RcMgt 396 Monitoring Human Impacts in Wilderness	2
RcMgt 489 Personalities & Philosophies in Conservation	2
RcMgt 490 Wilderness Management	3
RcMgt 492 Internatl Land Preservation Systems	2
RcMgt 498 Internatl Issues in Nature Conserv	3

Faculty

Richard D. Gibb, President; Thomas O. Bell, Vice President for Academic Affairs and Research; James S. Macdonald, Chair of the Faculty Council (1987-88); Bruce Bray, Secretary of the Faculty.

This list was compiled December 15, 1987. Off-campus personnel are identified with an asterisk (*). The date following a name indicates the beginning of service at the university. When two dates are given, the second, in parentheses, is the date of promotion to the rank shown.

*M. AUDREY AARON, 1971 (1976), Professor Emerita of Foreign Languages and Literatures (Spanish); A.B., 1934, Mount St. Scholastica; A.M., 1950, Ph.D., 1952, Johns Hopkins. Emerita since 1979 (now residing in Oklahoma City, Okla.).

ERNEST D. ABLES, 1973, Professor of Wildlife Resources; Head, Department of Fish and Wildlife Resources, 1982-84, 1985 (Associate Dean for Academics, College of Forestry, Wildlife and Range Sciences, 1974-82; Acting Dean, 1984-85); B.S., 1961, Oklahoma State; M.S., 1964, Ph.D., 1968 Wisconsin.

*BARBARA B. ABO, 1976 (1984), Associate Extension Professor of Home Economics; Ada County Extension Home Economist, Boise; B.S., 1972, Wisconsin; M.S., 1975, Iowa State.

TERRY P. ABRAHAM, 1984, Head, Special Collections and Archives, University Library, with rank of Associate Professor; B.A. 1965, Washington; M.F.A., 1968, Washington State. M.L.S., 1970, Oregon.

WILLIAM V. ACCOLA, 1973, Director, Computer Services, 1973-; B.S., 1965, Oklahoma State; M.A., 1968, Missouri.

DAVID L. ADAMS, 1971 (1975), Professor of Forest Resources (Head, Department of Forest Resources, 1979-87); B.S., 1959, Oklahoma State; M.F., 1961, Idaho; Ph.D., 1969, Colorado State.

*DONALD E. ADAMS, 1975, Affiliate Clinical Professor of Medical Science, Moscow; B.A., 1949, Wyoming; M.D., 1953, St. Louis.

DOUGLAS Q. ADAMS, 1972 (1981), Professor of English; A.B., 1968, A.M., 1971, Ph.D., 1972, Chicago.

GAIL H. ADELE, 1974 (1985), Professor of Mathematics; A.B., 1962, M.A., 1963, Indiana; Ph.D., 1968, Michigan State.

KATHERINE G. AIKEN, 1984, Assistant Professor of History; B.A., 1972, Idaho; M.A., 1974, Oregon; Ph.D., 1980, Washington State.

*GORDON A. ALAND, 1978, Affiliate Professor of Geology, Soda Springs; B.S., 1958, Brigham Young.

*RICHARD M. ALFORD, 1975, Affiliate Clinical Professor of Medical Science, Lewiston; B.S., 1945, Ursinus; M.D., 1949, Michigan.

*ROBERT E. ALLAN, 1976, Affiliate Professor of Plant Science, Pullman, Wash.; B.S., 1952, Iowa State; M.S., 1956, Ph.D., 1958, Kansas State.

*ROBERT C. ALLDAFFER, 1955 (1983), Extension Professor Emeritus; B.S.Ag., 1950, Idaho. Emeritus since 1983 (now residing in Soda Springs).

*CHARLES A. ALLEN, 1986, Affiliate Professor of Chemistry, Idaho Falls; B.S., 1962, Ottawa (Kansas); Ph.D., 1969, Oregon State.

*STEWART D. ALLEN, 1987, Affiliate Assistant Professor of Wildland Recreation Management, Missoula, Mont.; B.A., 1976, Utah; M.A., 1978, Claremont Graduate School Ph.D., 1980, Montana.

*ALVIN R. ALLER, 1959 (1972), Professor Emeritus of Botany; B.S., 1931, Bethany; MS., 1932, Kansas State; Ph.D., 1949, Oregon State. Emeritus since 1972 (now residing in Nampa).

*FLORENCE D. ALLER, 1962 (1971), Professor of Home Economics and Department Head Emerita (Head, Department of Home Economics, 1971-74); B.A., 1930, Bethany-Penial; M.S., 1947, Oregon State; Ed.D., 1962, Idaho. Emerita since 1974 (now residing in Nampa).

*DAVID W. ALLMAN, 1978, Affiliate Professor of Geology, Idaho Falls; B.S., 1964, McMaster; M.S., 1968, Ph.D., 1973, Idaho.

DON A. AMOS, 1963, Business and Real Estate Manager, 1974-; B.S.Bus., 1952, Idaho.

DOYLE E. ANDEREGG, 1967, Professor of Biology, Assistant Dean, College of Letters and Science, 1981-, Management Information Specialist (Head, Department of Biological Sciences, 1967-75); B.Sc., 1952, M.S., 1957, Ph.D., 1958, Ohio State.

*BRUCE C. ANDERSON, 1978 (1984), Professor of Pathology, Caldwell; B.S., 1965, D.V.M., 1965, Ph.D., 1977, California (Davis).

CLIFTON E. ANDERSON, 1972 (1977), Associate Professor of Agricultural Information, Associate Agricultural and Extension Editor; B.S., 1947, Wisconsin, M.A., 1954, California (Berkeley).

*GUY R. ANDERSON, 1946 (1968), Professor of Bacteriology and Director of the WAMI Medical Education Program Emeritus; B.S.Ag., 1942, M.S.Ag., 1947, Idaho; Ph.D., 1956, Washington State. Emeritus since 1984 (now residing in Moscow).

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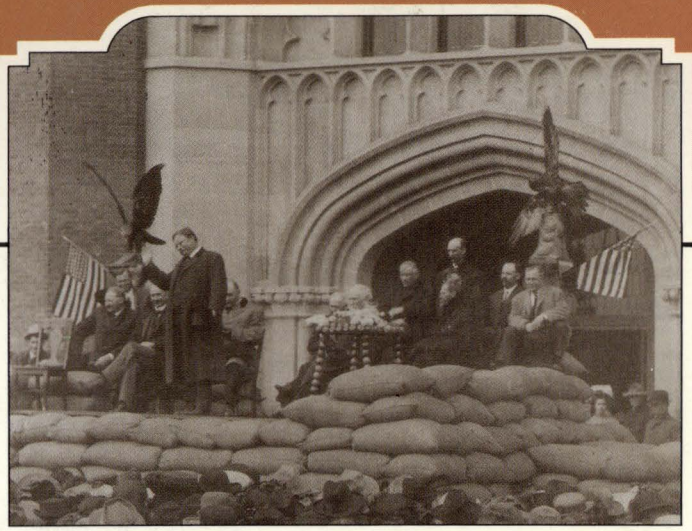

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Theodore Roosevelt's 1911 visit to the University of Idaho campus.

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