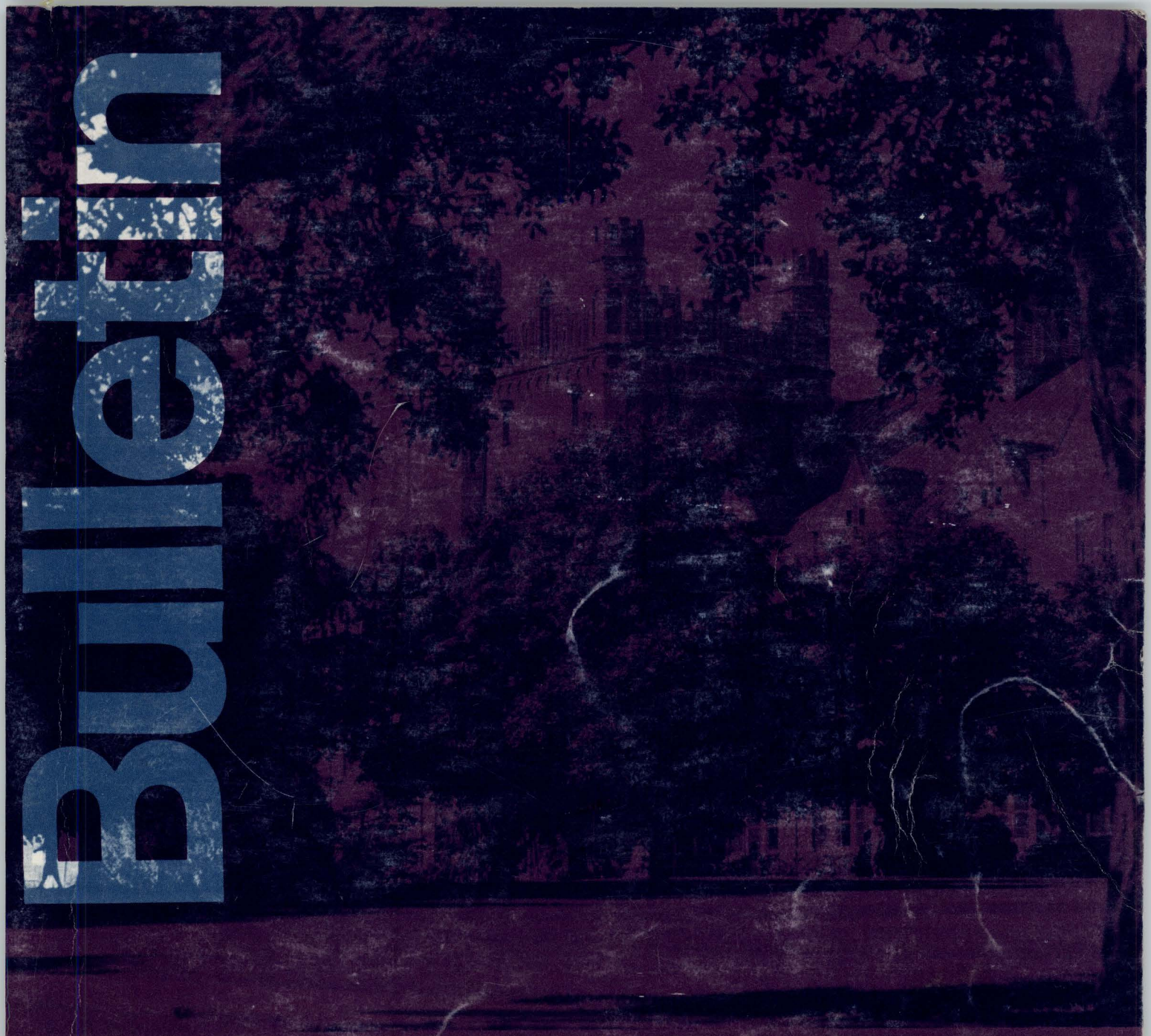
Bulletin



General Catalog 1983/85

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.
Second class postage paid at Moscow, Idaho 83843

Academic Calendars for 1983-84 and 1984-85

Dates in these calendars are subject to change without notice; dates appearing in admission and registration instructions take precedence over those listed here.

FALL SEMESTER 1983-84

Application closing dates for new and former students—see "Admission to the University" in part 2.
Last day of preregistration advising and official opening date of fall semester (Monday) ..... Aug. 22
Registration (Tuesday) ..... Aug. 23
Classes begin (Wednesday, 7:30 a.m.) ..... 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 courses or change course sections—see regulation C in part 3 for exceptions (Wednesday) ..... Sept. 7
Last day to change to or from pass-fail basis (Wednesday) ..... Sept. 7
Last day to change to or from audit basis (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 petition and without having grade of W recorded (Wednesday) ..... Sept. 21
Last day to remove or extend incompletes (Wednesday) ..... Oct. 5
Classes WILL MEET this date (Monday), even though Columbus Day is a state holiday ..... Oct. 10
Last day for midsemester examinations (Friday) ..... Oct. 14
Midsemester grade reports due (Monday, 1:30 p.m.) ..... Oct. 17
Writing Proficiency Test for transfer students (Thursday) ..... Oct. 20
Homecoming Weekend (Saturday-Sunday) ..... Oct. 22-23
Classes WILL MEET this date (Friday), even though Veterans' Day is a state holiday ..... Nov. 11
Last day to withdraw from a course or from the university (Friday) ..... Nov. 18
Last day to file thesis or dissertation and abstract or results of comprehensive examination for graduate degrees to be awarded in December (Monday) ..... Nov. 21
Fall recess begins (Tuesday, 10 p.m.) ..... Nov. 22
Fall recess ends (Monday, 7:30 a.m.) ..... Nov. 28
Field-trip completion deadline (Monday, 7:30 a.m.) ..... Dec. 5
No-examination week (Monday-Friday) ..... Dec. 5-9
Last day to report grades for challenged courses (Friday) ..... Dec. 9
Last day of instruction (Friday) ..... Dec. 9
Final examinations (Monday-Friday) ..... Dec. 12-16
Close of fall semester (Friday, 5:30 p.m.) ..... Dec. 16
Semester grade reports due (Monday, 5 p.m.) ..... Dec. 19
Intersession courses ..... Dec. 27-Jan. 6

SPRING SEMESTER 1983-84

Application closing dates for new and former students—see "Admission to the University" in part 2.
Last day of preregistration advising and official opening date of spring semester (Monday) ..... Jan. 9
Registration (Tuesday) ..... Jan. 10
Classes begin (Wednesday, 7:30 a.m.) ..... Jan. 11
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 courses or change course sections—see regulation C in part 3 for exceptions (Tuesday) ..... Jan. 24
Last day to change to or from pass-fail basis (Tuesday) ..... Jan. 24
Last day to change to or from audit basis (Tuesday) ..... Jan. 24
Last day to file applications for graduate degrees to be awarded in May (Monday) ..... Jan. 30
Last day to withdraw from a course without petition and 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 9
Spring recess begins (Friday, 5:30 p.m.) ..... March 9
Midsemester grade reports due (Monday, 1:30 p.m.) ..... March 12
Spring recess ends (Monday, 7:30 a.m.) ..... March 19
Writing Proficiency Test for transfer students (Thursday) ..... March 29
Silver and Gold Day (Saturday) ..... April 7
Last day to withdraw from a course or from the university (Friday) ..... April 13
Parents' Weekend (Saturday-Sunday) ..... April 14-15
Last day to file thesis or dissertation and abstract or results of comprehensive examination for graduate degrees to be awarded in May (Monday) ..... April 16
Field-trip completion deadline (Monday, 7:30 a.m.) ..... April 30
No-examination week (Monday-Friday) ..... April 30-May 4
Last day to report grades for challenged courses (Friday) ..... May 4
Last day of instruction (Friday) ..... May 4
Final examinations (Monday-Friday) ..... May 7-11
Close of spring semester (Friday, 5:30 p.m.) ..... May 11
Commencement Day (Saturday) ..... May 12
Semester grade reports due (Monday, 5 p.m.) ..... May 14
Intersession courses ..... May 14-June 8

SUMMER SESSIONS 1984

Application closing dates for new and former students—see "Admission to the University" in part 2.
Forestry Summer Camp ..... May 21-July 13
Geology Summer Camp ..... May 21-June 29
Memorial Day, a holiday (Monday) ..... May 28
Registration for regular eight-week session (Monday) ..... June 11
Classes begin (Tuesday, 8 a.m.) ..... June 12
Writing Proficiency Test for transfer students (Thursday) ..... June 14
Classes WILL MEET this date (Saturday) ..... June 16
Last day to file applications for baccalaureate degrees to be awarded in August (Monday) ..... June 18
Last day to file applications for graduate degrees to be awarded in August (Monday) ..... June 25
Classes WILL MEET this date (Wednesday), even though Independence Day is a state holiday ..... July 4
Classes WILL NOT meet this date (Friday) to compensate students and instructors for classes that were held on Independence Day ..... July 6
Last day to remove or extend incompletes (Tuesday) ..... July 24
Last day of instruction (Friday) ..... Aug. 3
Close of summer sessions (Friday, 5 p.m.) ..... Aug. 3
Intersession courses ..... Aug. 6-24

FALL SEMESTER 1984-85

Application closing dates for new and former students—see "Admission to the University" in part 2.
Last day of preregistration advising and official opening date of fall semester (Monday) ..... Aug. 27
Registration (Tuesday) ..... Aug. 28
Classes begin (Wednesday, 7:30 a.m.) ..... Aug. 29
Labor Day, a holiday (Monday) ..... Sept. 3
Last day to file applications for baccalaureate degrees to be awarded in December (Tuesday) ..... Sept. 11
Last day to register (Wednesday) ..... Sept. 12
Last day to add courses or change course sections—see regulation C in part 3 for exceptions (Wednesday) ..... Sept. 12
Last day to change to or from pass-fail basis (Wednesday) ..... Sept. 12
Last day to change to or from audit basis (Wednesday) ..... Sept. 12
Last day to file applications for graduate degrees to be awarded in December (Monday) ..... Sept. 17
Last day to withdraw from a course without petition and without having grade of W recorded (Wednesday) ..... Sept. 26
Classes WILL MEET this date (Monday), even though Columbus Day is a state holiday ..... Oct. 8
Last day to remove or extend incompletes (Wednesday) ..... Oct. 10
Last day for midsemester examinations (Friday) ..... Oct. 19
Homecoming Weekend (Saturday-Sunday) ..... Oct. 20-21
Midsemester grade reports due (Monday, 1:30 p.m.) ..... Oct. 22
Writing Proficiency Test for transfer students (Thursday) ..... Oct. 25
Fall recess begins (Tuesday, 10 p.m.) ..... Nov. 20
Fall recess ends (Monday, 7:30 a.m.) ..... Nov. 26
Last day to withdraw from a course or from the university (Monday) ..... Nov. 26
Last day to file thesis or dissertation and abstract or results of comprehensive examination for graduate degrees to be awarded in December (Monday) ..... Nov. 26
Field-trip completion deadline (Monday, 7:30 a.m.) ..... Dec. 10
No-examination week (Monday-Friday) ..... Dec. 10-14
Last day to report grades for challenged courses (Friday) ..... Dec. 14
Last day of instruction (Friday) ..... Dec. 14
Final examinations (Monday-Friday) ..... Dec. 17-21
Close of fall semester (Friday, 5:30 p.m.) ..... Dec. 21
Semester grade reports due (Monday, 5 p.m.) ..... Dec. 24
Intersession courses ..... Dec. 26-Jan. 4

SPRING SEMESTER 1984-85

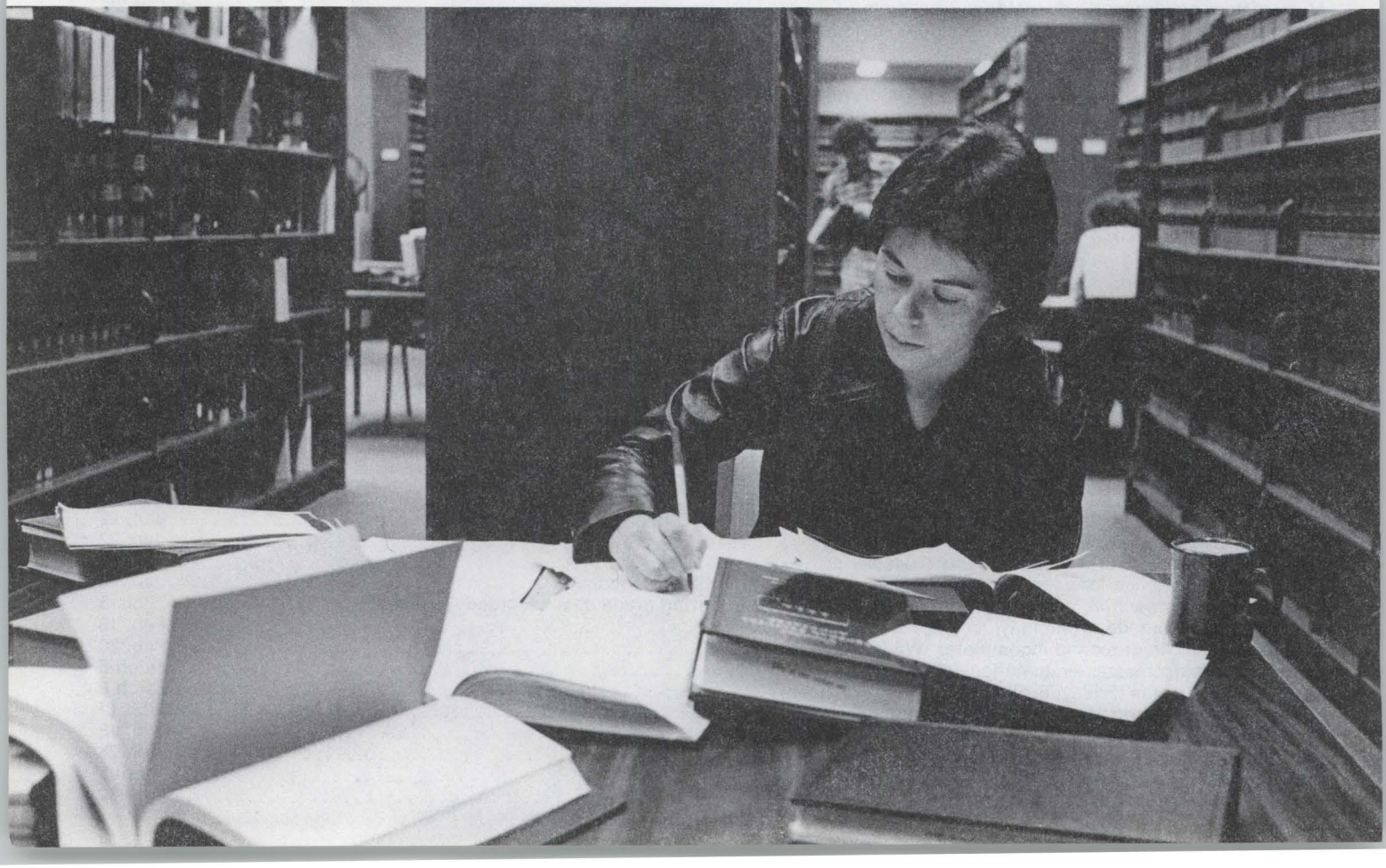
Application closing dates for new and former students—see "Admission to the University" in part 2.
Last day of preregistration advising and official opening date of spring semester (Monday) ..... Jan. 7
Registration (Tuesday) ..... Jan. 8
Classes begin (Wednesday, 7:30 a.m.) ..... Jan. 9
Last day to file applications for baccalaureate degrees to be awarded in May (Monday) ..... Jan. 21
Last day to register (Tuesday) ..... Jan. 22
Last day to add courses or change course sections—see regulation C in part 3 for exceptions (Tuesday) ..... Jan. 22
Last day to change to or from pass-fail basis (Tuesday) ..... Jan. 22
Last day to change to or from audit basis (Tuesday) ..... Jan. 22
Last day to file applications for graduate degrees to be awarded in May (Monday) ..... Jan. 28
Last day to withdraw from a course without petition and without having grade of W recorded (Tuesday) ..... Feb. 5
Presidents' Day, a holiday (Monday) ..... Feb. 18
Last day to remove or extend incompletes (Wednesday) ..... Feb. 20
Last day for midsemester examinations (Friday) ..... March 8
Spring recess begins (Friday, 5:30 p.m.) ..... March 8
Midsemester grade reports due (Monday, 1:30 p.m.) ..... March 11
Spring recess ends (Monday, 7:30 a.m.) ..... March 18
Writing Proficiency Test for transfer students (Thursday) ..... March 28
Silver and Gold Day (Sunday) ..... April 7
Last day to withdraw from a course or from the university (Friday) ..... April 12

Parents' Weekend (Saturday-Sunday) ..... April 13-14
Last day to file thesis or dissertation and abstract or results of comprehensive examination for graduate degrees to be awarded in May (Monday) ..... April 15
Field-trip completion deadline (Monday, 7:30 a.m.) ..... April 29
No-examination week (Monday-Friday) ..... April 29-May 3
Last day to report grades for challenged courses (Friday) ..... May 3
Last day of instruction (Friday) ..... May 3
Final examinations (Monday-Friday) ..... May 6-10
Close of spring semester (Friday, 5:30 p.m.) ..... May 10
Commencement Day (Saturday) ..... May 11
Semester grade reports due (Monday, 5 p.m.) ..... May 13
Intersession courses ..... May 13-June 7

SUMMER SESSIONS 1985

Application closing dates for new and former students—see "Admission to the University" in part 2.
Forestry Summer Camp ..... May 20-July 12
Geology Summer Camp ..... May 20-June 28
Memorial Day, a holiday (Monday) ..... May 27
Registration for regular eight-week session (Monday) ..... June 10
Classes begin (Tuesday, 8 a.m.) ..... June 11
Writing Proficiency Test for transfer students (Thursday) ..... June 13
Classes WILL MEET this date (Saturday) ..... June 15
Last day to file applications for baccalaureate degrees to be awarded in August (Monday) ..... June 17
Last day to file applications for graduate degrees to be awarded in August (Monday) ..... June 24
Classes WILL MEET this date (Thursday), even though Independence Day is a state holiday ..... July 4
Classes WILL NOT meet this date (Friday) to compensate students and instructors for classes that were held on Independence Day ..... July 5
Last day to remove or extend incompletes (Tuesday) ..... July 23
Last day of instruction (Friday) ..... Aug. 2
Close of summer sessions (Friday, 5 p.m.) ..... Aug. 2
Intersession courses ..... Aug. 5-23

The academic regulations and requirements in this bulletin cover the years encompassed by the catalog and are subject to change without notice.



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(January 1983)

Board of Regents of the University of Idaho

BOARD MEMBERS

Eugene L. Miller, *President,* Coeur d'Alene (1986*)
Nels L. Solberg, *Vice President,* Grangeville (1983*)
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Leno D. Seppi, Lava Hot Springs (1984*)
Jerry L. Evans, *State Superintendent of Public Instruction*, Boise (ex officio)

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Warren S. Owens, *A.M.L.S., Dean of Instructional Services/Director of Libraries*
Matt E. Telin, *M.Ed., Director of Admissions/Registrar*

Major Academic Divisions

GRADUATE SCHOOL

Arthur R. Gittins, *Ph.D., Dean*

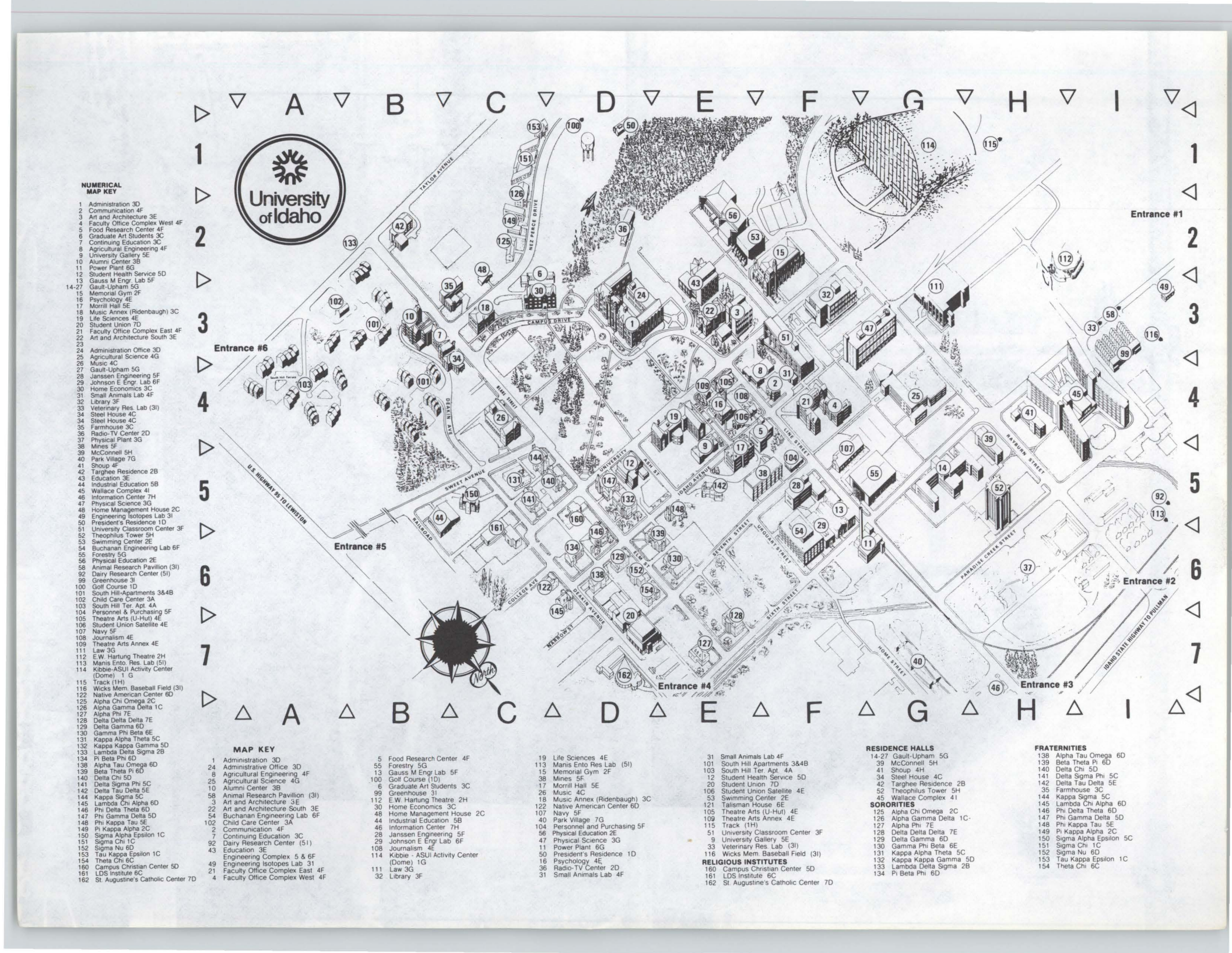
COLLEGES**

Letters and Science—Galen O. Rowe, *Ph.D., Dean*
Agriculture—Raymond J. Miller, *Ph.D., Dean*
Engineering—J. Richard Williams, *Ph.D., Dean*
Law—Cliff F. Thompson, *J.D., Dean*
Mines and Earth Resources—Maynard M. Miller, *Ph.D., Dean*
Forestry, Wildlife and Range Sciences—John H. Ehrenreich, *Ph.D., Dean*
Education—Thomas O. Bell, *Ed.D., Dean*
Business and Economics—Lawrence H. Merk, *M.A., Acting Dean*
Art and Architecture—Paul L. Blanton, *M.Arch., Dean*

UI FACULTY OF THE WOI REGIONAL PROGRAM IN VETERINARY MEDICINE

Floyd W. Frank, *Ph.D., Dean*

*Date current appointment expires.
**Colleges are listed in the order of their founding.



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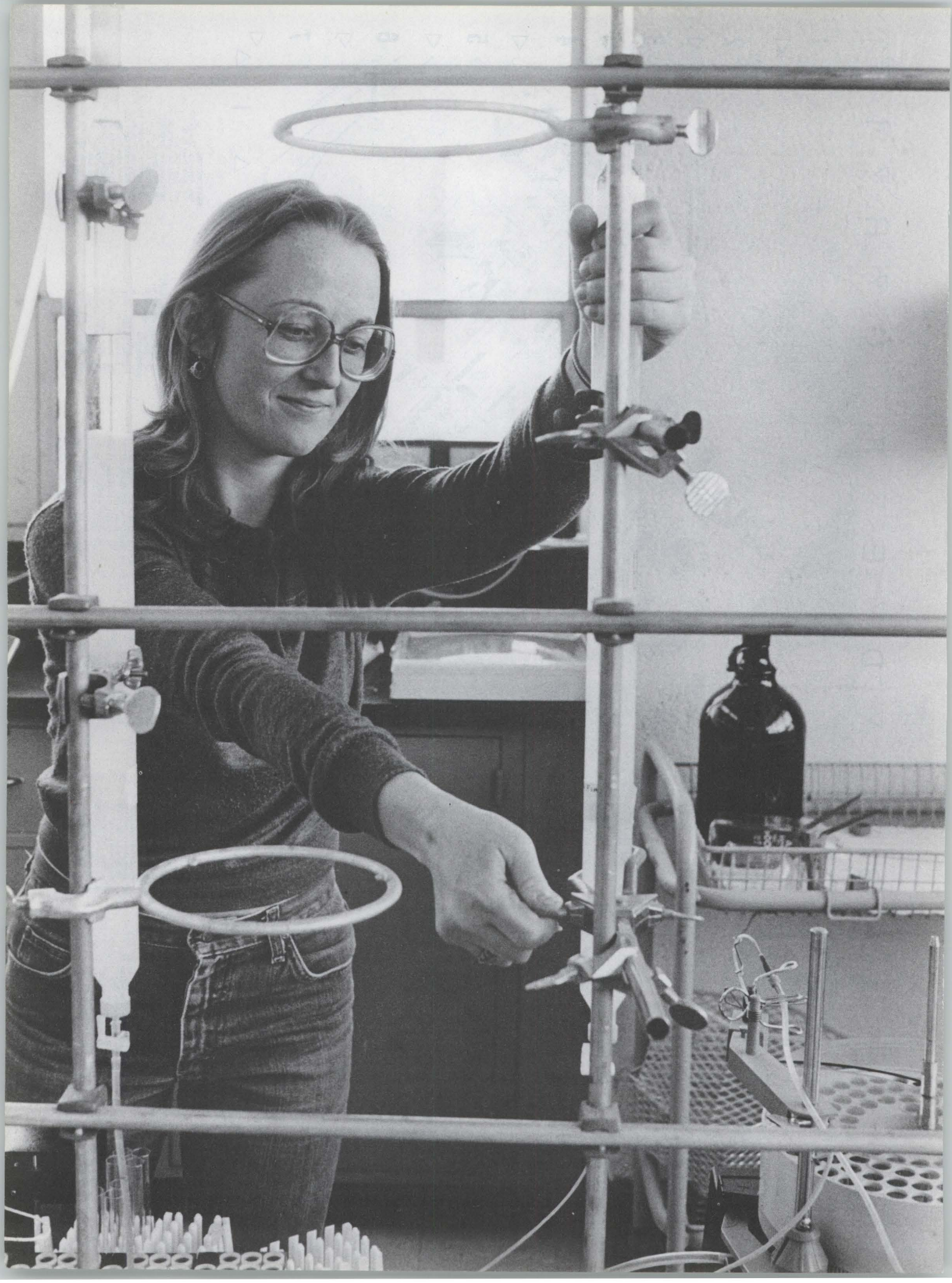


The University

A multipurpose institution, the University of Idaho was founded in 1889 by an act of the 15th territorial legislature of Idaho. This statute, commonly known as the university's charter, became a part of Idaho's organic law by virtue of its confirmation under article IX, section 10, of the state constitution when Idaho was admitted to the union in 1890. As provided in the territorial act and the state constitution, an appointed board of regents is vested with the ultimate authority for the government of the university; in turn, the board appoints the university president, who also serves as president of the faculty and of the several constituent faculties. The president's responsibilities include giving "general direction to the instruction and scientific investigation of the university." The charter also entrusted the immediate government of the University of Idaho to the faculty. The tradition that the faculty, the president, and the regents are jointly responsible for governing this university has continued to the present.

When the university opened its doors, October 3, 1892, there were about 30 students and 2 professors, one of whom, Franklin B. Gault, also served as president. By 1982, the on-campus enrollment has grown to more than 8,300 students representing a broad spectrum of social and economic backgrounds. Although most of the students come from Idaho, every state and approximately 50 foreign countries are represented on campus. Since its founding, the university has granted more than 49,400 degrees.

Mission, Functions, and Objectives

The highest aspiration of a university is to imbue the human mind with knowledge, tolerance, and vision, and to stimulate a lasting attitude of inquiry. The University of Idaho shares this aspiration with universities everywhere. The particular mission, functions, and objectives of the university have been defined by the regents as follows:

Mission. In the widest sense, the mission of the University of Idaho, a publicly supported, land-grant institution, is to serve the people of the state and nation as a major center of learning for the advancement, preservation, dissemination, and use of knowledge. Deriving from this multifaceted mission are the functions to be performed and the objectives to be achieved through the interaction of the various components and publics of the university.

Basic Functions and Objectives. Since its founding, the functions of the university have been viewed as threefold—teaching, research, and service. The broad objectives relating to these functions are: (a) to offer undergraduate and graduate academic programs of excellent quality in the liberal arts and sciences and in many professional disciplines so that qualified students may develop into responsible, thinking citizens, provided with a sound general education, prepared for a lifetime of learning, and equipped with the professional and technical skills needed by society; (b) to add to knowledge through research, scholarship, and creative activities in both fundamental and applied fields, and to seek ways of applying that knowledge to the betterment and enrichment of humanity; and (c) to make readily available to all people of the state the results of research and the rich heritage of human culture embodied in the arts and sciences.

Unique Functions of the University. As a part of a coordinated state system of higher education that encompasses the senior institutions and the public community colleges, the University of Idaho historically has had certain unique functions. Specifically, the university has the responsibility to serve as: a) the land-grant institution for the state of Idaho, with the exclusive responsibility for instruction, research, extension, and public services in the fields of agriculture, forestry, mining, and related areas, and with the principal responsibility in the field of engineering; (b) the chief research center for the state and the chief center for research-oriented graduate education (because of the land-grant and Ph.D.-awarding functions of the University of Idaho, its faculty members conduct research as a clearly defined professional responsibility); (c) a principal center for professional education, operating fully accredited professional programs in architecture, chemistry, education, engineering, forestry, home economics, law, musical performance, wildlife, fishery, and range sciences and cooperative regional programs in medicine and veterinary medicine, and also fulfilling the major responsibility for comprehensive programs in the preparation of public school teachers, administrators, and counselors; and (d) the state's preeminent center for comprehensive graduate programs, with responsibility for the granting of the degree of Doctor of Philosophy.

The University Today

The central academic division of the university is the College of Letters and Science, which offers a broad, liberal education in the arts and sciences coupled with preparation for leadership in the student's selected field of concentration. Other academic divisions are: College of Agriculture, College of Art and Architecture, College of Business and Economics, College of Education, College of Engineering, College of Forestry, Wildlife and Range Sciences, College of Law, College of Mines and Earth Resources, the University of Idaho faculty of the Washington-Oregon-Idaho Regional Program in Veterinary Medical Education, and the Graduate School. The School of Communication and the School of Music function within the administrative framework of the College of Letters and Science; the School of Home Economics functions within the administrative framework of the College of Agriculture.

The faculty is composed of many dedicated teachers and scholars who hold advanced degrees from universities throughout the world. Besides teaching, the faculty is actively involved in research, and many faculty members serve the community-at-large through consulting services, lectures, recitals, exhibitions, dramatic productions, seminars, and similar activities. Examples of research and service agencies associated with the university are the Cooperative Extension Service, the Idaho Water and Energy Resources Research Institute, and the Bureau of Public Affairs Research.

Many of the university's facilities are among the best to be found. The College of Law Building is an excellent example, and the J. E. Buchanan Engineering Laboratory features advanced equipment found in few other institutions in the nation. A further example is the Forestry, Wildlife and Range Sciences Building, which is fully equipped for research and instruction and considered by many to be the best facility of its kind in the country. Architectural honors were also awarded to the Physical Education Building and adjoining Swimming Center.

Within a short drive from the campus are rich mineral deposits, which make the area valuable for the study of mining. Also nearby are mountains, rivers, and semiarid areas, all important to the study of the environmental sciences. The farmlands in the region are well suited for agricultural research; and for the interested student, the locale offers much in the way of native American history and artifacts. For students of recreation management, there are wildlands and state and national parks nearby.

The educational climate of the university is enhanced by the proximity of Washington State University in Pullman, only eight miles to the west. The interchange of library materials, programs, and course offerings between the two campuses makes the entire area a true university center.

Outside the classroom, students may enhance their university experience in many ways. In addition to a range of campus-wide social and cultural events, the various living groups hold their own activities. A large variety of varsity and intramural sports is offered, and dramatic, musical, and dance productions, as well as art and museum exhibitions, enrich the cultural life.

Some students contribute to the campus newspaper, the *Argonaut*, which has the distinction of having been free from faculty or administrative control since it was first published in 1898. Others spend time working in the student-owned and operated radio station, KUOI. The Student Union Building is the headquarters for many of these activities and for student government. Students are also represented on most standing committees of the faculty as well as on the Faculty Council, and thus are active participants in the governance of the university.

Assistance, whether academic, vocational, or personal, may be obtained from various sources, including Student Advisory Services, the Career Planning and Placement Center, and the Student Counseling Center. Nightline, an independent, volunteer telephone service for advice in crises, for general information and referrals, and for nutritional information, is always available for students and Moscow residents at 882-0320. In addition, three religious institutes are located adjacent to the campus, and courses may be taken through these centers for college credit.

Accreditation

The university is a member of the National Association of State Universities and Land-Grant Colleges and the Council on Postsecondary Education. It is accredited by the Northwest Association of Schools and Colleges and the following organizations have granted additional approval or accreditation for specific programs: American Bar Association, American Chemical Society, American Dietetics Association, Association of American Law Schools, Board of Accreditation of the American Society of Landscape Architects, Engineers' Council for Professional Development, National Architectural Accrediting Board, National Association of Schools of Music, National Council for Accreditation of Teacher Education, and Society of American Foresters.

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 a collection of over one million volumes, to which approximately 20,000 volumes are added annually. The library receives more than 11,600 periodicals (serials) and 110 newspapers and, as the regional depository in Idaho for U.S. government documents, houses a collection of over 400,000 official publications. The U.S. Geological Survey and the Army Map Service also use the library as a depository; there are now about 124,000 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 more than 11,000 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 98 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.

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

University Gallery

The University Gallery is the major cultural resource facility emphasizing the visual arts in northern Idaho. It serves the university, community, state, and region with rotating exhibitions throughout the academic year. The gallery offers visitors a varied and exciting sequence of exhibitions that cover the full range of the visual arts, including the traditional art media as well as architecture, landscape architecture, interior design, and photography.

The opportunity for local, regional, and national artists to exhibit their work, a place for visitors to heighten their awareness and appreciation of the arts, and an excellent teaching device are multiple objectives of the gallery.

Each year's schedule traditionally includes exhibitions by the faculty and undergraduate and graduate students from the College of Art and Architecture. The gallery also broadens its impact by sponsoring public receptions for many exhibitions, by offering occasional musical performances in the context of the gallery, and by conducting seminars with guest artists and lecturers.

The gallery is administered through the Department of Art. It is located on the UI campus on the corner of Pine Street and Idaho Avenue and is open free to the public.

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 4341 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. A key-punch and verification service is also available.

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 and Energy 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. Then in 1980 the institute was enlarged to include responsibility for energy programs. The institute now serves the state by developing and coordinating water and energy research programs intended to assure the state, region, and nation of a supply of both high-quality water and energy.

The area of water resources planning, development, and management is a composite of many disciplines. Consequently, the Idaho Water and Energy 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 directed 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 and Energy 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) improve and coordinate the efforts of the various university divisions and departments in water and energy 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 and energy resources.

University Research Office and the Idaho Research Foundation

The University Research Office serves as the coordinating center for research and development activities at the university. While colleges, departments, and other units independently 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 director 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 those policies. Additionally, the council acts as the peer review board in the university's internal competitive grants program.

The Idaho Research Foundation is a nonprofit corporation that specifically (a) facilitates and expedites research management; (b) functions as an agent of education; (c) encourages, fosters, aids, and coordinates implementation of scientific and industrial investigations and research; (d) disseminates scientific knowledge and technical information; (e) reviews all inventions owned by the university and submitted to the foundation, and initiates patent-licensing arrangements on those accepted by the foundation, and (f) reviews written works owned by the university and publishes those accepted by the foundation.

Degrees Granted

On completion of specified 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 Architecture, B.Arch.
Bachelor of Arts, B.A.
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 Applied Physics, B.Appl.Phys.
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 Sciences, B.S.An.Sc.
- Art Education, B.S.ArtEd.
- 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.
- 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 Technology, B.Tech.

Master's Degrees

Master of Architecture, M.Arch.
Master of Arts, M.A.
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 Nuclear Science, M.Nuc.Sc.
Master of Public Administration, M.P.A.
Master of Science, M.S.

Specialist Degrees in Education

Specialist in Education—Ed.Sp.
Specialist in Educational Administration—Ed.Admin.Sp.
Specialist in Guidance and Counseling—Guid.-Couns.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 Education, Ed.D.
Doctor of Philosophy, Ph.D.

*Limited to students enrolled in the UI/Idaho Falls Center for Higher Education.

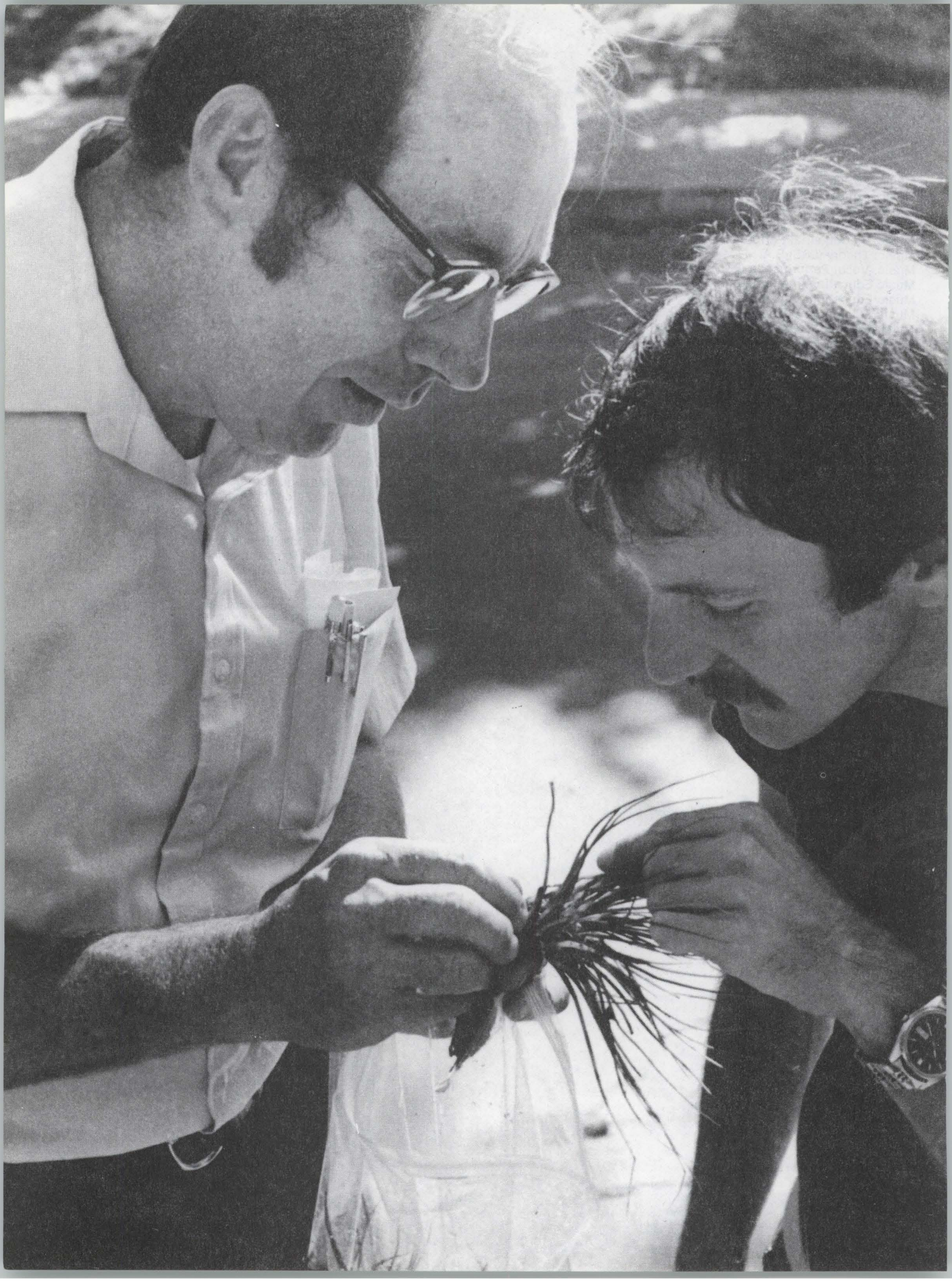
Programs Offered

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 and 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 Graduate School. 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 Sciences (Ag) B.S.An.Sc., M.S.
Anthropology (L&S) B.A., B.S., M.A.
Applied Statistics (L&S) M.S.
Architecture (A&A) B.Arch., M.Arch., M.A.
Army Officer Education Program
Art (A&A) B.F.A., B.S.Art Ed., M.A., M.F.A., M.A.T.; also (L&S) B.A.
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., M.A.T.
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.S., 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.Nuc.Sc.,* 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.A.; 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.
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.Nat.Sc., M.A.T.
Economics (B&E) B.S.Bus., M.S.; also (L&S) B.A., B.S.
Education (Ed) M.A.T., 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., M.F. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Food and Nutrition (Ag) B.S.H.Ec.
Foreign Languages (L&S) B.A.
Food Science (Ag), cooperative with Oregon State University
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., 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.
German (L&S) B.A., M.A., M.A.T.
Guidance and Counseling (Ed) M.S., M.Ed., Guid.-Couns.Sp. Doctoral programs in this field are offered under "Education."
History (L&S) B.A., B.S., M.A., M.A.T., Ph.D.
Home Economics (Ag) B.S.H.Ec., M.S., M.A.T.
Home Economics Education (Ag) B.S.H.Ec.
Horticultural Science (Ag) B.S.Pl.Sc.
Hydrology (Min) M.S.
Industrial Education (Ed) B.S.Ed., M.S., M.Ed.
Industrial Technology (Ed) B.Tech.
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 Design (A&A) B.F.A., M.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.
Management (B&E) B.S.Bus.
Marketing (B&E) B.S.Bus.
Mathematics (L&S) B.A., B.S., M.S., M.Nuc.Sc.,* 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., M.Nuc.Sc.

Mining Engineering (Min) B.S.Min.E., M.S.
Mining Engineering-Metallurgy (Min) Ph.D.
Music (L&S) M.A., M.Mus., M.A.T.
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 Administration (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., M.A.
Physical Education (Ed) B.S.Ed., M.S., M.Ed.
Physical Sciences (L&S) M.Nat.Sc.
Physics (L&S) B.A., B.S., B.Appl.Phys., M.S., M.Nuc.Sc.,* 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., M.A.T., Ph.D.
Poultry Science (Ag) B.S.An.Sc.
Pre-Dental Studies (L&S) B.S.Pre-Dent.
Pre-Medical Studies (L&S) B.S.Pre-Med.
Pre-Nursing Studies (L&S) 2-year program
Psychology (L&S) B.A., B.S., M.S.
Public Administration (L&S) M.P.A.
Radiological Science* (L&S) M.S.
Range-Livestock Management (Ag) B.S.An.Sc.
Range Resources (FWR) B.S.Range Res., M.S., M.F. A doctoral program in this field is offered under "Forestry, Wildlife and Range Sciences."
Recreation (Ed) B.S.Rec.
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., M.A.
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., M.A.T.
Special Education (Ed) B.S.Ed., M.S., M.Ed., Sp.Ed.Sp.
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.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., M.F. 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, nuclear engineering, and radiological science, and the degree of Master of Nuclear Science are limited to students enrolled in the UI/Idaho Falls Center for Higher Education.



Admission to the University

NOTE: As this catalog issue went to press, revised admission requirements were under consideration. Write to the Admissions Office for current information.

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 Graduate School 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 (less than 26 credits), sophomores (less than 58 credits), juniors (less 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 the following:

1. Personal data on the regular "Application for Admission" form. Failure to list all institutions 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 less than 26 semester credits) is required to have the scores attained on either the College Entrance Examination Board (SAT) or the American College Testing Program (ACT) 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 and a health history form, 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

NOTE: As this catalog issue went to press, revised admission requirements were under consideration. Write to the Admissions Office for current information.

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 half 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, applicants 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 sciences.

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 required 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.

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 satisfactory 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 by the Admissions Office. 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.

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.

6. Advanced-standing applicants with less 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 64 credits earned at junior or community colleges, or one-half of the total credits required for the student's intended baccalaureate degree program, may be transferred to the University of Idaho, except as limited by regulation J-5 (see part 3).

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 characterization 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 student 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. If applying for financial aid, the applicant must request transcripts from all institutions attended above the eighth grade, if an undergraduate; or from the institution from which the degree was earned, if a bachelor's degree is held. 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.

Nonmatriculated students who are otherwise eligible for financial aid may be assisted for a maximum of two semesters while enrolled in this category. If a departure from this regulation is warranted, the student has the right to appeal to the Student Financial Aid Committee. The two-semester limitation includes periods at other institutions in which the student was enrolled in a nonmatriculated or similar category.

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 whose previous degree was earned outside the U.S. must present the equivalent of a "C" average (by international standards). Those whose previous degree was earned at an institution in the U.S. must present at least a 2.70 grade point average (or a grade point average acceptable to the Graduate Council and the department concerned).

4. **English Proficiency.** Applicants must present the minimum score on the Test of English as a Foreign Language

COLLEGES OF THE UNIVERSITY

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
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

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.

(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.

Admission to the Graduate School and the College of Law. Students interested in graduate study should request a copy of the Graduate Bulletin. The special procedures for admission to the College of Law are described in part 4.

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 1982-83 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.

1982-83 Costs per Semester

	Idaho Residents	Nonresidents
Tuition[1]	$ 0	$ 1,000
Regular full-time student fees	408	408
Books, supplies, etc	170 to 260	170 to 260
Room and board[2]	975	975
TOTAL[3]	$1,553 to $1,643	$2,553 to 2,643

(1) In addition to special fees applicable to students enrolled in the Graduate School, the College of Law, etc.

(2) Double-occupancy rate in university-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.

Annual Expenses

In forecasting total costs for the academic year, double the 1982-83 semester costs, allow for normal increases, and add miscellaneous costs—clothing, laundry, transportation, incidentals, social and recreational expenditures, fraternal affiliations, and personal needs. These miscellaneous costs will vary widely with individual tastes.

An undergraduate student coming to the university needs about $1,050 to meet initial payments, including the first installment on the board payment. Out-of-state students need an additional $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.

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 $408 a semester. Students in certain divisions pay additional amounts; see "Special Fees" further on in this catalog section. Fees are payable in full at the time of registration on the scheduled registration day.

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 additional 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 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 guardian 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.

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

Foreign Nonresident Student Fee ($50 a semester). Full-time nonresident students who are not citizens of the U.S. and who are not resident aliens pay this fee in addition to the regular student fees and nonresident tuition.

Registration Packet Replacement Fee ($5).

Law Tuition ($125 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 $12.50 per credit.

Graduate Tuition. Students who enroll in the Graduate School pay this fee in addition to the regular student fees and, if applicable, in addition to nonresident tuition. Fees are $85 per semester for full-time students or $7.50 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 1982-83 this fee is $1,508 a semester and will be increased to approximately $1,618 for 1983-84.

WOI Tuition. Students who enroll in the Washington Oregon Idaho Regional Program in Veterinary Medical Education pay this fee in addition to the regular student fees. For 1982-83 this fee is $1,373 a semester and will be increased to approximately $1,455 for 1983-84. (The fees are paid to Washington State University, as students in this program enroll through that institution.)

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 instructional and library privileges only, and does not include insurance, student health services, ASUI membership, or free admission to athletic events.

Part-Time Fee ($43 a credit or equivalent for residents; $73 for nonresidents). Students who register for seven credits or less may pay this fee and any special fees applicable to specific courses in lieu of regular fees and tuition. Graduate students pay an additional $7.50 a credit in each category.

Audit or Zero-Credit Fee ($43 a credit or equivalent for residents; $73 for nonresidents). 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).

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 100, 101, 201, 301, 407, 505, Individual Instruction, pay $25 for each credit or equivalent. The individual-instruction fee is waived for students whose programs of studies specifically require these courses for graduation. In addition, each student presenting a formal recital performance in the School of Music Recital Hall is charged $20. If two or more performers present a program together, the charge is $10 for each of the principal 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.

Extramural Credit 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 when a special diploma insert must be made.

Thesis/Dissertation Binding Fee ($7). 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 ($30). 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 ($1). 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 $1 per copy.

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

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 last day to add or change courses.

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

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 ASUI 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 in full 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 by October 10 and November 10 for the fall semester and by February 10 and March 10 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.

6. Any student aid received by a student for purposes of registration (scholarships, student loans, BEOG awards, etc.) is deducted from fees to be assessed, and 60 percent of the balance, if that balance is over $100, may be deferred.

7. The student signs a promissory note for the deferred balance, and an authorization for deferred payment is given the student for presentation to the cashier. The Controller's Office makes related determinations, has notes signed, and issues authorizations during registration at the location for disbursement of student-aid checks.

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 $11 of the registration fee is nonrefundable once registration is completed). This does not apply, however, to the Northwest Interinstitutional 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.

Refund of Music Fees. The above schedule does not cover applied music lessons. Special music fees for individual instruction in performance studies may, upon prompt application by the student withdrawing, be refunded according to the following schedule: during the first two weeks of a semester, five-sixths; during the third and fourth weeks, two-thirds; fifth and sixth weeks, one-half; seventh and eighth weeks, one-third; ninth and tenth weeks, one-sixth. Application for this refund should be made to the director of the School of Music who is responsible for the approval of the application.

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, 106 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 con-

tribute 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

Nine 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 Alpha Theta, Kappa Kappa Gamma, and Pi Beta Phi. The average cost for living in a sorority ranges between $150 and $160 a month, which includes charges for room, board, and social fees. In addition there are special membership fees—pledge, initiation, and house corporation reserve fund—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 during participation in a program known as "rushing," which is held before the beginning of the fall semester. Registration for rushing *must be completed no later than August 1.*

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, Farm-House, 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 ranges between $150 and $160 a month, which includes charges for room, board, and social fees.

Arrangements 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 1982-83 rented for about $180-225 a month. One-, two-, and three-bedroom units are available; some are not furnished. A $50 advance deposit is 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 basis 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 initiative in seeking out advice and counseling. Assistance, 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, 9 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 institutions 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 885-6757).

Women's Center

The objective of the Women's Center is to assess the needs of students, faculty, staff, and community women, and to provide services and programs to help meet these needs. Some of the programs include the "Brown Bag Series," weekly informal discussions on a wide range of topics; the "Focus Series," several weekly sessions devoted to an indepth examination of a particular topic; special programs, films, symposiums, lectures, and events such as film and art festivals and workshops. Services include a referral system, lending library, resource files, subscriptions to several magazines and newspapers, and a large, comfortable lounge area.

Everyone is welcome at the Women's Center. The focus is on women's issues, but men are welcome and encouraged to join in the center's activities.

National Student Exchange

The National Student Exchange (NSE) provides state-college and university students an opportunity to become better acquainted with social and educational 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

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

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-identification will not adversely affect any admissions decision.

Minority Student Programs

The staff in Minority Advisory Services is prepared to assist specific ethnic 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 students and spouses without charge. Professionally trained counseling 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 all students who have paid the health-service fee. Care may also be provided on a fee-for-service basis to such persons as spouses, students who have not paid the health-service fee, and others at the discretion of the director of the Student Health Service.

Weekday, scheduled outpatient care is available for fall, spring, and summer sessions, except during vacations. Emergency care is available 24 hours a day Monday through Thursday during fall and spring semesters. Emergency care is available at Gritman Hospital when the Student Health Service is closed.

Laboratory, pharmacy, and x-ray services are available at the Student Health Service during fall and spring semesters; other studies are referred to area facilities. Psychiatric evaluation and treatment are available through the Student Health Service by consulting psychiatrists. Special services are available depending upon the training and skills of the staff. Patient needs beyond the scope of the staff and facilities of the Student Health Service are referred elsewhere as appropriate, at the patient's expense unless covered by university or other health insurance.

Fees are charged for outpatient visits, certain studies and special services such as lab tests, x-rays, medications, and procedures consuming more than minimal materials that must be repurchased.

History forms mailed to new students during the summer before enrollment should be completed and returned soon after they are received in order to be in the Student Health Service files when students register.

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 official university activities. Limits of this coverage are $3,500 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 are 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, National Direct Student Loans, Federal Guaranteed Student Loans, and Basic and Supplemental Educational Opportunity Grants. Students applying for admission to the University of Idaho and seeking financial aid may make application by completing the financial aid application form that is sent by the Admissions Office, together with a descriptive brochure, to each new applicant. To receive full consideration, completed applications for financial aid must be received by March 3 for the following fall semester. If application documents or the descriptive brochure were not received, they may be obtained from the Office of Student Financial Aid.

Students who qualify under the College 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. The Student Financial Aid Office also assists students in finding other part-time employment. In most cases part-time job placements cannot be made before a student actually arrives in Moscow and has registered.

Restrictions on Financial Aid. A student is not eligible for financial aid when:

Having Completed (Number of Credits)	Cumulative GPA Is Less Than
0 through 12	1.25
13 through 24	1.50
25 through 36	1.60
37 through 64	1.80
65 or more	2.00

An undergraduate student who receives financial aid is expected to progress toward a degree at the rate of at least 12 credits completed each semester. Thus, an undergraduate student is not eligible for financial aid after:

Total Semesters on Financial Aid	Credits Completed While on Financial Aid Are Less Than
2	24
4	48
6	73
8	99
10	128

Students with prior approval from deans for less than full-time loads will have a lower priority for aid, and any aid given will generally be in proportion to their credits loads.

Federal law requires that a student holding any baccalaureate degree be considered a graduate student for financial-aid purposes. In addition, it is UI policy that when a student has accumulated 12 credits more than the minimum number required for a baccalaureate degree in his or her particular program, the student is not eligible for grant aid. College Work Study and loans may be awarded to these students, but on a lower priority level.

Students who have been restored to eligibility after termination of financial aid will be reevaluated at the end of the semester for which eligibility was restored. All students receiving financial aid will be evaluated each year at the end of the spring semester.

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. (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. Nonmatriculated students should note the section headed "Admission as a Nonmatriculated Student" in this part 2.

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 0-1 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 in both academic and nonacademic pursuits. The listing of specific awards and recipients is included in the annual commencement program. 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, 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 and Recreation. The ASUI operates an 18-hole golf course adjacent to the campus. Recreational facilities located on the campus include the Kibbie-ASUI Activity Center, indoor and outdoor tennis and handball courts, 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, swimming, 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 play with the exception of Division II women's swimming.

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

The women's program competes as a member of the Mountain West Athletic Conference, which also includes Boise State University, Eastern Washington State University, Idaho State University, Montana State University, Portland State University, University of Montana, and Weber State College.

The men's program competes in the prestigious Big Sky Athletic Conference, which includes Boise State 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.

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 client who is seeking employment. The files contain biographical, educational, and experiential data as well as letters of recommendation about the applicant. Throughout the year, representatives of business, industry, government, and education visit the campus to interview students and alumni who are seeking employment. The CPPC makes arrangements for these visits and interviews. A compilation of summer employment opportunities is also maintained. In addition, the CPPC provides a weekly listing of job openings in education and industry.

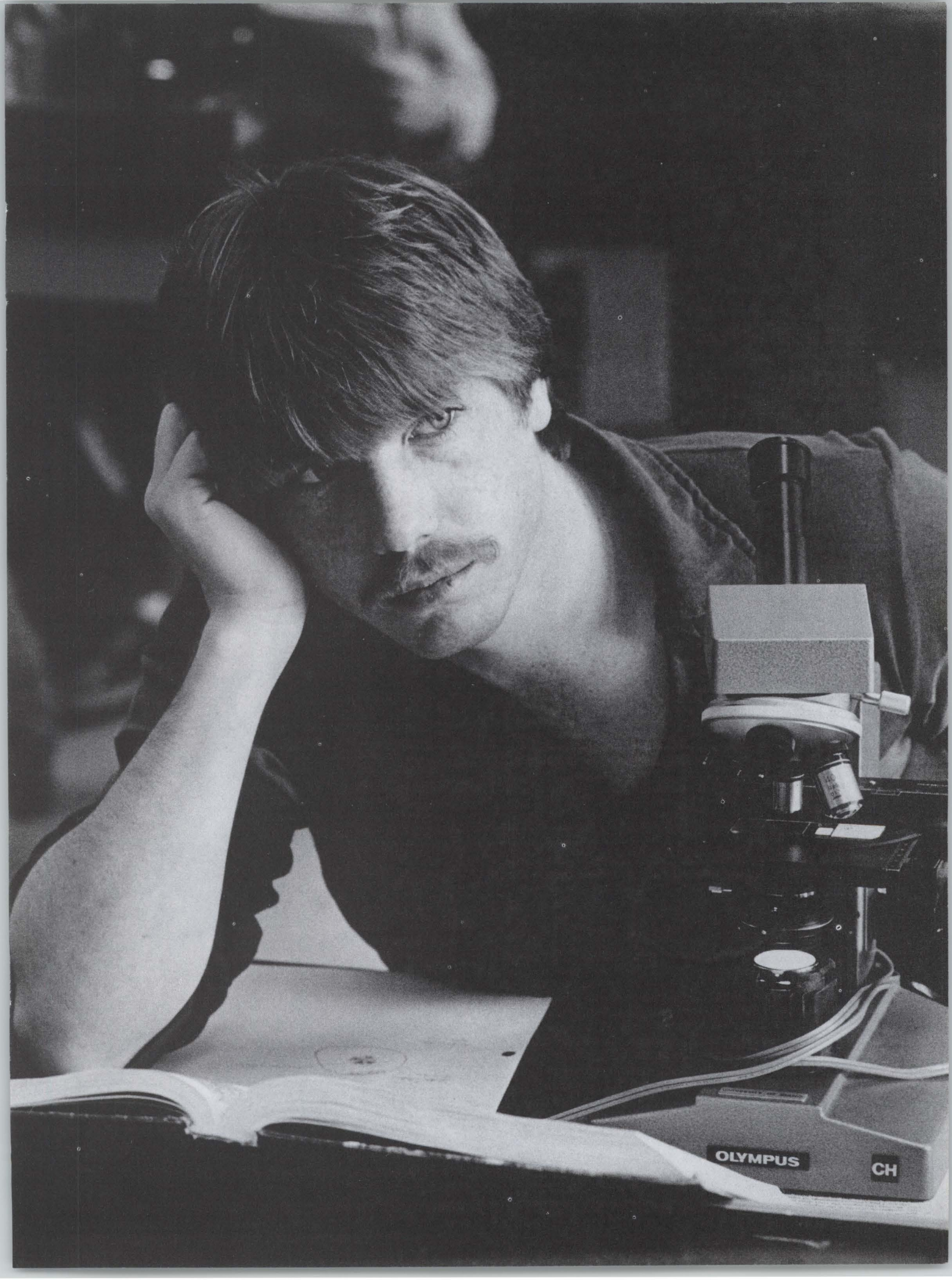
Alumni Association

All former UI students and honorary alumni are members of the University of Idaho Alumni Association, Inc. Activities of the 43,000-plus members are coordinated by the director of alumni relations and an elected volunteer board of directors of the association. Both the ASUI president and a faculty member are voting directors. These leaders, along with county chairmen in Idaho and metropolitan leaders throughout the country, keep alumni informed about their alma mater, encourage alumni moral and material support, and apprise university officials of alumni opinion. The association honors outstanding former students or those who provide exceptional service to the institution through a variety of awards. Scholarships are given to selected children of alumni. Areas of recent emphasis include informing prospective students about the university, strengthening ties with present students, supporting continuing education programs, and aiding in the activities of the UI Foundation.

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. In addition to the usual services of worship and church school classes, most of the churches help maintain and staff campus-oriented religious centers. Church addresses are readily available in the Moscow phone directory.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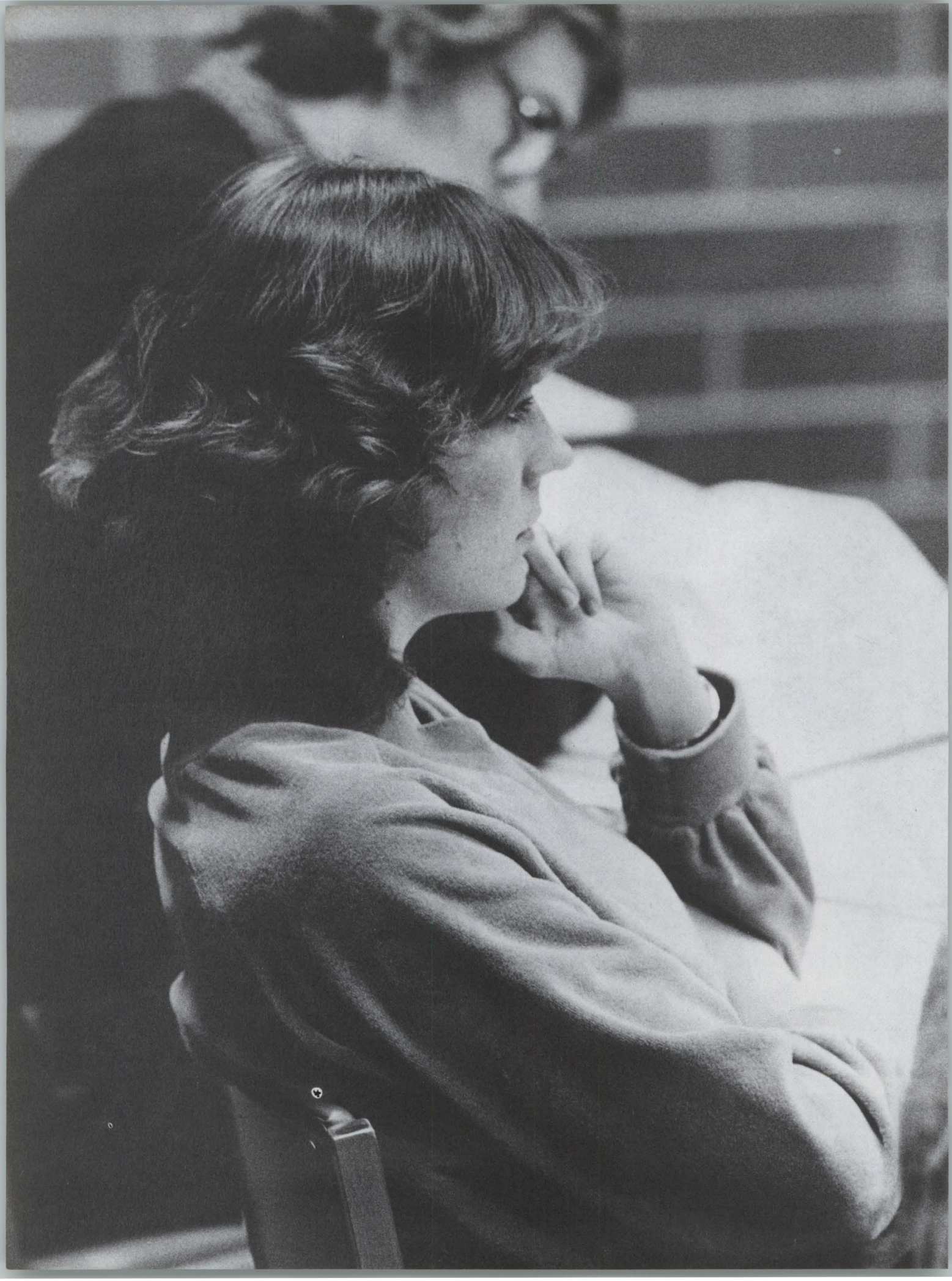


General Requirements and Academic Procedures

These regulations were in effect as of January 1, 1983. See the Time Schedule for any substantive changes that may occur after this catalog went to press.

The following procedures and regulations have been adopted to help students, faculty, 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 Council of Academic Deans 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 receiving departmental validation for each course, the student files the completed registration form with the registrar. After payment of fees, registration is complete and 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 instructor's loads, and determining departmental services.

B-5. Continuing-Education and Correspondence-Study Courses. A student enrolled in the regular program on the Moscow campus is permitted to carry continuing-education or correspondence-study courses for college credit only with the prior written approval of his or her academic dean. Credit for continuing-education or 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 Students in Graduate Courses. Undergraduate students may register in graduate courses under the procedures 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 Graduate School.

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 semester 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 head 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 graduate dean, graduates may enroll in a limited number of courses 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, graduate students 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 graduate dean. 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 last day to add courses or change course sections. 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 course 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" 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 after the end of the second week following midterms, 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.

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 sessions 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 sessions.

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 Dean's Council (file petition through dean's office). Grade recorded as withdrawal (W).****
Add course.	File form with registrar.	File form with registrar. Only for accelerated courses or by petition through dean's office. Permission of instructor required.		
Change course section.	File form with registrar.	By petition through dean's office in special cases only.		
Change to or from audit or pass-fail 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 Dean's Council (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.

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 Council of Academic Deans to drop more than 20 credits during a student's undergraduate career at UI. Credits dropped before the beginning of the 1979-80 academic year are not counted in the maximum of 20.

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 clock hours of scholarly activity each week. Ordinarily one 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.

D-2-a. Undergraduate.

(1) Regular Semester. Full-time undergraduate students may register for a maximum of 20 credits a semester. This number may be increased to 22 with the approval of the student's academic dean. Registration for more than 22 credits must be approved by the Council of Academic Deans (submit petition via dean's office). (Also see J-5.)

(2) Summer Session and Intersessions. The limitations corresponding to those in D-2-a-(1) during the regular eight-week summer session are 10 and 11, respectively. When registering for workshops or accelerated courses in conjunction with the regular eight-week summer session, students are considered to have exceeded the credit-load limitation when the rate of accumulation of credits (credit hours divided by length of course) exceeds 1.25 credits a week. The same limitation on the rate of accumulation applies during intersessions, presessions, and postsessions. A student may exceed the limitation on rate of accumulation for a period of one week during a summer session with permission of his or her adviser. Registration in excess of the above limitations must be approved by the Council of Academic Deans (submit petitions via dean's office).

D-2-b. Graduate School. During the fall and spring semesters, there is no maximum credit load for students in the Graduate School, except for instructional and graduate assistants, who are limited to an average of 12 credits. During the eight-week summer session, the maximum credit load for graduates is 10 credits, except for instructional and graduate assistants, who are limited to six credits. Graduate students who wish to take more than the specified maximum number of credits must obtain the approval of the dean of the Graduate School.

D-2-c. Full-Time Employees. Full-time UI employees may register for a maximum of six credits each semester and three credits during the eight-week summer session. Written approval by the employee's department chairman and dean must be attached to the registration form.

D-2-d. Nonmatriculated. Nonmatriculated students who have registered for two semesters pursuing 12 credits or more are required to petition the Admissions Committee if they wish to continue as nonmatriculated students pursuing more than a 12-credit load. See "Admission as a Nonmatriculated Student" in part 2.

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). Students may challenge UI lecture and associated laboratory courses—earn 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 course. (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 chairman of the department in which the course is offered, and by his or her academic dean, the extramural-credit fee is paid and the completed 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 chairman of the student's major department and the graduate dean.

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 in Eng 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 when the statement "May be graded IP" is included 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 Thesis or Dissertation. The grade of IP (in progress) may be used in courses 500 (Master's Research and Thesis) and 600 (Doctoral Research and Dissertation). When the thesis or dissertation is accepted, or when a student ceases to work under a particular major professor, 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 major professor 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. The following scale is used in computing grade point averages for all courses attempted at UI: A-4, B-3, C-2, D-1, F-0. Grade points are not computed for transfer, correspondence study, extension, advanced placement, credit by examination, or for courses graded I, IP, P, W, WU, or N. However, credits earned at other recognized institutions that are earned subsequent to regular enrollment for at least one semester or summer session at UI are computed in the students' UI cumulative grade point average on the same basis as credits earned at UI. "Regular enrollment" does not include enrollment as a nonmatriculated student.

E-5. Raising a Grade by Repeating the 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 chairman of the department 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 permanent 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 make 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 reverts to the grade specified by the instructor on the class roster (see F-1) unless the student has previously 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 upon 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 Received at End of Final Term. If a candidate for a degree receives a grade of "Incomplete" in a required course at the end of the semester or summer session in which the requirements for the degree are otherwise completed, the grade reverts immediately to the grade specified by the instructor on the class roster. However, the student is permitted to complete the course work involved within the usual time limit and 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 midterms.

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 Council of Academic Deans *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 Council of Academic Deans on forms available in department and college offices. If the student's petition is approved, the Council of Academic Deans 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 contact 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 initiated 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. Upon 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 or not 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 shall be 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 upon 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 upon 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 shall not 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 shall 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 shall 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 shall 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 chairman 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 chairman of the department concerned, undergraduates 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 upon 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 department chairman 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 sessions.

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 candidate is within 40 credits of completing the total number of credits required for the particular baccalaureate degree sought, he or she must complete a minimum of 32 credits in UI courses other than those offered by correspondence study. Exceptions to this requirements are stated below; exceptions are also made for study abroad and student exchange programs, with prior approval by the student's academic dean. Among the last 40 credits, the candidate may count a maximum of eight credits earned at other senior colleges or universities, or through any of the following means: correspondence study, bypassed courses, credit by examination, College Level Examination Program (CLEP), external study/experience, technical competence, or certain educational programs sponsored by the armed forces.

J-2-b. Candidates for preprofessional degrees (e.g., B.S.Pre-Med.), whose curricula require that they complete (usually in the senior year) professional courses not offered at UI, are exempt from the requirement stated in J-2-a and must complete the junior year (32 credits) by taking 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-2-d. Candidates for baccalaureate degrees at the UI/Idaho Falls Center for Higher Education are exempt from the requirements 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-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. **Lists of courses that have been approved for the fulfillment of the requirement in each category are available from deans' offices.** 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.

[This revised regulation J-3 is effective for all students who graduate under the 1983-85 catalog or a subsequent catalog

(i.e., it is applicable to students who enter UI as freshmen after July 1983 and to those who enter after that date with transfer credits sufficient to place them in the class of '87 or a later class). See regulation J-6 for information on the permitted selection of other catalog issues under which the student may graduate, but note that for students graduating after May 1982 the former requirement of physical education activities has been eliminated.]

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 or on the American College Testing (ACT) English Test 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.

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.

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.

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.

J-4. Grade Requirements. To qualify for the baccalaureate degree, a candidate must have a cumulative grade point average of 2.00 or better for all UI courses attempted. 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. Sixty-four credits earned at junior or community colleges, or one-half of the total credits required for the student's intended baccalaureate degree. (Note that J-2-a provides that after a candidate is within 40 credits of completing the total required for the baccalaureate degree sought, no credits earned at junior or community colleges may be counted.)

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 Council of Academic Deans (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 courses in reading, writing, and numerical skills, such as Math 107. Credits in remedial courses may be counted toward general elective credit only.

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 catalog issue that was in effect at the time of or subsequent to the candidate's enrollment as a degree-seeking student here; however, transfer students may elect to satisfy the requirements of the catalog issue that was in effect at the time of entry into UI of the class to which they were assigned on the basis of the number of credits transferred. In any case, the catalog issue designated must have been in effect within seven years of the commencement at which the candidate is to receive the degree.

J-7. Second Baccalaureate Degree.

J-7-a. Students may complete the requirements for different majors and concurrently receive two different baccalaureate degrees (e.g., B.A. and B.S.Ed.) from UI upon fulfilling 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 receive 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.

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.

K—Academic Honors

K-1. Graduation with Honors. Honors are awarded at graduation upon reccomendation of the faculty of the college from which the student graduates. Honors are not awarded with degrees earned in the Graduate School.

K-2. Dean's List. Students who are carrying the specified number of credits and attain the required grade point average for a given semester are placed on lists prepared for the college deans. These lists are publicized within UI and are distributed to news agencies. The grade point average and numbers of credits required by the various degree-granting units are listed below:

College or Program	GPA Required	Minimum Credits*
Agriculture	3.30	14
Art and Architecture	3.30	14
Business and Economics	3.30	14
Education	3.30	14
Engineering	3.30	12
Forestry, Wildlife and Range Sciences	3.30	14
General Studies	3.00	14
Law	3.00	12
Letters and Science	3.30	14
Mines and Earth Resources	3.30	14

*Credits for which a student was graded P are not computed in this minimum, except for grades of P earned in Eng 103 and 104.

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 Sessions. 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 nonmatriculated students or to students in the College of Law or the Graduate School.

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 upon 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 (or equivalent in audits, zero-credit enrollments, etc.) each semester to be classified as full time.

O-1-b. For fee and tuition purposes only, students carrying eight or more semester hours (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 Graduate School are considered full time: **(1)** when registered for nine credits (or equivalent) of course and/or thesis work; **(2)** when registered for less than nine credits but paying full-time student fees and certified by the major professor and the dean of the Graduate School as being engaged in the equivalent of nine credits of study in the pursuit of course work, research, preparation for examinations, or other activities of an academic nature; or **(3)** when on regular appointment as an instructional assistant or graduate assistant.

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 semester 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 semester hours; vice president and senators, six semester hours. 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 semester hours; associate editor, six semester hours.

0-2. 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 department chairman and college dean, and finally to the Academic Hearing Board. Disciplinary penalties for academic dishonesty must be handled by the Student Judicial System.

0-3. 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.

0-4. 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

MINIMUM CREDIT LOADS FOR VETERANS' BENEFITS

Benefits	Academic Year Undergraduate	Academic Year Graduate	Summer Session Undergrad. & Grad.
Full	12 or more	9 or more	6 or more
Three-fourths	9-11	6-8	4-5
Half	6-8	4-5	3
Fees and tuition only	less than 6	less than 4	less than 3

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.

0-5. Limitations on Class Size. 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 regular basis, the limitation must be approved through faculty channels and will be made part of the catalog description of the course. 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 particular 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 0-5.)

0-7. 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.

0-8. Confidentiality of Academic and Counseling Records. See the student records policy in the Time Schedule.

0-9. Rights Reserved to the University.

0-9a. Catalogs, bulletins, schedules of classes or fees, etc., are not to be considered as binding contracts between the UI and students. UI and its divisions reserve 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 at the time. When financial 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 the graduation requirements, and who are making normal progress toward the completion of those requirements, will have the opportunity to complete the program that is to be withdrawn.

0-9-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 Ad. Office Bldg.

General Studies Program

Francis Seaman, Director (111 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 should 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 university'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 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 in 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 complete 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. degree "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

Raymond J. Miller, Dean and Director of the Agricultural Experiment Station (53 Iddings Wing, Ag. Sc. Bldg.); A. Larry Branen, Associate Dean and Director of Resident Instruction; Harold R. Guenthner, Associate Dean and Director of the Cooperative Extension Service; Lee A. Bulla, Associate Dean and Associate 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 biological, 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; 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, poultry brooder, laying houses, and plant science farm and research plots. Poultry, dairy cattle, beef cattle, sheep, and swine 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 with the exception of the Department of Agricultural and Extension Education. Thus, most of the teaching faculty in the college also have part-time appointments in the experiment station. A few individuals have dual appointments in teaching and extension; selected individuals have three-way appointments in teaching, research, and extension; several staff members are assigned to full-time research.

The Idaho agricultural research program is statewide. Research activities are conducted with all major agricultural commodities and resources and in all major 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 for an average of two years, 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 in Moscow, Boise, Caldwell, Twin Falls, and Idaho Falls. 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 four broad areas. These are: (1) agriculture and natural resources, (2) community resource development, (3) family living, and (4) 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.

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 (majors in agribusiness and soil science), and Bachelor of Science in Veterinary Science. Also, a program in food science is offered in cooperation with Oregon State University (the degree is granted by that institution). See part 5 for the programs of 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 School 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. Each candidate for a baccalaureate degree in the College of Agriculture must complete a minimum of 132 semester credits (136 for the degree in plant protection), including the specific departmental requirements listed in the major curriculum and the following general college requirements: (a) advanced writing, 3 credits; (b) speech, 2 credits; (c) mathematics, 4 credits; (d) chemistry, 4 credits; (e) life sciences, which must include Biol 201, 8 credits; (f) humanities and social sciences, including at least 5 credits in each, 14 credits; and (g) courses in the major, 20 credits recommended. A list of approved courses to satisfy these college requirements is available through departmental advisers. A course may be used to satisfy only one requirement. These college requirements do not apply to the B.S.H.Ec. degree.

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. 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 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 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 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 School 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 furnish the student photographs (prints or slides) of the work it chooses to retain.

College of Business and Economics

Lawrence H. Merk, Acting Dean (211-A Admin. Bldg.); Dolores A. Sanchez, Assistant to the Dean.

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, the need for long-range planning in all economic activities, adapting to rapid technological change, including computerization, and the need for personal career flexibility and adaptability.

The College of Business and Economics provides a sound background in the basic principles that will help graduates as they advance into key positions. As part of a state-supported land grant university, CBE also aims to give its students an appreciation of the social importance and responsibilities of business men and women, 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 majors in the following fields: accounting, economics, finance (options in financial systems, financial institutions, and corporate financial management), management (options in human resources and operations management), and marketing. The program of study includes three principal components: the business and economics core, requirements for the selected CBE major field, and non-CBE course work. Detailed statements of the requirements for majors 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.) in business. Graduate students must fulfill the requirements of the Graduate School 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 are required to achieve a minimum cumulative grade point average of 2.00 for all course work at the lower-division (freshman-sophomore) level and a 2.40 grade point average for the following courses: Econ 151 and 152, Principles of Economics; Acctg 201 and 202, Principles of Accounting; and ApSt 251, Principles of Statistics.

In addition, all lower-division requirements (a total of 58 credits) must be completed before fully pursuing upper-division work. 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 all upper-division College of Business and Economics courses 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 that have upper-division designations at UI (300 or 400 course numbers) may not be completed at a two-year college for transfer into the College of Business and Economics core or major. Such courses may be transferred only as undesignated electives.

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: 36 credits in the business and economics core, at least 18 credits in the selected CBE major field, and at least 52 credits in required and elective nonbusiness courses as specified below. 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. *CORE REQUIREMENTS IN BUSINESS AND ECONOMICS (36 credits):*

Course	Credits
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
Bus 265 Legal Environment of Business	3
Bus 301 Financial Management	3
Bus 311 Intro to Management Theory	3
Bus 321 Marketing	3
Bus 332 Quantitative Methods in Bus (required for all majors except econ, who can choose Bus 332, Econ 433, or Econ 436)	3
Econ 350 Mgt Information Systems or Bus 351 Systems Analysis Methods	3
Bus 370 Industrial Management	3
Bus 474 International Bus or Bus 475 International Marketing or Econ 474 International Econ or Econ 477 Econ of Developing Countries or	

Econ 490 Comparative Econ Systems	3
Bus 480 Business Policy	3
Upper-division economics elective	3

B. *NONBUSINESS REQUIREMENTS (at least 55 credits):*

Course	Credits
ApSt 251 Principles of Statistics	3
Comm 131 Fundamentals of Speech	2
CS 100 Intro to Computers & Programming	3
Econ 151, 152 Principles of Economics	6
Eng 103, 104 Basic Skills and Essay Writing	6
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Math 111 Finite Mathematics	4
Math 160 Survey of Calculus	4
Phil 101 Ethics	3
Psych 100 Intro to Psychology	3
Literature	6
Natural science (physical or biological science)	4
Social science	3
Additional credits outside of the College of Business and Economics (physical education activity and office administration credits excluded)	2*

*5 credits for accounting majors.

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 must 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

Thomas O. Bell, Dean (301 Educ. Bldg.); 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 and Recreation, the Division of Teacher Education, and the Division of Vocational Teacher Education. 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). Undergraduate programs leading to nonteaching degrees include: dance, industrial technology, office administration, 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 Professional and Curriculum Development

The Center for Professional and Curriculum Development 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 things 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 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 School offers work toward advanced degrees in several disciplines of the college. Students must fulfill the requirements of the Graduate School and of the department in which they intend to study. Consult the Graduate Bulletin 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 Education, Specialist in Educational Administration, Specialist in Guidance and Counseling, 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, distributive education, educational administration, elementary education, guidance and counseling, industrial education, physical education, secondary education, special education, and vocational education.

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

Doctoral candidates majoring in education may concentrate in education, educational administration, elementary education, guidance and counseling, secondary education, or vocational 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. 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 2.25 GPA; (2) completion of Ed 201, Introduction to Teaching; (3) completion of Eng 103 and 104; (4) completion of Math 135 (for elementary education majors); and (5) recommendation from advisers. 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 courses.

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 simulated 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 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 25-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.)

25-Credit Core. Introduction to Teaching, 2 cr (Ed 201); Educational Psychology, 3 cr (Ed 415); Strategies for Teaching, 2 cr (Ed 314); Special Methods, 2 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 School of Home Economics, or the 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 four years of preparation and hold a bachelor's degree.

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 (54 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 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. *English-Speech (14 credits),* including basic skills for writing and essay writing plus an additional 6 credits in English composition and literature, and Comm 131, Fundamentals of Speech, or Comm 132, Oral Interpretation.

2. *Social Science (12 credits),* including one course in American history (Hist 111 or 112), one course in American government (PolSc 101), and 6 credits selected from the following list of courses:

Course	Credits
Anthr 220 Peoples of the World	3
Anthr 225 North American Indians or Hist 423 Idaho & the Pacific Northwest	3
Anthr ID425 Contemporary North American Indian	3
Econ 100 Contemporary Economics	3
Geog 250 World Regional Geography	3
Geog 362 United States & Canada	3
Geog 364 Idaho & the Pacific Northwest	3
Soc 110 Intro to Sociology	3

3. *Science (12 credits),* including biological, earth, and physical science courses requiring laboratory work. From the following list, select 4 credits each from the areas of (a) life sciences, (b) earth sciences, and (c) physical sciences:

Course	Credits
(a) Life Sciences	
Biol 100 Man & the Environment or 201 Intro to the Life Sciences	4
For 205, 206 Wildland Resource Conservation & Lab	4
(b) Earth Sciences	
Geog 100, 101 Man's Physical Environment & Lab	4
Geol 101, 102 Physical Geology & Lab or 106, 107 Historical Geology & Lab	4
(c) Physical Sciences	
Chem 103 Intro to Chem.	4
Phys 101 Fundamentals of Physical Science or 105, 106 Physics & Society & Lab	4
Phys 103, 104 General Astronomy & Lab	4

4. *Mathematics (6 credits):* Math 135-136, Math for Elementary Teachers.

5. *Art and Music (2 credits in each area):* select from non-methods courses.

6. *Psychology (6 credits):* Psych 100, Intro to Psych, and Psych 205, Developmental Psych.

B. *GENERAL STUDIES REQUIREMENTS FOR SECONDARY SCHOOL TEACHING (38 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. *English-Speech (14 credits),* including basic skills for writing and essay writing plus an additional 6 credits in English composition and literature, and Comm 131, Fundamentals of Speech, or Comm 132, Oral Interpretation.

2. *Social Science (9 credits),* including at least one course in American history (Hist 111 or 112) or American government (PolSc 101).

3. *Science-Mathematics (12 credits),* including biological, earth, or physical science courses requiring laboratory work. Majors preparing to teach at the secondary-school level must complete a minimum of 12 credits in laboratory science and mathematics.

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

C. *UNIFORM REQUIREMENTS FOR ELEMENTARY AND SECONDARY TEACHING (21-22 credits).*

Course	Credits
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2-3
Ed 328 Audiovisual Aids	1
Ed 415 Educational Psychology	3
*Ed 430 or 431 or 432 or SpEd 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.

*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.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 268 Survey of English Literature	3
Eng 277-278 Survey of American Literature	6
Eng 401 Writing Workshop for Teachers or 402 Composition & Criticism	3
Eng 435 Shakespeare	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

ANTHROPOLOGY

A teaching major in anthropology is not offered.

15-CREDIT ANTHROPOLOGY TEACHING MINOR

Course	Credits
Anthr 100 Intro to Anthropology	3
Anthr 225 North American Indians or 325 Indians of Idaho	3
Approved anthropology electives	9

ART

A. 40-CREDIT ART TEACHING MAJOR

Course	Credits
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Art 211 Drawing II	3
Art 231 Painting I	2
Art 241 Sculpture I	3
Art 261 Ceramics I	2
Art 271 Jewelry I	2
Arch 155-156 Design & the Creative Process	4
Art electives	12

B. 20-CREDIT ART TEACHING MINOR

Course	Credits
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 231 Painting I	2
Art 241 Sculpture I	3
Art 261 Ceramics I	2
Art 271 Jewelry I	2
Art electives	3

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
PE 418 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 323 Comparative Vertebrate Embryology or 324 Comparative Vertebrate Anatomy	4
Zool 416 Mammalian Physiology	4
Approved electives from bacteriology, biology, botany, entomology, or zoology	4

B. 24-CREDIT COMPOSITE TEACHING 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
Biol 352 Experimental Genetics	1
Biol 361 Biological Literature	1
One of the following: Bot 311 and 312, Bot 425, Zool 323, Zool 324, or Zool 414	4-5

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. 41-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 277, 278 Organic Chem I & Lab and 372, 376 Organic Chem II & Lab	8-9
Chem 302 Prin of Physical Chem	3
Biol 201 Intro to Life Sciences	4
Math 180 Analytic Geom & Calculus I	4
Phys 113-114-115-116 General Physics & Lab	8

B. CHEMISTRY TEACHING MINORS

The teaching minor in chemistry may be 15 or 20 credits. For secondary-school teacher certification, 20 credits are required.

Course	Credits
Chem 111 Prin of Chem or 103 Intro to Chem	4
Chem 112 Inorganic Chem & Qual Analysis	5

Chem 275, 278 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 and Recreation 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 & Psych 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
Comm 121 News Writing	3
Comm 131 Fundamentals of Speech	2
Comm 140 Mass Communication in a Free Society	3
Comm 175 Intro to Telecommunication Equipment	3
Comm 222 Reporting	3
Comm 233 Interpersonal Communication	2
Comm 274 Radio Production	3
Comm 275 Television Production	4
Comm 281 Understanding Photography	3
Comm 325 News Editing	3
Comm 331 Resolution of Conflict	3
Comm 332 Communication & the Small Group	3
Comm 362 Print Media Advertising	3
Comm 431 Professional Presentation Tech	3
Comm 441 Ethics in Journalism	2

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	

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 321 Dance Pedagogy	2
Dan 320 Labanotation	2
Dan 325 Dance Production	2
Dan 420 Dance Accompaniment	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 207 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 College Algebra	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 210 Intro to Analysis of Lit	3
Eng 250-260-270 Anglo-American Lit	9
Eng 309 Advanced Prose Writing	3
Eng 401 Writing Workshop for Teachers	3
Eng 435 Shakespeare	3
Eng 441 and 442 or 443 or 496 Linguistics	6
Eng 445 Lit for Young People	3
Area requirements (one course from each of the following three groups)	9
Middle Ages/Renaissance/17th Century: Eng 433, 434, 437, 451, 452, 453	
Restoration/18th & 19th Century British: Eng 421, 422, 438, 456, 465, 466	
American Lit/20th Century British & American: Eng 426, 427, 428, 429, 439, 470, 471, 472, 474	

B. 33-CREDIT ENGLISH TEACHING MAJOR

Course	Credits
Eng 210 Intro to Analysis of Lit	3
Eng 250-260-270 Anglo-American Lit	9
Eng 309 Advanced Prose Writing	3
Eng 401 Writing Workshop for Teachers	3
Eng 435 Shakespeare	3
Eng 441 and 442 or 443 or 496 Linguistics	6
Eng 445 Lit for Young People	3
Area requirement (one course from those listed under the 42-cr teaching major)	3

C. 24-CREDIT ENGLISH TEACHING MINOR

Course	Credits
Eng 210 Intro to Analysis of Lit	3
Eng 250-260-270 Anglo-American Lit	9
Eng 335 Shakespeare for Nonmajors	3
Eng 401 Writing Workshop for Teachers	3
Eng 441 Intro to Study of Language	3
Eng 445 Lit for Young People	3

ENVIRONMENTAL EDUCATION

60-CREDIT COMPOSITE TEACHING MAJOR

For student who wish to pursue a broad interdisciplinary major to prepare for working in school-related environmental programs. Certification granted following completion of this major is for environmental education only. Those wishing certification in other fields must complete the appropriate program outlined elsewhere in this section (see Biological Sciences, Chemistry, Earth Science, Physical Science, Physics). The candidate will have two advisers: one from education and the other selected from the faculties of biological science, earth science, or forestry, wildlife, and range sciences. Any changes or substitutions in the program outlined below must be approved by the two advisers.

Course	Credits
Biol 201 Introduction to the Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3

Chem 103 Introduction to Chemistry 4
For 205 Wildland Resource Conservation or
Geog 360 Population Dynamics & Dist 3
Geog 100-101 Man's Physical Environment & Lab
or Geol 101-102 Physical Geology & Lab 4
Geog 180-181-182 Spatial Graphics 3
Geog 330 Urban Geography 3
Geog 427 Decision-Making in Resource Mgt 3
Geog 495 Public Planning Participation 1
Phys 101 Fundamentals of Physical Science 4
RcMgt 287 Principles of Wildland Recreation Mgt 2
RcMgt 387 Environmental Interpretive Methods 3
RcMgt 489 Personalities & Phil in Conservation 2
Soils 354 Soil Resources & Land Use Planning 2
WLF 390 Principles of Fish & Wildlife Ecology,
or Biol 331 General Ecology 3
WLF 493 Environmental Law or Geog ID420 Land &
Resource Regulation 2-3
Approved electives in natural history 9

Additional Strongly Recommended Electives:

ApSt 251 Principles of Statistics 3
Chem 275 Carbon Compounds 3
Rec 255 Backpacking & Camping Skills 2
Art electives 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	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 413 French for Teachers	2
FL/FR 449 Practicum in Tutoring	1-2
Electives chosen from the following	5-8
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 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 NW	3
Geog 401 Atmospheric Environment or ID420 Land & Resource Regulation or 427 Decision-Making in Resource Management	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 ID420 Land & Resource Regulation or 427 Decision-Making in Resource Management	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 Palentology	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 433 German for Teachers	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.

GUIDANCE AND COUNSELING

An undergraduate major is not offered in guidance and counseling. Students who wish to qualify for guidance and counseling may qualify as teachers in any subject area and enroll in guidance and counseling programs later in graduate school. Those definitely planning to become counselors should seek advice from the guidance 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 guidance and counseling.

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 Marriage in a Changing World 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 ID130 Basic Electricity	3
IEd 140 Wood Technics	3
IEd 250 General Metals	3
IEd 310 Maintenance of Tools & Equipment	3
IEd 462 Industrial Ed Curriculum	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 Comm in a Free Society	3
Comm 222 Reporting	3
Comm 325 News Editing	3
Comm 421 Supervising High School Publications	2
Comm 445 Hist of Mass Communication	3
Journalism electives	3

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 364 Literature of Ancient Greece & Rome	3
FL/LA 161-162 Elementary Latin	8
FL/LA 261-262 Intermediate Latin	8
FL/LA 361-362 Adv Latin Grammar & Composition or courses in adv Latin literature	6
FL/LA 365-366 Survey of Latin Literature	6
FL/LA 467 Latin for Teachers	2
Electives chosen from the following	3
Eng 441 Intro to Study of Language	
FL/EN 243 English Word Origins	
FL/LA 369 Latin Language Lab	

B. 20-CREDIT LATIN TEACHING MINOR

Course	Credits
FL/LA 161-162 Elementary Latin	8
FL/LA 261-262 Intermediate Latin	8
Approved Latin electives (FL/LA 361-362 is especially recommended)	4

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 MINORS

The teaching minor in library science may be either 15 or 20 credits. This teaching minor will qualify the student for the Idaho school librarianship credential. Because library science is not a teaching field, the teacher-librarian who must qualify for a standard Idaho teacher's certificate will need to develop a second teaching minor in addition to his or her teaching major.

Course	Credits
LibSc 420 Classification & Cataloging	4
LibSc 421 Selection of Books & Related Materials	3
LibSc 422 Use of the School Library	2
LibSc 423 Reference in School Libraries	3
Library science electives	3-8

MATHEMATICS

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

Math 140 and 179 may be necessary prerequisites for students with weak backgrounds. Math 390 is offered only in alternate years, so students must plan their schedules to take this course when it is offered.

A. 40-CREDIT MATHEMATICS TEACHING MAJOR

Course	Credits
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers	3
Math 215 Seminar in Topology of the Plane	2
Math 330 Linear Algebra or 326 Linear Programming	3
Math 390 Postulational Geometry	3
Three of the following courses (chosen from courses not already taken)	9
Math 326 Linear Programming	
Math 330 Linear Algebra	
Math 346 Applied Combinatorics	
Math 407 Discrete Math Structures	
Math 430 Optimization	
Math 440 Liner Algebra	
Math 461 Higher Algebra	
Math 471 Advanced Calculus	
ApSt 251 Prin of Stat or ApSt 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3
CS 100 Intro to Computers and Programming	3
CS 150 Intro to PASCAL Programming or Math 205 Intro to Computer Programming	3
Math 200 or math courses numbered above 300	3

B. 30-CREDIT MATH TEACHING MAJOR

Course	Credits
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers or 215 Seminar in Topology of the Plane	2-3
Math 326 Linear Programming or 330 Linear Algebra	3
Math 390 Postulational Geometry	3
One of the following courses	3
Math 407 Discrete Math Structures	
Math 440 Linear Algebra	
Math 461 Higher Algebra	
Math 471 Advanced Calculus	
Math 200 or math courses numbered above 300	3
ApSt 251 Prin of Stat or ApSt 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3
CS 100 Intro to Computers and Programming	3
CS 150 Intro to PASCAL Programming or Math 205 Intro to Computer Programming	3

C. 20-CREDIT MATH TEACHING MINOR

Course	Credits
Math 180, 190 Analytic Geom & Calculus	8
Math 186 Theory of Numbers	3
Math 390 Postulational Geometry	3
ApSt 251 Prin of Stat or ApSt 301 Probability & Stat or Math 451 Prob Theory & Math Stat	3
CS 100 Intro to Computers and Programming	3

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
MuA 387 Conducting I	2
MusC 141, 142 Theory of Music I, II or 121-122 Elements of Music Theory	6-8
MusH 221-222 Music in Western Civilization or two courses from the following: MusH 412, 413, 415, 418	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, 265, 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 271-272 Shorthand III-IV	6
BusEd 313 Office Management	2
BusEd 395 Secretarial Procedures	3
BusEd 491 Teaching Business Ed I	3
Eng 313 Business Writing	3

OFFICER EDUCATION

TEACHING MINORS IN OFFICER EDUCATION

This teaching minor may consist of either 15 or 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 are 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 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 Programming 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 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	23

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 Man & the Environment 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 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Introductory Physics Lab	3
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 THE 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 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Introductory Physics Lab	3
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	
Geog 401 Atmospheric Environment	
Inter ID394 Tech & Societal Decisions	
Inter ID490 Tech & Human Values	
Phys 103 General Astronomy	

PHYSICS

A. 40-CREDIT PHYSICS TEACHING MAJOR

Course	Credits
Phys 103 General Astronomy	3
Phys 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Introductory Physics Lab	3
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 Anal Geom & Calc	11

B. 20-CREDIT PHYSICS TEACHING MINOR

Course	Credits
Phys 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Introductory Physics Lab	3
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 U.S. 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, 443, 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 lit 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
ApSt 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
ApSt 251 Principles of Statistics	3
Approved psychology electives	4

RECREATION

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

SOCIAL SCIENCE

A. 40-CREDIT COMPOSITE TEACHING MAJOR

Courses for this composite teaching major may be selected from anthropology, economics, geography (excluding physical geography), history, philosophy, political science, and sociology. At least 18 of the required 40 credits must be in history, including at least 9 credits in U.S. history. At least 3 credits are required in each of the following fields: U.S. government, economics, geography, and sociology or anthropology.

B. 20-CREDIT COMPOSITE TEACHING MINOR

Required course work consists of approved courses from the fields listed above. This composite minor must include at least 3 credits in U.S. history or government and is limited to students who are majoring in elementary education.

SOCIOLOGY

A teaching major in sociology is not offered.

15-CREDIT SOCIOLOGY TEACHING MINOR

Course	Credits
Soc 110 Intro to Sociology	3
Soc 230 Social Problems	3
Approved sociology electives	9

SOCIOLOGY/ANTHROPOLOGY

A teaching major in sociology/anthropology is not offered.

20-CREDIT SOCIOLOGY/ANTHROPOLOGY TEACHING MINOR

Course	Credits
Anthr 100 Intro to Anthropology	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.

SPEECH

A. 30-CREDIT SPEECH TEACHING MAJOR

Course	Credits
Comm 131 Fundamentals of Speech	2
Comm 132 Oral Interpretation	2
Comm 133 Improving Listening Skills	1
Comm 134 Nonverbal Communication	2
Comm 140 Mass Comm in a Free Society	3
Comm 232 Parliamentary Law & Procedure	1
Comm 233 Interpersonal Communication	2
Comm 331 Resolution of Conflict	3
Comm 332 Communication & the Small Group	3
Comm 333 Interviewing	3
Comm 334 Intercultural Communication	2
Comm 431 Professional Presentation Tech	3
Comm 434 Organizational Communication	3
Comm 441 Ethics in Journalism	2

B. 20-CREDIT SPEECH TEACHING MINOR

Course	Credits
Comm 131 Fundamentals of Speech	2
Comm 132 Oral Interpretation	2
Comm 232 Parliamentary Law & Procedure	1
Comm 233 Interpersonal Communication	2
Comm 331 Resolution of Conflict	3
Comm 332 Communication & the Small Group	3
Comm 432 Public Address Practicum	2
Courses selected from those specified for the speech teaching major	5

THEATRE ARTS

A. 30-CREDIT THEATRE ARTS TEACHING MAJOR

Course	Credits
ThA 102 Theatrical Makeup	2
ThA 105 Basics of Performance	2
ThA 263 Technical Production	3
ThA 271 Play Analysis	3
ThA 272 Intermediate Acting	3
ThA 362 Costume for the Stage	3
ThA 420 Production Management	2
ThA 471-472 Directing	6
Approved theatre arts electives	7

B. THEATRE ARTS TEACHING MINORS

The teaching minor in theatre arts may be 15 or 20 credits. For secondary-school teacher certification, 20 credits are required.

Course	Credits
ThA 102 Theatrical Makeup	2
ThA 105 Basics of Performance	2
ThA 263 Technical Production	3

ThA 271	Play Analysis	3
ThA 362	Costume for the Stage	3
ThA 420	Production Management	2
ThA 471	Directing	3
	Approved theatre arts electives	3

THEATRE ARTS-SPEECH

40-CREDIT COMPOSITE TEACHING MAJOR

Course		Credits
Comm 130	Intercollegiate Forensics	1
Comm 131	Fundamentals of Speech	2
Comm 132	Oral Interpretation	2
Comm 134	Nonverbal Communication	2
Comm 232	Parliamentary Law & Procedure	1
Comm 233	Interpersonal Communication	2
Comm 331	Resolution of Conflict	3
Comm 332	Communication & the Small Group	3
Comm 431	Professional Presentation Tech.	3
ThA 102	Theatrical Makeup	2
ThA 105	Basics of Performance	2
ThA 263	Technical Production	3
ThA 362	Costume for the Stage	3
ThA 420	Production Management	2
ThA 471-472	Directing	6
	Approved electives in theatre arts and speech	4

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

J. Richard Williams, Dean (125 Janssen Engr. Bldg.); George R. Russell, Associate Dean and Secretary of the College Faculty; Weldon R. Tovey, Associate 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, but who have not attained a cumulative GPA of at least 3.0 in all previous college-level courses, including any courses taken at UI, will be admitted only upon 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, Chemistry, 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. Each 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 comes 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 135 FORTRAN Programming for Engineers	2
Eng 104 Essay Writing	3
Engr 101 Engineering Graphics	2
ES 211 Intro to Mechanics	4
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 H. Ehrenreich, Dean (202 Forestry, Wildlife and Range Sciences Bldg.); Arland D. Hofstrand, Associate Dean; Charles R. Hatch, Associate Dean; Winifred B. Kessler, 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 resources (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 collection 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 purposes. Shattuck Arboretum, with over 60 species of trees, is maintained on campus for studies in dendrology and silvics. Other field facilities include permanent summer camps located on the shore of Payette Lake in the mountains of west-central Idaho and at Clark Fork in northern Idaho, a wilderness field station in the heart of the River-of-No-Return Wilderness, and a range field station near the Nevada border. In addition, the 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 evaluates 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 in all divisions of the university.

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.); Bachelor of Science in Forest Products (B.S. For.Prod.), with options in forest business management and science-engineering; Bachelor of Science in Forest Resources (B.S.For.Res.) with options in management and science; Bachelor of Science in Range Resources (B.S.Range Res.); Bachelor of Science in Wildland Recreation Management (B.S.Wildland Rec.Mgmt.); and Bachelor of Science in Wildlife Resources (B.S.Wildl.Res.); Master of Science (thesis and nonthesis options), and Master of Forestry, with majors in each 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 summer camp, in those curricula that require it, is not completed at the end of the sophomore year. Students planning to elect one of these curricula may report directly to summer camp for their initial registration in the university; even so, it is advisable to transfer no later than the spring semester of the sophomore year in order to enroll in courses that are prerequisite to summer camp. Students who transfer directly to summer camp must complete a minimum of one additional semester in residence at UI before credit in summer camp courses will be validated for transfer to another institution. Enrollment in summer camp may be limited to the capacity of the camp facilities and equipment available.

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 School and requesting a copy of the Graduate Bulletin. Specific information on specializations available and projects under way may be obtained by writing the coordinator 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 that are 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 113 or 114, regardless of whether or not 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. Of the indicated electives, at least 12 credits are to be chosen from approved social science or humanities courses, and, of these, at least 4 credits must be courses that apply social sciences or humanities to the management of natural resources.

All students are required to attend a library orientation session during the first semester on campus.

Summer Camp or Summer Employment Requirements. Students who elect the forest resources, range resources, wildland recreation management, or forest products (business management option with resources emphasis) curriculum are required to complete the eight-credit course program offered at summer camp. They must complete this requirement before beginning the professional course work of their upper-division programs.

Students who elect the fishery resources, wildlife resources, or forest products (other than the option and emphasis indicated above) curriculum must complete at least one summer of experience in employment deemed by the faculty to be appropriate to their respective 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

Cliff F. Thompson, 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 seminar 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 scientific 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 in general less important than the quality of work done and the caliber of the professors under whom the work is taken. 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 a 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 introductory 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 generally 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 well 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 information about the test may be obtained by writing directly to Law School Admission Services, Box 2000, Newton, 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 continued 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 by the College of Law of the personnel and application blanks, 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 admitted as candidates for the Juris Doctor degree are not accepted by the College of Law. Nonlaw students may enroll in law courses if permission is obtained from individual instructors and the dean. Such permission is normally confined to postgraduate students.

Combined Degree Programs

Applicants for admission to the College of Law must have a bachelor's degree from an accredited four-year college or university. Exceptions to this requirement may be made in very rare instances and admission extended to one or two carefully selected students who demonstrate unusual capacity for legal study on the basis of their college record (above 3.50) and LSAT score (above 650) and who are enrolled in a "combined degree program" that will award the student a bachelor's degree upon the successful completion of the first year of law study. The combined degree program must include 98 semester credits of undergraduate work before any work in a college or school of law may be undertaken. It is not wise, however, to make long-range plans relying on admission to the College of Law as a combined degree student, because only one or two individuals each year are able to meet the standards for this category of admission. A combined degree program is not recommended; it is successfully pursued infrequently.

Fees

Students in the College of Law pay $125 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; Earl J. Larrison, Secretary of the College Faculty.

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, History, Mathematics, Philosophy, Physics, Political Science and Public Affairs Research, Psychology, Sociology/Anthropology, and Theatre Arts. The School of Communication and the 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 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 School 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, biology, botany, chemistry, English, French, German, history, mathematics, music, philosophy, physical sciences, physics, political science, psychology, social sciences, sociology, Spanish, 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 offered in the college and are administered by the Pre-Medical and Pre-Dental Studies Committee. For baccalaureate programs in these fields, see the section on medical education in part 5.

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 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.Phys., B.S.Pre-Dent., B.S.Pre-Med., 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. Degree

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 107, 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.

Honors

Honors are awarded at graduation from L & S on the basis of each student's entire academic record, but are granted only to those who have completed at least the last 64 credits in residence (see regulation J-2-a in part 3). The minimum grade point average (GPA) required for graduation with honors is 3.76. Students whose GPA is 3.90 or above will be graduated *summa cum laude.* All other students eligible for honors will be graduated *cum laude.*

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 upon 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

Maynard M. Miller, 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 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, and the Idaho Mining and Mineral Resources Research Institute.

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 data 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 School 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, and other instruments for stress-strain studies of rock structures. 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. 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 works. 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 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 Bureau of Mines and Geology is available to advanced students. Also available are computers, proton magnetometers, resistivity survey equipment, a 12-channel seismograph, a gravity meter, 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, 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 departmental 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 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.

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 Scholarships (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. For further information, write to the Office of Student Financial Aid, University of Idaho.

Idaho Bureau of Mines and Geology

The Idaho Bureau of Mines and Earth Resources, functioning under the Idaho State Department of Lands and cooperating with the College of Mines and Earth Resources, performs applied field and laboratory research related to the geology, mineral resources, and environmental geologic problems of the state. The bureau 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 bureau and the educational programs of the College of Mines and Earth Resources and with other state and federal agencies, particularly the U.S. Bureau of Mines and the U.S. Geological Survey, enhances the overall work of the college and the bureau. The bureau staff and that of the College of Mines and Earth Resources share equipment, as well as the specialized expertise of both groups. Bureau personnel, who are experienced in both applied and academic areas, are available to any department of the university for advice, consultation, and lecturing. Whenever possible, students in the College of Mines and Earth Resources are offered part-time or summer work as assistants to bureau professionals, frequently on projects that are funded by grant monies available for some bureau programs. High quality graduate student dissertations, when in accord with the bureau's mission and with proper permission, are often published in one of the several bureau formats.

Although equipment used by the bureau is housed both in the Mines Building and Morrill Hall, the principal business office of

the bureau and most bureau personnel are located in Morrill Hall. Here, also, the bureau 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.

Idaho Mining Research Bureau

Staff members of the Idaho Mining Research Bureau conduct applied 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

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 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 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, and hydrology and 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.

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 program 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. The great 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 36 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 36 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* 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 inter-

ested 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 and veterinary medicine.

Medical Education (WAMI Program)

Guy R. Anderson, Director, Idaho WAMI Program (302 Student Health Serv.).

In the WAMI Medical 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 17 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 realistic approach to the problems of medical practice.

Veterinary Medical Education (WOI)

Floyd W. Frank, Dean, Idaho Faculty of the WOI Regional Program in Veterinary Medical Education (22 Veterinary Science Bldg.).

The University of Idaho cooperates 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.

Institute for Resource Management (IRM)

Hope Morris, Executive Director (P.O. Box 32229, Washington, D.C. 20009); Arthur R. Gittins, Dean of the Graduate School (112 Morrill Hall).

The Institute for Resource Management is a nonprofit organization incorporated in Washington, D.C., which supports graduate programs and fellowships in resource management on the campuses of the University of Idaho and Washington State University. Many of the designated IRM fellows study on both campuses, which are geographically separated by only eight miles. The institute was conceived as a means of achieving a balance between resource development and environmental protection.

Individuals selected as institute fellows are supported by fellowships of $10,000 per year and pursue a master's degree in interdisciplinary studies at UI or environmental science and regional planning at WSU.

On the UI campus, fellows pursue an individualized plan of study emphasizing one or more of the resource areas of water, minerals, land, or energy. Each plan of study leads to a master's degree in interdisciplinary studies and has as its objective "to build upon and broaden the individual's undergraduate preparation for pursuing a resource management career." Thus, this program is complementary to the undergraduate degree. It is anticipated that the normal program will consist of three semesters of academic work and a summer of experience in resource management.

Selection as an IRM fellow is highly competitive and strongly dependent on the applicant's motivation for and design of a multidisciplinary program that uses the interdisciplinary studies concept to prepare for an effective career role in resource management. Inquiries regarding the IRM Fellowship Program should be directed to the dean of the Graduate School.

University Year for Action Program (UYA)

Elizabeth M. Sullivan, Director (117 Continuing Education Bldg.)

In the UYA program a student may earn university credits outside the classroom in an internship project related to the student's academic field. Most interns are paid a monthly living allowance. The student must negotiate an "academic contract" with faculty members who determine what academic and practi-

cal work must be completed to earn credit. The student is not granted academic credit wholly on work experience.

The UYA program has student internship projects available throughout the state of Idaho and in eastern Washington. Students are placed under professional on-site supervision and are provided assistance and guidance by the UI faculty. Good internship experiences are available in a variety of disciplines in which practical experience is an important asset to students' professional training.

Students interested in applying to the UYA program should write to the UYA office, 117 Continuing Education Building, or phone (208) 885-7983. Final acceptance into the program is determined by the faculty of the student's academic field.

Graduate School

Arthur R. Gittins, Dean of the Graduate School (108 Morrill Hall); R. Bruce Bray, Secretary of the Graduate Faculty.

The Graduate School was formally organized in 1925, but the university has offered advanced degrees for more than 80 years, awarding the first master's degree in 1897. The Graduate School encompasses all colleges 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 73 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 School, 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 2.8 or higher may apply for partial enrollment in the Graduate School. Seniors desiring partial enrollment must submit 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 is for one semester only and does not admit or guarantee subsequent admission of such students to the Graduate School. Students who have been granted partial enrollment and who later wish to be admitted to the Graduate School for work on a degree must apply for admission to the Graduate School 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 2.8 or higher; (2) obtained the written approval of the instructor of the course, his or her adviser, and the dean of the Graduate School; and (3) filed a "Seniors in 500s Courses" form with the Graduate School. 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 School. Credits earned under this regulation are recorded on the student's undergraduate record.

Continuing Education

Janet T. Yoder, Conference Coordinator (112 Continuing Education Bldg.); Mary Lou Thompson, Course Coordinator (114 Continuing Education Bldg.).

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.

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 academic unit 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. Since these courses are prepared in response to local needs and interests, anyone interested is urged to contact University Continuing Education a month or two before the term in which the course is proposed to be offered and indicate interest in a specific subject and provide some observations on the number of other people who may be interested in the same course in the geographic area. Persons interested in teacher education courses should contact the College of Education directly.

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 regularly enrolled in residence are not allowed to also enroll in credit continuing education courses without prior approval.

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. In order to better meet the educational needs of rural Idaho, a video outreach program has been initiated. Continuing education programs and graduate degree-granting programs in a number of areas can be produced on 3/4-inch U-matic color video cassettes, on 1/2-inch Betamax color video cassettes, or on 1/2-inch VHS color video cassettes. Many local libraries and private industries now have videotape playback units for viewing programs. For further information on the video outreach program, write the Director, Video Outreach Program, College of Engineering.

Noncredit Classes. University Continuing Education develops and administers the noncredit courses for the UI cam-

pus, 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 2,000 participants. The program consists of classes in art, music, leisure skills, spoken languages, physical activities, and career improvement, including such things as calligraphy, aviation and hang-gliding ground school, and introduction to computers. 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 University Continuing Education 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.

University Continuing Education 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 University Continuing Education. 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 University Continuing Education.

Special Programs

Intersession, Presession, and Postsession Programs. University Continuing Education is authorized to offer self-supporting credit and noncredit programs during the interval between semesters and at other times when the university is not regularly in session. In addition, courses may be offered during regular sessions when they are designed for a specific group of students and offered for a shorter period of time than the regular semester or summer session. In short courses offered for credit, students are allowed to register and earn credits at the rate of one per week. Courses offered are those approved for credit by the appropriate academic unit, and faculty are generally members of the regular staff or others who have been approved by the academic unit. Usually 13 students are required to offer a special-programs course, although arrangements can be made for individual-study type courses such as directed study. People interested in enrolling in courses of this kind on campus should contact University Continuing Education and indicate a specific interest. Persons interested in teacher education courses should contact the College of Education directly.

Study Abroad. The Study Abroad Program is coordinated through Student Advisory Services. For information on the program, see "Student Services" in part 2.

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 principally 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 science, 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 Sessions

Paul F. Kaus, Director of Summer Sessions (507 Education Bldg.).

An eight-week summer session is scheduled each year, normally starting about the second week in June. In addition, intersession courses may be scheduled before or after the eight-week session. During the eight-week session, many courses are accelerated into one-, two-, or three-week concentrated sessions, thus allowing students to complete a course in less than the full eight weeks. Many recreational and cultural activities are scheduled through the Summer Recreation Office, as well as programs presented through the School of Music and the Department of Theatre Arts. Special programs for high school age 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 Office of Summer Sessions for a copy of the summer bulletin that is published each year in March or early April. The bulletin contains complete information needed to register for the summer session.

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, guidance and counseling, industrial education, library science, and special education.

Numbering System

Courses numbered below 100 are remedial; 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 School (see regulation B-8 in part 3 for the exception to this rule); courses numbered 800-999 are of a highly professional and technical nature that count toward a professional degree only (e.g., Juris Doctor), NOT toward academic degrees such as M.A., M.S., and Ph.D.

Letter Designations with Numbers

Certain course numbers also include letters preceding the arabic number, e.g., 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.

ID—cooperative course with Washington State University offered at the University of Idaho and available to WSU students.

J—courses conducted jointly, e.g., MusA J265/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.

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.

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 (the academic year in which it is to be offered is usually shown)
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(-cal)
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
org(s)—organization(-s, -al)
perm—permission of instructor

perm of dept—permission of the department or subject-field chairman
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

Glen G. Utzman, Dept. Head (209-G Admin. Bldg.). Faculty: Robert W. Clark, Jerry D. Hansen, Harold L. Jones, Adrian L. Kline, Kathryn S. Russell, Glen G. Utzman.

The Department of Accounting, one of three departments in the College of Business and Economics, offers the B.S.Bus. degree with a major in accounting. Students with degrees in other fields take accounting courses to prepare for the Certified Public Accountant (CPA) Examination, without becoming degree candidates.

The curriculum is designed to prepare students for entry level in the accounting profession. The program includes a well-defined body of knowledge and rigorous, comprehensive examinations to test such knowledge. Because of the magnitude of knowledge required and the expanded curriculum (136 semester hours), most accounting students will need more than eight semesters to obtain their undergraduate degrees. Accounting majors should consider two other important opportunities. The first is a comprehensive, noncredit CPA review course that involves approximately 100 classroom hours—about the same effort as nine semester hours of rigorous accounting course work. Ideally, the CPA review course (or equivalent review) should be scheduled during the last semester before graduation (in conjunction with an appropriately reduced course schedule). The second opportunity is the Accounting Internship Program, which enables students to gain practical accounting experience by working in the business and accounting departments of accounting, business, and industrial concerns. Normally these internships involve working for periods of three to six months for employers in offices away from the campus. Accounting professors are available as advisers to tailor the curriculum, the CPA review course, and the internship program to meet the needs of individual students.

The principal objective of the department is to prepare graduates for professional accounting careers. However, the curriculum is sufficiently broad and diverse that our graduates are well prepared to pursue careers in other fields as well. Many graduates become owners and managers of businesses. In addition, the accounting program has proven to be excellent in preparing students for entry into law school. The faculty keeps up to date with the rapidly changing accounting/business environment and utilizes both conventional and computer-assisted teaching techniques.

No advanced degrees in accounting are offered at UI. An M.B.A. degree is offered through the Graduate School, which requires the Seminar in Accounting (Acctg 501). Acctg 395, Fundamentals of Accounting, is a deficiency course for those MBA students who have not previously taken Acctg 201-202, Principles of Accounting. A limited number of undergraduate accounting courses may be taken as M.B.A. elective courses.

Accounting Courses—Acctg

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content are: 201-202-301-302-401-402.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201 Prin of Acctg (3 cr) (C). Description and derivation of the primary financial statements prepared by accountants; acctg rationale; reports to stockholders and other investors; intro to other acctg courses and terminal course in financial acctg.

202 Managerial Acctg (3 cr) (C). Prin of cost determination and control of manufacturing activities; managerial use of cost info for planning and control; cost-profit-volume analysis; job-order costs; process costing; standard costs; budgeting; responsibility acctg; transfer prices; capital budgeting. Prereq: 201.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

299; 499; 502 (s) **Directed Study** (cr arr). Indiv sections may be graded P/F. Prereq: perm.

301-302 Interm Acctg (4 cr) (C). Acctg 301: review of fundamental acctg process; classification and valuation problems relating to current and noncurrent assets; acctg prin and conventions used to govern valuation and procedures for statement presentations. Acctg 302: acctg prin involved in the presentation of the liability and owners' equity sections of the balance sheet; analysis of financial statements and statements of source and appl of funds. Prereq for 301: 202. Prereq for 302: 301.

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. Prereq: 202 and Bus 350.

385 Costs: Concepts and Methods (3 cr). Methods of specific order, process, and standard costing, overhead allocation. Prereq: 202, jr standing.

395 Fundamentals of Acctg (4 cr). Primarily for students in the M.B.A. program. Financial statements, limitation of data, partnership and corporate acctg, financial and cost analysis, and interp. Prereq: perm.

399 Acctg Internship Program (1-3 cr, max 6). Graded P/F. Provided career-relevant learning experience in actual work setting and expose employers to students. Prereq: perm.

401 Adv Acctg (3 cr). Partnerships, fiduciary, estate, trust, govt, and institutional acctg. Prereq: 302.

402 Acctg for Nonprofit Orgs (3 cr). Acctg and reporting prin, standards and procedures appl to state and local govts and other not-for-profit institutions such as universities and hospitals; financial mgt considerations and problems peculiar to the not-for-profit sector. Prereq: perm.

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. Prereq: 302, 381 or 385, Bus 350.

466 Business Law (3 cr). See Bus 466.

467 Business Law (3 cr). See Bus 467.

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: Acctg 202 (Bus 466, 467, and senior standing recommended).

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: Acctg 202 (Acctg 483, Bus 466, 467, and senior standing recommended).

485 Federal Gift and Estate Taxation with Estate Planning (3 cr). Gift and estate tax consequences on property transfer during life and at death, tax research, and estate planning. Prereq: 483-484 or perm.

486 Costs: Analysis and Controls (3 cr). Cost analysis and control methods as a basis for planning, cost control, and decisions. Prereq: 385 and ApSt 251.

491 Acctg Theory (3 cr). Hist; major areas of controversy in prin and theories. Prereq: 401.

493 Auditing Theory (3 cr). Nature, importance, and basis of the audit theory; standards and procedures. Prereq: 302.

494 Auditing Procedures (2 cr). Background in basic auditing procedures incl audit prog appl and general technology of auditing. Prereq: 493.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

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 meet the entry-level requirements of the accounting profession that include 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. In addition to the expanded curriculum (136 semester hours), accounting majors should consider two other important opportunities. The first is a comprehensive, non-credit CPA Review Course that involves approximately 100 classroom hours—about the same effort as 9 semester hours of rigorous course work. Ideally, the CPA Review Course (or the equivalent) should be scheduled during the last semester before graduation (in conjunction with an appropriately reduced course schedule). The second opportunity is 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, the CPA Review Course, and the Internship Program to meet the needs of individual students.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Acctg 301-302 Intermediate Accounting	8
Acctg 385 Costs: Concepts & Methods	3
Acctg 401 Advanced Accounting	3
Acctg 405 Accounting Information Systems	3
Acctg 466, 467 Business Law	6
Acctg 483-484 Federal & State Taxes	6
Acctg 486 Costs: Analysis & Controls	3
Acctg 493 Auditing Theory	3

The minimum number of credits for the degree is 136.

Aerospace Studies

Robert R. Koehne, Head (109 Cont. Educ. Bldg.). Faculty: Robert M. Barrett, Jr., Conrad G. Bills, Stephen O. Davis, Robert R. Koehne, Wayne F. Spenst.

The Air Force Officer Education Program (OEP) prepares men and women for commissioning and active service in the U.S. Air Force. Successful completion of the program can lead to challenging positions as pilots, navigators, or in technical and nontechnical nonflying positions paralleling most civilian professions. Leadership and management experience gained in the Air Force OEP and as an Air Force officer equips young men and women for successful careers in the Air Force, should they elect to continue on active duty, or in another occupation.

Air Force OEP also offers financial assistance to selected students in the form of scholarships and subsistence allowance. The students compete for the scholarships through a national screening process. The Air Force offers 3½-, 3-, 2½-, and 2-year scholarships, which cover student fees, the cost of required texts, and the cost of required labs, 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.

Two routes to an Air Force commission are available to college students in the Air Force OEP. Entering students may enroll in the Air Force OEP Four-Year Program and students with at least two academic years remaining in college may apply for the Two-Year Program. UI students can pursue the four-year and two-year programs on campus.

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 levels, 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 by a board of Air Force officers. 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 Air Force OEP Professional Officer Course.

Air Force OEP does not offer any graduate-level courses. However, there are graduate degree programs available through the Air Force to selected individuals.

Aerospace Studies Courses—Aero

101-102 U.S. Aerospace Forces (1 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 one 1-hr lab a wk; one 1-day field trip in 102.

201-202 Evolution of Aerospace Power (1 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 one 1-hr lab a wk; one 1-day field trip in 202. Prereq: perm of dept.

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.

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 course 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.

311 Air Force Leadership (3 cr). Professional leadership and mgt responsibilities, Air Force communications, and functions reqd of career Air Force officers. Three lec and one 1-hr lab a wk; one 1-day field trip. Prereq: 291 or 292, or perm of dept.

312 Air Force Mgt (3 cr). Mgt prin and functions pertaining to command and supervision. Three lec and one 1-hr lab a wk; one 1-day field trip.

411 The Professional Military Officer (3 cr). Military officership as a profession; role of national security forces in the U.S. civil-military interactions and relations. Three lec and one 1-hr lab a wk; one 1-day field trip.

412 National Security Forces in Contemporary American Society (3 cr). Defense strategy and conflict mgt; formulation and implementation of U.S. defense policy; intro to the military justice system. Three lec and one 1-hr lab a wk; one 1-day field trip.

WS456 Flight Instruction Prog (2-3 cr). Ground phase: flight theory, meteorology, FAA regulations, navigation. To register for 3 cr (incl 13 hrs actual flying time), student must be enrolled in Aerospace Studies as an Air Force pilot candidate. Prereq: perm of dept.

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 mathe-

matical reasoning. Scholarship students must take one semester of a foreign language.

Four-Year Program

Course	Credits
Aero 101-102 U.S. Aerospace Forces	2
Aero 201-202 Evolution of Aerospace Power	2
Aero 291 Four-Week Field Training Course	2
Aero 311 Air Force Leadership	3
Aero 312 Air Force Management	3
Aero 411 The Professional Military Officer	3
Aero 412 National Security Forces	3
Aero WS456 Flight Instruction Program (reqd for pilot candidates only)	3

Two-Year Program

Course	Credits
Aero 292 Six-Week Field Training Course	6
Aero 311 Air Force Leadership	3
Aero 312 Air Force Management	3
Aero 411 The Professional Military Officer	3
Aero 412 National Security Forces	3
Aero WS456 Flight Instruction Program (reqd for pilot candidates only)	3

Afro-American Studies

Siegfried B. Rolland, Coordinator (315 Admin. Bldg.).

Afro-American Studies Courses—AfrAm

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

322 Racial and Ethnic Relations (3 cr). See Soc 322.

327 Black Lit (3 cr). See Eng 327.

432 Afro-American Hist (3 cr). See Hist J432/J532.

Department of Agricultural and Extension Education

Douglas A. Pals, Dept. Head (111 Ag. Sc. Bldg.). Faculty: Charles S. Dunham, Richard M. Foster, Maurice E. Johnson, Robert E. Julian, Douglas A. Pals, Louis E. Riesenberg, Corrine M. Rowe, William H. Shane, Charles M. Thomas, Mary L. Wood.

Students in agricultural education may pursue a diversified program to prepare for teaching vocational agriculture. Courses in animal science, agricultural economics, agricultural mechanics, plant science, and soil science will prepare them to teach these areas as vocational agriculture instructors. This curriculum is approved by the State Board for Vocational Education. Graduates who have completed a minimum of 20 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 business agencies that seek persons with training in the general field of agriculture provide employment opportunities for graduates of this curriculum. Courses are available through which students can explore and develop employment opportunities in cooperative extension.

The mission of the Department of Agricultural and Extension Education includes teaching, service, and research. The specific objectives of the department are: (1) to prepare educators for employment in vocational agriculture and extension programs in conjunction with available resources in UI's College of Agriculture; (2) to provide service and direction to FFA and 4-H programs in Idaho; (3) to provide an opportunity for graduate study in the areas of agricultural and extension education; (4) to assist in providing inservice training for agricultural and extension 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 programs in agricultural and extension education; (7) to assist in maintaining viable vocational agriculture programs and cooperative extension service programs; and (8) to assist in the development of necessary information and instructional materials for the support of agricultural educators and Cooperative Extension Service personnel.

The department provides opportunities for professional growth and development of 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 school administration.

Agricultural Education Courses—AgEd

111 Intro to Ag Ed (1 cr). Overview of teaching voc ag in Idaho; role of voc ag instructor and indiv dev of competencies needed to teach voc ag. Graded P/F.

200; 400, 501 (s) **Seminar** (cr arr). Prereq: perm.

211 Ag Ed Skills (1 cr). Practical ag/ed skills applicable to teaching voc ag. Graded P/F.

248 Dev and Org of Extension Ed (2 cr) (C) (348). Overview of Cooperative Extension Service in Idaho; hist and dev of extension prog; methods used by extension personnel.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

351 Prin of Voc Ed (2 cr) (C). Same as VocEd 351. Overview of hist, aims, and purposes of voc ed; issues and prog comprising voc ed in Idaho and U.S.

352 Methods of Teaching Voc Ag (3 cr). Procedure of identifying and selecting instructional methods and materials, planning, and student evaluation criteria to effectively teach voc ag.

453 Prog Planning in Voc Ag (2 cr). Planning, organizing, and implementing voc ag progs; dev of annual course of study.

454 Methods of Teaching Ag Mechanics (3 cr). Appl of efficient planning, organizing, and teaching ag mechanics and presentation of lessons. Two lec and one 2-hr lab a wk.

457 Adult Ed in Ag (2 cr). Dev and organizing adult ed prog in ag; use of advisory councils in planning and evaluating prog.

458 Supervision of FFA and SOE Programs (3 cr). Planning, coordinating, and supervising FFA and SOE prog in voc ag; record keeping and analysis in voc ag.

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.

460 Student Teaching in Voc Ag (9 cr). Nine weeks of supervised teaching in secondary voc ag prog.

470 Proseminar in Ag Ed (1 cr). Issues and problems in ag ed.

500 Master's Research and Thesis (cr arr).

503 (s) **Workshop** (cr arr). Prereq: perm.

557 Problems in Teaching Voc Ag (1-3 cr, max 9). Methods and new dev. Prereq: perm.

562 Instructional Methods in Ag Ed (2-3 cr). Innovations and advanced prin in teaching methods and materials.

583 Program Planning in Ag and Extension Ed (2-3 cr). Mgt practices and practices of planning, organizing, directing, and evaluating voc ag and extension programs.

598 (s) **Internship** (cr arr). 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 teachers. Graduates who have completed at least 20 credits in agricultural education, and who meet the state certificate requirements for a Standard Secondary Teaching Certificate, are eligible to teach vocational agriculture in Idaho. In addition, government and business agencies that seek persons with training in the general field of agriculture provide employment opportunities for graduates of this curriculum.

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
AgEd 351 Principles of Vocational Ed	2
AgEd 352 Methods of Teaching Voc Ag	3
AgEd 453 Program Planning in Voc Ag	2
AgEd 454 Methods of Teaching Ag Mechanics	3
AgEd 457 Adult Education in Ag	2
AgEd 458 Supervision of FFA & SOE Programs	3
AgEd 460 Student Teaching in Voc Ag	9
AgEd 470 Proseminar in Ag Ed	1
AgMech 101 Oxy-Actylene Welding	1
AgMech 107 Arc Welding	2
AgMech 201 Ag Building Constr	2
AgMech 202 Ag Shop Practices	2
AgMech 305 Ag Machinery & Equip	3
AgMech 310 Small Engines Lab	1

AgMech 312 Elec Power Applications....3
AgMech 409 Ag Tractors....2
Ed 440 Methods of Teaching Content Reading....3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg....3
Math 140 College Algebra or 111 Finite Math....3-4
Ag electives, incl a minimum of 6 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
Speech electives....2
Humanities and social sciences electives (incl Ed 201, Psych 100, and Ed 415)....14
Electives to total 132 cr for the degree....–

Department of Agricultural Economics

Richard W. Schermerhorn, Dept. Head (39A Iddings Wing, Ag. Sc. Bldg.). Faculty: Ahmed A. Araji, John E. Carlson, Dale O. Everson, Richard D. Gibb, Joel R. Hamilton, James R. Jones, Karl H. Lindeborg, Roger B. Long, Gerald E. Marousek, Neil L. Meyer, Edgar L. Michalson, John L. Pardue, Richard W. Schermerhorn, Stephen M. Smith, R. Kirk Steinhorst, 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 life, 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 farms and ranches, 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 Economics Courses—AgEc

101 Ag and Its Social and Econ Environment (3 cr) (C). Agriculture and its relation to social and econ problems of the U.S. and the world; factors affecting production and marketing of ag products.

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.

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.

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.

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.

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. Two 1-day field trips. Prereq: 278 or 383 or Bus 311 or perm.

383 Econ of Conservation (3 cr). See ForPr 383.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

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.

404 (s) **Special Topics** (cr arr).

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.

WS430 Financial Arrangements in Ag (3 cr). Personal and bus finance in the ag economy, insurance, retirement, amortization, and interest. Prereq: Econ 152 and Acctg 201.

451 Land 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.

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 ApSt 251 or equiv.

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.

477 Econ of Developing Countries (3 cr). See Econ 477.

481 Ag Market Analysis (3 cr). Structure, competition, and econ performance of ag product and input markets. Prereq: Econ 321, 372, or perm.

493 Ag Production Econ (3 cr). Econ theory related to ag production at the enterprise, firm, and industry levels. Prereq: 278 and Econ 321.

499 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

507 Research Methodology (3 cr). Same as Econ 507. Theoretical background of the scientific method applied to econ research; org, procedures, reporting, and eval of research. Prereq: grad standing and perm.

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 ApSt 401.

509 Adv Microecon Theory I (3 cr). See Econ 509.

510 Adv Microecon Theory II (3 cr). See Econ 510.

522 Adv Aggregate Econ (3 cr). See Econ 522.

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.

525 Econometrics (3 cr). Same as Econ 525 and ApSt 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.

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.

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 Ag & Its Social & Econ Environment	3
AgEc 278 Prin of Farm & Ranch Mgt	4

AgEc 356 Ag Programs & Policies 3
ApSt 251 Principles of Statistics 3
Chem 103 Intro to Chem or 111 Prin of Chem 4
Comm 131 Fundamentals of Speech 2
CS 131 Intro to Computer Programming 2
Econ 151, 152 Principles of Economics 6
Econ 321 Interm Microecon Analysis 3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg 3
Humanities and social sciences (at least 5 cr of each) 14
Life sciences (incl Biol 201) 8

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 Anaysis	3
Math 180 Analytic Geometry & Calculus I	4
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 Analyt 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 Intermediate Accounting or 381 Financial & Administrative Accounting or 385 Costs: Concepts & Methods	3-4
Bus 265 Legal Environment of Business	3
Bus 413 Human Relations in Business	3
Math 160 Survey of Calculus	4
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 180 Analyt Geometry & Calculus I	4
PolSc 276 American Local Government	3
Soc 310 Rural Sociology	3
Agricultural econ electives (select from AgEc 289, 332, ID361, 414, 451, and 467)	9
Supporting field electives (see list in dept office)	18
Electives to total 132 cr for the degree	--

Department of Agricultural Engineering

Delbert W. Fitzsimmons, Dept.Chairman (326 Buchanan Engr. Lab.). Faculty: George L. Bloomsburg, Charles E. Brockway, John R. Busch, John E. Dixon, Edwin A. Dowding, Delbert W. Fitzsimmons, James L. Halderson, Thomas S. Longley, Galen M. McMaster, Jack M. McHargue, Walter L. Moden, Myron P. Molnau, Charles L. Peterson, Louis E. Riesenberg, 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 conservation of natural resources. Agricultural engineers have background training and interests that make them uniquely capable to conduct research and develop engineering solutions to agricultural problems. They are involved in every phase of agriculture from 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 tools 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 mechanization (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. They can be used to support degree programs in other departments or as electives by students wishing to explore the field or to obtain information in a particular area.

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.

242 Ag Engr Analysis (2 cr). Methods of analyzing and solving engr problems; use of computers in solving selected problems. Prereq: CS 131, Math 190.

299; 499; ID502 (s) **Directed Study** (cr arr). Prereq: perm.

351 Hydrology (2 cr). Same as CE 321. Analysis of precipitation and runoff events; prin of evaporation, infiltration, and snowmelt.

352 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.

372 Ag Power and Machinery (4 cr). 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.

J441/J541 Instrumentation and Measurements (3 cr). Sensing 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.

449 Elements of Structural Engr (4 cr). Design of steel and timber members and connections, reinforced concrete beams, slabs, columns, and footings. Prereq: ES 340.

451 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.

J454/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 J554: perm.

456 Irrigation System Design (2 cr). Crop water requirements, irrigation scheduling and water mgt, design of irrigation systems, pump selection. One lec and one 3-hr lab a wk. Prereq: 352.

458 Open Channel Hydraulics (3 cr). Same as CE 428. Hydraulics of uniform and varied flow in open channels with fixed and movable beds.

461 Environmental Systems (3 cr). Analysis and synthesis of environmental control systems for animal production, crop storage, and plant growth; waste mgt. Coreq: ES 321.

462 Elec Power and Processing (4 cr). Design and on-farm use of elec equipment and systems; processing and storage of ag products. Three lec and one 3-hr lab a wk; one 1-day field trip. Prereq: ES 321.

J469/J569 Environmental Systems Design (3 cr) (562). Systems engr approach to design of livestock production, crop processing, and storage facilities. Additional effort reqd for grad cr. Prereq for J569: perm.

J471/J571 Energy Conversion in Ag Systems (2 cr). Energy sources and applications in ag production; solar, wind, and bio-mass energy systems design. Additional effort reqd for grad cr. Prereq: ES 321; prereq for J571: perm.

J474/J574 Fluid Power and Control Systems (2 cr). Circuit components; circuit design and testing; ag appl. One lec and one 3-hr lab a wk. Additional effort reqd for grad cr. Prereq for J574: perm.

479 Ag Machine Design (2 cr). Design of machine elements including CAD concepts; design, construction, and testing of a solution to an ag machinery problem. One lec and one 3-hr lab a wk. Prereq: 372.

491 Seminar (1 cr). Professional aspects of the field, employment opportunities and prep of occupational inventories. Graded P/F. Prereq: sr standing.

492 Seminar (0 cr). Professional aspects of the field. Graded P/F. Prereq: sr standing.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

551 Adv Hydrology (3 cr). Prin of the hydrologic cycle in mountainous areas, incl precipitation, snowmelt, and systems simulation.

WS552 Adv Theory of Irrigation Water Requirements (3 cr). Alt/yrs 83-84. WSU 590. Energy balance and consumptive use of water; influence of farm and project irrigation system design criteria, mgt, and efficiencies.

WS553 Adv Theory and Design of Irrigation Systems (3 cr). Alt/yrs 84-85. WSU 591. Design and dev of irrigation systems. Two lec and one 3-hr lab a wk. Prereq: 352.

ID555 Natural Channel Flow (3 cr). Hydraulics of nonuniform flow in irregular channels, unsteady flow, and flow routing.

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.

WS561 Adv Ag Engr Topics (1-4 cr). WSU 551. Directed group study of selected adv topics in ag engr.

589 Water Resources Seminar (1 cr). See Inter 589.

600 Doctoral Research and Dissertation (cr arr).

AGRICULTURAL MECHANIZATION—AgMech

101 Oxy-Acetylene Welding (1 cr). Prin of operation, use, and care of welding and cutting equipment. One 2-hr lab a wk. Enrollment limited to 13 per section; preregistration reqd.

107 Arc Welding (2 cr). Prin of operation, use, and care of equipment. One lec and one 2-hr lab a wk. Enrollment limited to 11 per section; preregistration reqd.

112 Engr Appl in Ag (3 cr). Engr prin applied to farm machinery, bldgs, processing, irrigation, and energy use.

115 Graphical Representation (1 cr). Lettering, drafting procedures, orthographic projection, pictorial drawings, and sketching. One 3-hr lab a wk.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

201 Ag Bldg Constr (2 cr). Farm bldg constr prin and practices incl carpentry, concrete work, and plumbing; experience with tools and materials. Two 2-hr lab a wk.

202 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. Enrollment limited to 12 per section; preregistration reqd.

305 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.

306 Ag Structures and Environmental Systems (2-3 cr). Planning farm bldgs, constr materials, beam and column design, insulation and ventilation for environmental control. Two lec, or two lec and one 3-hr lab a wk.

309 Ag and Automotive Engines (2 cr). Constr, service, and repair; fuels and combustion; ignition, cooling, lubrication, and fuel systems; engine testing and energy use.

310 Small Engines Lab (1 cr). Prin of engine operation, tune-up, and maintenance; repair and overhaul of small engines. One 2-hr lab a wk. Enrollment limited to 12 per section; preregistration reqd.

312 Elec Power Appl (3 cr). Basic circuits; wiring and the code; motors and controls; heating, lighting, and power. Two lec and one 3-hr lab a wk.

315 Irrigation and Drainage (2-3 cr). Irrigation methods, water resources, water rights, conveyance and measurement, pumps, soil-water-plant relationships, and drainage. Two lec, or two lec and one 3-hr lab a wk.

375 Ag Energy Production and Use (2 cr). Energy production and use with emphasis on solar and bio-mass topics; energy conservation and mgt in ag enterprises. One lec and one 2-hr lab a wk; one 1-day field trip.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

405 Ag Processing (3 cr). 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.

409 Ag Tractors (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.

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:

First and Second Years	Credits
Courses common to engineering curricula (see part 4)	39
AgE 241 Intro to Agricultural Engr	1
AgE 242 Agricultural Engineering Analysis	2
CE 218 Elementary Surveying	2
EE 207 Intro to Electrical Engineering	3
ES 221 Dynamics of Rigid Bodies	2
Agriculture or biological science electives	3
Humanities and social sciences electives	8
Undesignated electives	4
Third and Fourth Years	
AgE 351 Hydrology	2
AgE 352 Soil & Water Engineering	3
AgE 372 Agricultural Power & Machinery	4
AgE 449 Elements of Structural Engineering	4
AgE 456 Irrigation System Design	2
AgE 461 Environmental Systems	3
AgE 462 Electric Power & Processing	4
AgE 479 Agricultural Machine Design	2
AgE 491-492 Seminar	1
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
ES 340 Mechanics of Materials	3
Soils 205 General Soils	3
Communications electives	2
Humanities and social sciences electives	8
Statistics electives	3
Technical electives	12
Undesignated electives	2

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 Engineering Applications in Ag	3
AgMech 115 Graphical Representation	1
AgMech 200 Seminar	1
AgMech 201 Ag Building Construction	2
AgMech 202 Agricultural Shop Practices	2
AgMech 305 Ag Machinery & Equipment	3
AgMech 306 Ag Structures & Environmental Systems	3
AgMech 309 Ag & Automotive Engines	2
AgMech 310 Small Engines Lab	1
AgMech 312 Electric Power Applications	3
AgMech 315 Irrigation & Drainage	3
AgMech 400 Seminar	1
AgMech 405 Ag Processing	3
AgMech 409 Agricultural Tractors	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
Bus 265 Legal Environment of Business	3

CE 218 Elementary Surveying 2
Comm 131 Fundamentals of Speech 2
CS 131 Intro to Computer Programming 2
Econ 152 Principles of Economics 3
Math 111 Finite Mathematics 4
PlSc 102 Introduction to Plant Science 3
Soils 205, 206 General Soils & Lab 4
Advanced writing electives 3
Agricultural electives 12
Business electives 3
Chemistry electives 4
Humanities and social sciences electives 14
Life sciences electives (incl Biol 201) 8
Major field electives 5
Math electives (approved) 3
Electives to total 132 cr for the degree ..... --

Program in Agriculture (General)

A. Larry Branen, Coordinator (47 Iddings Wing, Ag. Sc. Bldg.)

Agriculture (General) Courses—Ag

PREREQUISITE: Enrollment in courses in this subject field requires perm of the coordinator.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm.

404 (s) **Special Topics** (cr arr).

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

510 Professional Problems (1-4 cr, max 4). Primarily for students in the nonthesis M.S. prog. Professional paper required.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

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. 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.

General agriculture students may choose an adviser in any department in 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
Electives in ag econ, business, and acctg	15
Mathematics electives	4
Humanities and social sciences electives	14
Speech electives	2
Electives to total 132 cr for the degree	--

Program in American Studies

Walter A. Hesford, Coordinator (121 Faculty Office Complex-East). Faculty: David S. Barber, Willard Barnes, Richard W. Beeson, Robert H. Blank, G. Ellis Burcaw, Jack L. Davis, Richard L. Day, Mary H. DuPree, Shaikh M. Ghazanfar, Peter A. Haggart, Kenneth M. Harris, Walter A. Hesford, Barbara R. Meldrum, Roderick Sprague, Stanley W. Thomas, J. Gary Williams

American Studies Courses—AmSt

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 403 (s) **Special Topics** (cr arr).

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
Eng 277-278 Survey of American Literature	6
Two courses in English literature	6
Five courses (selected from the following list)	15
Eng 327 Black Literature	
Eng 330 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 U.S.: Jacksonian America	
Hist 415 U.S.: Civil War & Reconstruction, 1865-1896	
Hist 417-418 Twentieth-Century America	
Hist 423 Idaho & the Pacific Northwest	
Hist 428 History of the American West	
Hist 432 Afro-American History	
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 277-278 Survey of American Literature	
Eng 327 Black Literature	
Eng 330 American Indian 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	3
Courses (selected from the following list)	14
Anthr 100 Intro to Anthropology	
Arch 483 Intro to City Planning	
Arch 484 City Planning	
Comm 140 Mass Comm in a Free Society	
Comm 384 Hist of American Film	
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 American Music	
Phil 411 Social Philosophy	
PolSc 275 American State Government	
PolSc 276 American Local Government	
PolSc 431 Political Parties	
PolSc 432 The Legislative Process	
PolSc 433 Public Opinion & Electoral Behavior	
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 277-278 Survey of American Literature
Eng 327 Black Literature
Eng 330 American Indian 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 417-418 Twentieth-Century America
Hist 432 Afro-American History
Hist 433-434 Social & Cultural History of the U.S.

Department of Animal and Veterinary Sciences

Floyd W. Frank, Dept. Head (22 Vet. Sc. Bldg.)

Animal Sciences Faculty: Richard C. Bull, Ross E. Christian, Jerome J. Dahmen, Steven L. Davis, Dennis G. Falk, Kenneth R. Frederiksen, Kim L. Hossner, John C. Miller, Robert E. Roffler, R. Garth Sasser, Erwin A. Sauter, Jr., David L. Thacker, Verl M. Thomas.

Veterinary Sciences Faculty: Bruce C. Anderson, Dannie P. Barrett, Marie S. Bulgin, Victor P. Eroschenko, Floyd W. Frank, Loren E. Koller, Robert I. Krieger, Kenneth L. Kuttler, V. Michael Lane, Stuart D. Lincoln, John P. Maas, David P. Olson, Gerald A. Pollock, Robert C. Ritter, Peter J. South, Erik H. Stauber, David Stiller, Alton C. S. Ward, Lynn F. Woodard.

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 young people 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 and Veterinary Science Buildings, the department's facilities include centers for dairy, beef, sheep, poultry, and disease teaching and research, 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. The veterinary science curriculum is designed to prepare students for entrance into veterinary medicine. For more specific information, get in touch with the department head (208/885-7081).

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.

The veterinary science major is designed for students preparing for admission to a college of veterinary medicine. If, after successful completion of 99 credits, the student 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.

Under the major in animal sciences, 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. 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.

Courses

ANIMAL SCIENCES—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.

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.

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.

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.

WS212 Dairy Cattle Traits (2 cr). WSU AS 212. Evaluating form and function in dairy cattle; measurement of production and eval of type. One lec and one 3-hr lab a wk; one 1-day field trip.

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.

223 Applied Animal Breeding (2 cr). Breeding programs and systems; improvement of beef cattle, dairy cattle, sheep, and swine. Prereq: 222.

263 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.

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.

WS288 Horses and Horsemanship (3 cr). Hist and evolution; anatomy and physiology; prin of selection; care and handling of horses. Enrollment limited to 25. Prereq: 109.

299; 499 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm of dept.

303 Live Animal and Carcass Eval I (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.

304 Live Animal and Carcass Eval II (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.

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.

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.

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 ApSt 251.

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.

ID&WS322 Sheep Sc (3 cr). WSU AS 322. 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.

ID&WS323 Dairy Cattle Mgt (3 cr). WSU AS 383. 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.

326 Swine Sc (3 cr). 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.

352 Physiology of Reproduction and Lactation (3 cr). Physiology of reproduction of animals; structure, growth, dev, and physiology of the mammary gland. Prereq: Biol 202 and Biochem 380.

353 Physiology of Reproduction and Lactation Lab (1 cr). Lab in reproduction and the structure, growth, dev, and physiology of the mammary gland. One 3-hr lab a wk. Prereq: 352 or Zool 411 (may be concurrent).

WS388 Horse Production (3 cr). Prin of breeding, feeding, and mgt of horses. Enrollment limited to 10. Prereq: 205, 222, WS288.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

403 (s) **Workshop** (cr arr). Normally offered in nutrition, breeding, products, and mgt. Graded P/F. Prereq: perm.

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.

WS413 Physiology of Lactation (3 cr). Alt/yrs 83-84. WSU AS 413. Endocrine system and physiology of milk secretion, incl bovine mammary anatomy, dev, endocrine control, and synthesis of milk. Prereq: VS 371.

WS415 Animal Nutrition Lab (1 cr). WSU AS 415. Proximate analysis, bomb calorimetry and other selected lab methods related to nutrition. Three hrs of lab a wk. Prereq: 305.

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 ApSt 251.

450 Proseminar (1 cr, max 2). Special topics in animal sc.

451 Endocrine Physiology (3 cr). Same as Zool 417. 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. Prereq: Biol 202 and Biochem 380.

ID454 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. Enrollment limited to 20 students. Two 2-hr lec-labs a wk. Graded P/F. Prereq: 352 or Zool 411 (may be concurrent) and perm.

ID472 Meat Sc (3 cr). Alt/yrs 84-85. Growth and dev of meat animals; factors affecting quantity and quality of meat. Prereq: 263 and biochem.

500 Master's Research and Thesis (cr arr). Graded P/F.

501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

504 (s) **Special Topics** (cr arr).

511 Animal Nutrition (3 cr). Alt/yrs 84-85. Biochem and physiological aspects of nutrition of higher animals and man; function and metabolism of nutrients. Prereq: perm.

WS512 Energy Metabolism (3 cr). Alt/yrs 84-85. WSU AS 561. Biochem, physiological, and nutritional aspects of energy metabolism. Prereq: 305, 306, Biochem 380.

ID513 Microbiol and Physiology of Ruminant Nutrition (3 cr). Alt/yrs 83-84. 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.

514 Physiology of Nonruminant Nutrition (3 cr). Alt/yrs 83-84. Physiology of digestion, absorption, and metabolism of nutrients in monogastric animals and birds; biol eval of nutrients and nutritional interrelationships. Prereq: perm.

ID&WS520 Seminar in Animal Physiology (1 cr, max arr). WSU AS 520. Current topics in animal physiology.

522 Stat Genetics (3 cr). Same as ApSt 522 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 homeostatis. Prereq: perm.

WS526 Adv Reproduction (4 cr). Alt/yrs 84-85. WSU AS 526. Physiology of sexual maturation; gametogenesis; sexual cycle; fertilization; embryonic dev; physiological, chem, and immunological characterization of hormones of reproduction. Three lec and three hrs of lab a wk. Prereq: 352 or equiv.

551 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: 451, Chem J482/J542.

WS596 Adv Topics in Animal Sc (1-2 cr, max arr). WSU AS 598. Recent research in various disciplines of animal sc.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

VETERINARY SCIENCE—VetSc

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 dean of the Idaho faculty of the WOI Regional Program in Veterinary Medical Education.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203 (s) **Workshop** (cr arr). Prereq: perm.

204 (s) **Special Topics** (cr arr).

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

WS401 Vet Anatomy (4 cr). WSU V An 401. Grad cr not granted to those who have DVM degree. Detailed macroscopic functional morphology of domestic animals. Prereq: admission to vet med or grad student in vet sc.

WS402 Vet Anatomy (4 cr). WSU V An 402. Grad cr not granted to those who have DVM degree. Detailed macroscopic functional morphology of domestic animals. Continuation of WS401. Prereq: WS401.

ID&WS404 (s) **Special Topics** (cr arr). WSU V An 499, V Mic 499, V Ms 499, V Pa 499, V Ph 499.

WS405 Microscopic Anatomy (7 cr). WSU V An 405. Grad cr not granted to those who have DVM degree. Microscopic functional morphology of the cell, tissue, and selected organ systems in domestic animals. Prereq: admission to vet med or grad student in vet sc.

WS413 Adv Anatomy (3 cr, max 6). WSU V An 413. Microscopic and gross anatomy of selected organ systems. Prereq: WS402 and WS405.

WS421 Vet Pharmacology (4 cr). WSU V Ph 421. Pharmacology of the systems of the body. Prereq: VS 371, or equiv, or perm.

WS422 Vet Pharmacology (6 cr). WSU V Ph 422. Continuation of WS421. Prereq: WS421.

WS423 Vet Neuroscience (3 cr). WSU V Ph 423. Structure and function of nervous tissues, emphasis on relationship of neurophysiology and neuroanatomy. Two lec and one 3-hr lab a wk. Prereq: courses in vet gross anatomy and vet physiology.

WS430 Vet Immunology (3 cr). WSU V Mic 430. Immunology for professional vet student. Prereq: major in vet med or grad student in vet sc.

WS431 Vet Virology (3 cr). WSU V Mic 431. Virology for professional vet student. Prereq: major in vet med or grad student in vet sc.

WS432 Vet Bact (4 cr). WSU V Mic 432. Bacteria that produce disease in animals. Prereq: WS431 or perm.

WS435 Disease Concepts for Wildlife Biologists (4 cr). WSU V Mic 435. Biologic aspects of infectious diseases and environmental contaminants in wild mammalian and avian populations. Note: Students on the Idaho campus who need this course enroll in VS 446A.

WS436 Diseases of Commercial Fowl (3 cr). WSU V Mic 436. Diagnosis, control, and treatment of disease in domestic fowl. One lec and two 3-hr labs a wk. Prereq: 512A, Bact 304.

WS443 Ecologic Perspectives in Vet Med (2 cr). WSU V Pa 443. Vet-related ecological problems approached in a multidisciplinary context; guest panelists, lec, field trips; group projects. Prereq: perm.

WS444 Small Animal Pathology (3 cr). WSU V Pa 444. Pathology of diseases of small pet animals. Prereq: WS446B.

WS445 General Pathology (4 cr). WSU V Pa 445. Structural and functional alterations in disease; elem oncology. Prereq: VS 371 or equiv, WS405.

446A Diseases of Wild Birds and Mammals (2 cr). See WLF 446.

WS446B Systemic Pathology (5 cr). WSU V Pa 446. Prin of systemic and organ response to disease. Prereq: WS445.

WS447 Gross Pathology Conference (1 cr). WSU V Pa 447. Review of current necropsy cases; exper in performing necropsies. Prereq: WS445 or equiv.

WS449 Pathology of Large Animal Diseases (3 cr). WSU V Pa 449. Diseases of cattle, horses, swine, and sheep; diagnosis at necropsy. Prereq: WS446B.

WS451 Veterinary Parasitology (5 cr). WSU V Pa 451. Anthropods, protozoa, and helminths of vet importance; their host-parasite relationship and control. Four lec and one 3-hr lab a wk. Prereq: perm.

452 Diseases and Care of Lab Animals (3 cr). Alt/yrs 84-85. Vertebrate animal species commonly employed as lab animals; diseases, sanitation, environmental control, and general care. Two lec and one 2-hr lab a wk.

WS454 Special Animal Medicine (3 cr). WSU V Pa 454. Problems concerning the common lab animal, e.g., rodents, logomorphs, and nonhuman primates. Prereq: soph standing in vet med.

WS471 Chem Pharmacology (5 cr). WSU Phar 471. Mechanisms of drug action and factors modifying drug response; physiochem properties of drugs; drug-receptor interactions; dev of drugs. Coreq: WS473B.

WS472 Pharmacodynamics (5 cr).WSU Phar 472. Pharmacology and medicinal chem of classes of drugs. Prereq: WS471 or perm; coreq: WS474B.

473A Herd Health Mgt (2 cr). Impact of immunity, sanitation, housing, chemotherapy, quarantine, and stress on livestock disease prevention.

WS473B Pharmacology Lab (1 cr). WSU Phar 473. Prin, physiological, and biochem tech. Coreq: WS471.

474A 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.

WS474B Pharmacology Lab (1 cr). WSU Phar 474. Pharmacodynamics of specific drug categories. Coreq: WS472.

ID477 Prin of Toxicology (3 cr). Dose-response concepts, mechanisms of toxicity, metabolic activation and detoxication, environmental fate of chemicals in personal, occupational, community, and global environments. Prereq: Biochem 380.

481 Virology (3 cr). Same as Bact 481. Emphasis on pathogenesis and host-virus relationship. Prereq: Bact 304; prereq or coreq: Bact 409.

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.

500 Master's Research and Thesis (cr arr).

ID&WS504 (s) **Special Topics** (cr arr).

WS505 Environmental and Comparative Toxicology (4 cr). WSU P/T 505. Prin of toxicology, mechanisms of action of certain toxins, mutagenic and carcinogenic substances, eval of hazards of environmental contaminants. Prereq: grad standing and perm.

WS510A Pharmacokinetics (2 cr). WSU Phar 510. Alt/yrs 82-83. Kinetic aspects of drug absorption, distribution, and excretion; biophysico-chem factors influencing the time variation of drug concentrations.

WS510B Adv Food Chem (3 cr). WSU FS 510. Alt/yrs 84-85. Chem, physical, and toxicological properties of water, vitamins, pigments, synthetic colors, minerals, miscellaneous food additives, and natural toxicants.

WS511 Large Animal Applied Anatomy (2 cr). WSU V An 511. Applied anatomy of large animals incl surgical anatomy. Prereq: WS402.

512A Prin of Comparative Pathology (4 cr). Alt/yrs 84-85. Gross and micro pathology, histological tech, neoplasia. Prereq: Zool 324, Zool 427 or equiv, or perm.

WS512B Small Animal Applied Anatomy (2 cr). WSU V An 512. Applied anatomy of small animals incl surgical anatomy. Prereq: WS402.

WS513 Adv Neuroanatomy (3 cr). WSU V An 513. Alt/yrs 83-84. Adv gross and microscopic anatomy of the nervous system and organs of special sense.

516 Methods of Animal Experimentation (4 cr). Alt/yrs 83-84. Methods of experimentation, incl anesthesia, sedation, surgical tech, euthanasia, germ-free animals, drug admin, physiological measurements, radiation, and electronic monitoring of physiological phenomena. Two lec and two 3-hr labs a wk. Prereq: 371 or Zool 324.

WS517 Mammalian Physiology (5 cr). WSU V Ph 517. Physiology of the organ systems of domestic animals. For nonvet med majors.

WS518 Mammalian Physiology (5 cr). WSU V Ph 518. Continuation of WS517.

WS520 Tech in Mammalian Physiology (2 cr). WSU V Ph 520. Alt/yrs 84-85. Use of anesthetic and surgery. One lec and one 3-hr lab a wk.

WS521 Cardiorespiratory Systems (3 cr). WSU V Ph 521. Alt/yrs 83-84. Systems approach to cardiovascular and respiratory physiology.

WS522 Pathophysiology of Blood (3 cr). WSU V Ph 522. Alt/yrs 83-84. Physiology and pathophysiology of the formed elements of blood.

WS524 Special Topics in Vet and Comparative Pharmacology (1 cr). WSU V Ph 524. Practical vet pharmacology tech and clinical appl. Prereq: WS421.

WS525 Pharmaceutical Analysis (3 cr). WSU Phar 525. Procedures and instruments in analyt and separation methods. Prereq: Chem 372 or perm.

WS526A Pharmaceutical Analysis (3 cr). WSU Phar 526. Continuation of WS525. Two lec and 3 hrs of lab a wk.

WS526B Mammalian Physiology Lab (2 cr). WSU V Ph 526. For nonvet med majors. Lab procedures in mammalian physiology.

WS528 Behavioral Mechanisms of Physiology (3 cr). WSU V Ph 528. Alt/yrs 84-85. Exam of physiological transduction mechanisms that enable animals to interact behaviorally with their environment.

WS529 Neurochemistry (3 cr). WSU V Ph 529. Alt/yrs 84-85. Exam of basic biochem processes in the nervous system and their significance for normal and abnormal function. Prereq: biochem or perm.

WS530 Neurochem Tech (1 cr). WSU V Ph 530. Alt/yrs 83-84. Tech of major importance to study of functional neurochemistry. Coreq: WS529.

WS531A Chem Structure and Drug Action (3 cr). WSU Phar 531. Theories of medicinal chem. Prereq: 10 hrs organic chem, chem pharmacology or intro biochem or equiv, or perm.

WS531B Adv Immunology (3 cr). WSU V Mic 531. Alt/yrs 84-85. Analysis of the immune response. Prereq: Bact 409, or equiv, or perm.

WS531C Vet Pharmacology (4 cr). WSU V Pharm 531. Pharmacology of systems of the body. Prereq: WS518.

WS532A Chem Structure and Drug Action (3 cr). WSU Phar 532. Effect of variation of structure on pharmacological properties of selected classes of medicinals. Prereq: WS531A.

WS532B Virology (4 cr). WSU V Mic 532. Alt/yrs 83-84. Adv topics in basic virology. Prereq: 481 and Biochem 380 or equiv, or perm.

WS532C Toxicology (2 cr). WSU V Ph 532. Pharmacology of toxicants and poisonous plants. Prereq: WS421 or perm.

WS533A Adv Vet Diagnostic Bact (2 cr, max arr). WSU V Mic 533. Isolation and ident of bacterial and mycotic agents in diseased organs and tissues of animals. Two 3-hr labs a wk. Prereq: Bact 304.

WS533B Vet Pharmacology (4 cr). WSU V Pharm 533. Pharmacology of systems of the body with special emphasis on nervous system and study of common poisonous plants affecting domestic animals. Prereq: WS531C.

WS534 Viral and Rickettsial Disease of Animals (3 cr). WSU V Mic 534. Alt/yrs 83-84. Pathogenesis of viral and rickettsial diseases. Prereq: 481, Bact 409 or equiv.

WS535 Adv Readings in Vet Microbiology (1 cr, max arr). WSU V Mic 535. Supervised reading prog that peruses publications of interm tech difficulty and adv textbooks. Prereq: sr in vet med or grad student in vet sc.

WS536 Diagnostic Microbiologic Conference (1 cr, max arr). WSU V Mic 536. Ident of animal pathogens in clinical material. One 3-hr lab a wk.

WS537 Diagnosis of Viral and Rickettsial Diseases of Domestic Animals (3 cr). WSU V Mic 537. Clinical, pathological, and lab diagnosis. One lec and two 3-hr labs a wk. Prereq: 481, Bact 304.

WS538 Vet Mycology (2 cr). WSU V Mic 538. Isolation and ident of fungi and mycotoxins important to vet med. Two 3-hr labs a wk. Prereq: Bact 304.

WS539 Pet Bird Diseases (2 cr). WSU V Mic 539. Diagnosis and treatment of diseases in pet, wild, and zoo birds. Prereq: WS432, WS446B.

WS542A Adv Diagnostic Pathology (1-4 cr, max 8). WSU V Pa 542. Necropsy lab for tech and skills in performing and interpreting necropsy material. Prereq: WS445, WS446B, or equiv, or perm.

WS542B Diseases of Wildlife (2 cr). WSU V Mic 542. Mgt prin, epidemiology, pathology, treatment, and control of diseases in wild birds, fish, and mammals. Prereq: jr standing in vet med.

WS543 Lab Animal Pathology (3 cr, max 6). WSU V Pa 543. Alt/yrs 84-85. Diseases of smaller lab animals. Prereq: WS454.

WS544 Immunopathology (3 cr). WSU V Pa 544. Alt/yrs 84-85. Role of immune processes in the genesis of disease. Two lec and one 3-hr lab a wk. Prereq: a course in general pathology or an adv course in immunology.

WS545A Mechanisms of Disease (5 cr). WSU V Pa 545. Biochem and immunological mechanisms involved in disease processes studied from the comparative standpoint.

WS545B Toxicology of Insecticides (4 cr). WSU Entom 545. Alt/yrs 84-85. General prin of insecticide toxicology; classification, mode of action, and metabolism of each group of insecticidal chemicals; hazards to invertebrates.

WS546 Adv Readings in Vet Parasitology (1 cr, max arr). WSU V Mic 546. Selective reading prog under tutorial guidance for important topics in vet parasitology. Prereq: grad or adv undergrad status.

WS547 Adv Vet Parasitology (3 cr). WSU V Pa 547. Alt/yrs 84-85. Mechanisms involved in host-parasite relationship important to control of parasitic infections.

WS548 Seminar in Experimental Pathology (1 cr, max arr). WSU V Pa 548.

WS549 Adv Systemic Pathology I (4 cr). WSU V Pa 549. Alt/yrs 84-85. Pathology of selected organ systems and oncology. Two lec and 6 hrs of lab a wk. Prereq: DVM degree.

WS550A Adv Systemic Pathology II (4 cr). WSU V Pa 550. Alt/yrs 83-84. Selected organ systems. Two lec and 6 hrs of lab a wek. Prereq: WS446B, or equiv, or perm.

WS550B Research Prin and Methods of Anatomy (1 cr). WSU V An 550. Exposure to research performed in lab of each anatomy faculty member. Prereq: grad student in vet sc.

WS560 Molecular Genetics (3 cr). WSU Bact 560. Biochem description of genetic processes in microorganisms. Prereq: a course in genetics or microbiol.

WS561 Adv Pharmacology (3 cr). WSU Phar and V Ph 561. Lec and conferences on the most adv concepts and appl of drug action. Three lec and one 3-hr lab a wk. Prereq: a course in pharmacology.

WS562 Adv Pharmacology (3 cr). WSU Pharm and V Ph 562. Continuation of WS561. Prereq: WS561.

WS563 General Biochem (3 cr). WSU BC/BP 563. Structure and function of proteins and nucleic acids; fundamental prin of enzymology; chem aspects of molecular biol. 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.

WS564 General Biochem (3 cr). WSU BC/BP 564. Carbohydrate and lipid metabolism and its control; biochemical energetics; photosynthesis. Prereq: Biochem J481/J541 or Chem J481/J541. Note: Students on the Idaho campus enroll in Biochem J482/J542 or Chem J482/J542.

WS566 Biochem Tech (3 cr). WSU BC/BP 566. Adv research methods. One lec and 6 hrs of lab a wk. Prereq: Biochem J482/J542 or Chem J482/J542. Note: Students on the Idaho campus enroll in Biochem 483 or Chem 483.

WS570 Adv Immunology and Immunochem (4 cr). WSU Bact 570. Biol of the immune process; chem and function of immunoglobulins. Two lec and 6 hrs of lab a wk. Prereq: Biochem J481/J541 or Chem J481/J541, and a course in immunology.

WS587 Hospital Rotation (3 cr). WSU V MS 587. Supervised practical experience in all service areas of the veterinary hospital. Nine hrs of lab a wk. Prereq: DVM degree.

WS592 (s) **Seminar** (1 cr, max arr).

WS597 Seminar in Pharmacology/Toxicology (1 cr, max arr). WSU P/T 597.

598 (s) **Internship** (cr arr). Prereq: perm.

Curricular Requirements

Animal Sciences

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 operations.

CORE COURSES FOR B.S.AN.SC.

Course	Credits
Biol 201 Intro to the Life Sciences	4
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
Comm 131 Fundamentals of Speech	2
Humanities and social sciences (at least 5 cr of each)	14

AGRIBUSINESS (B.S.An.Sc.)

Required course work includes the university requirements (see regulation J-3), the animal sciences core, and:

Course	Credits
AnSc 205 Intro to Animal Nutrition	3
AnSc 222 Animal Reproduction & Breeding	3
AnSc 223 Applied Animal Breeding	2
AnSc 263 Intro to Meat Science or 264 Consumer Meats or 303 Live Animal & Carcass Eval I	3
AnSc 450 Proseminar	1
Two of the following courses	6
AnSc 321 Beef Cattle Science	
AnSc ID&WS322 Sheep Science	
AnSc ID&WS323 Dairy Cattle Mgt	
AnSc 326 Swine Science	
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
AgEc 278 Prin of Farm & Ranch Management	4
AgEc 289 Ag Markets & Prices	3
AgEc 391 Agribusiness Management	3
ApSt 251 Principles of Statistics	3
Econ 151, 152 Principles of Economics	6
Eng 313 Business Writing	3
Agricultural economics electives	6
Animal science electives	4
Business electives	9
Life sciences electives	4
Math electives	4
Electives to total 132 cr for the degree	--

ANIMAL SCIENCES (B.S.An.Sc.)

Required course work includes the university requirements (see regulation J-3), the animal sciences core, and:

Course	Credits
AnSc 263 Intro to Meat Science or 303 Live Animal & Carcass Eval I	3
AnSc 305 Animal Nutrition	3
AnSc 306 Feeds & Ration Formulation	4
AnSc 320 Animal Breeding	3
AnSc 321 Beef Cattle Sc or ID&WS322 Sheep Sc or ID&WS323 Dairy Cattle Mgt or 326 Swine Sc	3
AnSc 352 Physiology of Reproduction & Lactation or 451 Endocrine Physiology	3
AnSc 450 Proseminar	1
ApSt 251 Principles of Statistics	3
Biochem 380, 382 Introductory Biochemistry and Lab	4
Biol 202 General Zoology	4
Chem 278 Organic Chem I: Lab	1
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Genet 314 General Genetics	3
VS 371 Anatomy & Physiology	4
Life sciences electives	3
Math electives	8
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 sciences 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 Life Sciences	4
Biol 202 General Zoology	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Anal	5
Chem 277, 278 Organic Chem I & Lab	4
Comm 131 Fundamentals of Speech	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 450 Proseminar	1
AnSc 451 Endocrine Physiology or 352 Physiology of Reproduction & Lactation	3
ApSt 251 Principles of Statistics	3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Humanities and social sciences electives	6
Electives	14

OPTION B—B.S. in Poultry Sc from OSU

First and Second Years	Credits
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 sciences core, and:

Course	Credits
AnSc 303 Live Animal & Carcass Eval I	3
AnSc 305 Animal Nutrition	3
AnSc 306 Feeds & Ration Formulation	4
AnSc 320 Animal Breeding	3
AnSc 321 Beef Cattle Sc or ID&WS322 Sheep Sc	3
AnSc 352 Physiology of Reproduction & Lactation	3
AnSc 450 Proseminar	1
AgMech 315 Irrigation & Drainage	2
Biochem 380 Introductory Biochemistry	3
Biol 202 General Zoology	4
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Chem 278 Organic Chem I: Lab	1
Eng 317 Technical & Engineering Report Writing	3
Genet 314 General Genetics	3
PlSc 308 Forage Crops	3
Range 351 Elements of Range Management	3
Range 452 Range Communities	4
Range 453 Range Inventory & Analysis	3
Soils 205, 206 General Soils & Lab	4
Math electives	8
Electives to total 132 cr for the degree	--

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 200 Seminar	1
Bact 250 General Microbiology	4
Biochem 380, 382 Introductory Biochemistry & Lab	4
Biol 201 Intro to 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 College Algebra 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 to total 132 cr for the degree	--

Department of Architecture

Ronald D. Bevans, Dept. Chairman (Art and Arch. Library Bldg.). Faculty: Robert M Baron, Ronald D. Bevans, Paul L. Blanton, Cynthia Blue, William B. Bowler, Jr., Antor A. Eder, Rosario P. Fasolino, Larry G. Fisher, Bruce Haglund, William B. McCroskey, John L. Pulliam, William P. Sloan.

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 design (B.F.A.). Both are professional programs that combine a specialized core cur-

riculum 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 or interior design will find three 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 Arts in interior design provides an extended program in interior design for persons with undergraduate degree backgrounds in interior design, architecture, or other design-oriented fields, with special emphasis on the sociological and psychological implications of the interior environment. A thesis is required. 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 furnish the student photographs (prints or slides) of the work it chooses to retain.

ARCHITECTURE—Arch

155-156 Design and the Creative Process (2 cr). Intro to design; lec, readings, and experiences to familiarize the student with the hist and dev of the design tradition and its appl in the visual, environmental, and communicative arts; emphasis on critical eval and understanding of the design process and its relationship to human society.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

255 Graphic Comm (2 cr). Intro to the process of graphic comm; studio projects to explore graphics through experiences, lec, and readings. Two 2-hr studios a wk and assigned work.

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.

266 Materials and Methods (3 cr). Materials characteristics from manufacture to constr; production info and resource lit investigation.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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; seven days of field trips during yr.

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, applied to practical bldg problems by integrating solutions with Arch Design studio. Coreq: 353 for 365, 354 for 366; prereq: 353 and 365 for 366.

383 Environmental Analysis (2 cr). Goals and ident of arch form determinants; ident and analysis of arch programming criteria; appl of computer tech.

384 Environmental Analysis (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: 383 or perm; prior experience in computer programming desirable.

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.

388 Arch Hist of Ancient Civ (2 cr). Prehistoric, Egyptian, West Asiatic, Aegean, and Etruscan arch and town dev.

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; seven days of field trips during yr.

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 456, the student undertakes a self-directed arch design study with faculty consultation. Three 3-hr studios a wk and assigned work.

463 Environmental Control Systems (3 cr). Design of water systems, heating, and a/c for arch appl.

464 Environmental Control Systems (3 cr). Arch appl of acoustics, lighting, and elec power systems.

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. Coreq: 453 for 465; 454 for 466; prereq: 353, 354, 365, and 366 for 465; 453 and 465 for 466.

473 Arch Programming (2 cr). Research and eval for arch thesis program; research methods and their appl.

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.

483 Intro to City Planning (3 cr). Hist and theory of city planning and problems associated with urban growth.

484 City Planning (2 cr). Analysis of 20th-century planning in the U.S. and Europe; group housing and urban dev patterns. Prereq: 483.

485-486 Bldg Technology III (2 cr). Seismic analysis in basic and complex bldgs; special problems (bldg type); environmental control, comm, and sound control systems.

497 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

498 (s) **Proseminar** (1-3 cr, max 6). Prereq: perm.

500 Master's Research and Thesis (cr arr).

562 Concepts in Contemporary Habitation (3 cr). The house in hist establishing precedents for the current pattern of housing with a critical analysis to determine their suitability to the requirements of today's society.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

INTERIOR DESIGN—IntD

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

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.

361 Interiors and Materials (3 cr). Use and appl of bldg materials, textiles, lighting, and color in interior space; intro to the physical properties of interior surfacing materials. Prereq: jr standing.

362 Furniture Design and Constr (3 cr). Wood furniture design and constr; models and shop drawings; full size constr of prototype.

451-452 Interior Design II (4 cr). Adv problems in commercial interior design. Three 3-hr studios a wk; seven days of field trips during yr.

461 Interior Systems and Constr (2 cr). Elec, mech, and plumbing systems for interior designers; interior constr; working drawings.

472 Professional Practice of Interior Design (2 cr). Interior designer's duties and responsibilities in professional practice; services, estimating, specs, and contracts.

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 chairman 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 155-156 Design & the Creative Process	4
Arch 255 Graphic Communication	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	2
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 System	6
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 111-112 Drawing I	4
Art 121-122 The Creative Process & Design	4
CE 218 Elementary Surveying	2
LArch 259 Landscape Architecture I	3
Math 140 College Algebra	3
Math 160 Survey of Calculus or Phil 211 Logic or ApSt 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 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
IntD 351-352 Interior Design I	8
IntD 361 Interiors & Materials	3
IntD 362 Furniture Design & Construction	3
IntD 451-452 Interior Design II	8
IntD 461 Interior Systems & Constr	2
IntD 472 Professional Practice of Interior Design	2
Arch 155-156 Design & Creative Process	4
Arch 255 Graphic Communication	2
Arch 256 Basic Architectural Design	3
Arch 266 Materials & Methods	3
Arch 383 Environmental Analysis	2
Arch 385-386 History of Architecture	6
Arch 499 Directed Study	2
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Art 221 Graphic Design	3
CS 100 Intro to Computers & Programming	3
HEc 123 Textiles	3
HEc 314 Weaving	3
HEc 426 History of Interiors & Furnishings	2
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

Nelson S. Curtis, Dept. Chairman (Art and Arch. Library Bldg.). Faculty: Frank A. Cronk, Nelson S. Curtis, James A. Engelhardt, David F. Giese, H. Lynne Haagensen, David L. Moreland, 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 overall 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 furnish the student photographs (prints or slides) of the work it chooses to retain.

100 Seminar (1 cr, max 2) (210). Overview of contemporary art scene; directions, interpretations, alternatives, problems, ethics, and values. Two cr reqd of all undergrad art majors as early in prog as possible.

101-102 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.

111-112 Drawing I (2 cr). Freehand drawing; emphasis on expressive use of materials.

121-122 The Creative Process and Design (2 cr). Intro to the design process; studio problems to familiarize the student with the basic design process, elements of design and dev of indiv design criteria as related to traditional and experimental concepts of design; studio problems explore basic design through two- and three-dimensional studies, experiences, and readings. Two 2-hr studios a wk and assigned work.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 505 (s) **Special Topics** (cr arr). Prereq: perm.

211 Drawing II (3 cr). Life drawing; work with various media to develop an understanding of the human figure. Prereq: 111-112 or perm.

221 Graphic Design (3 cr) (223-224). 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.

225 Comm Graphics (2 cr) (221). Basic intro to graphic comm using elem tech emphasizing typography and advertising layout. Two 2-hr studios a wk and assignments. Not for graphics majors.

231 Painting I (3 cr). Intro to basic fundamentals of painting.

235 Comm Design (2 cr). For nonmajors. General overview of field of commercial art dealing with areas of graphic design concerned with advertising media. Two 2-hr studios a wk and assigned work.

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.

251 Printmaking I (3 cr). Intro to relief methods of printmaking; emphasis on sensitivity to materials and indiv dev.

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.

271 Jewelry I (3 cr). Intro to basic jewelry materials and tech; basic jewelry design concepts; dev of indiv design criteria.

281 Water Color I (3 cr) (233-234). Intro to tech of water color painting by indiv instruction and group criticism.

299 (s) **Directed Study** (cr arr). Prereq: perm.

301-302 Hist of Art (3 cr). Art 301: 19th century. Art 302: 20th century.

311 Drawing III (3 cr, max 12). Adv drawing from the model, nature, and abstract form; emphasis on indiv dev. Prereq: 211 or perm.

321 Graphic Design II (3 cr) (323-324). 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.

331 Painting II (3 cr). Interm painting from the model, nature, and abstract form. Prereq: 231 or perm.

341 Sculpture II (3 cr). Studio investigation of various sculptural concepts, materials, and tech. Prereq: 241 or perm.

351 Printmaking II (3 cr). Intro to intaglio methods of printmaking; etching, aquatint, drypoint; emphasis on indiv dev. Prereq: 251 or perm.

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.

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.

381 Water Color II (3 cr) (333-334). Tech of water color painting; sketching from still life and nature. Prereq: 281 or perm.

403 (s) **Workshop** (cr arr). Prereq: upper-div standing and perm.

421 Graphic Design III (3 cr, max 12) (423-424). Adv design problems; projects are actual design problems drawn from campus community. One 5-day field trip spring sem. Prereq: 321 or perm.

431 Painting III (3 cr, max 12). Adv painting with emphasis on indiv dev. Prereq: 331 or perm.

433-434 Water Color III (2 cr).

441 Sculpture III (3 cr, max 12). Studio investigation of adv sculptural concepts, materials, and tech. Prereq: 341 or perm.

451 Printmaking III (3 cr, max 12). Tech of lithography; concepts of adv printmaking; emphasis on indiv dev. Prereq: 351 or perm.

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.

471 Jewelry III (3 cr, max 12). Adv jewelry tech with emphasis on design. Prereq: 371 or perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (3 cr).

502 (s) **Directed Study** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

504 (s) **Studio Problems** (3-5 cr, max 10).

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

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:

Course	Credits
Art 100 Seminar	2
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Art 211 Drawing II	3
Art 221 Graphic Design	3
Art 231 Painting I	2
Art 241 Sculpture I	3
Art 251 Printmaking I	3
Art 261 Ceramics I	2
Art 271 Jewelry I	2
Art 281 Water Color I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Arch 155-156 Design & Creative Process	4
Arch 385-386 History of Architecture	6
Art electives (400-level)	12
Literature electives	3
Sc electives (at least two courses, incl one or more lab courses, selected to incl both the life and physical sc)	8
Social sciences electives (at least three courses taken in two or more of the following fields: anthro; econ; geog, excluding physical geog and cartography; hist; political sc; psych, excluding Psych 205 and the more physiologically oriented courses; social sc; soc; other approved courses)	12

ART (B.A.)

Required course work includes the university requirement (see regulation J-3), the general requirements for the B.A. degree, and:

Course	Credits
Art 100 Seminar	2
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Art 211 Drawing II	3
Art 222 Graphic Design	3
Art 231 Painting I	2
Art 241 Sculpture I	3
Art 251 Printmaking I	3
Art 261 Ceramics I	2
Art 271 Jewelry I	2
Art 281 Water Color I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Arch 155-156 Design & Creative Process	4
Arch 385-386 History of Architecture	6

ART EDUCATION (B.S.Art Ed.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Art 100 Seminar	2
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Art 211 Drawing II	3
Art 221 Graphic Design	3
Art 231 Painting I	2
Art 241 Sculpture I	3
Art 251 Printmaking I	3
Art 261 Ceramics I	2
Art 271 Jewelry I	2
Art 281 Water Color I	3
Art 301-302 History of Art	6
Art 311 Drawing III	3
Arch 155-156 Design & Creative Process	4
Arch 385-386 History of Architecture	6
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
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
Philosophy and/or lit electives	3
Sc electives (at least three courses, incl one or more lab courses taken in two or more of the following areas, one of which is in either of the first two categories: life sc; physical sc; math, excluding Math 107; approved courses dealing with sc)	9
Social sc electives (incl Psych 100, Intro to Psych, and at least one course in either U.S. hist or govt)	9

Department of Bacteriology and Biochemistry

Wayne E. Magee, Dept. Head (14 Life Sc. Bldg.).

Bacteriology Faculty: Guy R. Anderson, Sidney M. Beck, Lee A. Bulla, Donald L. Crawford, Richard C. Heimsch, Al J. Lingg, George W. Teresa.

Biochemistry Faculty: Jorg A. L. Augustin, Duane J. Le Tourneau, Wayne E. Magee, Lois K. Miller, David J. Oliver, Arthur W. Rourke.

Food Science Faculty: Jorg A. L. Augustin, Karen R. Davis, 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. 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.

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.

154 Elem Microbiology and Public Health (3 cr) (C) (254). Microorganisms and their role in health, disease, and human welfare.

250 General Microbiology (4 cr). 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.

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.

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.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

400 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

402 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.

404 (s) **Special Topics** (cr arr).

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.

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.

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.

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.

425 Soil and Aquatic Microbial (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.

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.

481 Virology (3 cr). See VS 481.

483 Virology Lab (1 cr). See VS 483.

ID-J485/J585 Molecular Genetics (2-4 cr). Alt/yrs 83-84. Bact 485 same as Biochem 485 and Genet 485. Molecular basis of genetics: DNA, RNA, protein biosynthesis, and genetic engr. Prereq: course in genetics recommended.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

499 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

502 (s) **Directed Study** (cr arr). Areas normally offered are: aquatic, food, immunology, medical, microbial ecology, physiology, and soils. Prereq: perm.

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 two additional projects. Prereq: ID460 or perm.

504 (s) **Special Topics** (cr arr).

505 Microbial Biotechnology (2-4 cr). Alt/yrs 83-84. Industrial microbial processes and lab methods. Two lec, or two lec with labs, a wk. Prereq: 250, Chem 372, or perm.

507 Bacterial Taxonomy (2 cr). Determination of and differentiation between taxonomic groups of bacteria. Prereq: 250, 304.

516 Adv Fish Diseases (4 cr). See Fish 516.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 275.

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.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

400 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

401 Undergrad Research (1-2 cr, max 4). Indiv study. Prereq: sr standing and perm.

404 (s) **Special Topics** (cr arr).

J481-J482/J541-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.

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.

ID485 Molecular Genetics (2-4 cr). See Bact ID-J485/J585.

486 Plant Biochem (3 cr). Alt/yrs 83-84. Same as Chem 486. Composition and metabolism of higher plants with emphasis on secondary plant products. Prereq: 380.

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Graded P/F. Prereq: perm.

581 Carbohydrates (3 cr). Alt/yrs 83-84. Same as Chem 581. Structure, function, and metabolism of carbohydrates. Prereq: 482 or perm.

582 Proteins and Enzymes (4 cr). Same as Chem 582. Protein structure and function; mechanisms of enzyme action. Prereq: 481.

583 Lipids and Membranes (3 cr). Alt/yrs 84-85. 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.

584 Nucleic Acids (3 cr). Alt/yrs 84-85. Same as Chem 584. Structure, function, and metabolism of nucleic acids. Prereq: 482.

585 Physical Biochem (3 cr). Alt/yrs 83-84. Same as Chem 585. Appl of physical chem to biol systems, processes, and structure. Prereq: 482.

ID&WS589 Adv Topics in Biochem (1-9 cr, max 9). Same as Chem ID&WS539. WSU BC/BP 568. Recent research in enzymes, hormones, complex lipids, vitamins, nucleic acids, antibiotics, viruses, and biochem genetics. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

Curricular Requirements

BACTERIOLOGY

The undergraduate curricula in bacteriology prepare students for obtaining interesting and challenging careers in public health, medical technology, research laboratories, and agricultural 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 bacteriology (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 ID460 Microbial Physiology	5
ApSt 251 Principles of Statistics	3
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

Comm 131 Fund of Speech or 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
Science electives (incl at least 3-4 cr in bact) 16
Humanities and social sciences electives 14
Electives to total 132 cr for the degree ..... --

Strongly recommended science electives:
Bact 425 Soil & Aquatic Microbiol or
402 Food & Applied Microbiol
Bact ID460 Microbial Physiology or
409, 410 Immunology & Lab
Bact 481, 483 Virology & Lab
Bact ID485 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 474A Animal Diseases

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 474A for Bact 402/425. Under this plan VS 371 is reqd, Chem 253 is optional, and AnSc 305, 352, 451, VS/Bact 481, and Zool 323 are strongly recommended.

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 ID460 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
Comm 131 Fund of Speech or 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 ID485 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 488 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 488. 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 ID485 Molecular Genetics
Biochem 486 Plant Biochem
Biochem 499 Directed Study
Bact 250 General Bacteriology
Bact ID460 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. The program is offered in cooperation with Oregon State University, the degree-granting institution. The student may complete the first two years of study at UI and then transfer to OSU for the remainder of the program. Idaho resident students are not charged out-of-state tuition by OSU. It also is possible to complete many of the requirements for the degree and transfer to other universities, such as nearby Washington State University, to complete a food science degree. Students are advised by food science faculty members according to their individual goals. Courses may be selected from the following:

AnSc 205 Intro to Animal Nutrition or
HEc 205 Concepts in Human Nutrition
ApSt 251 Prin of Statistics
Bact 101 Food and Life
Bact 250 General Microbiology
Bact 402 Food & Applied Microbiology
Biochem 380, 382 Intro Biochem & Lab
Biol 201 Intro to the Life Sciences
Chem 111 Prin of Chemistry
Chem 112 Inorganic Chem & Qual Analysis
Chem 253 Quantitative Analysis
Chem 277, 278 Organic Chem I & Lab
Chem 372 Organic Chem II
Comm 131 Fundamentals of Speech
Eng 103 Basic Skills for Writing
Eng 317 Tech & Engr Report Writing
Math 111 and 160 Finite Math and Survey of
Calculus or 180 Analyt Geom & Calculus I
Phys 113-114-115-116 General Physics & Lab

Department of Biological Sciences

Arthur W. Rourke, Dept. Chairman (115 Life Sc. Bldg.).

Biology Faculty: Doyle E. Anderegg, O. Clifford Forbes, Earl J. Larrison, Richard J. Naskali, Fred W. Rabe, Edmund E. Tylutki, Richard L. Wallace.

Botany Faculty: Douglass M. Henderson, Richard J. Naskali, Lorin W. Roberts, George G. Spomer, Edmund E. Tylutki.

Zoology Faculty: John A. Byers, Joseph G. Cloud, Mark E. DeSantis, Victor P. Eroschenko, O. Clifford Forbes, Donald R. Johnson, Earl J. Larrison, Kenneth A. Laurence, Thomas A. McKean, Rodney A. Mead, Fred W. Rabe, Arthur W. Rourke, 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 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 chairman at (208) 885-6280.

Courses

BIOLOGY—Biol

100 Man and the Environment (4 cr). 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.

101 Perspectives in Biol (1 cr). Intro to the disciplines in the fields of biol; current research topics. Graded P/F.

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.

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.

201 Intro to the Life Sc (4 cr). 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.

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.

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.

207 Intro to Oceanography (3 cr). Geological, physical, chem, and biol features of oceans; biol emphasized. Prereq: course in biol and soph standing.

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.

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.

351 General Genetics (3 cr) (C). Same as Genet 314. Genetic mechanisms in animals, plants, and microorganisms. Prereq: 201.

352 Experimental Genetics (1 cr). Same as Genet 315. One 3-hr lab a wk. Prereq or coreq: 351 or Genet 314.

361 Biol Lit (1 cr). Botanical and zoological lit. Prereq: major in one of the life sc or 20 cr in any combination of biol, bot, or zool.

405 Biol Lab Procedures (2 cr). Lab org, prep, and demonstrations using readily available, inexpensive materials.

442 Biol Evolution (3 cr). Genetic, ecological, and paleontological aspects of evolution, incl that of man. Prereq: 202 and 351, or perm.

443 Bioecology (3 cr). Ecology of plants and animals in the field. Field labs and at least one weekend field trip.

445 Taxometrics (3 cr). Quantitative approach to classification; analysis of numerical and computer taxonomics, phenetic and phylogenetic systems, codification of biol entities; appl of info theory to taxonomy; a numerical taxonomic problem worked out on a computer. Prereq: ApSt 251 or perm.

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.

462 Natural Hist Museum (3 cr). Plants and animals as exhibited and studied in the natural hist museum, including collection, curation, storage and analysis, and dissemination of research data. Two lec and one 3-hr lab a wk; one 4-day field trip. Prereq: perm.

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

501 (s) **Seminar** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

504 (s) **Special Topics** (cr arr). Prereq: perm.

505 Colloquium (1 cr, max 2). Graded P/F.

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.

311 Plant Physiology (3 cr). Functions of plant growth and dev. Prereq: Biol 203 and organic chem.

312 Plant Physiology Lab (2 cr). Two 3-hr labs a wk. Prereq or coreq: 311.

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.

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.

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.

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.

J401/J510 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.

J413/J515 Mineral Nutrition (3 cr). Alt/yrs 83-84. Bot 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.

420 Aquatic Macrophytes (1 cr). Classification, structure, and habits of predominant aquatic macrophytes of Pacific NW. Accelerated course with six hrs of lab a wk for first 8 wks; one 1-day field trip. Prereq: Biol 203; Bot 241 recommended.

ID&WS-J421/ID&WS-J521 Biol of Fungi (2 cr). WSU Pl P 421. Alt/yrs 83-84 WS, 84-85 ID. Life activity of fungi; structure, life hist, and classification. Two lec and two 3-hr labs a wk. Cr earned in ID&WS521 by exam of current lit and prep of term paper. Prereq: Biol 203 or perm.

ID&WS-J422/ID&WS-J522 Fungi in the Lab (1 cr). Culture, experimentation, isolation, and morphology of fungi. Cr earned in ID&WS522 by directing open-ended lab experiment.

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.

ID-J426/J526 Morphology of the Embyrophytes (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.

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.

WS435 Synecology (3 cr). WSU 462. Structure, methods of analysis, and dynamic behavior of plant communities. Prereq: 241.

WS437 Field Ecology (2 cr). WSU 463. Structure, environmental relations, and dynamism of local semidesert, grassland, and forest communities. Six hrs of lab a wk; field trips. Prereq: WS435.

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.

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.

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

504 Special Topics (cr arr). Prereq: perm.

512 Plant Growth Substances (3 cr). Alt/yrs 84-85. Hormonal regulation of physiological processes. Two lec and one 2-hr disc a wk. Prereq: 311 and organic chem.

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.

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.

535 Plant Geog (3 cr). Alt/yrs 83-84. 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.

ID539 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: 432; 311 recommended.

ID558 Genetics of Fungi (3 cr). Alt/yrs 84-85. Same as Genet 511. Genetic systems and sexuality of fungi. Prereq: ID&WS-J421/ID&WS-J521, Biol 351, or perm.

WS575 Basidiomycetes (3 cr). Alt/yrs 84-85. WSU Pl P 522. Taxonomy, physiology, and reproduction of rusts, smuts, and higher basidiomycetes. Two lec and one 3-hr lab a wk. Prereq: ID&WS-J421/ID&WS-J521.

WS576 Ascomycetes and Fungi Imperfecti (2 cr). Alt/yrs 83-84. WSU Pl P 523. Taxonomy, phylogeny, physiology, reproduction of ascomycetes and fungi imperfecti. One lec and one 3-hr lab a wk. Prereq: ID&WS-J421/ID&WS-J521.

WS577 Lower Fungi (2 cr). Alt/yrs 83-84. WSU Pl P 524. Taxonomy, phylogeny, physiology, and reproduction of aquatic and terrestrial phycomycetes and myxomycetes. One lec and one 3-hr lab a wk. Prereq: ID&WS-J421/ID&WS-J521.

WS590 Adv Topics in Bot (2 cr). Recent research in plant sc. Prereq: major in bot or equiv.

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.

323 Comparative Vertebrate Embryology (4 cr). Organogeny, ovulation, fertilization, cleavages, hormonal control, experimental methods; frog, chick, and pig dev. Two lec and two 3-hr labs a wk. Prereq: Biol 202.

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.

366 Histological Technique (2 cr). Methods of fixing, sectioning, staining, and mounting. Two 3-hr labs a wk. Prereq: Biol 202.

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.

J411/J511 Comparative Vertebrate Reproduction (3 cr). Physiology of major events in reproductive cycles of vertebrates with emphasis on mammals. Credit earned in 511 by completion of additional reading in journals, take-home exam with each hr exam, and term paper. Prereq: Biol 202.

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 352.

J414/J514B Cell Physiology (3 cr). Experimental investigations of cells. Cr earned in 514B by completion of research proposal. Prereq: organic chem, Biochem 380, and Biol 201; Biol 202 recommended.

415 Cell Physiology Lab (2 cr). Current methodology to investigate a variety of functions in several eukaryotic cell types. One 3-hr lab a wk.

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.

417 Endocrine Physiology (3 cr). See AnSc 451.

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.

435 Physical-Chem Limnology (2 cr). See Fish 415.

436 Biol Limnology (3 cr). See Fish 416.

J438/J538 Animal Geog (2 cr). Zool 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.

478 Animal Behavior (3 cr). Evolution, causation, dev, and function of behavior in vertebrates and invertebrates. Prereq: Biol 202.

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.

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.

483 Natural Hist of Mammals (3 cr). Two lec and one 3-hr lab a wk. Prereq: Biol 202 or perm.

484 Invertebrate Zoology (5 cr). Morphology of freshwater, marine, and terrestrial invertebrates and phylogeny of major groups. Three lec and two 3-hr labs a wk; one 5-day field trip: Prereq: Biol 202 or perm.

485 Freshwater Invertebrates (2 cr). Collection, preserving, ident, slide preparation, and culturing of freshwater invertebrates not to incl insects, protozoans, or parasitic forms.

487 Protozoology (3 cr). Classification, morphology, physiology, and ecology of protozoa. Two lec and one 3-hr lab a wk. Prereq: Biol 202.

488 Parasitology (3 cr). Animal parasites, emphasis on those of man, ident and preservation of local forms. Two lec and one 3-hr lab a wk. Prereq: Biol 202 or perm.

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.

499 (s) Directed Study (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) Seminar (cr arr). Prereq: perm.

502 (s) Directed Study (cr arr). Prereq: perm.

503 (s) Workshop (cr arr). Prereq: perm.

504 Special Topics (cr arr). Prereq: perm.

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.

513 Comparative Animal Physiology (3 cr). Alt/yrs 83-84. Physiology, morphology, evolution, and ecology of various animal groups. Prereq: 415 or 416.

WS514A Neurophysiology (3 cr). Alt/yrs 83-84. WSU 562. Structure and function of nervous tissues; org of nervous systems; variations in nervous systems relating to plasticity of behavior. Prereq: 416.

WS515 Adv Vertebrate Physiology (4 cr). Alt/yrs 83-84. WSU 557. Prin of vertebrate physiology illustrated through contemporary analyt and instrumental procedures. Prereq: 416.

WS531 Math Ecology (3 cr). Math approach to the study of natural animal populations. Prereq: 4 courses in biol, one course in calculus, and perm.

ID532 Raptor Ecology (2 cr). Ident, population dynamics, migration and food habits, energetics of North American birds of prey. Prereq: perm.

536 Hydrobiology (4 cr). Alt/yrs 83-84. Freshwater ecology; water chem, primary and secondary production, microinvertebrates, investigation of nearby lotic and lentic environments. Three lec and one 3-hr lab a wk; field labs. Prereq: perm.

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, 278 Carbon Compounds & Lab	4
Math 140 College Algebra	3
Phys 113-114-115-116 General Physics & Lab	8
Zool 323 Comparative Vertebrate Embryology or 324 Comparative Vertebrate Anatomy	4
Zool 414, 415 Cell Physiology & Lab or 416 Mammalian Physiology	4-5

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 ID&WS421 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
Chem 278 Organic Chem I Lab	1
Math 140 College Algebra	3

And completion of one of the two sections below:

A. FOR STUDENTS NOT PLANNING TO ATTEND GRADUATE SCHOOL

Chem 275 Carbon Compounds	3
And at least one of the following:	
ApSt 251 Principles of Statistics	
CS 131 Intro to Computer Programming	
CS 205 Intro to Computer Programming	
Math 160 Survey of Calculus	
Math 180 Analytic Geom & Calculus I	

B. FOR STUDENTS PLANNING TO ENTER GRADUATE SCHOOL

Biochem 380 Introductory Biochemistry	3
Chem 277, 372 Organic Chemistry I, II	6

Math 180 Analytic Geom & Calculus I or
ApSt 251 Principles 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
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	4
Chem 372 Organic Chem II	3
Math 140 College Algebra	3
Math 180 Analytic Geom & Calculus I	4
Phys 113-114-115-116 General Physics & Lab	8

And one of the following options:

A. VERTEBRATE OPTION

At least one course from each of the following groups:

Zool 414, 415 Cell Physiology & Lab or
416 Mammalian 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 488 Parasitology or Ent 211 General Entomology 3-5
Biol 442 Biol Evolution or Zool 323 Comparative Vertebrate Embryology or Zool 411 Comparative Vertebrate Reproduction or Zool 427 Vertebrate Histology & Organology 3-4

B. INVERTEBRATE OPTION

Zool 414, 415 Cell Physiology & Lab 5
Zool 484 Invertebrate Zoology 5
Ent 211 General Entomology 4
Ent 342 Insect Identification 4
Ent 442 Immature Insects or Zool 435 Physical-Chem Limnology or Zool 487 Protozoology or Zool 488 Parasitology 2-3
Ent ID484 Insect Anatomy & Physiology 4
Ent ID496 Dev Systems in Insects 3

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	4
Biol 201 Intro to Life Sciences	4
Chem 103 Intro to Chem or 111 Principles of Chem	4
Chem 114 General Chemistry or 275, 278 Carbon Compounds & Lab	4
HEc 205 Concepts in Human Nutrition	3
HEc 334 Middle Childhood-Adolescence	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	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 College Algebra 3

PRE-PHYSICAL THERAPY STUDIES

UI does not offer a formal program in pre-physical therapy studies; however, the pre-physical therapy adviser will assist interested students select courses that will best qualify them for transfer into a regular program at another institution.

There are three plans of study leading to professional qualification in physical therapy: (1) 4-year bachelor's degree courses for high school graduates and transfer students, (2) 12- or 16-month certificate courses for students who hold the bachelor's degree; and (3) courses leading to the master's degree for students with a bachelor's degree and the requisite background. As noted above, such programs are not offered at UI.

Recommended Preparation

The courses listed below include most of the essential courses 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 College Algebra	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.

Department of Business

C. Randall Byers, Dept. Head (335 Admin. Bldg.). Faculty: C. Randall Byers, Richard B. Coffman, Byron J. Dangerfield, Donald Del Mar, Dennis B. Fitzpatrick, Eugene F. Golis, W. Larry Gordon, John H. Hallaq, Cornelis D. Hoekstra, Bradley D. Lockeman, Lawrence H. Merk, John S. Morris, Norman C. Olson, Philip D. Olson, William H. Parks, David E. Terpstra, Jerry L. Wegman.

Three major fields (finance, management, and marketing) within the department lead to the B.S.Bus. degree. These programs are structured to provide a strong basic education, preparing the student for entrance into the business environment. The courses in these fields are the basis for further development as students progress through their careers. The department also offers a Master of Business Administration (M.B.A.) degree that stresses the breadth of areas encountered in the business world. The M.B.A. program is especially well suited for students with technical undergraduate programs.

The curriculum in finance is broken into three options. The financial systems option is designed for the student who desires to combine computer science and finance into his or her curriculum. Students in this program often plan to pursue careers in programming, systems analysis, or data processing, which require a knowledge of business systems as well as computer principles. Job prospects in this area are excellent as modern business becomes more dependent on effective computer systems.

The financial-institutions option is directed toward those students desiring careers in commercial lending, security analysis, portfolio management, etc. There is a steady demand for graduates in this field.

The option in corporate financial management is designed for students seeking a career in corporate finance. It requires a heavier emphasis on accounting than do the other finance options. Numerous opportunities exist in this field, especially for the student willing to relocate in another state. By taking electives in accounting and other fields, students can achieve the background necessary to take the CMA (Certificate of Management Accounting) Examination. This examination is intended for persons specializing in managerial accounting and financial management in the corporate world. Typically a student intending to take the CMA Examination should plan to spend one or two additional semesters at UI to take courses that complement the basic requirements.

The major in management is for students interested in acquiring knowledge and understanding of, and skills in, the administrative process. The curriculum focuses on the decision-making task with regard to the following functions: planning, organizing, staffing, directing, and controlling. There are two options available: human resource management and operations management. The human resource management option offers opportunities for students to develop competences in personnel administration and labor relations. The operations manage-

ment option is designed to prepare students for supervisory careers in operations planning and control, and purchasing.

The remaining major within the department is marketing. Students contemplating careers with consumer or industrial goods manufacturers, retail or wholesale distributors, or advertising and marketing research organizations elect this program.

Business Courses—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.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

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 contrast as basic concepts in a free enterprise system.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

301 Financial Mgt (3 cr). Policies and practices involved in acquisition, control, and allocation of financial resources in bus orgs. Prereq: Acctg 202; ApSt 251 or 301.

311 Intro to Mgt Theory (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.

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.

322 Marketing Research and Analysis (3 cr). Purposes, methods, and tech; market-potential analysis; product analysis and adoption. Prereq: 321, ApSt 251.

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. Prereq: 321.

332 Quantitative Methods in Bus (3 cr). Sampling applications; forecasting tech—time series analysis, exponential smoothing multiple regression; decision theory; survey of mgt sc tech incl linear programming and simulation. Prereq: ApSt 251.

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 131, Acctg 202, or perm.

351 Systems Analysis Methods (3 cr). Intro to info systems; systems dev life cycle; algorithms; classical and structured consideration of process flows, data flows, data structures, file designs, I/O designs, and program specifications. Prereq: CS 150 or CS 233.

361 Real Estate (3 cr). Listing, selling, leasing, financing, and brokerage; fundamentals of valuation and listing property mgt.

370 Industrial Mgt (3 cr) (312). Intro to production and operations mgt, incl inventory, quality control, simulation tech, scheduling, production processes, job design, standards setting, plant layout, maintenance, product design, and queueing problems; analyt approach stressed in problem ident and modeling; quantification employed when feasible or necessary. Prereq: 332 or Econ 433 or Econ 436.

399 (s) **Internship** (1-3 cr, max 6). Graded P/F. Prereq: perm.

401 Investments (3 cr). Security analysis and portfolio mgt; types of securities and their suitability to various investment goals. One 1-day field trip. Prereq: 301.

402 Bus and Society (3 cr). Private enterprise's ethical and pragmatic relationships in international relations, national dev, indiv citizen's welfare, and U.S. govt structures.

403 Insurance (3 cr). Major branches of insurance; prin and practices.

406 Problems in Financial Mgt (3 cr). Analysis of selected financial mgt problems; working capital mgt, capital budgeting and valuation; research project and analysis of cases. Prereq: 301 and sr standing.

407 Financial Institutions (3 cr). Mgt and regulation of commercial and nonmonetary financial institutions incl savings and loan institutions. Prereq: Econ 403.

410 Financial Info Systems (3 cr). Applications in computer-based info systems for selected financial mgt problems; capital budgeting, working capital mgt, financial analysis. Prereq: 332, 350, 406.

412 Personnel Mgt (3 cr). Basic personnel mgt functions with heavy legal emphasis. Prereq: 265, 311.

413 Human Relations in Bus (3 cr). Microoriented treatment of areas incl comm, motivation, group process, conflict, leadership style. Prereq: 311.

415 Small Business Mgt (3 cr). Study of problems encountered by small business orgs through case analysis of actual small business operations; topics in locating, staffing, financing, marketing, and regulating small business. Prereq: 301, 311, and 321 or perm.

416 Compensation Admin (3 cr). Dev and admin of monetary-nonmonetary reward programs; relationship between compensation, motivation, performance. Prereq: 311.

418 Org Theory (3 cr). Integration of macro level variables; org structure, environment, technology, change, and info systems. Prereq: 332, 413, Acctg 381.

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. Prereq: 321 (322 strongly recommended).

422 Sales Force Mgt (3 cr). Alt/yrs 83-84. Selecting, training, compensating, stimulating, supervising, and directing the selling efforts of an outside sales force; org and methods. Prereq: 311, 321.

424 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. Prereq: 321, 322.

425 Industrial Marketing (3 cr). Managerial strategies relevant to planning and implementation of elements of the industrial marketing mix. Prereq: 321.

426 Channels of Distribution (3 cr). Alt/yrs 84-85. Structure and operation of channels of distribution; areas incl transportation, storage, order processing, location analysis, functional middlemen, channel design. Prereq: 321.

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, 322, 420, 424.

435 Operations Research I: Linear Programming (2 cr). Linear programming, simplex method, computer solution, sensitivity analysis, and appl. Prereq: CS 100 or 131, and Bus 332, or perm.

436 Econ and Bus Forecasting (3 cr). See Econ 436.

437 Stat for Bus Decisions (2 cr). Same as ApSt 437. Decision making under uncertainty; utility theory. Prereq: ApSt 251.

439 Systems and Simulation (2 cr). Distribution theory, randon numbers, modeling concepts and simulation of queueing and inventory systems. Prereq: 332 and CS 131.

441 Labor Relations (3 cr). Negotiations and admin of current union-mgt issues. Prereq: 311.

442 Govt Regulation of Bus (3 cr). Analysis and appraisal of major types of public policy toward bus activity; emphasis on antitrust laws.

451 Data-Base Org (3 cr). Intro to appl prog dev in a data-base environment; storage devices and logical data org 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 org, and secondary org structures. Prereq: 351.

455 Integer, Nonlinear, and Dynamic Programming (1 cr). Intro. Prereq: 435.

456 Quality Control (3 cr). Same as ApSt 456. Designing of efficient and effective systems for the maintenance of quality. Prereq: 370.

462 Real Property Appraisal (3 cr). Theories and prin in estimating value of natural resources and any attached improvements. Prereq: Econ 152 or perm.

464 Real Estate Law (3 cr) (C). Study of Idaho real estate law. Prereq: 265 or equiv and perm.

C465 Real Estate Finance (3 cr). Analysis of sources and methods in the financing of real property constr and dev. Prereq: 361 or equiv.

466 Bus Law (3 cr) (C). Same as Acctg 466. Law of sales, negotiable instruments, security interests in properties, and bus regulations dealing with competitive torts, antitrust, and federal trade regulations; bus ethics. Prereq: 265 or perm.

467 Bus Law (3 cr). Same as Acctg 467. Legal concepts of agency, partnerships, corporations, securities regulation (Securities Act of 1933 and 1934), personal property, real property, and environmental law. Prereq: 265 or 466.

470 Motion Study, Time Study, and Job Design (2 cr). Prin and concepts for the effective and efficient employment of labor. Prereq: ApSt 251.

471 Product Design, Value, and Engr Analysis (1 cr). Analyt approach to reducing manufacturing costs via product design, process, specification, and distribution methods. Prereq: ApSt 251.

472 Operations Planning and Scheduling (3 cr). In-depth study of planning and scheduling tech with emphasis on material requirement planning. Prereq: 332, 370.

474 International Bus (3 cr). International trade and the nature of exchange among nations; socioecon environment of the multinational corporation.

475 International Marketing (3 cr). Alt/yrs 83-84. Foreign market operations; econ, cultural, and political aspects of international markets and how they interact with the marketing mix. Prereq: 321.

480 Bus 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, and sr standing.

501 (s) **Seminar** (cr arr). Normally offered in real estate, investments, insurance, govt regulation, industrial mgt, industrial relations, and current problems. Prereq: perm.

503 Financial Policy (3 cr). Social and econ implications of the financial process. Prereq: perm.

505 (s) **Workshop** (cr arr). Prereq: perm.

510 Govt Regulation of Bus (3 cr). Econ and legal aspects of antitrust laws; phil and econ basis of govt control of bus.

513 Human Behavior in Orgs (3 cr). Seminar concerned with worker and supervisor behavior and attitudes, work group behavior, leadership and motivation, comm and decision making. Prereq: perm.

521 Adv Marketing (3 cr). Production dev, pricing, demand creation, physical distribution, and channel selection. Prereq: perm.

525 Industrial Mgt (3 cr). Tech of and decision making in production mgt; quantitative approaches of resource allocation to problems of production. Prereq: perm.

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: ApSt 251 or perm.

580 Bus Policy (3 cr). Integration of admin/mgt concepts, tech, and models for both line/staff (cases); org goals, policies, strategies through case analysis. Prereq: perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

FINANCE (B.S.Bus.)

This curriculum is for students pursuing a career in corporate finance, banking, or financial systems. Students may specialize in one of three options in this degree: financial systems, financial institutions, or corporate financial management. Students interested in taking the CMA exam are encouraged to follow the corporate financial management option.

Required course work includes the university requirements (see regulation J-3), the college requirements, and one of the following options:

A. FINANCIAL SYSTEMS OPTION

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 332 Quantitative Methods in Business	3
Bus 406 Problems in Financial Management	3
Bus 410 Financial Information Systems	3
Bus 451 Data-Base Organization	3
CS 334 Advanced COBOL Programming	3
College of Business and Economics electives	6

B. FINANCIAL INSTITUTIONS OPTION

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 361 Real Estate	3
Bus 401 Investments	3
Bus 406 Problems in Financial Management	3
Bus 407 Financial Institutions	3
*Econ 403 Money & Banking	3
College of Business and Economics electives	3

C. CORPORATE FINANCIAL MANAGEMENT OPTION

Course	Credits
Acctg 301-302 Intermediate Accounting	8
Acctg 385 Costs: Concepts & Methods	3
Bus 332 Quantitative Methods in Business	3
Bus 406 Problems in Financial Management	3
Bus 413 Human Relations in Business	3
*Econ 321 Intermediate Microeconomic Analysis	3

*May be used to fulfill college core econ requirements.

MANAGEMENT (B.S.Bus.)

This program is for students interested in acquiring knowledge and understanding of, and skills in, the administrative process. The curriculum focuses on the decision-making task with regard to the following functions: planning, organizing, staffing, directing, and controlling. There are two options or tracts available: human resource management and operations management. The human resource management option offers opportunities for students to develop competencies in personnel administration and labor relations. The operations management option is designed to prepare students for supervisory careers in operations planning and control, and purchasing.

Required course work includes the university requirements (see regulation J-3), the college requirements, and one of the following options:

A. HUMAN RESOURCES OPTION

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 332 Quantitative Methods in Business	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	3
Psych elective (upper-division)	3

B. OPERATIONS MANAGEMENT OPTION

Course	Credits
Acctg 381 Financial & Admin Accounting	3
Bus 332 Quantitative Methods in Business	3
Bus 413 Human Relations in Business	3
Bus 418 Organization Theory	3
Bus 456 Quality Control	3
Bus 472 Operations Planning & Scheduling	3
IEd 365 Indus Supervision or 450 Indus Safety	3
At least three of the following courses	7-9
IEd ID130 Basic Electricity	
IEd ID131 Basic Electronics	
IEd 140 Wood Technics	
IEd 170 Wood Product Design & Fabrication	
IEd 237 Integ Circuits & Semiconductor Devices	
IEd 250 General Metals	
IEd 253 Metals Processing Lab I	
IEd 254 Metals Processing Lab II	
IEd 300 Finishing Materials & Methods	
College of Business and Economics electives	3

*May be used to fulfill college core econ requirements.

MARKETING (B.S.Bus.)

Students contemplating careers with consumer or industrial goods manufacturers, retail or wholesale distributors, or advertising and marketing research organizations elect this program.

Required course work includes the university requirements (see regulation J-3), the college requirements, and:

Course	Credits
Bus 322 Marketing Research & Analysis	3
Bus 420 Promotional Strategy	3
Bus 424 Consumer Behavior	3
Bus 428 Marketing Problems	3
Electives (select at least two of the following)	6
Bus 325 Retailing	
Bus 422 Sales Force Management	
Bus 425 Industrial Marketing	
Bus 426 Channels of Distribution	
Bus 475 International Marketing	

Department of Chemical Engineering

George M. Simmons, Dept. Chairman (312 Buchanan Engr. Lab.). Faculty: Thomas E. Carleson, David C. Drown, Louis L. Edwards, Jr., Robert R. Furgason, Roger A. Korus, Jin Y. Park, Jay J. Scheldorf, George M. Simmons.

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, 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 offers both M.S. and Ph.D. degrees. The graduate program is flexible and concerned with providing individualized educational experiences for the students. The research interests of the faculty cover a broad range. Examples of ongoing projects include fundamental studies of geothermal energy utilization, alcohol production from agricultural waste material, and energy conservation in pulp and paper mills. Other areas of research include fluidized bed reaction engineering, biomass pyrolysis to produce gaseous and liquid fuels, process modeling and simulation, and deep-tank aeration for secondary waste treatment.

The department has available a number of fellowships and assistantships for students. Support includes fellowships from the Potlatch Foundation, Weyerhaeuser Company, and Crown Zellerbach; 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

100 Intro to Chem Engr Analysis (2 cr). Offered summers only. Analysis of chem processes and operations with emphasis on elem computer technology. Graded P/F. Prereq: CS 131 or equiv and perm of dept.

200 Soph Seminar (0 cr). Discussion of topics of current concern to engr profession. Graded P/F.

204; 404; 504 (s) **Special Topics** (cr arr).

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

300 Jr Seminar (0 cr). Graded P/F.

323 Material and Energy Balances (3 cr). Conservation of mass and energy calculations in chem process systems. Prereq: Chem 114, Math 190.

326 Chem Engr Thermodynamics (3 cr). Fluid behavior, property estimation, and phase and reaction equilibria; appl to chem process systems. Prereq: ES 321; coreq: 323.

330 Stagewise Operations (3 cr). Stagewise process operations, incl distillation, extraction, absorption, and ion exchange. Coordinated lec-lab periods. Prereq: 323, ES 321.

390 Intro to Chem Engr Prin (3 cr). For chemists and engineers. Mass and energy balances and unit operations used in chem process industries. Prereq: perm.

393 Chem Engr Projects (1-3 cr, max 9). Problems of a research or exploratory nature. Prereq: perm of dept.

410 Fundamentals of Polymer Science and Processing (1-3 cr). Structure and formation of polymers, polymerization and fabrication process and properties. Prereq: perm.

423 Reactor Kinetics and Design (3 cr). Chem reaction equilibria, rates, and kinetics; design of chem and catalytic reactors. Prereq: 323, Chem 306, Math 310.

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: 323, ES 320, ES 321, Math 310.

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.

444 Automatic Process Control (3 cr). Process dynamics and control, with appl of industrial instruments to processing systems. Two lec and one 3-hr lab a wk. Prereq: Math 310; coreq: EE 203.

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: 423, 431.

WS470 Fundamentals of Air Pollution (3 cr). WSU CE 470. Sources, magnitude, and impact; chem of urban atmosphere, photochem of smog, and meteorological forces. Prereq: Chem 111, Chem 114.

491-492 Seminar (0 cr). Recent dev and topics. Graded P/F. Prereq: sr standing.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

ID&WS515 Transport Phenomena (3-4 cr). Same as ME 515. Adv treatment of momentum, energy, and mass transport processes; solution tech. Prereq: perm.

WS521 Special Topics in Air Pollution (2-3 cr). Adv topics in air pollution chem and physics; analysis of industrial and urban air pollution problems and control engr.

ID&WS523 Topics in Catalysis (3 cr). Prep and characterization of supported heterogeneous catalysts, mechanistic interp of surface reactions and chemisorption, deactivation and kinetics from lab experiments; homogeneous and supported liquid phase catalysis.

WS524 Polymer Reactor Engr (3 cr). Fundamentals of polymerization reaction analysis, chem reactor design for polymerization processes.

525 Adv Heat Transfer (2-3 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.

ID&WS527 Adv Chem Engr Thermodynamics (2-3 cr). Equilibria in physical and chem systems; generalized prediction of thermodynamic properties, incl nonideal systems. Prereq: perm.

R528 Adv Thermodynamics (3 cr). See ME R528.

ID&WS529 Chem Engr Kinetics (2-3 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.

WS532 Transport Phenomena in Non-Newtonian Systems (3 cr). Transport process analysis of non-Newtonian systems and appl.

534 Chem Engr Processes (2-3 cr). Industrial processes, incl electrochem and high pressure technology, petroleum refinery engr, and pulp and paper technology. Prereq: perm.

537 Adv Fluid Mechanics (2-3 cr). Same as ME R537. Fluid systems used in industry; non-Newtonian behavior of particle and plastic systems; two-phase situations, incl fluidization and film flow. Prereq: perm.

ID&WS541 Chem Engr Analysis I (2-3 cr). Same as ME 541. Math analysis of chem engr operations and processes; math modeling and computer appl. Prereq: perm.

ID&WS542 Chem Engr Analysis II (2-3 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.

544 Adv Process Control (2-3 cr). Theory of process dynamics and systems engr. Two lec and one 3-hr lab a wk. Prereq: perm.

545-546 Mass Transfer Operations I-II (2-3 cr). Diffusional and equilibrium operations. Prereq: perm.

WS551 Discrete Digital Control (3 cr). Appl of digital computers to chem process analysis and control, sampled data systems analysis.

ID560 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.

571 Adv Plant Design (2-3 cr). Design of process plants for optimum costs and econ return; scale-up of pilot plants. Prereq: perm.

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:

First and Second Years	Credits
Courses common to engineering curricula (see part 4)	39
ChE 200 Sophomore Seminar	0
ChE 323 Material & Energy Balances	3
EE 207 Intro to Electrical Engineering	3
Third and Fourth Years	
ChE 300 Junior Seminar	0
ChE 326 Chemical Engr Thermodynamics	3
ChE 330 Stagewise Operations	3
ChE 423 Reactor Kinetics & Design	3
ChE 430-431-432 Transport & Rate Processes I-II-III	7
ChE 444 Automatic Process Control	3
ChE 453-454 Chemical Process Analysis & Design	6
ChE 491-492 Seminar	0
Chem 277, 372 Organic Chem I-II	6
Chem 305-306 Physical Chemistry	6
Chem 307-308 Physical Chemistry Lab	2
Econ 151 Principles of Economics	3
EE 314 Electronic Systems	4
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
Engineering science electives	3
Humanities and social sciences electives	13
Mathematics electives	3
Technical electives	7
Undesignated electives	5

Department of Chemistry

Jean'ne M. Shreeve, Dept. Head (116 Phys. Sc. Bldg.). Faculty: Dennis G. Brown, Teri F. Brown, James H. Cooley, Bruce N. Diel, Sherry O. Farwell, Verl G. Garrard, Merland W. Grieb, Duane J. Le Tourneau, Joseph Marcello, David B. Marshall, Jeanne L. McHale, Lois K. Miller, Nicholas R. Natale, George M. Rubottom, Jean'ne M. Shreeve, 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 Nuclear Science (offered only at the UI/Idaho Falls Center for Higher Education), Master of Natural Science, 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—Chem

RELATED FIELD: See biochemistry.

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content are: 111-112-253; 111-114; 103-275.

100 Chem Fundamentals (1 cr). Accelerated treatment of chem problem solving, incl SI unit conversion, mole concept, specific heat, specific gravity, chem stoichiometry, and solution concentration problems. Adv placement cr is not allowed for students who are permitted to bypass this course.

101 Concepts of Chem (4 cr). Nonmath descriptive treatment relating key dev of chem to modern living. Three lec, dem, and one 2-hr lab a wk.

102 Chem and the Citizen (3 cr). Impact of chem on society; what is new in chem technology and effect on the public; transfer of chem know-how to underdeveloped nations; guidelines for the nonscientist in evaluating chem sc and industry.

103 Intro to Chem (4 cr). Cr will not be allowed in both Chem 103 and 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: 100 or adequate score on chem-fundamentals exam.

111 Prin of Chem (4 cr). Cr will not be allowed in both Chem 103 and 111. Intensive treatment of prin and appl of chem. Three lec, one recitation, and one 3-hr lab a wk. Prereq or coreq: 100 or adequate score on chem-fundamentals exam.

112 Inorganic Chem and Qualitative Analysis (5 cr). 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.

114 General Chem (4 cr). Continuation of 111 for students who do not plan to take further professional chem courses. Some work in inorganic, organic, and biochem, 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.

121 Glassblowing (1 cr). Tech used in constr scientific apparatus and artistic objects from glass. Graded P/F. One 3-hr lab a wk.

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

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.

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.

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.

278 Organic Chem I: Lab (1 cr). Lab to accompany 275 or 277. One 3-hr lab a wk. Prereq or coreq: 275 or 277.

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

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.

303 Prin of Physical Chem Lab (1 cr). Lab to accompany 302. One 3-hr lab a wk. Prereq or coreq: 302.

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.

307-308 Physical Chem Lab (1 cr). Lab to accompany 305-306. One 3-hr lab a wk. Prereq or coreq: 305-306.

318 Environmental Chem (3 cr) (418). Basic atmospheric and aquatic chem; factors that influence this chem; current global, national, and state environmental problems. Prereq: 253, 275 or 277, or perm.

372 Organic Chem II (3 cr). Continuation of 277. Prereq: 277.

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 or coreq: 372.

409 Proseminar (1 cr). Current publications in chem and chem engr with reports on typical scientific papers. Prereq: 372 and sr standing.

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.

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.

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 221, or perm.

441 Chem Lit (1 cr). Survey of important chem reference works and periodicals; use of these sources. Prereq: perm.

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.

463 Inorganic Chem (3 cr). Prin, complex ions and coordination compounds, theory of acids and bases, non-aqueous solvents, familiar elements and their relationship to the periodic table. Prereq: 305; prereq or coreq: 306 or perm.

464 Inorganic Chem Lab (1 cr). Lab to accompany 463. One 3-hr lab a wk. Coreq: 463.

473 Interm Organic Chem (3 cr). Theories and mechanisms of organic chem. Prereq: 372; prereq or coreq: 306.

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.

J481-J482/J541-J542 Biochem (3 cr). See Biochem J481-J482/J541-J542.

483-484 Biochem Lab (2 cr). See Biochem 483-484.

486 Plant Biochem (3 cr). See Biochem 486.

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.

495 Thermodynamics and Kinetics (3 cr). Prereq: 306 or equiv.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

WS503 Adv Topics in Inorganic Chem (3 cr, max arr). Recent significant dev. Prereq: 561.

504 (s) **Workshop** (cr arr). Prereq: perm.

ID507 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.

509-510 Adv Physical Chem (3 cr). Appl of quantum theory to chem bonding, molecular spectroscopy, and molecular structure. Prereq: 306 or perm.

513 Nuclear Chem (3 cr). Intro to artificial and natural radioactivity, tracer methods, and atomic energy. Prereq: 306 or Phys 360.

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.

517 Chem of High Polymers (3 cr). Relationship of structure and properties of polymeric materials; appl of thermodynamic prin of polymers and their solutions; kinetics of polymerization. Prereq: 306.

WS525 Adv Topics in Analyt Chem (2 cr, max arr). Selected current dev. Prereq: perm.

WS537 Adv Topics in Physical Chem (2 cr, max arr). Selected subjects; irreversible thermodynamics; chem bonding; NMR; ligand field theory; x-ray diffraction; neutron diffraction.

WS544 Adv Topics in Organic Chem (3 cr, max arr). Current research. Prereq: 575.

553 Analyt Separation Methods (3 cr). Separation theory; modern gas, liquid, and supercritical fluid chromatography; ident and quantification tech; detectors; analyt mass spectrometry. Prereq: 306, 454, or perm.

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.

556 Chem Spectroscopy (3 cr). Interp of spectra.

R557 Topics in Analyt Chem (1-9 cr, max 9). Atomic and molecular analyt spectroscopy; modern electrochem methods; surface analysis tech.

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.

563 Adv Inorganic Chem Lab (2 cr, max 4). Inorganic preparations using aqueous, nonaqueous, and high vacuum tech. Prereq or coreq: 561.

ID565 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.

WS568 Adv Topics in Biochem (2 cr, max arr). Recent research in selected areas. Prereq: J482/J542.

ID571 Topics in Organic Chem (1-9 cr, max 9). Selected topics from the current lit. Prereq: perm.

573 Synthetic Organic Chem (3 cr). Use of organic reactions in synthesis.

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.

579 Physical Organic Chem (3 cr). Physical chem methods applied to organic chem.

581 Carbohydrates (3 cr). See Biochem 381.

582 Proteins and Enzymes (4 cr). See Biochem 582.

583 Lipids (3 cr). See Biochem 583.

584 Nucleic Acids (3 cr). See Biochem 584.

585 Physical Biochem (3 cr). See Biochem 585.

ID&WS589 Adv Topics in Biochem (1-9 cr, max 9). See Biochem ID&WS589.

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 307-398 Physical Chemistry Lab	2
Chem 409 Proseminar	1
CS 131 or Math 205 Intro to Computer Programming	2-3
Math 180, 190, 200 Analytic Geom & Calculus	11
Phys 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Intro Physics Lab	3

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 Inorganic Chem & Lab	4
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 131 or Math 205 Intro to Computer Programming	2-3
Eng 317 Technical & Engr Report Writing	3
FL/FR 101-102 Elementary French	8
FL/GN 121-122 Elementary German	8
FL/GN 223-224 Scientific German	8
Math 180, 190, 200 Analytic Geom & Calculus	11
Phys 220, 221, 222, 223-224-225 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 Inorganic Chemistry & Lab	4
Acctg 201 Principles of Accounting	3
ApSt 251 Principles of Statistics	3
Bus 265 Legal Environment of Business	3
Bus 321 Marketing	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2

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 220 Intro to Mechanics 3
Phys 221 Intro to Electricity & Magnetism 3
Phys 222 Intro to Waves & Thermodynamics 3
Phys 223-224-255 Intro Physics Lab 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 323 (Material and Energy Balances).

Department of Civil Engineering

James H. Milligan, Dept. Chairman (104 Buchanan Engr. Lab.). Faculty: Charles E. Brockway, Donald F. Haber, James H. Hardcastle, Cecil W. Hathaway, Terry R. Howard, Robert P. Lottman, James H. Milligan, Dale C. Perry, George R. Russell, Ronald L. Sack, Alfred T. Wallace, Calvin C. Warnick, 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; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

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.

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.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

316 Adv and Route Surveys (3 cr). Alt/yrs 84-85. 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.

ID317 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.

ID319 Photogrammetry and Photo-Interp (3 cr). Alt/yrs 83-84. 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.

321 Hydrology (2 cr). See AgE 351.

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.

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.

345 Structural Design (4 cr). Continuation of ES 340 and CE 342. Intro to design concepts. Three lec and one 3-hr lab a wk. Prereq: ES 340 and CE 342.

357 Mech Properties of Constr Materials (3 cr). Characteristics and measurements of stress-strain stiffness and strength properties of structural materials for improvement, selection, and design. Two lec, one lab-recitation, and one 2-hr lab a wk. Student-selected lab sections may be reassigned by instructor due to limited lab-facility accommodations. Prereq: ES 340; coreq: Eng 317.

372 Transportation Engr (4 cr). Intro to planning, design, constr, operation, maintenance, and admin of transportation systems. Three lec and one 3-hr lab a wk. Prereq: jr standing.

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.

421 Engr Hydrology (3 cr). See AgE 451.

ID422 Hydraulic Design (3 cr). Hydraulic problems in design of gravity and pressure systems. One field trip. Prereq: perm.

428 Open Channel Hydraulics (3 cr) (421). See AgE 458.

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.

432 Sanitary Engr Tech (3 cr). Physical, chem, and biol tech for analysis of sanitary engr problems; dev of design criteria for common operations and processes. Two lec and one 3-hr lab a wk. Prereq: perm.

441 Reinforced Concrete Design (3 cr). Ultimate strength method in accordance with latest ACI bldg code. Two lec and one 3-hr lab a wk. Prereq: 345.

444 Steel and Timber Design (4 cr). Working-stress design and plastic design of steel using latest AISC specs. One cr on timber design using latest NFPA specs. Three lec and one 3-hr lab a wk. Prereq: 345.

446 Matrix Structural Analysis (3 cr). 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. Prereq: 342 and 345 or perm.

460 Soil Mechanics (3 cr). Physical and mech properties of soils; behavior of soil structures under load. Prereq: ES 320 and ES 340.

WS461 Foundations (3 cr). WSU 435. Analysis and design of foundation elements; retaining walls, sheet piling, cofferdams, and waterfront structures. Prereq: 441, 460, coreq: 444.

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.

WS473 Transportation Planning (3 cr). Transportation-planning procedures, emphasis on urban appl; org data collection, modeling, analysis of alternative, and implementation. Prereq: 372 and one course in stat.

ID474 Highway Design and Operations (3 cr). Fundamentals of geometic design and traffic engr for urban and rural highways. Prereq: 372 and one course in stat.

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.

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 and in any order.

ID484 Engr Law and Contracts (2 cr). Dev of law, courts, and ethics; laws of contracts, agency, sales, property, and patents; specs; prep of contract documents. Prereq: sr standing.

486 Engr Economy (3 cr). Econ analysis and comparison of engr alternatives. Prereq: sr standing.

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.

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.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) Seminar (cr arr). Conferences and reports on current dev.

ID522 Adv Hydraulic Design (3 cr) (ID521). 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.

ID523 Water Resources Systems (3 cr). Concepts in water dev; coordination of dev of other natural resources; systems approach and optimization tech. Prereq: perm.

524 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.

WS525 Interm Fluid Mechanics (3 cr). WSU 550. Basic flow equations; Navier-Stokes equations; similitude; potential flow, boundary layers, turbulence, and diffusion; uniform and nonuniform conduit flow; drag and lift. Prereq: ES 320.

WS526 Turbulent Flow and Diffusion (2 cr). WSU 551. Theories of turbulent motion and diffusion in flow with appl in jet, pipe, and natural environments. Prereq: ES 320.

WS527 Adv Hydraulic Engr (3 cr). WSU 552. Water hammer, flow establishment, surge tanks, transient flow in open channels; intro to hydraulic machinery. Prereq: perm.

WS528 Stochastic Hydrology (3 cr). WSU 559. Appl of probability in hydrology; analysis and eval of hydrologic data; regression analysis and simulation tech. Prereq: 321 and a course in stat.

529 Natural Channel Flow (3 cr). See AgE 555.

WS530 Instrumental Analysis in Environmental Contaminants (2 cr). WSU 540. Theory and methods of analysis of water, wastewater, and air; electrometric, spectrophotometric, and chromatographic tech.

ID&WS531 Unit Operations of Sanitary Engr (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.

ID&WS532 Unit Processes of Sanitary Engr (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.

ID534 Sanitary Engr Analysis (2 cr). Theoretical and lab methods for dev of design criteria for sanitary engr systems. One lec and one 3-hr lab a wk. Prereq: perm.

ID536 Wastewater Treatment System Design (3 cr). Appl of unit operations and processes to design of integrated wastewater treatment systems; critical analysis of existing designs. Prereq: ID&WS531; coreq: ID&WS532.

WS538 Engr Aspects of Aquatic Biol (4 cr). WSU 584. Role of microorganisms, incl bacteria, algae, fungi, and protozoa in water and waste treatment processes.

WS539A Industrial Waste Problems (2 cr). WSU 545. Eval and possible solutions of industrial waste problems.

WS539B Water Quality Mgt (3 cr). WSU 546. Systems analysis applied to mgt of water quality problems, incl econ, political, and soc aspects.

WS539C Radiological Health (3 cr). WSU 547. Sources and units of radiation and radioactivity, radiological health, radiation detection, and radioactive waste disposal.

WS539D Air Pollution Meterology (3 cr). WSU 571. Weather and climate; atmospheric turbulence; transport and diffusion to air pollution problems by modeling, stat, and graphic treatment.

WS539E Air Pollution Measurement Tech (2 cr). WSU 572. Survey design and site selection; ident and determination of air pollutants by chem and physical methodology; data reduction and presentation.

WS539F Air Pollution Abatement and Admin (3 cr). WSU 573. Control measures; process modification; atmospheric dilution; air quality criteria and standards; admin of air pollution control agencies.

WS539G Engr Aspects of Aquatic Chem (3 cr). WSU 583. Chem prin applied to water supply and pollution control engr.

WS539H Applied Stream Sanitation (3 cr). WSU 586. Assimilating capability and complex self-purification capacity of a natural water system.

541-ID542 Design of Structures I-II (3 cr). CE 541: arches, reinforced concrete appl, incl prestressed concrete and thin-shell design. CE ID542: nonprismatic member analysis, secondary stresses, composite sections, plate girder design. Prereq: 441, 444, or perm.

ID&WS543 Dynamics of Structures (3 cr). WSU 512. Alt/yrs 83-84. Behavior of structures under impact, impulse, and seismic loads. Prereq: 441, 444, Math 310.

ID544 Buckling 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.

WS545 Adv Structural Design (3 cr). WSU 531. Adv concepts in structural steel design.

ID546 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.

WS547 Theory of Elastic Stability (3 cr). WSU 513. Elastic and inelastic buckling phenomena of bars, beams, frames, and plates.

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.

WS549 Intro to Finite Elements I (3 cr). WSU 532. Concepts and appl of finite elements.

ID556 Physical Properties of Concretes (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.

557 Mech Properties of Elastic and Nonelastic Materials (3 cr). Quantitative effects and methods of stress-strain mode, time, and temperature on overall stress, strain, and stiffness of structural materials encountered in civil engr; concepts of fracture mechanics. Prereq: 357 or perm.

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.

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.

563 Seepage and Earth Dams (3 cr). See GeoIE 535.

571 Transportation Engr (2-3 cr). Demand, econ appl of various modes of transportation, econ impact on land areas of transportation dev, national transportation policy, and metropolitan and regional transportation studies. Prereq: 372 or perm.

572 Traffic Engr (2-3 cr). Urban street systems, traffic signals, signing, striping and illumination, math stat of traffic, freeway operations, warrants, accident analysis, traffic research and admin. Prereq: 372 or perm.

576 Airport Engr (2 cr). Planning and design of air transportation facilities, incl terminal areas, runways, and navigational aids. Prereq: 372.

577 Highway Capacity (2 cr). Analysis of rural and urban highway and intersection capacity for design and operations. Prereq: 372.

589 Water Resources Seminar (1 cr). See Inter 589.

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 221 Dynamics of Rigid Bodies	2
ES 340 Mechanics of Materials	3
Third and Fourth Years	
CE 321 Hydrology	2
CE 322 Hydraulics	3
CE 342 Theory of Structures	4
CE 345 Structural Design	4
CE 357 Mech Properties of Construction Materials	3
CE 372 Transportation Engineering	4
CE 431 Sanitary Engineering	4
CE 460 Soil Mechanics	3
CE 486 Engineering Economy	3
CE 491-492 Civil Engr Professional Seminar	1
ES 301 Engineering Statistics	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Transfer	3
Eng 317 Technical & Engr Report Writing	3
Geol 101 Physical Geology	3
Humanities and social sciences electives	16
Technical electives	14

School of Communication

Don H. Coombs, Director, School of Communication (Communication Bldg.). Faculty: William A. Byrd, Edmund M. Chavez, Don H. Coombs, Bert C. Cross, Peter A. Haggart, Tom E. Jenness, John Lee, Paul L. Miles, Mark Secrist, C. Parker Van Hecke, William P. Woolston.

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. In addition to preparing communication students for their chosen professional fields, the school also provides — through KUID-TV and KUID-FM — broadcast services for the university, community, and state.

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 in journalism, telecommunication, advertising, public relations, photography/film, interpersonal communication, and organizational communication. Students in those programs either take a foreign language and get a B.A. degree or take a 20-credit minor outside the school and get a B.S. degree.

Communication Courses—Comm

121 News Wrtg (3 cr). Basic prin of wrtg news. Two 2-hr lec-labs a wk. Prereq: ability to type.

130 Intercollegiate Forensics (1 cr, max 4). Intercollegiate competition on the national debate topic and in indiv events.

131 Fundamentals of Speech (2 cr). Skills and tech of effective speaking.

132 Oral Interp (2 cr). Use of voice and body to communicate the intellectual and emotional meaning of lit.

133 Improving Listening Skills (1 cr). Appl of theory to variables that promote and impede listening.

134 Nonverbal Comm (2 cr). Study of body language, proxemics, kinesics, and other nonverbal codes.

140 Mass Comm in a Free Society (3 cr). Role of the media; their performance and significance.

175 Intro to Telecomm Equipment (3 cr). Audio and video equipment and recording procedures.

200; 400 (s) Seminar (cr arr). Prereq: perm.

203; 403 (s) Workshop (cr arr). May be graded P/F. Prereq: perm.

204; 404 (s) Special Topics (cr arr).

222 Reporting (3 cr). Types and sources of news; gathering and wrtg news. Two lec and one lab a wk. Prereq: 121.

232 Parliamentary Law and Procedure (1 cr). Practice of speech under parliamentary conditions.

233 Interpersonal Comm (2 cr). Theory and skills applicable to one-to-one comm situations.

236 Comm of Minorities (2 cr). Values, customs, language, stereotypes, and prejudices affecting comm between different cultural groups in the U.S.

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.

270 Radio-TV Newswrtg (3 cr). Basic prin of wrtg news for broadcast. Prereq: 121.

271 Radio Practicum (1 cr, max 2). Practical experience at KUID-FM. Graded P/F.

274 Radio Production (3 cr). Theory and practical appl in the creation, design, and production of radio elements. Prereq: 175.

275 Television Production (4 cr). Basic production theories, sets, lighting, composition, sound, producing, and directing; practice in a variety of contemporary television production forms. Two lec and one lab a wk. Prereq: 175 or perm.

281 Understanding Photography (3 cr). Basic skills of camera handling and darkroom tech; emphasis on learning to see. Two lec and two 3-hr labs a wk.

294 Student Media Experience (1-2 cr, max 4). Appl of comm tech on such campus media as the student newspaper and radio station. Graded P/F. Prereq: perm of dept.

299; 499 (s) Directed Study (cr arr). Prereq: perm.

323 Public Affairs Reporting (3 cr). Problems and practice in reporting the courts, govt, politics, other public issues. Prereq: 121, 222, or perm.

325 News Editing (3 cr). News selection, eval, editing, and display. Two lec and one lab a wk. Prereq: 121, 222, or perm.

330 Intercollegiate Forensics (1 cr, max 4). Adv training for intercollegiate competition on the national debate topic and indiv events.

331 Resolution of Conflict (3 cr). Approaches to resolving conflict in interpersonal, family, and other settings, e.g., mediation, negotiation, bargaining.

332 Comm and the Small Group (3 cr). Problem-solving methods; performing as a group leader or as a group member; small group behavior.

333 Interviewing (3 cr). Prin of info gathering and problem solving in interviews.

334 Intercultural Comm (2 cr). Patterns of comm among various races and nations of the world.

335 Employment Interview Skills (1 cr). Skill dev for job interview; personality surveys, resume prep, and mock interviews. Enrollment limited.

347 Comm and Attitude Change (3 cr). Approaches to attitude change, with consideration of appl in the mass media.

352 Prin of Public Relations (3 cr). Understanding public relations prog, functions and tech; projects related to student's interest. Prereq: 121.

354 Publications Editing (3 cr). Design and production of magazines, periodicals, brochures.

356 Public Info Methods (3 cr). For nonmajors. Intro to publicity planning; basic skills in wrtg and preparing materials for the mass media.

360 Broadcast Media Advertising (3 cr). Exam of TV and radio's network and spot buying procedures, local rate structures, market studies, sales tech, wrtg tech. Prereq: 265 (not reqd for majors in telecommunication).

362 Print Media Advertising (3 cr). Advertising and mgt functions of newspapers and magazines; experience in advertising sales, copywriting, layout and production. Prereq: 265.

372 Radio News Production (3 cr). Tech of gathering, wrtg, and producing news for radio; reqd on-air news duties at KUID-FM. Prereq: 270 or perm.

373 Telecomm Programming (3 cr). Sources of telecomm progs, scheduling strategies, audience research, legal limitations, prog design; role of prog mgt, prog promotion, and relationship of community ascertainment to prog decisions.

376 Ed Uses of Broadcasting (2 cr). Instructional and commercial broadcasting and its uses in the classroom.

381 Adv Photography (4 cr). Refining photographic skills; zone system; group critique. Two lec and two 3-hr labs a wk. Prereq: 281.

382 Hist of Photography (3 cr). Dev of photography in its various forms. Prereq: 281 or perm.

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.

385 Color Photography (3 cr). Exploration of all conventional color processes; slides, negatives, and prints; disc and practice in color theory and hist of the color medium. Prereq: 281.

386 American Documentary Film (2 cr). Open to all students. Dev of nonfiction film; documentary style and form; film's power to communicate; noted filmmakers; issues raised by films.

388 Cinematography (3 cr). Basics for 16mm motion picture production and theory.

421 Supervising High School Publications (2 cr). Planning and direction of the newspaper and yearbook; teaching methods for journalism.

424 Interpretive Wrtg (3 cr). In-depth wrtg on current affairs; investigative tech; wrtg editorials and columns. Prereq: 121 or perm.

425 Feature Article Wrtg (3 cr). Wrtg for specialized publications, newspapers, and magazines.

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.

432 Public Address Practicum (1 cr, max 3). Supervised experience in the preparation and presentation of speeches outside the classroom. Prereq: perm.

434 Org Comm (3 cr). Philosophy, methods, and designs for studying comm system of a complex org.

435 Strategies of Org Comm (3 cr). Theory and methods of improving comm in org; consulting, training, org change. Prereq: 434.

441 Ethics in Journalism (2 cr). Exam of ethical responsibilities and obligations of newspersons working in the mass media.

444 Comm and Public Opinion (3 cr). Role of comm in the formation of public opinion with special emphasis on mass media.

445 Hist of Mass Comm (3 cr). Growth and dev of mass media in the U.S.

446 Propaganda (2 cr). Nature and tech of propaganda.

448 Law of Mass Comm (3 cr). Freedom of the press, libel, right to know, privacy, contempt in print and broadcast media.

449 Theory in Comm (3 cr). Alt/yrs. Interdisciplinary approach to understanding the process of 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: 352.

466 Creative Processes of Advertising (3 cr) (366). Developing advertising ideas into message strategy for all media. One lec and two labs a wk. Prereq: 360 or 362.

471 Radio Practicum (1 cr, max 2). Practical experience at KUID-FM. Graded P/F. Prereq: 2 cr of 271.

475 TV News Production (4 cr). Tech of gathering, wrtg, and producing news for TV. Two lec and one lab a wk. Prereq: 372.

477 Telecomm Law and Regulation (2 cr). Dev, implementation, and court testing of laws and regulations governing or affecting the broadcasting industry.

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.

481 Experimental Photography (3 cr). Investigation of experimental uses of the medium, incl color and nonsilver tech. Two lec and two 3-hr labs a wk. Prereq: 381.

485 Photojournalism (3 cr). Newspaper and magazine photography. Two lec and two 3-hr labs a wk. Prereq: 281 or perm.

496 Sr Research Project (3 cr). Work on a project with close faculty supervision. Prereq: perm.

498 Internship (1-8 cr, max 8). Supervised experience in professional comm. Graded P/F. Prereq: perm of director, School of Comm.

501 (s) Seminar (cr arr). Prereq: perm.

502 (s) Directed Study (cr arr). Prereq: perm.

503 (s) Workshop (cr arr). May be graded P/F. Prereq: perm.

504 (s) Special Topics (cr arr).

Curricular Requirements

Note: Required courses in a student's option 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), Comm 131 (Fundamentals of Speech), Comm 140 (Mass Communication in a Free 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 that would constitute a minor. For students to receive internship credit toward a degree from the School of Communication requires approval of the School of Communication.

Majors in communication (public relations option) and journalism are required to earn a grade of C or better in Comm 121, Newswriting.

A cumulative grade point average of 2.50 in all School of Communication courses taken and the approval of a faculty review committee are required of students seeking upper-class standing in the school. Grades are subject to faculty review and any probation, if granted, shall be at the discretion of the faculty. In order to remain in good standing in the school, the 2.50 average must be maintained in all School of Communication courses taken.

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
Comm 233 Interpersonal Communication	2
Comm 441 Ethics in Journalism or 445 History of Mass Comm or 448 Law of Mass Comm	2-3
Comm 444 Comm & Public Opinion or PolSc 433 Public Opinion & Electoral Behavior or Soc 313 Collective Behavior	3
Comm 347 Comm & Attitude Change or Psych 320 Social Psych or Soc 412 Social Structure & Personality	3

And completion of one of the following options:

A. ADVERTISING OPTION

Course	Credits
Comm 265 Advertising & Society	3
Comm 352 Principles of Public Relations	3
Comm 360 Broadcast Media Advertising	3
Comm 362 Print Media Advertising	3
Comm 431 Professional Presentation Tech	3
Comm 452 Public Relations Management	3
Comm 466 Creative Processes of Advertising	3
Art 235 Communication Design	2
Bus 321 Marketing	3

B. PUBLIC RELATIONS OPTION

Course	Credits
Comm 265 Advertising & Society	3
Comm 332 Communication & the Small Group	3
Comm 352 Principles of Public Relations	3
Comm 354 Publications Editing	3
Comm 360 Broadcast Media Advertising or 362 Print Media Advertising	3
Comm 431 Professional Presentation Tech	3
Comm 434 Organizational Comm	3
Comm 452 Public Relations Management	3
Two of the following courses: Comm 222 Reporting; Comm 270 Radio-TV Newswriting; Comm 424 Interpretive Writing; Comm 425 Feature Article Writing	6

C. PHOTOGRAPHY/FILM OPTION

Course	Credits
Comm 281 Understanding Photography	3
Comm 354 Publications Editing	3
Comm 381 Advanced Photography	4
Comm 382 History of Photography	3
Comm 384 History of American Film	3
Comm 385 Color Photography	3
Comm 388 Cinematography	3
Art 101-102 Survey of Art	4
Art 235 Communication Design	2

D. INTERPERSONAL COMMUNICATION OPTION

Course	Credits
Comm 133 Improving Listening Skills	1
Comm 134 Nonverbal Communication	2
Comm 331 Resolution of Conflict	3
Comm 332 Communication & the Small Group	3
Comm 333 Interviewing	3
Comm 334 Intercultural Communication	2
Comm 434 Organizational Communication	3
Comm 449 Theory in Communication	3
Additional communication credits	6

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 323 Public Affairs Reporting	3
Comm 441 Ethics in Journalism	2
Comm 445 History of Mass Communication	3
Comm 448 Law of Mass Communication	3
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
PolSc 275 American State Government	3
PolSc 276 American Local Government	3
Additional cr from anthro, econ, geog, hist lit, pol sc, soc, phil, and psych	18
And one of the options listed below and sufficient electives to complete 128 cr for the degree	–

A. NEWS-EDITORIAL OPTION

Course	Credits
Comm 325 News Editing	3
Comm 424 Interpretive Writing	3
At least three of the following:	
Comm 270 Radio-TV Newswriting	3
Comm 281 Understanding Photography	3
Comm 333 Interviewing	3
Comm 352 Principles of Public Relations	3
Comm 354 Publications Editing	3
Comm 425 Feature Article Writing	3
Comm 444 Communication & Public Opinion	3
Comm 485 Photojournalism	3
Comm 498 Internship	1-8

B. BROADCAST NEWS OPTION

Course	Credits
Comm 270 Radio-TV Newswriting	3
Comm 372 Radio News Production	3
Comm 475 Television News Production	4
At least three of the following:	
Comm 333 Interviewing	3
Comm 352 Principles of Public Relations	3
Comm 388 Cinematography	3
Comm 424 Interpretive Writing	3
Comm 425 Feature Article Writing	3
Comm 444 Communication & Public Opinion	3
Comm 498 Internship	1-8

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
Comm 233 Interpersonal Communication	2
Comm 431 Professional Presentation Tech	3
Comm 434 Organizational Communication	3
Comm 435 Strategies of Organizational Comm	3
ApSt 251 Prin of Stat or PolSc 435 Political Research Methods	3
Communication electives from the following	15
Comm 175 Intro to Telecomm Equipment	
Comm 265 Advertising & Society	
Comm 274 Radio Production	
Comm 275 Television Production	
Comm 331 Resolution of Conflict	
Comm 332 Comm & the Small Group	
Comm 333 Interviewing	
Comm 347 Comm & Attitude Change	
Comm 352 Prin of Public Relations	
Comm 354 Publications Editing	
Cognate electives (constitutes minor)	20
Bus 311 Intro to Mgt Theory	
Bus 321 Marketing	
Bus 412 Personnel Mgt	
BusEd 313 Office Management	
Eng 313 Business Writing	
PolSc 451 Public Administration	
PolSc 454 Admin Org & Behavior	
Psych 316 Industrial Psych	
Psych 320 Intro to Social Psych	
Soc 312 Soc 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 175 Intro to Telecommunication Equipment	3
Comm 270 Radio-TV Newswriting	3
Comm 274 Radio Production	3
Comm 275 Television Production	4
Comm 360 Broadcast Media Advertising	3
Comm 373 Telecommunication Programming	3
Comm 448 Law of Mass Communication	3
Comm 477 Telecommunication Law & Regulation	2
Comm 479 Telecommunication Senior Seminar	2

And the following course areas beyond the general L & S requirements:

Humanities (B.S. degree only)	6
Social sciences	6

The following courses are not required, but should be used in the major program to emphasize professional broadcast areas of career interest:

Comm 132 Oral Interpretation
Comm 200, 400 Seminar
Comm 203, 403 Workshop
Comm 204, 404 Special Topics
Comm 271, 471 Radio Practicum
Comm 299, 499 Directed Study
Comm 372 Radio News Production
Comm 475 Television News Production
Comm 498 Internship

Department of Computer Science

Joe E. Thomas, Dept. Chairman (228 Johnson Engr. Lab.). Faculty: William V. Accola, Larry E. Bobisud, C. Randall Byers, James E. Calvert, John I. Cobb, Bryon J. Dangerfield, John W. Dickinson, Anthony K. Dunnam, Calvin L. Finn, William S. Junk, Gary K. Maki, Charles K. Nelson, Charles S. Parker, Robert C. Probasco, Robert E. Rinker, Joe E. Thomas, Karen H. Van Houten, Ya-Yen Wang.

Computer science is a new, vigorous, and exciting field for study, research, and employment. 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 is broad based and thus encompasses many areas of specialization. Among these many areas, 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 areas of application, the computer scientist must be familiar with the language of the physical sciences, the business world, the mathematician, and the lay world of the general public. 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 Applied Statistics, and Business to provide a degree program in computer science with specialization in either the data processing or scientific aspects of the field. This program is based on combinations of courses in these complementary areas. Each of the two combinations consists of a carefully selected grouping of courses, from within the four departments, that will provide an orderly, interesting, 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 and to exercise the facilities of these separate, but complementary, departments. Computers currently available for student usage include two IBM 4341 computers, one with extensive time-sharing capabilities throughout campus and the other with batch processing capabilities, several minicomputers, and a generous assortment of microprocessors.

The M.S. program in computer science offered by UI is designed to serve the needs of students whose undergraduate preparation is in a field other than computer science. 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 150, 201, and 313; EE 340; Math 190 and 330. 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. More information about the M.S. in computer science may be found in the Graduate Bulletin.

Computer Science Courses—CS

100 Intro to Computers and Programming (3 cr). May not be taken for cr after 111, 131, 135, or 150. Not intended for computer sc majors. Survey of computer systems and appl incl overview of hardware, software, industry trends, and societal implications; intro to programming through the use of the BASIC language.

104 Intro to BASIC Programming (1 cr). May not be taken for cr after 100. Intro to fundamental statements in BASIC programming language; limited discussion of arrays, functions, and subroutines.

111 Intro to Computer Sc (3 cr). Intended for CS majors. Intro to digital logic, microcomputers, and systematic problem-solving tech.

131 Intro to Computer Programming (2 cr). May not be taken for cr after 135 or 210. Primarily intended for non-CS majors. Prin and logic, flow charts, one- and two-dimensional arrays, function and subroutine subprograms; use of FORTRAN programming language.

135 FORTRAN Programming for Engr (2 cr). May not be taken for cr after 131 or 210. Basics of computer programming in FORTRAN, emphasizing scientific appl; one- and two-dimensional arrays, functions, subroutines. Coreq: Math 180.

150 Intro to PASCAL Programming (3 cr). Intended for CS majors. Intro to programming using the PASCAL language, structured programming concepts, data definition, and proper programming practices.

201 Intro to Computer Algorithms (4 cr). Concepts of algorithmic solution to a wide range of problems incl sorting and searching, numerical and character manipulation, and system process; use of top-down analysis and implementation. Three lec and one lab a wk. Prereq. 150 and Math 160 or Math 180.

204; 404; 504 (s) **Special Topics** (cr arr). Prereq: perm.

205 Intro to Computer Programming (3 cr). See Math 205.

210 Intro to FORTRAN Programming (3 cr). Only 1 cr allowed after 131 or 135. Basics of computer programming in FORTRAN, use of structure programming tech. Prereq: 150 or perm.

215 User's Intro to OS/370 (2 cr). JCL, tape and disk usage, linkage editor, user written program libraries, IBM utilities, packaged program libraries. Prereq: 131, 135, 150, or 233.

233 Intro to COBOL Programming (3 cr) (333). Intro to COBOL programming for bus, incl coverage of files and data base mgt systems. Prereq: intro programming language.

292 Soph Seminar (0 cr). Curriculum options, elective courses, prep for grad study, and current tech topics. Field trip may be required. Graded P/F.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

305 Computer Org and Programming (3 cr). See Math 305.

313 Data Structures (3 cr). Storage systems, data structures in languages, trees and graphs, data mgt systems. Prereq: 201 or perm.

324 Computer Graphics (2 cr). Use of the computer to define, store, manipulate, interrogate, and present pictorial output of 2-D and 3-D objects. Prereq: 131, 135, or 210 and Math 160 or 180 and trig or perm.

332 Adv FORTRAN Programming (3 cr). Programming style and structured programming in FORTRAN for large-scale problems, character manipulation in FORTRAN, plotting, features of FORTRAN 77. Prereq: 210 or perm.

334 Adv COBOL Programming (3 cr). Indexing and use of tables, COBOL sort feature, report writer, subroutines, and access methods. Prereq: 233.

J410/J510 Software Engr (3 cr). 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.

J420/J520 Computer Networks (3 cr). Analysis and design of geographically dispersed computer systems; network topology, routing, flow control, and network protocols. Additional effort reqd for grad cr. Prereq: 313 and statistics.

445 Programming Systems (3 cr). Investigates the algorithms used by the following system software: assemblers, macro-assemblers, interpreters, and compilers. Prereq: 150 and 313; coreq: 305.

446 System Modeling and Simulation (3 cr). Use of simulation tech in design and analysis of computer systems. Prereq: 313 and statistics.

447 Computer Operating Systems (3 cr). Design and implementation of computer operating systems; batch processing, interactive processes, multiprogramming systems, and operating systems mgt of storage, file systems, and processors. Prereq: 215, EE 340, and statistics.

448 Adv Assembler Language and Operating Systems (3 cr). EXCP and CHANNEL programs, user-written SVC's, user-written prog interrupts, I/O buffering tech, channel end appendage, conditional coding, and macro writing. Prereq: 305 or perm.

449 Elements of Computer Input/Output Operations (2 cr). Fundamental elements of I/O programming incl wait loops, interrupts, direct memory access, and channels; interfacing hardware; appl will involve real-time programming examples. Prereq: EE 340 or equiv.

J451/J551 VLSI Design (3 cr). Prin of design of very large-scale systems; design methodologies, integrated system fabrication, system arch, system timing, data flow, and topological consideration. Additional effort reqd for grad cr. Prereq: EE 440, EE 441, or perm.

J452/J552 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. Additional effort reqd for grad cr. Prereq or coreq: J451/J551.

J460/J560 Distributed Processing Systems (3 cr). 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: 447.

480 Computer Sc Design I (3 cr). Formal dev tech applied to the definition, design, coding, testing, and documentation of computer programming projects; students will complete individual projects. Prereq: Eng 317 or 313 and sr standing in CS.

481 Computer Sc Design II (3 cr). Application of formal design tech to the dev of a large computer sc project by students working in teams. Prereq: 480.

491-492 Sr Seminar (0 cr). Tech topics, employment practices, and interviewing. Graded P/F. One lec a wk. Prereq: sr standing in CS.

500 Master's Research and Thesis (cr arr). Prereq: perm.

542 Theoretical Models for Computation (3 cr) (EE 542). Theoretical models with widest appl to computer systems and programming; equivalence between abstract machines and corresponding formal grammars; formal languages and grammars; turing machines. Prereq: 445 or equiv.

545 Algorithms and Info Structures (3 cr) (EE 545). Basic algorithms of computer sc; implementation of algorithms on the computer, lists, list-processing languages, and data structures. Prereq: CS 445 or equiv.

580 Grad Project (1-3 cr, max 3). Appl of formal design and documentation tech to the dev of computer programming project; project selected in consultation with student's major professor. Prereq: perm.

Curricular Requirements

COMPUTER SCIENCE (B.S.C.S.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
CS 111 Intro to Computer Science	3
CS 150 Intro to PASCAL Programming	3
CS 201 Intro to Computer Algorithms	4
CS 215 User's Intro to OS/370	2
CS 292 Sophomore Seminar	0
CS 305 Computer Org & Programming	3
CS 313 Data Structures	3
CS 447 Computer Operating Systems	3
CS 480, 481 Computer Sc Design I & II	6
CS 491-492 Senior Seminar	0
EE 340 Digital Computer Fundamentals	3
Humanities: at least 3 courses totaling at least 9 cr selected from approved courses	9
Social sc: at least 3 courses totaling at least 9 cr selected from approved courses	9

And completion of either of the options below:

A. SCIENTIFIC OPTION

Course	Credits
CS 210 Intro to FORTRAN Prog or 205 Intro to Computer Prog or 233 Intro to COBOL Prog	3
CS 445 Programming Systems	3
ApSt 301 Probability & Stat or Math 451 Probability Theory & Math Stat	3
EE 440 Digital Systems Engr	3
EE 441 Computer Organization	3
EE 444 Logic Circuit Lab	1
Eng 317 Tech & Engr Report Writing	3
Math 180, 190, 200 Anal Geom & Calc	11
Math 330 Linear Algebra	3
Math 405 Analysis of Computer Algorithms	3
Math 407 Discrete Math Structures or 433 Numerical Analysis	3
Science: at least 3 courses selected from approved courses, incl one or more lab courses in life or physical sc	12
Technical electives: at least 15 cr selected from approved courses, incl 9 cr in CS courses but not more than 3 cr from programming language courses	15
Undesignated electives	8

B. DATA PROCESSING OPTION

Course	Credits
CS 233 Intro to COBOL Programming	3
CS 334 Adv COBOL Programming	3
Acctg 201 Prin of Accounting	3
Acctg 202 Managerial Accounting	3
Acctg 381 Financial & Admin Acctg	3
ApSt 251 Prin of Statistics	3
Bus 301 Financial Management	3
Bus 311 Intro to Mgt Theory	3
Bus 351 Systems Analysis Methods	3
Bus 451 Data-Base Organization	3
Econ 151, 152 Prin of Economics (may be used for social sc requirement)	6

Econ 436 Econ & Bus Forecasting or Bus 332 Quantitative Methods 3
Eng 317 Tech & Engr Report Wrtg or 313 Bus Wrtg 3
Math 111 Finite Math 4
Math 160 Survey of Calculus 4
Math 330 Linear Algebra or 326 Linear Programming 3
Science: at least 2 courses selected from approved courses, incl one or more lab courses in life or physical sc 8
Technical electives: at least 12 cr selected from approved courses, incl not more than 6 cr from bus-related courses and not more than 3 cr from programming language courses 12
Undesignated electives 7

Department of Economics

John W. Knudsen, Dept. Head (342B Admin. Bldg.). Faculty: Michael J. DiNoto, Max E. Fletcher, S. M. Ghazanfar, Catherine A. Hofmann, John W. Knudsen, R. Ashley Lyman, John T. Wenders.

An undergraduate major in economics provides a student with a logical, ordered way of studying the decision process involved in allocating sources among potential uses. It draws on and is integrated with history, philosophy, and mathematics. Economics calls for the ability to reason abstractly and to generalize, to handle quantitative and numerical data with facility, and because it is a social science to understand and work with people. An economics major must demonstrate an ability to understand what is read and be able to present findings intelligently to others. Clarity, precision of expression, and analytical abilities are thus hallmarks of a successful economist. Some fields of economics, such as economic theory, are largely analytical; others, such as economic history, are more concerned with describing both humankind and the business of everyday life and the large economic events and trends that have made history.

Because of its breadth and scope, economics, the study of the means of securing and distributing the wealth and welfare of society, is chosen as a major field of study by many students who do not intend to become professional economists. The broad understanding of the society in which we live that can be derived from studying economics and other social sciences has been found invaluable by students preparing for careers in law, journalism, teaching, business, or public service.

A student considering a career as a professional economist will find that many career positions can be secured with a bachelor's degree in economics, particularly in business and government. Professional economists are employed by almost all of the largest corporations, and some kinds of companies hire a fairly large staff of economists. Relatively small concerns are also finding it necessary to employ economists in order to keep abreast of economic developments and market trends. The demand for these special analytical services has become so great that many economists are becoming independent business consultants. Government at all levels also has a sizable demand for the services of economists. At the federal level, many economists are occupied with studying and advising legislators on the state of the economy, or on economic problems whose solution is vital to the society.

The economics program at UI offers two types of study programs. In addition to the major in economics offered in the College of Business and Economics (CBE), the university offers a major in economics in the College of Letters and Science. The essential difference between the two programs is that the College of L & S requires fewer business courses, allowing more electives. Students primarily interested in entering a management career in a corporate or financial field would benefit from the B.S.Bus. degree with an economics major. In addition to the economics requirement, CBE students must complete the business and economics core requirements and nonbusiness course work, and meet the grade point average requirement of the College of Business and Economics. The large number of requirements limits elective courses in this curriculum.

The program in the College of L & S provides a solid background in economics while maintaining maximum flexibility in the program of study. Student electing this path have the opportunity to combine the study of economics with some other specialty areas in the social sciences. The less structured program of study in economics offered through the College of L & S is oriented toward the liberal-arts tradition.

Because a general knowledge of human behavior and social organization contributes to an understanding of economic phenomena, students majoring in economics are advised to take as much work as possible in psychology, history, philosophy, political science, and sociology. Courses in mathematics, foreign languages, statistics, and business administration can be regarded as preprofessional training for economists as much as courses in economics proper. Both in the general supporting areas and in related professional courses, the precise selection of courses depends upon the interests of the individual students. Students should discuss programs with members of the departmental faculty.

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—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.

151, 152 Prin of Econ (3 cr). (C). May be taken in either order. Econ 151: org and operation of American economy; supply and demand, money and banking, employment and aggregate output, public finance, and econ growth. Econ 152: prin governing production, price relationships, and income distribution. Econ 151 and 152 carry only two cr each after 100.

272 Foundations of Econ Analysis (4 cr). 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.

299; 499; 502 (s) **Directed Study** (cr arr).

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.

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.

400; 501 (s) **Seminar** (cr arr). Prereq: perm.

402 (s) **Workshop** (cr arr). Prereq: perm.

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.

404; 504 (s) **Special Topics** (cr arr).

409 Public Finance (3 cr). Role of govt in a market economy, public sector allocation criteria, analysis of tax shifting and incidence, structure and econ effects of major federal taxes, govt budgeting, fiscal policy, public debt, and special topics. Prereq: 151 and 152 or 272.

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.

415 Industrial Org (3 cr). Analysis of structure, behavior, and performance of industry, theoretical and applied; econ impact of govt regulation. Prereq: 151 and 152 or 272.

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.

430 Regional/Urban Econ (3 cr). 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.

433 Intro to Econometrics (3 cr). Same as ApSt 433. Use of quantitative tech to analyze and test econ theories. Prereq: ApSt 251 or equiv stat.

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.

436 Econ and Bus Forecasting (3 cr). Same as Bus 436. Appl of recent theoretical, stat, and institutional dev to econ and bus forecasting. Prereq: 151, 152, and ApSt 251.

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.

474 International Econ (3 cr). Analysis of the significance and determination of international trade flows, national commercial and balance-of-payments policies, and the international monetary system. Prereq: 152 or 272.

477 Econ of Developing Countries (3 cr). Same as AgEc 477. Characteristics of underdev; hist perspective; population growth; barriers to growth; theories explaining dev; dev policies. Prereq: 151 and 152 or 272 or perm.

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.

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.

493-494 Seminar in Urban Studies (2 cr). See Inter 493-494.

500 Master's Research and Thesis (cr arr).

505 Hist of Econ Thought (3 cr). Econ doctrines; value and distribution; 19th-century dissenters.

507 Research Methodology (3 cr). See AgEc 507.

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.

510 Adv Microecon Theory II (3 cr). Same as AgEc 510. Current dev in microecon theory and policy. Prereq: 509 or perm.

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.

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.

525 Econometrics (3 cr). See AgEc 525.

526 Econ of Bus Decisions (3 cr). Applied microecon, covering topics such as theory of demand, production, cost, forecasting, capital budgeting. Prereq: perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

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	12
Upper-division cr from anthro, geog, hist, philosophy, political sc, psych, or soc (see note below)	9

ECONOMICS (B.A. or B.S.)

These programs are 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
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 and 160 Survey of Calculus or Math 140 College Algebra and 160 Survey of Calculus or Math 140 College Algebra and Phil 211 Logic or Math 180 Analytic Geom & Calculus I	4-8
Statistics electives	3-4
Upper-division cr in economics	18
Upper-division cr from anthro, geog, hist, philosophy, political sc, psych, or soc (see note below)	15

Note: Credit earned in math beyond the stated math requirements will be accepted in satisfaction of the elective requirement in areas other than economics.

Department of Electrical Engineering

James N. Peterson, Dept. Chairman (214 Buchanan Engr. Lab.). Faculty: Terry B. Cline, John W. Dickinson, Calvin L. Finn, Earl E. Gray, George G. Hespelt, William S. Junk, John Law, Gary K. Maki, John P. Oliver, William R. Parish, James N. Peterson, John E. Purviance, Anthony L. Rigas, Joe E. Thomas, Karen H. Van Houten.

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 con-

trol systems, advanced electronics, communication theory, analysis and applications of microprocessors, and antennas and microwave devices.

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—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.

200 Elec Circuits I (4 cr). For elec engr majors. Intro to elec circuit analysis, power and energy concepts. Three lec and one 3-hr lab a wk. Coreq: Math 200.

203 Elec Circuits II (4 cr). Continuation of 200 with emphasis on steady state AC circuits. Prereq: 200, Math 200.

204; 404; 504 (s) **Special Topics** (cr arr).

207 Intro to Elec Engr (3 cr). Intended primarily for nonelec engineers. Power and energy concepts, circuit analysis, transient and steady state behavior, resonant systems, systems analysis. Prereq: Math 190, Phys 211.

241 Basic Microprocessor Systems (0 cr). Machine language programming, overview of current microprocessor technology. Graded P/F.

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 131 or 135.

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.

301 Transients in Linear Systems (3 cr). Analysis of transients in elec and mech systems and circuits; Laplace transform theory and appl. Prereq: 203, Math 310.

310 Electronics I (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. Prereq: 203; coreq: 301.

314 Electronic Systems (4 cr). For nonmajors. Electronic devices and systems. Three lec and one 3-hr lab a wk. Prereq: 207 or equiv.

320 Elec Machinery (5 cr). Theory and appl of elec machinery and transformers. Four lec and one 3-hr lab a wk. Prereq: 203, Phys 211.

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: 200.

330 Electromagnetic Theory (4 cr). Vector calculus; electrostatics, electrodynamics; electromagnetic waves in isotropic media; Maxwell's equations; boundary value problems. Prereq: Math 310, Phys 211.

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.

350 Signal and Systems Analysis (4 cr). Continuous and discrete time signal and systems analysis; Fourier transforms, sampling, discrete and fast Fourier transforms; input/output and state-space descriptions of systems; the z-transform, intro to feedback. Prereq: 301.

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: 301 or perm.

405 Transmission Lines (3 cr). Transmission of signals and power in distributed parameter circuits; characteristic impedances, attenuation, phase shift, reflections, and Smith charts. Prereq: 301, Math 310, or perm.

410 Electronics II (3 cr). Physical electronics; diode and transistor models; noise mechanisms. Prereq: 310, 330.

411 Pulse and Digital Circuits (3 cr). Electronic switching, timing, and pulse-shaping tech; logic functions, realization with diodes, transistors, and FETs. Prereq: 301, 310.

413 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. Prereq: 310, 411, or perm.

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.

J415/J515 Adv Integrated Circuit Analysis and Design (3 cr). Temperature compensated biasing, noise analysis and reduction, non-linear circuits, digital integrated circuits (Bipolar FET), appl, integrated comm circuits. Prereq: J414/J514.

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. Prereq: 443 or perm.

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.

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.

422 Power Systems Analysis (3 cr). Prin of load flow, fault and stability analysis; computer methods; load flow and econ dispatch. Prereq: 421.

435 Antennas and Microwave Devices (3 cr). Antennas, antenna systems, waveguides and waveguide devices, klystrons, magnetrons, and traveling wave tubes. Two lec and one 3-hr lab a wk. Prereq: 330 or perm.

440 Digital Systems Engr (3 cr). Detailed study of combinational logic design; through study of asynchronous and synchronous sequential circuits; LSI designs of logic circuits; hazards; iterative cell design applicable to VLSI implementations, PLA designs for combinational and sequential circuits. Prereq: 340.

441 Computer Organization (3 cr). Register transfer language; design of computers and associated subsystems; various computer arch; microprocessors and associated LSI components. Prereq: 340.

442 Microprocessor System Software (1-3 cr). Use of microprocessor dev system, incl PL/M high level language programming, assembler language programming, in-circuit emulation.

443 Design and Constr of Microcomputers (3 cr) (412). Computer arch, combinational and synchronous logic design and implementation; basic software considerations and hardware designs for microprocessor-based computer. Prereq: 310, 340; coreq: 442.

444 Logic Circuit Lab (1 cr). Design and constr of logic circuits. Coreq: 440.

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.

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.

452 Comm Systems (3 cr). Linear and exponential modulation, noise, digital comm systems, intro to info theory. Prereq: 350.

465 Control Engr (3 cr). For nonmajors. Continuous systems; transient response; frequency response; root locus; stability. Prereq: 200 and familiarity with basic Laplace transforms.

470 Control Systems (3 cr). Control system design, frequency and time domain methods; performance specifications; computer control and computer aided design. Prereq: 350.

480-481 Prin of Design (3 cr). Computer-aided tech, econ, marketing, reliability, and patents; projects require original design, working model, and report. Prereq: sr standing and perm.

486 Solid-State Electronics I (3 cr). Modern microelectronics technology; thin film and thick film electronic circuits; lab projects in fabrication and testing. Coreq: 410.

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.

493 Thesis (3 cr, max 6). Original investigation or dissertation upon some subject in elec engr. Prereq: sr standing and perm.

499; ID502 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

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.

ID507 Computer-Aided Network Design (3 cr). Digital computers in design of elec networks; constrained and unconstrained optimization in network design. Prereq: perm.

ID512 Active Network Synthesis (3 cr). Active devices; classical network synthesis; two-port theory; amplifiers, filters, negative impedance converters. Prereq: 401 or perm.

ID520 Adv Elec Machinery (3 cr). Synchronous machines and transformers, machine transient and subtransient reactances, excitation and voltage regulation, power curves, transformer connections, impedance, harmonics, and impulse characteristics. Prereq: 422.

ID521 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.

ID523 Symmetrical Components (3 cr). Concepts of symmetrical components, sequence impedances of devices and lines, circuit equiv for unbalanced faults, mgt during faults. Prereq: 421.

ID524 Transients in Power Systems (3 cr). Voltage transients; overvoltages during faults; recovery voltage characteristics; arc restrikes, switching surges, ferroresonance, and nonlinear phenomena. Prereq: 422.

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.

533 Antenna Theory (3 cr). Linear, loop, and special antennas; synthesis and arrays; microwave reflectors and lenses. Prereq: 531 or perm.

535 Microwave Circuits (3 cr). Waveguide systems and components, oscillators and detectors; masers, parametric amplifiers, and other related methods. Prereq: 531 or perm.

540 Switching and Finite Automata Theory (3 cr). Finite-state automata; functional decomposition; threshold logic; synchronous and asynchronous sequential design; sequential circuit decomposition; facult detection and diagnosis in combinational and sequential machines. Prereq: 440.

541 Design of Digital Computer Systems (3 cr). Formal description of computer systems; multiprocessor org, microprocessor design, self-checking microprocessor design, microprogramming; pipelined processors, distributed processors, systolic arrays in VLSI. Prereq: 441 or equiv.

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.

R544 Adv Computer Programming Systems (3 cr). Adv systems software; generation of operating systems and I/O systems; adv machine language programming.

R547 Applied Time Series Forecasting (3 cr). Same as ApSt R547. 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.

WS548 Hybrid Simulation Techniques (3 cr). WSU 513. Design of hybrid computers and their appl to complex systems. Prereq: 301, 440.

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.

ID550 Comm Theory I (3 cr). Hypothesis testing; optimum detection of signals in noise; sequential detection; estimation of signal parameters; space time processing. Prereq: perm.

ID551 Comm Theory II (3 cr). Comm range equation, fading and scattering media; transmitter and receiver characteristics; noise calculations; diversity tech; optical comm systems; digital comm systems; optimum system design. Prereq: perm.

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, Bose-Chaudhuri codes, codes for arithmetic operations; design of encoders and decoders. Prereq: perm.

571 Estimation Theory (3 cr). 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: course in stoichastic processes or perm.

572 Linear System Theory (3 cr). 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.

574 Optimal Control Theory I (3 cr). 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.

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.

576 Digital Signal Processing (3 cr). Discrete time signals; sampling and z-transforms; discrete Fourier transform; digital filter design tech; fast Fourier transform algorithms; power spectrum estimation; appl. Prereq: 350 or perm.

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.

WS581-WS582 Wave Propagation I-II (3 cr). WSU 528-529. EE WS581: theory of radio wave propagation in a magnetoionic medium; appl to comm problems; plasma waves; atmospheric waves. EE WS582: phenomena occurring within the solar-terrestrial environment; dynamics of and wave propagation in the magnetosphere.

WS583 Artificial Intelligence and Heuristic Programming (3 cr). WSU CptS 501. Normative and descriptive models of intelligent processes; programming languages used to specify these models.

WS584 Modeling and Simulation of Ecological Systems (3 cr). WSU CptS 510.

WS585 Adv Topics in Info Processing (3 cr, max 6). WSU CptS 520.

ID586 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.

588 Equilibrium Tensor Properties of Solids (3 cr). Tensor analysis; crystal symmetry and symmetry transformations; dielectric, magnetic, and elastic properties; interaction effects; piezoelectricity; optical properties; piezo-optical effects. Prereq: perm.

589 Transport Phenomena in Solids (3 cr). Elec and thermal conductivities, diffusivity; thermoelectric, electrodiffusive, and thermodiffusive conductivities, thermodynamics of irreversible processes; Hall, Nerst, Ettinghausen, and Leduc-Righi effects; piezoresistance and piezogalvanomagnetic effects. Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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.

131 Basic Electronics (3 cr). Same as IEd 131. Continuation of ET/EE 130. Electron tube and semiconductor circuits. Prereq: 130.

R135 Elec Systems (3 cr). Same as IEd R135. Fundamentals of AC/DC circuits and components, motors, transformers, and switchgear; national elec code wiring requirements.

R215 Electronic Components (3 cr). Same as IEd R215. Physical and elec characteristics of electronic devices; emphasis on solid state devices; incl discrete and integrated circuit components.

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.

R240 Electronics and Control Systems (3 cr). Same as IEd R240. Complex frequency domain; appl of electronic devices and systems; intro to control theory.

R245 Minicomputer Fundamentals (3 cr). Same as IEd R245. Machine language programming, use of minicomputer software, assembler programming, real-time programming, interrupt facilities, system allocation.

R320 Electronic Drafting (3 cr). Same as IEd R320. Drafting phil as related to instrumentation and control circuits; design, layout, and fabrication of printed circuit boards; drafting as related to circuit fabrication.

R330 Industrial Instrumentation I (3 cr). Same as IEd R330. Use of electronic circuits and devices for process parameter measurements.

R331 Industrial Instrumentation II (3 cr). Same as IEd R331. Methods of process control from digital and analog signals; investigation of computer control concepts.

R333 Computer Electronics (3 cr). Same as IEd R333. 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:

First and Second Years	Credits
Courses common to engineering curricula (see part 4)	39
EE 200 Electrical Circuits I	4
EE 203 Electrical Circuits II	4
EE 292 Sophomore Seminar	0
Phys 212-213 Engineering Physics Laboratory	2
Third and Fourth Years	
EE 301 Transients in Linear Systems	3
EE 310 Electronics I	5
EE 320 Electrical Machinery	5
EE 330 Electromagnetic Theory	4
EE 340 Digital Computer Fundamentals	3
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
Engineering science electives	6
Humanities and social sciences electives	18
Technical electives	15
Undesignated electives	4

Engineering Science and General Engineering

Wayne R. Hager, Chairman, Engineering Science (224 Janssen Engr. Bldg.). Faculty: George L. Bloomsburg, Charles E. Cartmill, Anthony K. Dunnam, Donald F. Haber, Wayne R. Hager, Leroy F. Heitz, Terrence A. Precht, Jay J. Scheldorf, Fred H. Tingey, Weldon R. Tovey, Robert L. Turner, Margrit von Braun.

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 are responsible for teaching basic engineering and engineering science courses along with advising freshmen engineering students and coordinating the common core program for the College of Engineering. They will be happy to assist students in identifying an engineering discipline and answering questions concerning the engineering profession.

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.

102 Engr Graphics (2 cr) (C). Descriptive geometry; graphical solution of problems involving points, lines, planes, and surfaces in space. Prereq: 101 or equiv.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

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.

299 (s) **Directed Study** (cr arr). Prereq: perm.

R314 Adv Engr Graphics (2 cr). Industrial drafting practices, curve plotting, sketching, production illustrations, graphical math. Prereq: 101.

394 Technology and Societal Decisions (3 cr). Same as Inter ID394. Engr approach to decision making in society, incl eval of alternatives based upon econ, social, and human values.

396 Society and Engr Decisions (3 cr). Primarily for engineers. Commercial, political, soc, and ecological considerations relevant to technological decisions.

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.

404 (s) Special Topics (cr arr). Prereq: perm.

407 Professional Mgt for Engineers (3 cr). Consideration of analyt, quantitative, and human functions in mgt sc; emphasis on socioecon synthesis.

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.

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

210 Statics (3 cr) (C). Addition and resolution of forces; vector algebra; graphical methods; equilibrium; free body diagrams; trusses; frames; friction; centroids and moments of inertia; fluid statics; virtual work. Coreq: Math 190.

211 Intro to Mechanics (4 cr). Resolution of forces; vector analysis; equilibrium; free body diagrams; centroids and moments of inertia; kinematics, kinetics, work energy, and momentum methods for systems of particles. Three lec and one 2-hr lab a wk. Prereq: Math 190; coreq: Phys 210.

220 Dynamics (3 cr) (C). Particle and rigid body kinematics and kinetics, work/energy, impulse/momentum concepts, combined scalar/vetor approach. Prereq: 211 or equiv.

221 Dynamics of Rigid Bodies (2 cr). Kinematics, kinetics, work energy, and momentum methods for rigid bodies. Prereq: 211; coreq: Math 310.

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.

310 Engr Materials Sc (3 cr). Structure of materials; mech, elec, chem, and thermal properties of materials. Prereq: Chem 114, Phys 211.

320 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: 211, Math 200.

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: 211, Math 200.

340 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: 211, Math 200.

402 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.

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.

440 Adv Mechanics of Materials (3 cr). See ME 440.

490 Systems Analysis of Environmental Problems I (3 cr). Modeling and simulation of environmental systems; systems analysis and optimization tech especially applied to environmental problems. Prereq: Math 310.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

499 (s) **Directed Study** (cr arr). Prereq: perm.

504 (s) **Special Topics** (cr arr).

R505 Engr Stat (1-3 cr). Same as ApSt R505. Theory of probability, stat, and stochastic processes applied to selected areas of engr. Prereq: 301 or perm.

540 Continuum Mechanics (3 cr). Stress and deformation of continua using tensor analysis; relationship between stress, strain, and strain rate in fluids and solids; appl. Prereq: perm.

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

Kurt O. Olsson, Dept. Chairman (200 Faculty Office Complex-East). Faculty: Douglas Q. Adams, David S. Barber, Steven R. Chandler, Jack L. Davis, Richard J. Dozier, Kathryn M. Forlyes, Richard G. Hannaford, Kenneth M. Harris, Walter A. Hesford, Ronald E. McFarland, Maryann E. McKie, Barbara R. Meldrum, Kurt O. Olsson, Ronald R. Shook, Teoman Sipahigil, Leo F. Storm, Charles R. Stratton, Mason Tung, Roger P. Wallins, J. Gary Williams, Ruth R. Windhover.

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 linguistics.

English Courses—Eng

ADVANCED PLACEMENT: Courses in this subject field that are vertical in content 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 prerequisite 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.

103 Basic Skills for Wrtg (3 cr). Wrtg exercises that address various rhetorical situations; sentence-combining exercises that develop syntactic versatility. Graded P (pass)/N (repeat).

104 Essay Wrtg (3 cr). Training in wrtg clear, concise, and vigorous prose intended to inform and convince. Graded P (pass)/N (repeat). Prereq: 103 or equiv.

111-112 Lit of Western Civ (3 cr). Masterpieces reflecting the dev of Western thought and culture. Eng 111: Classical Greece to the Renaissance. Eng 112: 17th century to the present.

126 Lit and Film (2 cr). Study of film art through related literary works.

150 Expository Prose Analysis (3 cr). Persistent problems of diction, syntax, and clear expression in student prose exposition. Prereq: 104.

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.

201 The Research Paper (2 cr). Intro to basic skills common to most academic disciplines in gathering data, using recognized methods of documentation and conventions of presentation; supervised wrtg of a research paper. Prereq: 104 or demonstrated proficiency by exam (see regulation J-3-a).

210 Intro to the Analysis of Lit (3 cr). Concepts and tech of analysis necessary for the study of literary art. Prereq: 104 or equiv.

250-260-270 Anglo-American Lit (3 cr). Intro to major British and American authors from the age of Chaucer to the 20th century. Prereq: 210 or perm.

268 Survey of English Lit (3 cr). Robert Burns to contemporary writers. Prereq: 104.

277-278 Survey of American Lit (3 cr). Eng 277: colonial beginnings to Melville. Eng 278: Whitman to contemporary writers. Prereq: 104.

291 Creative Wrtg: Poetry (3 cr). Intro to tech of wrtg poetry. Graded P/F.

292 Creative Wrtg: Fiction (3 cr). Intro to tech of wrtg fiction. Graded P/F.

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.

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.

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).

313 Business Wrtg (3 cr). Principles of clear wrtg related to bus style; correspondence and reports; form, content, and style. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a); jr standing or perm.

317 Tech and Engr Report Wrtg (3 cr). Prin of clear wrtg related to tech style; problems such as tech description, proposals, formal reports, and tech correspondence. Prereq: 104 at UI or demonstrated proficiency by exam (see regulation J-3-a); jr standing or perm.

321 The Novel for Nonmajors (3 cr) (C). Major novels from the 18th century to the present.

325 Contemporary Lit for Nonmajors (3 cr). Current poetry and prose; emphasis on U.S. authors.

327 Black Lit (3 cr). Same as AfrAm 327. Major works of U.S. black writers; emphasis on the 20th century.

330 American Indian Lit (3 cr). Recent poetry and prose written by and about American Indians.

335 Shakespeare for Nonmajors (3 cr). Intro to Shakespeare's major plays.

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.

375 The Bible as Lit (3 cr). Literary qualities of the Bible.

387 Modern European Lit (3 cr). Major writers, incl dramatists of the late 19th and 20th centuries; readings in translation.

400; 501 (s) **Seminar** (cr arr). Prereq: perm.

401 Wrtg 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.

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.

404; 504 (s) **Special Topics** (cr arr).

421 Dev of the English Novel (3 cr). Major writers from the beginnings to Scott.

422 The Nineteenth-Century English Novel (3 cr). Dickens to Hardy.

425 Irish Literary Renaissance (3 cr). Lit of Ireland after 1880, especially Yeats, Joyce, and Synge.

426 Modern Poetry (3 cr).

427 American Fiction, 1914-1945 (3 cr). Fiction by writers such as Cather, Dos Passos, Faulkner, Fitzgerald, Hemingway, and Wright.

428 British Fiction, 1900-1945 (3 cr). Fiction by such writers as Conrad, Forster, Joyce, Lawrence, and Woolf.

429 Contemporary Fiction (3 cr). Fiction since 1945 by writers such as Barth, Bellow, Lessing, Nabokov, Pynchon, and Vonnegut.

433 Chaucer (3 cr). Intro to Chaucer's poetical works.

434 Middle English Lit (3 cr). Middle English lit to 1500, excluding Chaucer and drama.

435 Shakespeare (3 cr). Intro course, designed mainly for English majors: background and study of selected plays representative of Shakespeare's achievement in mode and kind.

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: 435 or perm.

437 English Drama to 1642 (3 cr). Medieval through renaissance drama, emphasis upon Marlowe, Jonson, Webster.

438 English Drama, 1660-1800 (3 cr). Heroic play and tragedy; sentimental drama; comedy of manners.

439 Modern English and American Drama (3 cr). Plays of the chief 20th-century dramatists.

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.

442 Intro to Transformational Grammar (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.

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.

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.

451 Sixteenth-Century Poetry and Prose (3 cr). Major authors of the period with emphasis on Spenser.

452 Milton (3 cr). Major prose and poetry of Milton.

453 Seventeenth-Century Poetry and Prose (3 cr). Major authors excluding Milton; emphasis on authors such as Bacon, Browne, Burton, Donne, Herbert, Herrick, Marvell.

456 Restoration and Eighteenth Century (3 cr). Neoclassical poetry and prose from Dryden to Johnson.

465 The Romantic Period (3 cr). Poetry and prose of the early 19th century; emphasis on Wordsworth, Coleridge, Shelley, Keats, Byron.

466 The Victorian Period (3 cr). Poetry and prose; emphasis on Tennyson, Browning, Arnold, Carlyle, Newman, J. S. Mill.

470 American Lit to 1830 (3 cr). Colonial period to the early republic; emphasis on authors such as Bradford, Taylor, Edwards, Franklin, Crevecoeur, Cooper, Irving.

471 Poe, Hawthorne, and Melville (3 cr). Major works and their place in the American Renaissance.

472 Emerson, Thoreau, and Whitman (3 cr). Major works and their place in the American Renaissance.

473 Lit of the American West (3 cr). Writings that reflect the growth of the western U.S. from frontier days to the present.

474 American Lit, 1865-1914 (3 cr). Emphasis on writers of realistic and naturalistic fiction such as James, Twain, Howells, Crane, and Dreiser.

476 American Folklore (3 cr). Forms, incl ballads and folksongs, known in the U.S.; their collection and study with special attention to their appearance in American lit.

482-483 (s) **Major Authors** (3 cr). Comprehensive study of the works of a single author. See the Time Schedule for author.

491 Adv Creative Wrtg: Poetry (3 cr, max arr). Continuation of 291. Prereq: 291 or perm.

492 Adv Creative Wrtg: Fiction (3 cr, max arr). Continuation of 292. Prereq: 292 or perm.

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.

495 Literary Criticism (3 cr). From Plato to the present.

496 Hist of the English Language (3 cr). Evolution of the language from Proto-Germanic to American English.

499 (s) **Directed Study** (1-3 cr, max 3). Prereq: perm.

500 Master's Research and Thesis (cr arr). Graded P/F.

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.

503 Problems and Methods of Literary Study (3 cr).

505 (s) **Workshop** (cr arr). May be graded P/F. Prereq: perm.

506 Language and Teaching of Wrtg (3 cr). Linguistic, rhetorical, stylistic, and pedagogical concepts essential to teaching college-level wrtg.

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.

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.

510 (s) **Studies in Linguistics** (3 cr, max 12). 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, 496, 506, or perm.

511 (s) **Studies in Literary Criticism** (3 cr, max 12). Hist of criticism; various schools of literary criticism. Prereq: 495 or perm.

512 (s) **Studies in Literary Theory** (3 cr, max 12). Various genres (poetry, drama, fiction), forms, and modes (tragedy, comedy, satire).

520 (s) **Studies in Medieval Lit** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

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).

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).

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).

560 (s) **Studies in American Lit Before 1900** (3 cr, max 12). Normally offered in period survey, genre studies, and major author(s).

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).

597 (s) **Practicum** (cr arr). Prereq: perm.

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 210 Intro to Analysis of Lit	3
Eng 250-260-270 Anglo-American Lit	9
Eng 435 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 from one of the following options	6

A. Two courses from the following or from courses not used in the area requirements list:
- Eng 400 Seminar
- Eng 425 Irish Literary Renaissance
- Eng 436 Advanced Shakespeare
- Eng 473 Lit of the American West
- Eng 476 American Folklore
- Eng 482-483 Major Authors
- Eng 494 Methods of Literary Criticism (strongly recommended)
- Eng 495 Literary Criticism (strongly recommended)

B. One course from option A and one course from the following:
- *Eng 111 Lit of Western Civilization
- *Eng 112 Lit of Western Civilization
- *Eng 175 Intro to Literature
- Eng 291 Creative Writing: Poetry
- Eng 292 Creative Writing: Fiction
- Eng 309 Adv Prose Writing
- Eng 491 Adv Creative Writing: Poetry
- Eng 492 Adv Creative Writing: Fiction

Related fields approved by dept chairman 20

CREATIVE WRITING EMPHASIS. Students wishing to emphasize creative writing must take Eng 210, 250, 260, 270, and three 400-level Eng courses in literature, including one in literature before 1900. The remaining six courses (18 credits) may be selected from the following: Eng 291, 292 (3 credits each), 491, 492, 404 (3-6 credits each).

PRELAW EMPHASIS. Students wishing to emphasize preparation for law school within the existing degree program must take Eng 210, 250, 260, 270, and three 400-level English courses in literature. The remaining nine courses required are Acctg 201, CS 131, Econ 272, Hist 101-102, Phil 101 and 211, PolSc 105, and Psych 100. Twenty credits of related course work will be chosen from the list approved for this emphasis.

*To receive elective credit for this course, a student must have completed it before enrolling in Eng 210.

Department of Fish and Wildlife Resources

Ernest D. Ables, Dept. Head (104A FWR Bldg.).

Fishery Resources Faculty: David H. Bennett, Ted C. Bjornn, James L. Congleton, C. Michael Falter, George W. Klontz.

Wildlife Resources Faculty: Ernest D. Ables, Elwood G. Bizeau, Edward O. Garton, Maurice G. Hornocker, Winifred B. Kessler, Lewis Nelson, Jr., James M. Peek.

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 actually 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. Each of these areas is clearly definable but cannot be considered as a distinct entity because each is supported and enhanced by the others. 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 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, Master of Forestry, 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) 885-6336 or 6434.

Courses

FISHERY RESOURCES—Fish

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

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.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

205 Wildland Resource Conservation (3 cr). See For 205.

206 Wildland Resource Conservation Lab (1 cr). See For 206.

299 (s) **Directed Study** (cr arr). Prereq: perm.

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.

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.

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.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision Graded P/F. Prereq: perm.

411 Ichthyology (4 cr). See Zool 481.

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.

415 Physical-Chem Limnology (2 cr). Same as Zool 435. Physical and chem features of lakes and streams. Two ½-day field trips. Prereq: general chem and general physics.

416 Biol Limnology (3 cr). Same as Zool 436. Aquatic biota and their relationships with physical-chem habitat; methodology and tech of biol limnological studies. Two 1-day field trips. Prereq: 415.

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.

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 ID413, Eng 317.

419 Prin of Fisheries Mgt (2 cr). Appl of prin toward managing rec and commercial aquatic resources. Prereq: 418, ApSt 251.

420 Fish Diseases (3 cr). Epidemiology, diagnostics, prevention, and treatment of infectious and noninfectious diseases of free-living and confined finfish.

446 Diseases of Wild Birds and Mammals (2 cr). See WLF 446.

495 Fish and Wildlife Seminar (1 cr, max 2). Disc integrating biol, social, political, econ, and philosophic aspects of fish and wildlife problems.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

ID510 Adv Fishery Mgt (3 cr). Alt/yrs 83-84. 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.

511 Fish Physiology (4 cr). Alt/yrs 83-84. Prin and methods used to study vital organs, organ systems, growth, and reproduction of fishes; emphasis on osmoregulation, metabolism, endocrinology, and respiration. Prereq: 411 and perm.

512 Aquatic Pollution Ecology (3 cr). Alt/yrs 84-85. Prin and working examples of the ecology of polluted aquatic stream and lake habitats. Two 1-day fields trips. Prereq: 415 or perm.

513 Adv Fish Culture (3 cr). Alt/yrs 84-85. Prin underlying freshwater and marine fishes; emphasis on pond design, nutrition, bioenergetics, genetics, water quality interactions. Prereq: 411, 415, and perm.

514 Fish Population Dynamics (3 cr). Alt/yrs 84-85. Models and empirical examples of density changes, competition, and predation; mechanisms controlling density and biomass; social behavior; fish production; aquatic community processes.

515 Adv Limnology (3 cr). Alt/yrs 83-84. Physicochemical interrelationships and dynamics of primary and secondary production in aquatic systems. Two 4-hr lec-labs a wk. Prereq: 415.

516 Epidemiology and Diagnostics of Fish Diseases (3 cr). Alt/yrs 84-85. Epidemiology, etiology, and pathology of major infectious and noninfectious diseases of free-living and confined fishes. Prereq: 420, VS 512A, and Zool 427.

ID517 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.

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.

589 Water Resources Seminar (1 cr). See Inter 589.

595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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—WLF

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

102 The Wildlife Profession (1 cr). Survey of mgt problems and professional opportunities. Graded P/F.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

299 (s) **Directed Study** (cr arr). Prereq: perm.

314 Wildlife Ecology (3 cr). Appl of prin of ecology to conservation and mgt of wildlife in natural and altered habitats. Prereq: general ecology or perm.

390 Prin of Fish and Wildlife Ecology (3 cr). See Fish 390.

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.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

WS406 Radiation Ecology (2 cr). Alt/yrs 84-85. WSU Bio S 440. Fate and effect of radionuclides in the natural environment.

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.

442 Wildlife Mgt (3 cr). Analysis and manipulation of wildlife populations and habitats. Two lec and one lab a wk. Prereq: 314, 448, Zool 482, Zool 483, or perm.

443 Wildlife Population Analysis (3 cr). Quantitative analysis of wildlife habitat, diet, harvest, population density, survival, and natality data; dev and appl of population models in wildlife mgt. Prereq: 448 and ApSt 251 or perm.

WS444 Disease Concepts for Wildlife Biologists (4 cr). WSU V Mic 435. Biol aspects of infectious diseases and environmental contaminants in wild mammalian and avian population. Prereq: perm.

445 Nongame Mgt (2 cr). Disc; relation to current land-use practices. Prereq: Zool 482, 483, or perm.

446 Diseases of Wild Birds and Mammals (2 cr). Alt/yrs 84-85. Same as VS 446A and Fish 446. Epidemiology, pathology, treatment, and control. Prereq: perm.

447 Prin of Big Game Mgt (3 cr). Coordination with other land uses and habitat capabilities. Prereq: 314.

448 Fish and Wildlife Population Ecology (4 cr). Attributes, natality, mortality, growth forms, fluctuations, and regulation of fish and wildlife populations. Three lec and one lab a wk. Prereq: ApSt 251, course in vertebrate ecology.

449 Wildlife Tech (3 cr). Investigation and mgt. One 3-hr lec/lab a wk; 3-5 hr field exercises a wk. Prereq or coreq: 314.

WS465 Law of Evidence (3 cr). WSU Polic 465. Nature of evidence, principal court decisions concerning admissibility, and eval of evidence and proof.

489 Personalities and Philosophies in Conservation (2 cr). See RcMgt 489.

493 Environmental Law (2 cr). Laws governing resource admin and environmental impacts. Prereq: sr standing.

495 Fish and Wildlife Seminar (1 cr, max 2). Disc integrating biol, social, political, econ, and philosophic aspects of fish and wildlife problems.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

WS507 Stat Ecology (3 cr). Alt/yrs 83-84. WSU Bio S 530. Same as ApSt WS530. Theory associated with stat methods as related to ecological problems. Prereq: course in biometry.

541 Adv Population Biol (2 cr). Alt/yrs 84-85. Readings and disc of current theories of population control, their biol basis, and appl to wildlife populations. Prereq: 448 or perm.

ID542 Waterfowl Mgt (3 cr). Alt/yrs 83-84. 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.

ID544 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.

545 Game Range Ecology (2 cr). Alt/yrs 83-84. Reading and disc on synecological relationships of wildlife habitats. Two days of field trips. Prereq: 442 or perm, animal and plant ecology.

ID546 Upland Game Ecology (2 cr). Alt/yrs 84-85. Ecology and mgt of forest and rangeland wildlife species. Three days of field trips. Prereq: perm.

WS560 Environmental Physiology (3 cr). WSU Zool 560. Physiological modes of adaptation of vertebrates to their temporal and physical environments. Two lec and one 3-hr lab a wk. Prereq: perm.

WS590 Adv Topics in Zool (2 cr). WSU Zool 590. Recent advances in zool.

595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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:

First and Second Years	Credits
Fish 102 Fishery Resources Profession	1
Biol 201 Intro to Life Sciences	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
Chem 275 Carbon Compounds	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Econ 272 Foundations of Econ Analysis	4
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geology & Lab or Soil 205, 206 General Soils & Lab	4
Math 180 Analytic Geometry & Calculus or Math 160 Survey of Calculus	4
Phys 113, 114 General Physics	6
Electives	6
Fishery Summer Camp	
Fish 301 Aquatic Resources Mgt	4
Third and Fourth Years	
Fish 411 Ichthyology	4
Fish ID413 Fish Ecology	3
Fish 415 Physical-Chem Limnology	2
Fish 416 Biol Limnology	3
Fish 417 Aquaculture	3
Fish 418 Fisheries Mgt Tech	2
Fish 419 Prin of Fish Mgt	2
Fish 420 Fish Diseases	3
Fish 495 Seminar	1
ApSt 251 Principles of Statistics	3
Bact 250 General Microbiology	4
Eng 317 Technical & Engr Report Writing	3
Ent ID472, ID474 Aquatic Entomology & Lab	3
For 462 Watershed Mgt or Range 351 Elements of Range Mgt or For 370 Prin of Forest Mgt	2-3
For 494 Models for Resource Decisions	4
VS 371 Vet Anatomy & Physiology or Zool 416 Mammalian Physiology	4
WLF 448 Fish & Wildlife Population Ecology	4
Electives to total 136 credits for the degree	--

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
Biol 331 General Ecology	3
Bot 241 Systematic Botany	3
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Econ 151, 152 Principles of Economics	6
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geol & Lab, or Soils 205-206 General Soils & Lab	4
Math 180 Analytical Geometry & Calculus I or Math 160 Survey of Calculus	4
Phys 113-114 General Physics	6
Electives	9
Third and Fourth Years	
WLF 314 Wildlife Ecology	3
WLF 442 Wildlife Management	3
WLF 448 Fish & Wildlife Population Ecology	4
WLF 495 Wildlife Seminar	1
ApSt 251 Principles of Statistics	3
Biol 351 General Genetics or Biol 442 Biological Evolution	3
Eng 317 Technical & Engr Report Writing	3
ForPr 383 Economics of Conservation	3
Range 351 Elements of Range Mgt or For 370 Prin of Forest Mgt	2-3
VS 371 Anatomy & Physiology or Zool 416 Mammalian Physiology or Zool 324 Comparative Vertebrate Anatomy	4
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. Chairman (314 Admin. Bldg.). Faculty: 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), Eugene E. Reed (German), Alan Rose (French), Galen O. Rowe (Classics), John H. Sullivan (German), Robert L. Suries (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 planned for the future.

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. and M.A.T. degrees. The purpose of graduate programs in languages, cultures, and literatures is to offer advanced scholarly preparation for careers in teaching and other fields for which a high level of competence in these disciplines is required.

For further information, please consult the department chairman (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 121-122-221-22; FL/GK 341-342-441-442; FL/LA 161-162-261-262; FL/SP 181-182-281-282. In appropriate cases, with the approval of the chairman 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/LA 361-362; FL/SP 381-382.

PREREQUISITE: Prereq for upper-div language courses, except those in Greek, is the appropriate interm course or equiv.

COURSES OFFERED IN ENGLISH—FL/EN

No knowledge of foreign language required. May be used to fulfill the L & S humanities requirement.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

204 (s) **Special Topics** (cr arr).

209 Learning Lab (1 cr, max arr). Autotutorial instruction using audiovisual materials. Graded P/F. Prereq: perm.

211-212 Classical Mythology (2 cr). Intro to classical myths and legends and their survival in western lit and art.

243-244 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.

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

313-314 Modern French Lit in Translation (3 cr). Does not count toward a major or minor in French. Major modern French authors in English translation; knowledge of French is not required.

323-324 German Lit in Translation (3 cr). Does not count toward a major or minor in German. Knowledge of German is not required.

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.

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.

393-394 Masterpieces of Spanish Lit in Translation (3 cr). Does not count toward a major or minor in Spanish. Knowledge of Spanish is not required.

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

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.

FRENCH—FL/FR

101-102 Elem French (4 cr) (C, 101 only). Pronunciation, vocab, reading, spoken French, and functional grammar.

103 French Language Lab (1 cr, max arr). Elem and interm conversational skills. Graded P/F. Prereq: perm.

104 Elem French Reviewed (4 cr). Not open for cr to students who have taken 101 or equiv in college. Review of subject matter covered in FL/FR 101-102. Prereq: two yrs of French in high school or perm.

105-106 French for Graduate Students (0 cr). Prep for the doctoral reading exam. Two 1-hr recitations a wk. Graded P/F.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201-202 Interm French (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 102.

204; 507 (s) **Special Topics** (cr arr).

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

301-302 Adv French Grammar and Composition (3 cr). Recommended for prospective teachers of French.

303-304 French Culture and Institutions (3 cr).

305-306 Survey of French Lit (3 cr). Middle Ages to the present.

309 French Language Lab (1 cr, max arr). Adv conversational skills. Graded P/F. Prereq: perm.

401-402 Nineteenth-Century French Lit (3 cr).

403-404 Seventeenth-Century French Lit (3 cr).

405-406 Eighteenth-Century French Lit (3 cr).

407-408 Contemporary French Lit (3 cr).

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.

411-412 French Composition and Conversation (2 cr).

413-414 French for Teachers (2 cr). Language and culture; pronunciation and diction.

415 (s) **Special Topics** (cr arr).

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

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.

500 Master's Research and Thesis (cr arr).

503 Hist of the French Language (3 cr).

504 Explications Francaises (3 cr).

505 Seventeenth-Century French Drama (3 cr).

506 (s) **Workshop** (cr arr). Prereq: perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

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). Pronunciation, vocab, reading, spoken German, and functional grammar.

123 German Language Lab (1 cr, max arr). Elem and interm conversational skills. Graded P/F. Prereq: perm.

124 Elem German Reviewed (4 cr). Not open for cr to students who have taken FL/GN 121 or equiv in college. Review of subject matter of FL/GN 121-122 with emphasis on functional grammar and reading. Prereq: high school German or perm.

125-126 German for Graduate Students (0 cr). Prep for the doctoral reading exam. Two 1-hr recitations a wk. Graded P/F.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

204; 404; 504 (s) Special Topics (cr arr).

221-222 Interm German (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 122.

223-224 Interm German: Scientific (4 cr). Readings adapted to the needs of students in scientific curricula. Prereq: FL/GN 122.

299 (s) Directed Study (cr arr). Prereq: perm.

321-322 Adv German Grammar and Composition (3 cr). Recommended for prospective teachers of German.

325-326 German Culture and Institutions (3 cr). Recommended for prospective teachers of German.

327-328 Survey of German Lit (3 cr). To the close of the 19th century.

329 German Language Lab (1 cr, max arr). Adv conversational skills. Graded P/F. Prereq: perm.

421-422 Nineteenth-Century German Lit (3 cr).

423-424 Modern German Lit (3 cr).

425-426 Eighteenth-Century German Lit (3 cr).

427-428 Classical Period in German Lit (3 cr).

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.

431-432 German Composition and Conversation (2 cr).

433-434 German for Teachers (2 cr). Language and culture; pronunciation and diction.

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

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.

499 (s) Directed Study (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

502 (s) Directed Study (cr arr). Prereq: perm.

506 (s) Workshop (cr arr). Prereq: perm.

523 Hist of the German Language (3 cr).

524 Middle High German (3 cr).

525 Goethe's Faust (3 cr).

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GREEK—FL/GK

200; 400 (s) Seminar (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

299; 499 (s) Directed Study (cr arr). Prereq: perm.

341-342 Elem Greek (4 cr). Pronunciation, vocab, reading, and functional grammar.

349 Greek Language Lab (1 cr, max arr). Emphasis on basic skills. Graded P/F. Prereq: perm.

441-442 (s) Interm Greek (4 cr, max arr). Readings in classical Greek prose and poetry.

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

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.

ITALIAN—FL/IT

299; 499 (s) Directed Study (cr arr). Prereq: perm.

LATIN—FL/LA

161-162 Elem Latin (4 cr). Pronunciation, vocab, reading, composition, and functional grammar.

163 Latin Language Lab (1 cr, max arr). Elem- and interm-level skills. Graded P/F. Prereq: perm.

200; 400 (s) Seminar (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

261-262 Interm Latin (4 cr). Reading, grammar review, and wrtg. Prereq: 162.

299; 499 (s) Directed Study (cr arr). Prereq: perm.

361-362 Adv Latin Grammar and Composition (3 cr). Recommended for prospective teachers of Latin.

365-366 Survey of Latin Lit (3 cr). To the close of the third century.

369 Latin Language Lab (1 cr, max arr). Adv-level expressive skills. Graded P/F. Prereq: perm.

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

461-462 Latin Lit of the Augustan Age (3 cr).

463-464 Latin Lit of the Republic (3 cr).

465-466 Latin Lit of the Silver Age (3 cr).

467-468 Latin for Teachers (2 cr).

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.

RUSSIAN—FL/RU

299; 499 (s) Directed Study (cr arr). Prereq: perm.

SPANISH—FL/SP

181-182 Elem Spanish (4 cr). Pronunciation, vocab, reading, spoken Spanish, and functional grammar.

183 Spanish Language Lab (1 cr, max arr). Elem and interm conversational skills. Graded P/F. Prereq: perm.

184 Elem Spanish Reviewed (4 cr). Not open for cr to students who have taken 181 or equiv in college. Review of subject matter covered in 181-182. Prereq: two yrs of Spanish in high school or perm.

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

204; 404; 504 (s) Special Topics (cr arr).

281-282 Interm Spanish (4 cr). Reading, grammar review, speaking, and wrtg. Prereq: 182.

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

381-382 Adv Spanish Grammar and Composition (3 cr). Recommended for prospective teachers of Spanish.

383-384 Hispanic Culture and Institutions (3 cr). Topics in Spanish-American civ.

385-386 Survey of Spanish Lit (3 cr).

387-388 Survey of Spanish-American Lit (3 cr).

389 Spanish Language Lab (1 cr, max arr). Adv conversational skills. Graded P/F. Prereq: perm.

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.

449 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

481-482 Nineteenth-Century Spanish Lit (3 cr).

483-484 Golden Age in Spanish Lit (3 cr). Sixteenth and seventeenth centuries.

485-486 Contemporary Spanish Lit (3 cr).

487-488 Contemporary Spanish-American Lit (3 cr).

489-490 Spanish Phonetics (1 cr). Phonetic description and phonemic analysis; stress, its nature and place; intonation patterns in conversation; reading of prose and poetry.

491-492 Spanish Composition and Conversation (2 cr).

493-494 Spanish for Teachers (2 cr). Language and culture; pronunciation and diction.

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.

500 Master's Research and Thesis (cr arr).

506 (s) Workshop (cr arr). Prereq: perm.

583 Hist of the Spanish Language (3 cr).

584 Spanish Phonetics and Phonemics (3 cr).

585 Cervantes (3 cr).

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

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.

204; 404 (s) Special Topics (cr arr). Prereq: perm.

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
Art 101 Survey of Art	2
FL/EN 211-212 Classical Mythology	4
FL/EN 363-364 Literature of Ancient Greece & Rome	6
FL/GK 341-342 Elementary Greek (or equiv)	8

FL/LA 161-162 Elementary Latin (or equiv) 8
FL/LA 261-262 Intermediate Latin (or equiv) 8
Phil 309 History of Ancient Philosophy 3
Additional Latin and/or Greek courses numbered above FL/LA 262 and FL/GK 342 12

And five courses in related fields approved by the 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 chairman)	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	20
A second foreign language (elem and interm, or equiv)	16
Related fields (as approved by chairman)	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/LA 261-262 Intermediate Latin (or equiv)	8
Upper-division courses in Latin	20
A second foreign language (elem and interm, or equiv)	16
Related fields (as approved by chairman)	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 chairman)	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 the following option:

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
ApSt 251 Prin of Statistics	3
Bus 301 Financial Management	3
Bus 311 Intro to Management Theory	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	3
Econ 272 Foundations of Econ Analysis or 151, 152 Principles of Economics	4-6
Electives (as approved by chairman) to total 128 cr for the degree	--

Department of Forest Products

Ali A. Moslemi, Dept. Head (102D FWR Bldg.). Faculty: Kjell A. Christophersen, Jo Ellen Force, Robert L. Govett, Ruben Guevara, Arland D. Hofstrand, Leonard R. Johnson, Harry W. Lee, Ali A. Moslemi, H. Peter Steinhagen.

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, 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 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. Each of these three 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. The department has recently obtained a computerized hot press capable of delivering over 3,000 pounds per square inch of pressure in

teaching the technologies of panel production. In addition, a variety of other facilities, such as a new testing machine, a dry kiln, and a computer terminal, add special educational capabilities to the department.

Students who have earned the B.S.For.Prod. degree in any of the above three program 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, and fundamental research. The department cooperates with several institutions around the world, and international opportunities for faculty and student exchanges are being explored.

Forest Products Courses—ForPr

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq. perm.

204; 404; 504 (s) **Special Topics** (cr arr).

230 Forest Land Measurements (2 cr). Public Land Survey System; pacing, chaining; traverse with silva and staff compass; slope measurements; contour mapping; triangulation; and corner location. Prereq: Math 140.

299 (s) **Directed Study** (cr arr). Prereq: perm.

331 Intro to Wood Technology (3 cr). Anatomy of woody plants, identifying characteristics and properties of woods, relation of wood properties to processing and use. Two lec and two 2-hr labs a wk; two days of field trips. Prereq: general bot.

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.

336 Physical Properties of Wood (3 cr) (437). Alt/yrs 83-84. Technology and physical properties of wood, incl wood-moisture relations, density, sound, thermo and elec properties. Two lec and one lab a wk. Prereq: 331.

337 Mech Properties of Wood (3 cr). Alt/yrs 84-85. Mech properties; appl of strength data and design prin to the use of wood and plywood in constr. Two lec and one lab a wk. Prereq: 331.

338 Prin of Wood Adhesion (2 cr). Alt/yrs 83-84. Theory and appl of adhesive prin to the bonding of wood composites and bldg components. Prereq: perm.

383 Econ of Conservation (3 cr). See For 383.

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.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

430 Forest Engr and Harvesting (3 cr) (434). Survey of logging equipment capabilities; intro to cable logging systems, road layout, and costs; cost analysis of logging systems; dev of road and logging plans. Three days of field trips. Prereq: Math 160 or equiv, CS 131, CE 218.

432 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.

433 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.

434 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.

435 Wood Drying and Preservation (3 cr). Alt/yr 84-85. Theory and practice of timber, veneer, and particulate drying; wood-destroying organisms and wood-preserving processes. Prereq: perm.

436 Plywood and Particleboard (3 cr). Alt/yrs 84-85. Properties, quality, manufacture, and use of veneer, plywood, and particleboard. Three 1-day field trips. Prereq: 331.

437 Wood as a Structural Material (3 cr). Alt/yrs 83-84. 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.

438 Intro to Wood Chem (3 cr). Alt/yrs 83-84. 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. Three 1-day field trips. Prereq: organic chem.

WS439 Wood and Wood-Base Materials (3 cr). Alt/yrs 83-84. WSU MSE 462. Structural characterization, mechanics of property measurement, size phenomena, rheology, micromechanics and fracture, cutting tool forces, and environmental influences. Prereq: jr standing in engr, arch, or sc.

440 Energy from Wood (2 cr). Alt/yrs 83-84. 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.

477 Topics in Forest Industries Mgt (3 cr). Applied mgt, marketing, trade, taxation, and corporate performance in wood products sector. Prereq: 383, Bus 311, Bus 321, or perm.

494 Models for Resource Decisions (4 cr). See For 494.

496 Forest Products Seminar (1 cr). Contemporary problems relevant to the manufacture of wood products.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of forest products industries; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

522 Adv Forest Roads (3 cr). Alt/yrs 84-85. 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.

WS530 Microstructure and Properties of Wood (3 cr). WSU MSE 546. Effect of structure and composition of wood on its physical and mech properties.

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.

WS532 Basic Prin of Adhesion (3 cr). WSU MSE 547. Prin of interfacial bonding applied in the engr of polymers, wood, and heterophase systems. Prereq: Met WS418.

WS533 Reinforced Polymer and Wood-Based Composites (3 cr). WSU MSE 548. Fundamentals of composite materials having polymers and wood as major components.

534 Adv Tech of Timber Harvesting Analysis (3 cr). Alt/yrs 83-84. 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.

WS535 Nondestructive Testing of Wood-Base Materials (3 cr). WSU MSE 549. Prin of nondestructive testing applied to wood-base materials.

536 Wood Chem (3-4 cr). Chem of woody tissues, incl lignin, cellulose, hemicelluloses, and other polysaccharides; lab work in the analysis and chem of wood. Prereq: 438.

WS537 Parameters for Synthesis of Wood Composition Materials (3 cr). WSU MSE 550. Theory and practice of wood composite materials manufacture and dev.

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.

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 analyses for both written and oral presentation. Prereq: 331 and perm.

595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 industrial 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 cover the basic knowledge areas of the sciences, business, and production engineering and management. This program area prepares students for a variety of positions in the wood-processing industry.

Course	Credits
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 336 Physical Properties of Wood	3
ForPr 337 Mechanical Properties of Wood	3
ForPr 338 Prin of Wood Adhesion	2
ForPr 383 Economics of Conservation or CE 486 Engineering Economy	3
ForPr 430 Forest Engineering & Harvesting	3
ForPr 435 Wood Drying & Preservation	3
ForPr 436 Plywood & Particleboard	3
ForPr 438 Intro to Wood Chemistry	3
ForPr 494 Models for Resource Decisions	4
ForPr 496 Forest Products Seminar	1
ApSt 251 Principles of Statistics	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qualitative Analysis or Chem 114 General Chemistry	4-5
Chem 277, 278 Organic Chem I & Lab	4
Chem 372 Organic Chem II	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Econ 151, 152 Principles of Economics or Econ 272 Foundation of Econ Analysis	4-6
ES 211 Intro to Mechanics	2
Eng 317 Technical & Engr Report Writing	3
For 370 Principles of Forest Management	2
For 476 Forest Regulation & Finance or ForPr 477 Topics in Forest Industries Mgt	3
FWR 101 Forestry Orientation	1
Math 180 Analytical Geom & Calculus I	4
Phys 210 Engineering Physics I	3
Restricted electives	12
Electives to total 136 cr for the degree	--

B. HARVESTING TECHNOLOGY OPTION

This program area prepares students for positions as logging engineers in logging engineering firms, other forest products companies, and governmental agencies. This training provides an excellent background for planning and design of timber sales, supervising logging crews, designing and laying out roads, and managing wood procurement. Others obtain positions in the areas of equipment development and marketing or serve as field representatives.

Course	Credits
ForPr 230 Forest Land Measurements	2
ForPr 331 Intro to Wood Technology	3
ForPr 383 Econ of Conservation or CE 486 Engineering Economy	3
ForPr 430 Forest Engineering & Harvesting	3
ForPr 432 Low Volume Forest Roads	3
ForPr 433 Forest Tractor System Analysis	3
ForPr 434 Cable System Analysis	3
ForPr 477 Topics in Forest Industries Mgt	3
ForPr 494 Models for Resource Decisions	4
ApSt 251 Principles of Statistics	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Chem 111 Principles of Chemistry	4
CE 316 Adv & Route Surveys	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Econ 151, 152 Principles of Economics or Econ 272 Foundations of Econ Analysis	4-6
ES 211 Intro to Mechanics	2
Eng 317 Technical & Engr Report Writing	3
For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2
For 370 Principles of Forest Management	2
For 374 Forest Mensuration	3
For 462 Watershed Management	2
For 476 Forest Regulation & Finance	3
FWR 101 Forestry Orientation	1
GeoIE 435 Intro to Geological Engineering	3
Geol 101, 102 Physical Geology & Lab	4
Math 180 Analytical Geom & Calculus I	4
Phys 210 Engineering Physics I	3
Soils 205 General Soils	3
Restricted electives	14
Electives to total 136 cr for the degree	--

C. FOREST PRODUCTS BUSINESS MANAGEMENT OPTION

This program area is designed for students who plan careers within either a staff or line management area of the forest products industry. Graduates obtain positions within production management, marketing and distribution, or technical service and support areas of the forest products industry. Graduates specializing within the forest harvesting management emphasis focus on both the financial and technical aspects of providing mills with a required raw material wood resource. Graduates specializing within the forest products production and technology management emphasis focus on the production, distribution, and marketing of wood products from both a technical and a managerial framework. Students pursuing studies within either emphasis are preparing themselves to assume management positions within an industry that employs nearly 1.5 million people and annually ships products valued at nearly $125 billion that are principally produced from a renewable natural resource.

Course	Credits
ForPr 200 Forest Products Orientation	1
ForPr 230 Forest Land Measurements	2
ForPr 331 Intro to Wood Technology	3
ForPr 335 Primary Wood Products Processes	3
ForPr 383 Economics of Conservation	3
ForPr 430 Forest Engineering & Harvesting	3
ForPr 477 Topics in Forest Industries Mgt	3
ForPr 494 Models for Resource Decisions or CE 482 Project Management Tech	4
ForPr 496 Forest Products Seminar	1
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
ApSt 251 Principles of Statistics	3
Biol 203 General Botany	4
Bus 265 Legal Environment of Business	3
Bus 301 Financial Management	3
Bus 311 Intro to Management Theory	3
Bus 321 Marketing	3
Bus 370 Industrial Management	3
Chem 103 Intro to Chemistry	4
Comm 131 Fundamentals of Speech	2
CS 100 Intro to Computers & Programming	3
CS 131 Intro to Computer Programming	2
Econ 151, 152 Principles of Economics	6
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geology & Lab or Phys 101 Fundamentals of Physical Science	4
Math 160 Survey of Calculus	4
Approved electives numbered 300 and above	17

And one of the following emphasis areas:

Forest Products Production and Technology Emphasis

ForPr 336 Physical Properties of Wood	3
ForPr 337 Mechanical Properties of Wood	3
Forest products courses numbered 400 and above	9
Electives to total 136 cr for the degree	--

Forest Harvesting Emphasis

For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2
For 370 Principles of Forest Management	2
Two of the following courses	6
ForPr 432 Low Volume Forest Roads	
ForPr 433 Forest Tractor System Analysis	
ForPr 434 Cable System Analysis	
Electives to total 136 cr for the degree	--

Department of Forest Resources

David L. Adams, Dept. Head (203B FWR Bldg.). Faculty: David L. Adams, George A. Belt, Jr., John A. Brockhaus, Donald G. Burnell, Brian C. Dennis, Lauren Fins, Jo Ellen Force, Donald P. Hanley, Charles R. Hatch, Frederic D. Johnson, Leonard R. Johnson, Howard Loewenstein, Charles W. McKetta, E. Lee Medema, James A. Moore, Leon F. Neuenschwander, Harold L. Osborne, Arthur D. Partridge, Kurt S. Pregitzer, John A. Schenk, Ronald W. Stark, Charles T. Stiff, Molly W. Stock, Karel J. Stoszek, Larry C. Tennyson, 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 stations 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. An eight-week summer camp is 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—For

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

205 Wildland Resource Conservation (3 cr). Same as Fish 205. 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.

206 Wildland Resource Conservation Lab (1 cr). Same as Fish 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.

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.

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.

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.

299 (s) **Directed Study** (cr arr). Prereq: perm.

300 Forest Resource Measurements (1-4 cr). Same as Range 300. Map and aerial photo interp; land surveying; log, tree, and stand measurement; wildland surveys for resource inventories and mapping. One to four wks of all-day summer classes. Prereq: 275 and CE 218.

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 of all-day summer camp. Prereq: 221 and systematic bot.

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.

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.

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: 301 and systematic bot.

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: 221, 301.

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.

361 Farm and Natural Resource Appraisal (3 cr). See AgEc 361.

365 Fundamentals of Forest Protection (2 cr). Key factors capable of damaging forest product or amenity yields; causal relationships and interactions; impacts and controls as related to mgt objectives. One 1-day and two 1/2-day field trips. Prereq: 324.

367 Wildland Fire Mgt (2 cr). 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.

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.

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: 300, ApSt 251, Math 160 or Math 180.

383 Econ of Conservation (3 cr). Same as AgEc 383 and For 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 212.

397-398 Renewable Natural Resource 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.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

408 Forest Soils (2 cr). Same as Soils 408. Properties of wildland soils; forest humus; soil-site relationships; improvement of unproductive forest soils; soils and reforestation; mgt of nursery soils. Prereq: general soils.

WS415 Remote Sensing Applied to Terrain Eval (2-3 cr). WSU Soils 415. Airphoto interp prin and tech for landform eval of hydrologic features, vegetation, land use, and erosion. Two lec and 1-2 hrs of lab a wk. Prereq: basic remote sensing, physical geol, sr standing or perm.

420 Tropical Dendrology/Ecology (3 cr). Distribution, physiognomy, and controls of world tropical and subtropical vegetation types; ident, ecology, and uses of major pantropical trees and associated vegetation. Two 2-hr lec-labs a wk. Prereq: systematic bot.

422 Artificial Regeneration (2 cr). Alt/yrs 84-85. 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.

423 Forest Nursery Mgt (2 cr). Alt/yrs 83-84. Seedling 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.

426 Fire Ecology (2 cr). 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.

427 Prescribed Burning Lab (2 cr). 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.

462 Watershed Mgt (2 cr). Hydrologic processes of forest and range lands; land mgt practices as they influence surface run-off and erosion. Three days of field trips.

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.

464 Forest Pathology (3 cr). Pathology, symptomatology, and ident of causes of diseases and decays; disease control and prevention by means of silviculture, mgt, and use. Two lec and one 3-hr lab a wk; occasional lab trip. Prereq: 300, 301, or perm.

467 Applied Forest Ent (3 cr). 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 2-hr lab a wk.

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.

471 Forest Land Resources Planning Appl (2 cr). Dev of multiple-objective land-use plan and impact statement using computer-based analyt and mapping tech. Two 2-hr labs a wk. Prereq: course in computer programming and 470, or perm.

ID472 Remote Sensing and Environment (3 cr). Current systems, data acquisition on ground and from remote locations, instrumentation, imagery interp and analysis, appl for natural resources.

476 Forest Regulation and Finance (2 or 4 cr). Two accelerated minicourses in one sem; forest mgt decisions for biol and financial production objectives: (1) timber investment decisions; single stand maturity, practice analysis, forest valuation and taxation; (2) forest harvest scheduling, sustained yield, product flow optimization, and timber supply models. Three hrs of lec and two hrs of lab a wk. Prereq: 324, 374, 383, 494, or perm.

478 Western Forestry Practices (0 cr). Eight days of field observation and analysis of current forest land mgt practices. Prereq or coreq: 476, sr standing or perm.

484 Forest Policy and Admin (3 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. Prereq: general econ.

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 131. Prereq or coreq: ApSt 251 or equiv.

497 Land Mgt Seminar (1 cr, max 2). Assigned studies in wildland mgt. Graded P/F. Prereq: sr standing in the College of FWR.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) Seminar (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) Directed Study (cr arr). Prereq: perm.

ID503 (s) Workshop (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

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.

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.

521 Adv Forest Soils (3 cr). Same as Soils 521. 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.

523 Forest Community Classification (3 cr). Field course in structure and ident of forest communities of northern Rockies. One 1-hr lec and one 1-day field lab a wk for half semester. Completed field reports are due no later than two yrs beyond the end of the semester enrolled. Enrollment limited to 10. Prereq: Bot 241 or equiv, a course in plant ecology, and perm.

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.

526 Fire Mgt and Ecology (3 cr). 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.

527 Forest Genetics (3 cr). 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.

ID528 Forest Tree Improvement (3 cr). Same as Genet 528. Practical problems and tech related to genetic improvement of forest trees. Two days of field trips. Prereq: 324 and general genetics.

WS529 Adv Genetics I (3 cr). WSU 501. Genetic consequences of inbreeding, equilibrium, and selection in natural and artificial populations; estimation of genetic variances, correlations, and selection gains. Prereq: general genetics.

WS540 Cytogenetics (3 cr). Alt/yrs 84-85. Chromosome structure, behavior, and evolution; effects of changes in chromosome number and structure. Prereq: general genetics.

ID563-ID564 Adv Forestry Pathology (2-4 cr). 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.

565 Biometeorology (3 cr). Alt/yrs 83-84. Interactions on the atmosphere and plant-soil-water complex; physical laws governing energy and mass of selected plant communities; mountain-valley wind systems, radiation balance, evapotranspiration, and diffusion processes; related instrumentation. Two lec and one 2-hr lab a wk; one 2-day field trip. Prereq: one year physics (calculus desirable) or perm.

566 Adv Forest Fungi (3 cr). Alt/yrs 84-85. Taxonomy, nomenclature, ident, and life cycles of fungi found in forested habitats; emphasis on ident for integrating disease and decay factors into forest mgt planning. Prereq: a course in mycology.

569 Adv Forest Entomology (3 cr). Alt/yrs 84-85. 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 lb a wk; two 1-day field trips. Prereq: 467 or perm.

ID572 Adv Remote Sensing (2 cr). Digital image processing systems applied to satellite and other remote sensing systems. Prereq: ID472, CS 131 or perm.

ID573 Adv Aerial Photo Interp (2-3 cr). 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.

574 Adv Forest Mensuration (2 cr). 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.

575 Adv Forest Mgt (2 cr). Forest regulation; recent dev in applied forest mgt and important contributions in forest mgt.

581-582 Adv Forest Econ (2 cr). Econ prin, legislation, and policies affecting forestry, particularly those bearing on the character and intensity of land use.

589 Water Resources Seminar (1 cr). See Inter 589.

595 (s) Problems in World Resources (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 RESOURCES (B.S.For.Res.)

Required course work includes the university regulations (see regulation J-3) and one of the following options:

A. MANAGEMENT OPTION

First and Second Years	Credits
For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Bot 241 Systemic Botany	3
Chem 103 Intro to Chem or 111 Prin of Chem	4
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
ForPr 230 Forest Land Measurements	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
Introductory economics	4
Electives	12
Forestry Summer Camp	
For 300 Forest Resource Measurements	4
For 301 Wildland Ecology	4
Third and Fourth Years	
For 320 Dendrology	3
For 324 Silviculture	3
For 365 Fundamentals of Forest Protection	2
For 367 Wildland Fire Mgt or For 464 Forest Pathology or For 467 Applied Forest Entomology	2-3
For 374 Forest Mensuration	3
For 383 Economics of Conservation	3
For 462 Watershed Management	2
For 470 Intro to Forest Land Resources Planning	2
For 476 Forest Regulation & Finance	3
For 484 Forest Policy & Administration	3
For 494 Models for Resource Decisions	4
ApSt 251 Principles of Statistics	3
Eng 317 Technical & Engr Report Writing	3
ForPr 331 Intro to Wood Technology	3
ForPr 430 Forest Engineering & Harvesting	3
Range 351 Elements of Range Management	3
Soils 205 General Soils	3
WLF 390 Principles of Fish & Wildlife Ecology	3
Electives to total 136 cr	--

B. SCIENCE OPTION

Note: Admission to this option requires sophomore standing and petition.

First and Second Years	Credits
For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2

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
Econ 151, 152 Principles of Econ or Econ 272 Foundations of Economic Analysis 4-6
ForPr 230 Forest Land Measurements 2
FWR 101 Forestry Orientation 1
Math 180 Analytic Geometry & Calculus I or Math 160 Survey of Calculus 4
Communication electives 2
Computer electives 2
Electives 10-12

Forestry Summer Camp

For 300 Forest Resource Measurements 4
For 301 Wildland Ecology 4

Third and Fourth Years

For 494 Models for Resource Decisions 4
ApSt 251 Principles of Statistics 3
Natural sciences 21
Professional courses 15
Quantitative sciences 7
Electives to total 136 cr ..... --

C. ADMINISTRATIVE OPTION

Course	Credits
For 221 Forest Ecology	3
For 275 Aerial Photo Interpretation	2
For 300 Forest Resource Measurements	4
For 301 Wildland Ecology	4
For 320 Dendrology	3
For 324 Silviculture	3
For 374 Forest Mensuration	3
For 383 Economics of Conservation	3
For 408 Forest Soils	2
For 470 Intro to Forest Land Resources Planning	2
For 476 Forest Regulation & Finance	3
For 478 Western Forestry Practices	0
For 484 Forest Policy & Administration	3
For 494 Models for Resource Decisions	4
Acctg 201 Principles of Accounting	3
Acctg 202 Managerial Accounting	3
ApSt 251 Principles of Statistics	3
Biol 203 General Botany	4
Bot 241 Systematic Botany	3
Bus 301 Financial Management	3
Bus 311 Intro to Management Theory	3
Bus 370 Industrial Management	3
Chem 103 Intro to Chemistry	4
Comm 131 Fundamentals of Speech	2
CS 135 FORTRAN Programming for Engineers	2
Econ 272 Foundations of Economic Analysis	4
Eng 317 Technical & Engr Report Writing	3
ForPr 230 Forest Land Measurements	2
ForPr 331 Intro to Wood Technology	3
ForPr 430 Forest Engineering & Harvesting	3
FWR 101 Forestry Orientation	1
Geol 101, 102 Physical Geology & Lab	4
Math 160 Survey of Calculus	4
RcMgt 235 Sociology of Natural Resources	2
Forest protection electives	2
Alternative management skills electives	3
Multiple-use management electives	5
Electives to total 136 cr	--

Forestry, Wildlife and Range Sciences (General)

John H. Ehrenreich, Dean (202C FWR Bldg.), Arland D. Hofstrand, Acting Assoc. Dean for Academics (202A FWR Bldg.), Charles R. Hatch, Assoc. Dean for Research (202B FWR Bldg.).

Forestry, Wildlife and Range Sciences (General) Courses—FWR

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

101 Forestry Orientation (1 cr). Intro to forestry and related wildland mgt professions.

200; 400 (s) Seminar (cr arr). Prereq: perm.

203; 403 (s) Workshop (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

299; 502 (s) Directed Study (cr arr). Prereq: perm.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

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.

501 (s) Seminar (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

ID503 (s) Workshop (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr). Prereq: admission to the doctoral program in "forestry, wildlife and range sciences" and perm of dept.

Genetics

Arthur W. Rourke, Coordinator (115 Life Sc. Bldg.). Faculty: Dick L. Auld, Richard T. Bingham, Roger Blair, Lee A. Bulla, Jr., Robert W. Campbell, Ross E. Christian, Lauren Fins, O. Clifford Forbes, Raymond J. Hoff, Geral I. McDonald, Lois K. Miller, Gerald E. Rehfeldt, Raphael J. Steinhoff, Edmund E. Tylutki.

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 the coordinator of the genetics program.

Genetics Courses—Genet

106 Heredity and Man (2 cr). See Biol 150.

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

307 Elem Forest Tree Improvement (2 cr). See For 327.

314 General Genetics (3 cr). See Biol 351.

315 Experimental Genetics (1 cr). See Biol 352.

320 Animal Breeding (3 cr). See AnSc 320.

421 Population Genetics (3 cr). See AnSc 421.

446 Plant Breeding (3 cr). See PlSc 446.

ID485 Molecular Genetics (2-4 cr). See Bact 485.

WS505 Adv Genetics I (3 cr). WSU 501. Genetic consequences of inbreeding, equilibrium, and selection in natural and artificial populations; estimation of genetic variances, correlations, and selection gains. Prereq: 314 and 1 semester stat.

511 Genetics of Fungi (3 cr). See Bot ID558.

522 Stat Genetics (3 cr). See AnSc 522.

527 Forest Genetics (3 cr). See For 527.

ID528 Forest Tree Improvement (3 cr). See For 528.

537 Physiological and Molecular Genetics (2-3 cr). See Biol 555.

WS540 Cytogenetics (3 cr). Alt/yrs 84-85. Chromosomes and their relation to mechanisms of dev and inheritance. Prereq: 314.

Department of Geography

Harley E. Johansen, Dept. Head (210 Mines Bldg.). Faculty: Harry H. Caldwell, Richard L. Day, Alan A. DeLucia, Nancy B. Hultquist, Harley E. Johansen, Olen P. Matthews, 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). Natural environment of man: nature, distribution, and relationships of climate, landforms, oceans, vegetation, hydrography, and soils.

101 Man's Physical Environment Lab (1 cr). Lab study relevant to Geog 100. One 2-hr lab a wk. Prereq or coreq: 100 or perm.

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.

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.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

240 Econ Geog (3 cr) (140). 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.

250 World Regional Geog (3 cr). Countries, regions, and peoples of the world; interrelationships between man and his physical and cultural environments.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

315 Geomorphology (3 cr). See Geol 335.

316 Processes in Glacial and Periglacial Environments (3-6 cr). See Geol 336.

330 Urban Geog (3 cr) (430). 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.

340 Industrial Location (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.

346 Transportation (3 cr) (446). 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.

360 Population Dynamics and Distribution (3 cr) (220). 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.

362 U.S. and Canada (3 cr). Regional and systematic geog; emphasis on contemporary problems. Two 1-day field trips.

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.

365 Political Geog (3 cr) (465). Conceptual approach to manifestations of political activity at every org level; intro to basic ideas of politics, territory, and geographic environment.

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 ApSt 251 or equiv.

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.

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.

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.

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.

427 Decision-Making in Resource Mgt (3 cr). Impact of ecosystem analysis and conflicts over environmental quality control on conservation theory; econ, political, managerial, perceptual, and scientific factors in shaping decisions for allocating natural resources.

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.

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.

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. Prereq: CS 131 recommended.

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.

475 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.

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.

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.

485 Cartographic Photo 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.

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.

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.

495 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.

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.

500 Master's Research and Thesis (cr arr).

505 Applied Climatology (3 cr). Climatic classifications, microclimatic investigations, instrumentation; impact of climate on ag, vegetation, and econ activities.

516 Adv Field Glaciology (6 cr). See Geol 536.

520 Land and Resource Regulation Seminar (3-6 cr, max 6). Current legal issues in land use control and mineral resource mgt. Prereq: ID420 or 425 or perm.

525 Plant Geog (3 cr). See Bot 535.

526 Animal Geog (2 cr). See Zool J438/J538.

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.

530 Urban Systems and Structure (3 cr). Reading and disc of lit of urban geog; indiv research. Two 1-day field trips. Prereq: 330 or perm.

WS541 Planning in Rural Environments (3 cr). WSU RP 541. Planning theories and methods applied to rural regions; issues and problems unique to rural planning.

WS544 Environmental Impact Assessment (3 cr). WSU Env S 544. Familiarization with environmental review procedure reqd by NEPA and some 23 separate state statutes; dev of systematic eval tech.

WS550 Methods and Processes in Regional Planning (3 cr). WSU RP 550. Analyt tools used by practitioners for population, econ base, housing, public service, and fiscal impact analysis; basic concepts of comprehensive planning incl growth mgt.

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 ApSt 251 or Math 451-452.

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; phil of maps. Prereq: 380 or perm.

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.

WS590 Special Topics in Regional Planning (1-3 cr). WSU RP 590.

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.

597 (s) Practicum (cr arr). Prereq: perm.

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.

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 362 U.S. & Canada or 364 Idaho & Pacific Northwest	3
Geog 370 Spatial Analysis	3
Geog 380 Cartography & Graphic Comm	4
ApSt 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	3
Geog 401 Atmospheric Environment	3
Geog 404 Special Topics: Mineral Resources	3
Geog 427 Decision Making in Resource Mgt	3
Geog 475 Geographical Info Systems	3
Geog 491 Field Techniques	3
Approved geography electives	6
ApSt 251 Principles of Statistics	3
Biol 201 Intro to Life Sciences	4
Chem 100 Chemistry Fundamentals	1
Chem 103 Intro to Chem or 111 Prin of Chem	4
CS 131 Intro to Computer Programming	2
For 275 Aerial Photo Interpretation	2
Geol 409 Ground Water	3
Math 140 College Algebra or 180 Analyt Geom	3-4
Soils 205, 206 General Soils & Lab	4
Approved electives	12

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 Industrial Location	3
Geog 346 Transportation	3
Geog 478 Interactive Carto-graphics	3
Acctg 201 Prin of Accounting	3
AgEc 451 Land Resource Economics	3
ApSt 251 Principles of Statistics	3
Bus 301 Financial Mgt or 311 Intro to Mgt Theory	3
Bus 321 Marketing	3
CS 131 Intro to Computer Programming	2
Econ 151, 152 Prin of Economics	6
Econ 430 Regional/Urban Economics	3
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Math 140 College Algebra	3
Approved geography electives	9

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 330 Urban Geog or 360 Population Dynamics	3
Geog 315 Geomorphology or 401 Atmospheric Environment	3
Geog ID420 Land & Resource Regulation or 425 Mineral Land Mgt	3
Geog 470 Computer Mapping or 475 Geog Info Systems or 478 Interactive Carto-graphics	3
Approved geography electives	9
AgEc 451 Land Resource Econ or Econ 430 Regional/Urban Econ or Econ 485 Environmental Economics	3
ApSt 251 Principles of Statistics	3
Bus 464 Real Estate Law	3
CE 218 Elementary Surveying	2
CS 131 Intro to Computer Programming	2
Econ 151, 152 Prin of Economics	6
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Math 140 College Algebra	3
PolSc 451 Public Admin or 452 Admin Law	3
Approved cr in bus, geol, and/or mining engr	28

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 College Algebra	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 362 U.S. & Canada or 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 Photo Techniques	3
Geog 497 Practicum	3-6
ApSt 251 Principles of Statistics	3
CE 211 Engr Measurements	4
CE ID319 Photogrammetry & Photo Interp	3
CS 131 Intro to Computer Programming	2
Engr 101 Engr Graphics	2
Eng 317 Tech & Engr Report Writing	3
For 275 Aerial Photo Interp or ID472 Remote Sensing of Environment	2-3
Math 140 College Algebra	3
Math 180 Analytic Geometry & Calculus I	4
Psych 218 Intro to Research in Behavioral Sc	4
Psych 325 Cognitive Psych or 444 Sensation & Perception	3
Approved related electives	2

Department of Geology

George A. Williams, Dept. Head (211 Mines Bldg.). Faculty: John H. Bush, Jr., William B. Hall, James H. Hardcastle, Terry R. Howard, Peter E. Isaacson, Robert W. Jones, Maynard M. Miller, Douglas J. Morell, Dale R. Ralston, Rolland 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 such as location of roads, damsites, and reservoirs. Hydrology is concerned with water: surface water, underground water, and water in the atmosphere.

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 mineral exploration or in geotechnical areas.

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 Bureau of Mines and Geology 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, petrology, 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, geomorphology, and glaciology.

The department offers Master of Science degrees in geology, geological engineering, and hydrology. 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. Geology master's candidates must fulfill, within eight credits, the undergraduate requirements as listed in the current catalog. Deficiencies for geological engineering master's candidates are determined by the major professor. The master's degree in hydrology is interdisciplinary and candidates are accepted from various fields of science and engineering; mathematics through Math 310, Ordinary Differential Equations, is required and other deficiencies will be determined by the major professor. There are no special departmental requirements as to deficiencies of candidates for the Master of Natural Science or Master of Arts in Teaching. Candidates for the Doctor of Philosophy in geology are expected to have earned a master's degree in geology; this requirement can be waived by petition to the department faculty after completion of two semesters of full-time enrollment in the geology graduate program. In all degree programs, study plans are worked out individually by the student with the student's committee.

Courses

GEOLOGICAL ENGINEERING—GeolE

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

203; 403; 503 (s) Workshop (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

301 Field Geol and Report Wrtg (6 cr). See Geol 301.

409 Ground Water (3 cr). See Geol 409.

410 Tech of Ground Water Study (3 cr). Same as Geol 410. Collection and analysis of field data for reconnaissance ground water studies.

421 Engr Geophysics (3 cr). See Min 421.

423 Exploration and Engr Geophysics (3 cr). See Min 490.

435 Intro to Geol Engr (3 cr). 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 or ES 211.

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.

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.

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.

485 Geochem Exploration (3 cr). See Geol ID485.

490 Mineral Resource Wastes and Mine Hydrology (3 cr). See Geol 490.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

500 Master's Research and Thesis (cr arr).

WS524 Geophysical Engr (4 cr). Theory and appl of exploratory geophysical procedures in engr and geol investigations; review of tech.

535 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.

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.

537 Adv Topics in Geotech Engr (3 cr). Alt/yrs. Selected topics in geotechnical engr; emphasis on recent dev. Prereq: perm.

563 Geohydrology (3 cr). See Hydro 563.

578 Theory of Mineral Exploration (2 cr). Alt/yrs 83-84. Hist and dev of thought; stat methods; appl of geol studies in search for mineral deposits.

589 Water Resources Seminar (1 cr). See Inter 589.

595 Geol-Oriented Environmental Problems (2 cr). See Geol 595.

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GEOLOGY—Geol

101 Physical Geol (3 cr). The earth, its composition, structure, and natural processes. Concurrent enrollment in 102 recommended. One 1-day field trip.

102 Physical Geol Lab (1 cr). Lab study relevant to 101. Coreq: 101.

106 Hist Geol (3 cr). 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.

107 Hist Geol Lab (1 cr). Lab study relevant to 106. Coreq: 106.

123 Geol of Idaho and the Pacific Northwest (3 cr). Geologic hist; dev of geologic structures and present-day distribution of rocks and mineral deposits; geol of area in which the course is given.

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

203; 503 (s) Workshop (cr arr). Prereq: perm.

204 (s) Special Topics (cr arr).

212 Prin of Paleontology (4 cr). Morphology, evolutionary trends, and classification of fossil groups. Three lec and one 2-hr lab a wk. Prereq: 106.

253 Minerals and Rocks I (2 cr). Elements of crystallography; properties, occurrence, 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.

257 Minerals and Rocks II (2 cr). Properties, occurrence, uses, ident, and classification of non-silicate minerals. One lec and one 2-hr lab a wk; two 1-day field trips. Recommended prep: high school chem or one sem of college chem.

286 Prin of Geochemistry (3 cr) (ID486). Chem concepts applied to geol. Prereq: 101, Chem 111.

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

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.

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.

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.

344 Structural Geol Lab (1 cr). Analysis of plan-sections and cross sections in geol. Geol majors taking this register for 3 cr in Geog 380. Six hrs a wk for five wks.

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.

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, and Chem 112 or 114.

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.

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.

410 Tech of Ground Water Study (3 cr). See GeolE 410.

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.

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.

425 Sedimentology (3 cr). Environments and processes responsible for separation of clastic and nonclastic sedimentary rock materials; roles of transportation, deposition, incl siltation and lithification. Two lec and one 2-hr lab a wk; one 2-day field trip. Prereq: 253, 257.

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 2-day field trip. Prereq: 425.

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.

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.

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.

476 Exploration Geol (3 cr). See GeolE 476.

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: Chem 112.

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.

492 Geologic Dev of North America (3 cr). Stratigraphic, paleontologic, and tectonic dev of the North American continent; examples of classic sequences from other continents. Prereq: 212; coreq: 426.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

500 Master's Research and Thesis (cr arr).

ID515 Paleoecology (3 cr). Alt/yrs 84-85. Past environments; interrelations of physical and biol factors; changes in the physical environments of the past; their influence on distribution and evolution of organisms, incl man.

ID516 Methods in Paleontology and Biostratigraphy (3 cr). Methods of collection, prep, illustration of paleontologic data; prin of systematic paleontology; stratigraphic presentation of biostratigraphic and paleontologic info. One lec and two 2-hr labs a wk; one 5-day field trip.

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.

WS520 Regional Stratigraphic Analysis (3 cr). Alt/yrs 84-85. One lec and two 3-hr labs a wk. Prereq: course in stratigraphy.

521 Mining Geophysics (3 cr). See Min 520.

522 Exploration Seismics (3 cr). Same as Min 522. Alt/yrs 83-84. Adv geophysics, fundamentals of seismic interpretation, and signal processing.

525 Stratigraphic Paleobotany (3 cr). Alt/yrs 83-84. 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.

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.

ID527 Petrology of Terrigneous Rocks (3 cr). Origin, classification, depositional environments, and diagenesis of fragmental rocks, incl low-rank metasedimentary rocks; emphasis on petrographic analysis. Two lec and one 3-hr lab a wk; one 3-day field trip.

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.

WS541 Structural Analysis (3 cr). Alt/yrs 84-85. Structural analysis of regions subjected to multiple deformation. Prereq: 345.

546 Tectonics (3 cr). Alt/yrs 84-85. Form, pattern, and evolution of large-scale units of the earth's crust.

WS548 Tectonics (3 cr). WSU 540. Alt/yrs 83-84. Nature and origin of earth's major structural features. Prereq: 345.

WS550 Adv Mineralogy (3 cr). Elements of crystal chem and crystal physics. Prereq: 101, 102, and Chem 111.

WS551 Ore Microscopy (3 cr). Alt/yrs 83-84. Ident of ore minerals using polarizing ore microscope; measurement of rotation properties; interp of ore textures; photomicrography; practical problems. Three 3-hr labs a wk. Prereq: 253, 257, GeolE 475.

WS552 X-Ray Analysis in Geol (3 cr). Internal symmetry of crystals; generation and use of x-rays in geol research; powder diffraction and X.R.F. spectrometry.

WS560 Adv Igneous Petrology (3 cr). Petrogenesis of igneous rocks. Two lec and one 3-hr lab a wk. Prereq: 465.

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.

566 Volcanic Geol (3 cr). Volcanoes, volcanic activity, petrology of volcanic rocks, and regional problems in layered volcanic rocks. Two lec and one 2-hr lab a wk; one 5-day and one 1-day field trip. Prereq: 465.

WS570 Metallic Mineral Deposits (3 cr). Modern advances in the genesis of metallic mineral deposits of magmatic, hydrothermal, sedimentary, and metamorphic origin. Prereq: GeolE 475.

WS573 Adv Topics in Econ Geol (2 cr, max arr). Alt/yrs 84-85. Field lab and library research on some problem in nonmetallic or metallic mineral deposit genesis. Prereq: GeolE 475.

ID575 Adv Mineral Deposits I (3 cr). Ore mineralogy and fabric; sulfid phase equilibria.

ID576 Adv Mineral Deposits I Lab (1 cr). Ident of ore minerals; their textures, association, and paragenesis.

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.

WS581 Mineral Equilibria (3 cr). Prin and petrologic significance of phase equilibria in mineral systems. Prereq: course in metamorphic petrology.

WS583 Intro Geochem (3 cr). Alt/yrs 83-84. WSU 480. Chem of earth materials and processes. Prereq: Chem 111.

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: ID485.

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.

589 Water Resources Seminar (1 cr). See Inter 589.

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.

WS592 Interdisciplinary Research Topics in Geol (3 cr, max 6). Adv topics across normal subject boundaries; geochem of ore deposits, tectonics and magma origin.

WS593 Adv Topics in Petrology (3 cr, max 6). Ore petrology or igneous petrology.

595 Geol-Oriented Environmental Problems (2 cr). Same as GeolE 595. Directed reading and disc of environmental problems related to natural geologic phenomena or artificial disruption of natural geologic conditions. Prereq: perm.

596 Adv Photogeol (3 cr). New research tech; use of special photographic and remote sensor imagery, such as color, infrared color, and multispectral scanner imagery, incl satellite photos. One lec and two 3-hr labs a wk. Prereq: ID590 or perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

HYDROLOGY—Hydro

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

WS510 Stratigraphic Paleontology (4 cr).

WS523 Adv Topics in Stratigraphy (2 cr).

WS524 Sedimentology (3 cr). WSU 525.

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.

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.

568 Adv Geohydrology (3 cr). Analysis of problems that have confronted the geohydrologist since the inception of quantitative methods. Prereq: 563.

569 Appl of Hydrogeol Concepts (3 cr). Appl of hydraulic and chem characteristics of well and aquifer systems to practical field problems.

572 Ground Water Mgt (3 cr). Hydrologic, economic, and legal factors controlling dev and mgt of ground water resources.

575 Design and Constr of Water Wells (3 cr). Analysis of geologic and engr factors important in design, constr, operations, and maintenance of water wells.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

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 286 Principles of Geochemistry	3
Geol 301 Field Geology & Report Writing	6
Geol 335 Geomorphology	3
Geol 344, 345 Structural Geology & Lab	4
Geol 365 Igneous & Metamorphic Rocks	3
Geol 422 Principles of General Geophysics	3
Geol 425 Sedimentology	3
Geol 426 Stratigraphy	3
Geol 465 Optical Mineralogy	3
Geol 467 Petrography	3
ApSt 251 Principles of Statistics	3
Biol 100 Man & the Environment or 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 180 Analytic Geometry & Calculus I	4
Phys 113-114-115-116 Gen Physics & Lab; or 220 Intro to Mechanics and 210-211-212-213 Engr Physics & Lab; or upper div courses in biol with perm of adviser	8-11
Humanities and social sciences electives	12

Any one course in computer programming, the equivalent of one year of college-level study of a foreign language, and approved electives to complete the total of 128 credits for the degree. Geog 380, Cartography and Graphic Communication, and Geog 404, Special Topics: Mining Law, are strongly recommended electives.

GEOLOGICAL ENGINEERING (B.S.Geol.E.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
GeolE 301 Field Geology & Report Writing	6
GeolE 423 Exploration & Engr Geophysics	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
ApSt 251 Principles of Statistics	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis or 114 General Chemistry	4-5

CE 218 Elementary Surveying 2
CE 486 Engineering Economy 3
CS 135 FORTRAN Programming for Engr 2
Econ 151 Principles of Economics 3
EE 207 Intro to Electrical Engr 3
ES 211 Intro to Mechanics 4
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
Phys 210-211-212-213 Engineering Physics & Lab 8
Humanities and social sciences electives 15

The following courses are required for those students wishing to specialize in the areas indicated:

Geotechnical Engineering

GeoIE 409 Ground Water 3
GeoIE 436 Geological Engineering Design 3
CE 460 Soil Mechanics 3
Min 103 Elements of Mining or 391 Mining Prin 3
Min 401 Rock Mechanics or AgE 351 Hydrology 2-3

Mineral Exploration

GeoIE 475 Mineral Deposits 4
GeoIE 476 Exploration Geology or 485 Geochemical Exploration 3
Geol 286 Prin of Geochemistry 3
Geol 365 Igneous & Metamorphic Rocks 3
Min 103 Elements of Mining or 391 Mining Prin 3
Min 401 Rock Mechanics 3

The minimum number of credits for the degree is 134.

Division of Health, Physical Education and Recreation

Dorothy B. Zakrajsek, Div. Director (203 Phys. Ed. Bldg.). Faculty: Edith Betts, Jess D. Caudillo, James L. DePaepe, Bonnie J. Hultstrand (Coordinator, Basic Instruction), Calvin W. Lathen (Coordinator, Recreation), Dwaine J. Marten (Coordinator, Health and Safety), Alexander W. McNeill (Coordinator, Graduate Program), Hazel C. Peterson, Frank E. Pettigrew, Sharon K. Stoll, Charles J. Thompson, Diane B. Walker (Director, Center for Dance), Robert K. Whitehead (Director, Intramurals and Campus Recreation), Dorothy B. Zakrajsek.

The Division of Health, Physical Education and Recreation is one of three divisions in the College of Education. The division offers a master's degree in physical education; baccalaureate degrees in dance, physical education, and recreation; several minors and options; basic instruction in numerous activities, and leisure activities through Intramurals and 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, 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.

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, exercise specialist, coaching, and athletic training.

A master's degree can be earned in physical education in one of four specializations: sport science, sport pedagogy, sport and recreation management, and physical education and recreation for the handicapped. The division adheres to the Graduate School's requirements for acceptance, including a 2.8 undergraduate grade point average.

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.

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.

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.

200; 400 (s) Seminar (cr arr). Prereq: perm.

203; 403 (s) Workshop (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

220 Children's Dance (2 cr). Alt/yrs 83-84. Methods and resource material for teaching rec and creative dance to elem school child and integrating dance into elem school curriculum.

299; 499 (s) Directed Study (cr arr). Prereq: perm.

320 Labanotation (2 cr). Alt/yrs 84-85. Intro to methods of notating movement; notating and reading basic elements of motif writing and labonotation.

321 Dance Pedagogy (2 cr). Methods and resource materials for teaching folk, square, social, and modern dance in secondary schools. Prereq: 112 or perm.

325 Dance Production (2 cr). Alt/yrs 84-85. Org and production of dance concerts; publicity; set design; costumes; lighting; make-up; accompaniment; house and stage mgt. One lec and two hrs of lab a wk.

383 Dance Composition (1-2 cr, max 6). Improvisation and choreography using basic compositional elements; adv exploration of choreographic procedures and performance. Prereq: Dan 105 (modern I) and perm.

420 Dance Accompaniment (3 cr). Emphasis on recorded music, percussion, and electronic accompaniments used for contemporary dance. Prereq: MusC 141, MusH 221-222.

421 Dance Hist (3 cr). Dev of theatrical, social, and ed dance from primitive to contemporary styles. Prereq: perm.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

HEALTH & SAFETY—H&S

150 Health Sciences (3 cr). Contemporary health issues; medical breakthroughs.

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

203; 403; 503 (s) Workshop (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

244 Lifesaving (1 cr). Students passing the Red Cross tests receive adv swimming and lifesaving certificates. Two hrs a wk. Prereq: interm swimming or perm.

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.

266 Aquatic Instructor's Course (2 cr). Methods. Students passing Red Cross tests will receive instructor's certificates. Three hrs a wk. Prereq: sr lifesaving and 18 yrs old.

288 First Aid (2 cr). Emergency care of injuries resulting from accidents or illness; adv Red Cross first aid card given.

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.

299; 499; 502 (s) Directed Study (cr arr). Prereq: perm.

316 School Health Services (2 cr). For elem classroom teachers.

323 Health Ed Methods (3 cr) (423). Curriculum design, organization, strategies, and resource materials for teaching health education.

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.

410 Athletic Rehabilitation and Admin (1 cr). Rehabilitation tech for reconditioning following specific injuries and surgeries; admin topics incl facilities, budgeting, and legalities.

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.

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 administrators; 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.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

592 The School Health Prog (3 cr). For teachers and administrators. Well-balanced health prog; org and admin; health services, healthful school living, and health instruction.

PHYSICAL EDUCATION—PE

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. See regulation J-3-b in part 3 for requirements in physical ed.

105 (s) **Dance** (1 cr, max arr). See Dan 105.

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.

107 (s) **Team Sports** (1 cr, max arr). Field sports, volleyball, basketball, and softball. Two hrs a wk. Graded P/F.

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

111 Fundamentals of Movement (1 cr). Concepts, prin, kinesthetic patterns, and rhythmic structure related to physical activity. Two lec-labs a wk.

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.

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.

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.

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.

116 Skills 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.

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.

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.

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.

120 Skill and Analysis: Wrestling (1 cr) (141). Skill analysis, skill dev, and teaching tech in wrestling. Two lec-labs a wk.

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.

C147 Hist of Physical Ed (2 cr). Backgrounds and dev; trends in various countries; modern trends in the U.S.

160 Foundations of Physical Ed (2 cr) (145). Aims and objectives, overview of prin, hist dev, and intro to profession and related fields.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201 Weight Training and Conditioning (1 cr) (126). Basic components of physical fitness, prin, testing, measurement, and dev. Two lec-labs a wk.

202 Skill and Analysis: Gymnastics (2 cr) (139). Skill analysis, skill dev, spotting, and teaching tech in gymnastics. Four lec-labs a wk. Prereq: 111.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

240 Elem School Physical Ed (3 cr) (252). 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.

243 Play and Game Theory (2 cr). See Rec 243.

250 Elem Physical and Health Ed (3 cr). Content, methods, and materials in elem school physical ed and health for classroom teachers.

260 Motor Learning (3 cr) (440). 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.

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.

280 Tests and Measurements (2 cr) (481). Eval and interp; use of tests and other assessment devices; appl of basic stat procedures. Three hrs of lec-lab a wk.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

300 Human Kinesiology (2 cr) (419). Body movement; anatomical and mech analysis. Three hrs of lec-lab a wk. Prereq: Zool 119.

310 Cultural and Psych Aspects of Sport (2 cr) (425). Analysis of sport as a social phenomenon; psych aspects of human play and competition; cultural influences on sport.

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.

320 Methods and Materials in Physical Ed (3 cr) (427). Study and appl of teaching methods and teaching behavior; structuring learning outcomes through performance objectives; lesson and unit planning. Prereq: 240, 260; coreq: 321.

321 Physical Ed Teaching Lab (1 cr). Appl of teaching styles and analysis of teaching behavior. Graded P/F.

322 Teaching Indiv Sports (2 cr). Methods for majors and minors.

323 Teaching Team Sports (2 cr). Methods for majors and minors. Prereq: 322.

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.

424 Adapted Physical Ed (2 cr). Adapting physical ed progs to meet indiv needs.

440 Prog Planning and Mgt (3 cr) (496). Curriculum, programming, org, and admin of school physical ed and intramurals; field experience.

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.

J467/J567 Physical Ed and Rec for the Severely Handicapped (3 cr). See Rec 467.

497 Sports and Athletic Problems (3 cr). Scheduling, facilities, equipment, maintenance, budgeting, and public relations in the school. Section A: men; section B: women.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

506 Foundations of Motor Skills (3 cr). Appl of psych, kinesiological, and mech prin for an understanding of motor activity.

518 Adv Prin in Physiological Assessments of Human Performance (3 cr). Prin and methods essential to the experimental approach to physiological performance problems. Two lec and one lab a wk.

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.

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.

522 Pedagogy Applied to Physical Ed (3 cr). Study and analysis of teaching strategies and behaviors as they affect teaching and learning in physical ed.

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.

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 sport as they apply in American society.

560 Sport Psych (3 cr). Indiv differences as they apply to sport performance; emphasis on aggression, affiliation, motivation, and personality traits of sport participant.

570 Ethics in Physical Ed and Sport (3 cr). Problem-oriented case study approach to ethical reasoning based on review of contemporary moral issues in physical ed and sport, review of moral thought throughout hist of phil, and interrelationships between them.

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.

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.

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.

591 Cultural and Phil Influences (3 cr). Democratic phil for physical ed, health ed, and rec; prin and objectives as related to the dev of the indiv and man's cultural heritage.

596 Supervision and Admin of Health, Physical Ed, and Rec (3 cr). Policies and problems; classification of children, time schedule, teaching staff, training, load, office org and admin, state laws, and finances.

597 (s) **Practicum** (cr arr). Appl of theories and tech. Graded P/F. Prereq: perm.

598 (s) **Internship** (cr arr). Supervised field experience in an appropriate public or private agency. Graded P/F. Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

RECREATION—Rec

102 Intro to Rec Professions (1 cr). Same as FWR 102. Intro to rec and its related mgt problems, resources, and professional opportunities. Graded P/F.

110 Intro to Therapeutic Rec (3 cr). Overview of rec for the handicapped incl services, resources, professional competencies, and rec program. Two 1-day field trips may be reqd.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

230 Therapeutic Rec (3 cr). Design and dev of integrated rec programs for the handicapped; clinical and field exper reqd. Prereq: 110.

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.

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.

255 Backpacking and Camping Skills (2 cr). Lec, disc, dem, and practical appl in backpacking and camping skills. Field trips required. Prereq: perm.

256 Camp Counseling Practicum (2-3 cr, max 3). For camp counselors who are employed by or assigned to approved camps. Or granted on the basis of one cr for each two wks of camping. Student contracts with instructor for written work. Prereq: perm.

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.

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.

261 Rec Arts and Crafts (2 cr). Handicrafts suitable for playground. Prereq: perm.

264 Rec Music (1 cr). Musical program in rec and community centers.

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.

299; 499 (s) Directed Study (cr arr). Prereq: perm.

329 Leadership in Rec (2 cr). Alt/yrs. Org, planning, and conduct of school and community, social, rec, and extracurricular events.

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.

360 Youth Serving Agencies (2 cr). Services, background, org, and admin structure. Three days of field trips may be required.

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.

381 Leisure Guidance for the Handicapped (3 cr). Knowledge and skills necessary to provide leisure guidance services for handicapped; clinical exper reqd. Prereq: 230 or perm.

422 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.

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.

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.

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.

486 Rec Program Planning (3 cr). Alt/yrs. Planning and dev of rec programs for rec agencies.

494 Rec Admin (3 cr). Alt/yrs. Planning and dev; leadership, facilities, finances, services, and public relations.

495 Internship in Rec (cr arr). Supervised field work in professional rec. Graded P/F. Prereq: 280, 445.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

Curricular Requirements

DANCE (B.Dan.)

The curriculum leading to the degree of Bachelor of Dance is designed to prepare students to be teachers of dance, as well as to perform and choreograph. Emphasis is on modern dance.

Required course work includes the university requirements (see regulation J-3), college requirements, 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	2
Dan 321 Dance Pedagogy	2
Dan 325 Dance Production	2
Dan 383 Dance Composition	4
Dan 420 Dance Accompaniment	3
Dan 421 Dance History	3
Art 101 or 102 Survey of Art	2
Comm 131 Fundamentals of Speech or 132 Oral Interp	2
Eng 111-112 Lit of Western Civilization	6
MusA 100 or 147 and 148 Piano and/or Voice	2
MusC 120 Fundamentals of Music (or two sem piano class)	2
MusH 221-222 Music in Western Civilization	6
PE 111 Fundamentals of Movement	1
PE 300 Human Kinesiology	2
PE 418 Physiology of Exercise	3
Psych 100 Intro to Psychology	3
Psych 205 or Ed 415 Developmental or Ed Psych	3
ThA 103 Intro to Stage Crafts	3
ThA 105-106 Basics of Performance	4
ThA 273 Stage Lighting	3
Social sc electives—incl at least one course in American hist or govt	9
Sc and/or math electives—incl biol, earth, or physical sc courses requiring lab work	12
Electives to complete 128 cr for the degree, incl additional courses numbered 300 or above to complete the requirement for 36 cr at the upper-division level	--

Recommended electives:

Dance majors planning to qualify for the Standard Secondary-School Teaching Certificate should include the following courses among the electives to complete the 128 credits for the degree:

Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2-3
Ed 431 Practicum (3 cr in Ed 435 may be substituted for 3 of the 9 cr in Ed 431)	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. 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 303.

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 & Psych 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 and Recreation.

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, exercise specialist, health education, or health and driver education. 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 in recreation agencies. Required course work includes either a 20-credit recreation option or a 20-credit approved minor or 20 credits in an approved cognate area of study, in addition to the university requirements (see regulation J-3), college and division requirements, and recreation core:

Course	Credits
Acctg 201 Prin of Acctg or 395 Fundamentals of Acctg	3-4
*Biol 100 Man & the Environment	4
Bus 265 Legal Environment of Bus or 311 Intro to Management Theory	3
Comm 131 Fundamentals of Speech or 132 Oral Interp	2
Comm 356 Public Information Methods	3
Dan 105 Dance	1
Eng 313 Business Writing	3
*Geog 100, 101 Man's Physical Environment & Lab	4
*Geol 101, 102 Physical Geology & Lab	4
PE 108 Swimming (or acceptable substitute)	1
PE 112, 113, 114, 115, 116, 117, 118, 119, or 202 Skill & Analysis	4
PolSc 101 U.S. Govt: Structures & Functions	3
Psych 100 Intro to Psychology	3

Psych 205 Developmental Psychology 3
Soc 110 Intro to Sociology 3
Soc 322 Racial & Ethnic Relations or 330 Juvenile Delinquency or 341 Practicum in Aging 3
English or American literature electives 3
Current certification in adv first aid and emergency care
Electives to complete 128 cr for the degree ..... --

*Therapeutic recreation students should contact adviser for alternate requirements.

Recreation Core:

Rec 102 Intro to Recreation Professions 1
Rec 110 Intro to Therapeutic Recreation 3
Rec 243 Play & Game Theory 2
Rec 254 Camp Leadership 3
Rec 261 Recreational Arts & Crafts 2
Rec 264 Recreational Music 1
Rec 329 Leadership in Recreation 2
Rec 349 Municipal Park Admin & Maintenance 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 Recreation, Leisure, & Play 3
Rec 486 Recreation Program Planning 3
Rec 494 Recreation Administration 3
Rec 495 Internship in Recreation 9

Recreation options are available in the following areas: youth agencies, therapeutic recreation, and commercial recreation. Consult the director of the Division of Health, Physical Education and Recreation for specific course requirements.

MINOR IN RECREATION

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 494 Recreation Administration	3

History—Hist

Siegfried B. Rolland, Dept. Chairman (315 Admin. Bldg.). Faculty: Donald C. Baldridge, Willard Barnes, Robert W. Coonrod, W. Kent Hackmann, Robert D. Harris, Raymond L. Proctor, Siegfried B. Rolland, William R. Swagerty, Fred H. Winkler.

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, American diplomatic history, and Europe since 1760. Undergraduates considering graduate study should master at least one modern foreign language through the intermediate level.

History Courses—Hist

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.

101-102 Hist of Civ (3 cr) (C). Contributions to the modern world. Hist 101: to 1650. Hist 102: 1650 to present.

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.

180 Intro to East Asian Hist (3 cr). Survey of traditional and modern Chinese and Japanese hist.

271-272 Hist of England (3 cr) (C). Political, social, econ, and religious dev of the British Isles. Hist 271: to 1714. Hist 272: 1714 to present.

J401/J501 Seminar (cr arr). Research papers in U.S., Latin America, ancient, English, or European hist. Prereq: perm of dept.

404; 504 (s) Special Topics (cr arr).

J411/J511 American Colonial Hist to 1763 (3 cr). International rivalries; British colonial foundations. Prereq for 511: perm of dept.

J412/J512 The American Revolution, 1763-1789 (3 cr). U.S. independence through the adoption of the Constitution. Prereq for 512: perm of dept.

J413/J513 U.S.: Early National Period (3 cr). Econ, political, constitutional, and social problems; 1789 to 1828. Prereq for 513: perm of dept.

J414/J514 Jacksonian America (3 cr). The Jackson era, sectionalism, westward expansion, slavery, and the coming of the Civil War. Prereq for 514: perm of dept.

J415/J515 Civil War and Reconstruction, 1865-1896 (3 cr). War, industrial and econ dev, and political reform. Prereq for 515: perm of dept.

J417-J418/J517-J518 Twentieth-Century America (3 cr). Hist J417/J517: 1896 to 1929. Hist J418/J518: 1929 to present. Prereq for 517-518: perm of dept.

J423/J523 Idaho and the Pacific Northwest (3 cr) (C, J423 only). Political, econ, social dev; earliest times to the present. Prereq for 523: perm of dept.

J428/J528 Hist of the the American West (3 cr). Spanish beginnings, Anglo-French expansion, the American occupancy, 1540 to present. Prereq for 528: perm of dept.

J430/J530 Hist of American Diplomacy, 1920-present (3 cr). Diplomacy between the two wars; World War II and the quest for peace since then. Prereq for 530: perm of dept.

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. Prereq for J531: perm of dept.

J432/J532 Afro-American Hist (3 cr). J432 same as AfrAm 432. Slavery, abolition movement, emergence of the Negro as a significant element in U.S. life. Prereq for 532: perm of dept.

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. Prereq for 533-534: perm of dept.

J435/J535 Colonial Latin America (3 cr). Indian civ, European colonization, Spanish Imperial System, wars of independence. Prereq for 535: perm of dept.

J438/J538 Mexico Since Independence, Central America, and the Caribbean (3 cr). Political, econ, social, and cultural dev; search for stability; growth of nationalism. Prereq for 538: perm of dept.

J439/J539 National Latin America: The South American Republics (3 cr). Political, econ, social, and cultural dev; search for stability; growth of nationalism. Prereq for 539: perm of dept.

J440/J540 Inter-American Relations (3 cr). Diplomatic relations between American republics. Prereq for 540: perm of dept.

J441/J541 Greek Hist (3 cr). Origins to Roman conquest. Prerq for 541: perm of dept.

J442/J542 Roman Hist (3 cr). Origins to the end of the Western Empire. Prereq for 542: perm of dept.

J446/J546 Medieval Europe (3 cr). Transition from classical Mediterranean civ to medieval civ, 400 to 1350 A.D. Prereq for 546: perm of dept.

J447/J547 Renaissance Europe (3 cr). Europe in the later middle ages and Renaissance, 1350 to 1520 A.D. Prereq for 547: perm of dept.

J449/J549 Early Modern Europe (3 cr). Europe, 1520-1763: Reformation, Wars of Religion, 17th century crisis, competition for empire. Prereq for 549: perm of dept.

J451/J551 The French Revolution (3 cr). Europe, 1763-1815: The Old Regime, French Revolution, and Napoleonic era. Prereq for 551: perm of dept.

J452/J552 19th Century Europe (3 cr). Revolution and reform of the 19th century; international frictions culminating in irredentist and imperialist rivalries of WWI. Prereq for J552: perm of dept.

J455-J456/J555-J556 20th Century Europe (3 cr). Europe and its impact on worldwide events. Hist J455/J555: 1914 to 1939. Hist J456/J556: since 1939. Prereq for 555-556: perm of dept.

J457/J557 Hist of the Middle East (3 cr). Survey of the Middle East from the beginning of the Islamic period to the present. Prereq for 557: perm of dept.

J458/J558 Military Hist (3 cr). Western military heritage, 19th and 20th century collective security, and the military in a democratic society. Prereq for 558: perm of dept.

J467-J468/J567-J568 Hist of Russia (3 cr). Hist J467/J567: Russian Empire to 1894. Hist J468/J568: 1894 to present. Prereq for 567-568: perm of dept.

J469/J569 Modern France (3 cr). French nation from 1815 through the De Gaulle era. Prereq for 569: perm of dept.

J470/J570 Modern Germany, 1789-1914 (3 cr). Unification of Germany and Hapsburg monarchy in 19th century. Prereq for 570: perm of dept.

J471/J571 Modern Spain (3 cr). 14th century to present. Prereq for 571: perm of dept.

J473/J573 Tudor England (3 cr). Royal prerogative; rise of middle class; exploration and colonization; culture. Prereq for 573: perm of dept.

J474/J574 Stuart England (3 cr). Royal prerogative; rise of middle class; exploration and colonization; culture. Prereq for 574: perm of dept.

J477/J577 Georgian Britain, 1714-1830 (3 cr). Rule of the oligarchy; the Empire wars; industrialization; parliamentary reform. Prereq for 577: perm of dept.

J490/J590 Intro to Hist Research (2 cr). Tech in compiling a bibliography, assembling material, composition, interp, and hist criticism.

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. Prereq for 596: perm of dept.

499 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

502 (s) **Directed Study** (cr arr). Prereq: perm of dept.

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.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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	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	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 393-394 Spanish Lit in Translation	
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 Amer & Carib 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 396 Survey of Spanish Literature	3
Hist 440 Inter-American Relations	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.

School of Home Economics

Elizabeth M. Kessel, Acting Director, School of Home Economics (108 Mary Hall Niccolls Home Ec. Bldg.). Faculty: Charles H. Ainsworth, Rose L. Forbes, Claudia M. Hamilton, Arlene T. Jonas, Joann C. Jones, Kathleen Kearney, Elizabeth M. Kessel, Shirley O. Kiehn, Shirley R. Medsker, Laura J. Miller, Shirley A. Newcomb, Nancy J. Wanamaker.

Home economics is the field of knowledge and service primarily concerned with strengthening family life. The School of Home Economics, through teaching, research, extension, and public service, combines the scientific and human approaches to helping individuals and families enrich their lives and cope with changes.

The School of Home Economics functions as an administrative unit within the College of Agriculture. Its objectives are to provide: (1) professional preparation for a career in home economics; (2) development of responsible leadership and effective participation in family and community life; (3) courses and seminars to update and upgrade home economists; (4) courses to enrich the professional preparation of all students, regardless of major; and (5) graduate home economics study at the master's degree level.

Five majors are available at the undergraduate level each with various options. The majors leading to the degree of Bachelor of Science in Home Economics include: general home economics; home economics education and extension; food and nutrition; clothing, textiles, and home design; and child development and family relations. Students may prepare themselves for careers in home economics communication or home economics business through options in the general home economics major. The food and nutrition major includes a food and nutrition research option and the Consortium Coordinated Undergraduate Program in Dietetics with Eastern Washington University (Cheney) and the Spokane clinical facilities. In addition, a Bachelor of Arts degree is available through the College of Letters and Science with a child development and family relations major.

With careful planning, double options in several majors may be achieved such as clothing, textiles, and home design with education and/or business. The child development and family relations option is frequently combined with education, thus enhancing opportunities for employment as well as giving flexibility in following one's special interests.

The School of Home Economics has an outstanding scholarship program for entering freshmen, continuing undergraduate majors, and graduate students. Most home economics scholarships are awarded on the basis of academic excellence regardless of financial need.

Home economics education majors are eligible for vocational endorsement upon completion of degree requirements. Similarly, the students who complete the Consortium Coordinated Undergraduate Program in Dietetics are eligible to take the examination required by the American Dietetic Association for certification as a registered dietician.

Upon completion of required course work, a Master of Science degree in home economics is available with either a thesis or a nonthesis option. A Master of Arts in Teaching is another option for home economics graduate students.

Home Economics Courses—HEc

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.

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.

123 Textiles (3 cr). Properties of fibers, yarns, and fabric structure, dyes and finishes, labeling, and legislation affecting the consumer.

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.

170 Meal Mgt (3 cr). Food consumerism, meal planning, preparation tech. Two lec and one 2-hr lab a wk.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

205 Concepts in Human Nutrition (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.

206 Aesthetics in the Near Environment (3 cr). Awareness of, appreciation of, and insight into the concept of beauty in our personal and near environment.

208 Decision Making for Consumers (3 cr) (106). Decision-making process as it influences effective consumer practices in food, clothing, shelter, and personal finance.

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.

235 Preschool Observation (1 cr). Dev of skills necessary to observe and record child behavior; observations to be arranged. Prereq or coreq: 234.

240 Interpersonal Relationships Before Marriage (3 cr). Intro to relationships involved in getting together, going together, and achieving commitment in premarital relations 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.

242 Household Equipment (3 cr). Selection, use, care, and prin of operation of household appliances.

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.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

314 Weaving (3 cr). Prin, tech, and aesthetics of handweaving. One lec and six hrs of lab a wk.

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.

326 Housing and Home Furnishings (3-4 cr). Org of space to fit contemporary indiv and family lifestyles; interior materials and furnishings from sources through utilization and effects; intelligent uses of energy in the design of the home. Registration for 4 cr incl 2 hrs a wk of lab problems.

327 Tailoring (3 cr). Textile selection, tailoring tech. One lec and six hrs of lab a wk. Prereq: 124 or perm.

329 Historic Costume and Textile Conservation (1-4 cr, max 4). Costume as an expression of the times; conservation of clothing from the past. Three lec and 1 hr lab a wk (lab may be taken concurrently or separately for 1 cr).

333 Preschool Curriculum (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.

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.

340 Marriage in a Changing World (3 cr). Dynamics of major types of marital relationships based on changing values, attitudes, and roles in marriage with emphasis on the processes of adjustment; prin of negotiation and methods of comm for resolving conflicts, facilitating decision-making skills, and enhancing mutual growth throughout the life cycle.

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.

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.

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.

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.

372 Clinical Dietetics I (4.6 cr; see headnote). Clinical experience in Spokane hospitals. Prereq: jr standing in CCUPD.

375 Intro to Clinical Dietetics (3 cr). Dietetics, role of the dietitian; dietary depts in health care facilities. Two lec and three hrs of clinical experience a wk; one field trip to Spokane. Prereq: jr standing in CCUPD.

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.

384 Food Admin I (6 cr). Quantity food production, buying, and equipment; intro to admin. Lab in UI food service. Three lec and nine hrs of lab a wk. Prereq: jr standing in CCUPD.

385 Food Admin II (5.3 cr; see headnote). EWU 386. Continuation of 384. Lab in Spokane hospitals and EWU food service. Prereq: 384.

413 Applied Textile Design (2 cr). Study of composition in applied textile designs; resist-dyeing processes incl tie-dye and batik; stitching and applique. Prereq: 206 or perm.

414 Off-Loom Weaving (3 cr). Constr of weaving frames; spinning and dyeing of fibers; weaving not requiring a harness loom such as card weaving, tapestry, and plaiting. Prereq: 314 or perm.

415 Textile Printing Processes (2 cr). Study of dev of pattern through various printing processes incl linoleum block and silk screen. Prereq: 206 or perm.

423 Adv Textiles (3 cr). Textile performance and problems involving recent dev in textile products. Two lec and one 3-hr lab a wk; one field trip. Prereq: 123.

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.

426 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.

428 Family Housing (2 cr). Housing as it affects today's consumer; needs, processes, and issues; socio-econ aspects; energy and environment.

429 Theories of Clothing and Fashion (3 cr). Exploration of human interest in clothing and fashion; how clothing affects behavior and how and why research is used as a tool in understanding attitudes toward clothing.

436 Theories of Child Dev (3 cr). Ident, interp, and eval of psychoanalytic, behavioristic, cognitive, and humanistic theories of dev.

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.

442 Current Dev in Household Equipment (2 cr). Available space and selection of functional equipment; materials, constr, operation, care, and relative cost. Prereq: 242.

448 Consumer Ed (3 cr). Consumer motivation, decision making, and behavior; protection, org, use of credit.

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.

451 Profession of Voc Home Ec Ed (1 cr). Orientation to student teaching to incl: profession of home ec educator, certification/endorsement standards and univ services. One 1-day field trip.

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.

456 Curriculum in H.E.R.O. (3 cr). Curriculum for teaching occupational home ec to incl working with advisory committees, delineating job responsibilities, identifying community employment resources. One 1-day field trip.

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 351; cum GPA of 2.25; HEc GPA of 2.50; acceptance into teacher ed prog; sr standing.

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.

470 Problems in Nutrition (3 cr) (C). Recent advances; infant, child, and adult nutrition. Prereq: 205, Zool 119, sr or grad standing.

472 Clinical Dietetics II (5.3 cr; see headnote). Continuation of 372. Practical experience in Spokane hospitals. Prereq: 372, sr standing in CCUPD.

473 Community Nutrition (3.3 cr; see headnote). EWU 469. Nutrition prog; nutrition problems of special groups. Clinical experience in Spokane school lunch prog, public health, etc. Prereq: sr standing in CCUPD.

474 Investigation of Foods (3 cr). Adv problems in foods. Two lec and 3 hrs of lab a wk. Prereq: 271 or perm.

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.

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.

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.

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.

488 Food Systems Mgt II (4 cr; see headnote): EWU 486. Continuation of 484. Lab in EWU food service and Spokane hospitals. Prereq: 484.

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.

498 Home Ec Internship (6-9 cr). Supervised internship in ed institutions, govt/social agencies, hospitals, business, or industry; geared to the professional goals of students. Prereq: perm.

500 Master's Research and Thesis (cr arr).

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.

546 Problems in Home Mgt (2 cr). Selected topics. Prereq: 346 or equiv.

551 Tech of Supervision (2 cr).

553 Home Ec Ed (1-4 cr, max 4).

554 Curriculum in Home Ec (2 cr). Problems and planning in secondary-school homemaking ed.

570 Current Concepts in Nutrition (2 cr). Innovative concepts and tech in nutrition research; scientific investigations; nutrition problems. Prereq: 470, Zool 119, or equiv.

583 Recent Trends in Institutional Mgt (2 cr). Mgt prin applied to food service institutions.

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.

597 (s) **Practicum** (cr arr). Prereq: perm.

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.

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 105 Individual & Family Development	3
HEc 205 Concepts in Human Nutrition	3
HEc 206 Aesthetics in the Near Environment	3
HEc 208 Decision Making for Consumers or 346 Family Resource Mgt or 448 Consumer Ed	3

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 Preschool Observation	1
HEc 333 Preschool Curriculum	3
HEc 334 Middle Childhood-Adolescence	3
HEc 436 Theories of Child Development	3
HEc 440 Contemporary Family Relationships	3
HEc 497 Home Economics Practicum	6-9
Comm 131 Fundamentals of Speech or 132 Oral Interp	2
Ed 201 Intro to Teaching	2
Home economics electives	6

And one or more of the following options:
- Additional major in College of Education
- Approved courses in behavioral sciences and/or home ec
- Approved internship on or off campus (HEc 498 or equiv)

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	3
HEc 124 Clothing Construction Principles	3
HEc 314 Weaving	3
HEc 326 Housing & Home Furnishings	3
HEc 329 Historic Costume & Textiles Conservation	3
HEc 413 Applied Textile Design or 415 Textile Printing Processes	2
HEc 423 Advanced Textiles	3
HEc 426 Hist of Interiors & Furnishings	2
Art 101-102 Survey of Art	4
Chem 100 and 103 Chem Fundamentals and Intro to Chem or Chem 111 Prin of Chem or Phys 101 Fundamentals of Physical Sc	4-5
CS 100 Intro to Computers & Programming	3
Hist 101-102 History of Civilization or Eng 111-112 Lit of Western Civilization	6
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Anthropology electives	3
Art electives	7
Business electives	6
Home ec electives (clothing, textiles & design)	9
Home ec electives (non-major areas)	6
Science electives	8
Electives	27

FOOD AND NUTRITION (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the home economics core, and:

Course	Credits
HEc 170 Meal Management	3
HEc 271 Food Preparation Principles	3
HEc 470 Problems in Nutrition	3
HEc 474 Investigation of Foods	3
Bact 250 General Microbiology	4
Math 140 College Algebra	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Zool 119 Human Anatomy & Physiology	5

And one of the following options:

A. CONSORTIUM COORDINATED UNDERGRADUATE PROGRAM

Course	Credits
HEc 371 Diet Therapy	4
HEc 372 Clinical Dietetics I	4.6
HEc 375 Intro to Clinical Dietetics	3
HEc 376 Advanced Nutrition	3.3
HEc 384 Food Administration I	6
HEc 385 Food Administration II	5.3
HEc 472 Clinical Dietetics II	5.3
HEc 473 Community Nutrition	3.3
HEc 484 Food Systems Management I	4
HEc 486 Nutrition in the Life Cycle	2.6
HEc 488 Food Systems Management II	4
Anthr 100 Intro to Anthropology	3
ApSt 251 Principles of Statistics	3
Biochem 380, 382 Introductory Biochemistry & Lab	4
Bus 413 Human Relations in Business	3
Chem 100 Chemical Fundamentals	1
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
Chem 278 Organic Chemistry I: Lab	1
CS 131 Intro to Computer Programming	2
Econ 151 Principles of Economics	3
Ed 415 Educational Psychology	3.3
Eng 317 Tech & Engr Report Writing	2

B. FOOD AND NUTRITION RESEARCH

Course	Credits
AnSc 305 Animal Nutrition	3
Bact 402 Food & Applied Microbiology	4
Chem 100 Chemical Fundamentals	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	4
Chem 372, 376 Organic Chem II & Lab	5
Math 180 Analytic Geom & Calculus I	4
Social science electives	6
Electives	22

And at least 15 cr selected from the following:
- HEc 478 Recent Advances in Food
- ApSt 251 Principles of Statistics
- Biochem 380 Introductory Biochemistry
- Biol 201 Intro to Life Sciences
- Chem 302 Principles of Physical Chemistry
- Chem 481-482, 483-484 Biochem & Lab
- Eng 317 Technical & Engr Report Writing
- Math 190, 200 Analytic Geom & Calculus II, III
- Zool 417 or AnSc 451 Endocrine Physiology
- Proficiency in one foreign language equiv to completion of FL/FR 201-202, Interm French, or FL/GN 221-222, Interm German

GENERAL HOME ECONOMICS (B.S.H.Ec.)

Required course work includes the university requirements (see regulation J-3), the general L & S requirements for the B.S. degree, including one course in mathematics, the home economics core, and:

Course	Credits
HEc 309 Trends & Perspectives in Home Ec	1
HEc 350 Communicating Home Ec Concepts	3
Econ 151, 152 Principles of Economics or 272 Foundations of Economic Analysis	4-6
Psych 100 Intro to Psych	3
Home economics courses to incl at least one course in each area of home ec	25
Sociology electives	3
Statistics or computer course	2-3

And one of the following options:

A. GENERAL OPTION

At least one additional course in each area of home economics and 12 additional upper-division home economics credits.

B. BUSINESS OPTION

An approved minor or second degree in business.

C. COMMUNICATIONS OPTION

An approved minor or second degree in communications.

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	3
HEc 124 Clothing Construction Principles	3
HEc 170 Meal Management	3
HEc 234 Infancy & Early Childhood	3
HEc 235 Preschool Observation	1
HEc 242 Household Equipment	3
HEc 271 Food Preparation Principles	3
HEc 309 Trends & Perspectives in Home Ec	1
HEc 326 Housing & Home Furnishings	4
HEc 346 Family Resource Management	4
HEc 350 Communicating Home Ec Concepts	3
HEc 440 Contemporary Family Relationships	3
HEc 448 Consumer Education	3
HEc 450 Methods & Curriculum in Home Ec Ed	4
HEc 451 Profession of Voc Home Ec Ed	1
HEc 452 Classroom & Lab Management	3
HEc 456 Curriculum in HERO	3
HEc 470 Problems in Nutrition	3
Comm 131 Fundamentals of Speech	2
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Science electives incl at least one physical, one biological, one bacteriological (at least one of which is a lab course)	12
Social science electives (incl econ)	13
Humanities electives	3

And one of the following options:

A. CLASSROOM TEACHING

Course	Credits
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 of Vocational Ed	2
VocEd 473 Intro to Adult Education	1
Vocational education elective	3
Electives	9

B. COOPERATIVE EXTENSION

Course	Credits
HEc 457 Student Teaching in Home Ec Classes or 497 Home Economics Practicum	6-9
AgEd 248 Dev & Org of Extension Ed	2
Electives	24

Program in Interdisciplinary Studies

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

Interdisciplinary Studies Courses—Inter

200; 300; 400; 501 (s) **Seminar** (cr arr). Each seminar under these numbers is offered jointly by two or more depts and has been approved by the University Curriculum Committee. Prereq: perm.

203 Environmental Pollution (3 cr). See Ag 203.

204; 404; 504 (s) **Special Topics** (cr arr).

299; 399; 499; ID502 (s) **Independent Study** (cr arr). Projects that have been approved by two or more depts and by the University Curriculum Committee. Prereq: perm.

WS302 Environmental Field Trip I (0-3 cr). WSU Env S 302. One-wk field trip during spring vacation to study environmental problems and mgt practices from perspective of govt and industry. Prereq: perm.

ID394 Technology and Societal Decisions (3 cr). See Engr 394.

ID438 Mgt of Pesticides in the Environment (3 cr). See Ent 438.

WS474 Human Ecology (3 cr). WSU Bio S 474. Biol basis of interdisciplinary human ecology; applicability of ecological prin to Homo sapiens; emergence of man as ecological dominant. Prereq: intro biol.

ID490 Technology and Human Values (2-3 cr). Same as RelSt 490. Ideological and value implications of technology for the future of man and his environment.

493-494 Seminar in Urban Studies (2 cr). Same as Econ or PolSc 493-494. Interdisciplinary inquiry into problems of communities, physical factors, transportation, comm, housing, planning bus and industrial districts, zoning, aesthestics, 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.

500 Master's Research and Thesis (cr arr).

503 (s) **Workshop** (cr arr). Prereq: perm.

WS505 (s) **Special Topics** (cr arr). WSU Env S 520. May be repeated; cumulative max 6 cr.

WS520 The Ecosystem (2-3 cr). WSU Env S 504. Analysis and simulation of ecosystem processes; dual emphasis on ecological prin and dev of models to evaluate policies for mgt.

WS544 Environmental Impact Statement Assessment (3 cr). WSU Env S 544. Familiarization with environmental review procedure reqd by NEPA and some 23 separate state statutes; dev of systematic eval tech.

580 Seminar in Admin and Contemporary Issues (3 cr). Same as Ed 580. Interdisciplinary approach to complex problems confronting administrators in ed. Prereq: perm.

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.

WS593 Grad IRM Seminar (1 cr). WSU Env S 593.

WS595 Grad IRM Internship (1-6 cr, max 12). WSU Env S 595. By interview only. Practical work exper in appropriate agencies; for grad career students.

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 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 chairman 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.

Department of Landscape Architecture

William H. Snyder, Dept. Chairman (206 Art and Arch. North). Faculty: James J. Kuska, Daniel G. Morabito, William H. Snyder.

Landscape architecture is one of several environmental design and planning professions. 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, hydrology, 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 devel-

oping an appropriate 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 fo the landscape architecture faculty.

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 Architecture, the national organization whose mission is dedicated to maintaining high academic and professional standards. The department does not offer a graduate degree. Graduates from the department are encouraged to pursue their master's degrees at other institutions so as to gain different insights and direction from other localities and faculties.

Landscape Architecture Courses—LArch

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 furnish the student photographs (prints or slides) of the work it choses to retain.

200; 400 (s) Seminar (cr arr). Prereq: perm.

203; 403 (s) Workshop (cr arr). Prereq: perm.

204; 404 (s) Special Topics (cr arr).

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. Selected field trips. Prereq: LArch major or perm.

259 Landscape Arch I (3-6 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: Arch 155-156, Art 121-122.

260 Landscape Arch I (3-6 cr). Integration and appl of prin acquired in plant materials, grading, and drainage, and in LArch 259 to small scale planning and design projects. Selected field trips. Prereq: 259.

270 Landscape Constr I (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.

288 Plant Materials (3 cr). Plant ident and selection; use of plant materials in relation to soils, topography, climate, and design. Selected field trips.

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.

299; 499 (s) Directed Study (cr arr). Prereq: perm.

358 Professional Office Practice in Landscape Arch (2 cr). Office org, fees, contracts, bonding, bidding specs, insurance, and relationships with subcontractors.

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; joint UI and WSU project. Selected field trips. Prereq: 260.

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. Selected field trips. Prereq: 359.

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.

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.

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.

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.

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.

490 Regional Landscape Planning (3 cr). Land use, analysis, and planning use in relation to regional scale; problems in special area studies.

Curricular Requirements

LANDSCAPE ARCHITECTURE (B.L.Arch.)

Landscape architecture, one of several planning and designing professions, is the art and science of integrating man's activities (development) with the natural and urban environment to satisfy physical and psychological needs through creative design. Landscape architects, as part of a planning team, become involved in 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.

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 259-260 Landscape Architecture I	11
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 Architecture II	12
LArch 388 Plant Materials	4
LArch 459-460 Landscape Architecture III	12
Arch 155-156 Design & Creative Process	4
Arch 384 Environmental Analysis	2
Arch 483 Intro to City Planning	3
Art 111-112 Drawing I	4
Art 121-122 Creative Process & Design	4
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
CE 218 Elementary Surveying	2
Geog 100, 101 Man's Physical Environment & Lab	4
Geol 101, 102 Physical Geology & Lab	4
Geol 335 Geomorphology	3
Math 140 College Algebra	3
Soils 205 General Soils	3
Soils 354 Soil Resources & Land Use Planning	2
Electives to total 136 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	--

College of Law

Cliff F. Thompson, Dean (101 Law Bldg.); Arthur D. Smith, Jr., Acting Associate Dean. Faculty: Mark D. Anderson, Dennis C. Colson, W. Lee Eckhardt, Neil E. Franklin, Dale D. Goble, Douglas L. Grant, Joann P. Henderson, D. Craig Lewis, James S. Macdonald, Walter H. McLeod, Albert R. Menard, Jr., Philip E. Peterson, Arthur D. Smith, Jr., Cliff F. Thompson, Sheldon A. Vincenti.

The law—combined program, under which students enrolled in the College of Letters and Science for their first three years and in the College of Law for the final three years, has been discontinued. Pre-law students may consult the dean of the College of Law for advice as to an appropriate L & S major preparatory to entering the College of Law.

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 nonlaw students in any course offered by the College of Law requires permission in advance by the associate dean and the instructor of the course.

511 Legal Process (2 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.

805-806 Procedure I-II (3 cr).

807-808 Property I-II (3 cr).

809-810 Torts I-II (3 cr; 2 cr).
811 Fundamentals of Public Law (2 cr).
812 Criminal Law and Procedure (3 cr).
813-814 Contracts I-II (3 cr).
815-816 Legal Research and Wrtg I-II (1 cr).
901 (s) Seminar (cr arr).
905 Constitutional Law and the Federal System I (4 cr).
906 Constitutional Law and the Federal System II (3 cr).
907 Admin Law (3 cr).
908 Labor Law (2 cr).
910 Antitrust and Trade Regulation (3 cr).
912 Legislation (3 cr).
913 Equal Opportunity Law (3 cr).
919 Bus Associations I (3 cr).
920 Bus Associations II (3 cr).
921 Basic Legal Acctg (1 cr).
922 Corporate Securities (3 cr).
923 Commercial Paper (2 cr).
924 Sales (2 cr).
925 Commercial Law and Creditors Rights I (2 cr).
926 Commercial Law and Creditors Rights II (3 cr).
927 Seminar, Bus Planning (3 cr).
929 Consumer's Rights (3 cr).
930-931 Taxation I-II (3 cr).
932 Estate Planning (4 cr).
941 Wills, Estates, and Trusts (3 cr).
942 Water Law (3 cr).
943 Real Estate Finance and Tax Planning (3 cr).
944 Local Govt and Land Use Planning (3 cr).
945 Community Property (2 cr).
946 Legal Problems in Ag (3 cr).
947 Seminar, Environmental Law (3 cr).
948 Seminar, Public Land Resources Law (3 cr).
949 Indian Law (3 cr).
950 Evidence (4 cr).
952 Remedies and Restitution (4 cr).
953 Seminar, Criminal Procedure (2 cr).
954-955 Practice Court I-II (3 cr).
956 Appellate Court (1-2 cr, max 3).
957 Insurance (2 cr).
958 Products Liability (2 cr).
960 Conflict of Laws (3 cr).
961 Seminar, Jurisprudence (2 cr).
962 Professional Responsibility (2 cr).
963 Family Law (2 cr).
971 Lawyering Process Seminar (2 cr).
972 Legal Externship (1 cr).
973 Judicial Externship (6 cr).
974 Legal Aid Internship (5 cr; 3 cr).
982 Law Review (1-4 cr, max 4).
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 man's 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 man now possesses that will enable the student to gain an introduction to, and a deeper understanding of, current problems of violence and war. Both of these objectives are based on the assumption that violence and war represent major threats to the continuation of organized society. Three senior courses are offered and curricula leading to a master's and doctorate are being prepared.

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.

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.

492 Terrorism: Threat, Reality, and Response (3 cr). The terrorist arsenal, national disruptive terrorism, countermeasure technology, incident mgt, prep for emergencies, potential targets, and patterns for negotiation.

Department of Mathematics and Applied Statistics

James E. Calvert, Dept. Chairman (300 Faculty Office Complex-East).

Mathematics Faculty: Erol Barbut, 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, Clarence J. Potratz, William D. Royalty, William L. Voxman, Ya-Yen Wang, Gail A. Williams.

Applied Statistics Faculty: C. Randall Byers, John E. Carlson, Ross E. Christian, James E. Crandall, Brian C. Dennis, Dale O. Everson, Edward O. Garton, Judith D. George, Donald F. Haber, Wayne R. Hager, Joel R. Hamilton, R. Ashley Lyman, Victor E. Montgomery, Philip D. Olson, Clarence J. Potratz, R. Kirk Steinhorst.

The Department of Mathematics and Applied 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. 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 applied 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 Applied 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 student 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, or scientific options. Many students interested in applications of mathematics pursue a joint major in some other department.

Applied Statistics. Applied 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. Optimal techniques are developed to obtain the most information in each of these cases for minimal cost and expenditure of time and energy. 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 applied 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 Applied Statistics will be happy to answer questions about specific programs and courses. Such questions can also be addressed to the department chairman (FOCE 300; telephone 208/885-6742).

Courses

MATHEMATICS—Math

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.

Also see regulation J-5-e.

R070 Review of Math (0 cr). Prereq: perm.

R080 Remedial Math (0 cr). Fundamentals of algebra. Prereq: 1 yr high school algebra and perm.

R090 Basic Engr Math (0 cr). Review of parts of college algebra, calculus, and differential equations important in engr curricula. Prereq: perm.

R105 Intro to Digital Computers (3 cr). Intro to computer tech using Fortran compiler language; conditional and unconditional control statements, input-output statements, and binary and octal number systems. Prereq: perm.

107 Beginning Algebra (3 cr). Intro to algebra; linear equations, factoring polynomials, rational algebraic expressions, quadratic formula, word problems, systems of equations. See regulation J-5-e. Prereq: mastery of arithmetic, or GenSt 101, or placement by test.

111 Finite Math (4 cr). Systems of linear equations and inequalities, matrices, linear programming, probability. Prereq: 1 yr high school algebra and 1 yr plane geometry, or placement by test.

135-136 Math for Elem Teachers (3 cr) (C). Math dev of arithmetic, informal geometry, problem solving, probability and stats as these subjects are currently taught in elem schools. Successful completion of an arithmetic skills test given at the beginning of the semester is reqd to pass Math 135. Prereq: 1 yr high school algebra (or 107) and 1 yr plane geometry, or placement by test.

140 College Algebra (3 cr) (C). Properties of real numbers; algebraic, exponential, logarithmic functions, complex numbers, and progressions. Prereq: 1½ yrs high school algebra (or 107) and 1 yr plane geometry, or equiv, or placement by test.

160 Survey of Calculus (4 cr). Functions, graphing, derivative, integral, exponential and logarithmic functions, functions of several variables. Prereq: 1½ yrs high school algebra (or 107 or 140) and 1 yr high school geometry, or placement by test.

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 107 or 140) and 1 yr plane geometry, and perm of dept. Concurrent enrollment in 107, 140, or 180 permitted.

180 Analytic Geometry and Calculus I (4 cr) (C). 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.

R181 Analytic Geometry and Calculus I (3 cr). Functions, rate of change, limits, continuity, differentiation of algebraic functions with appl, and integration. Prereq: perm.

186 Theory of Numbers (3 cr). Elem number theory, incl divisibility properties, congruences, and Diophantine equations. Prereq: 140 or perm.

190 Analytic Geometry and Calculus II (4 cr). Differentiation and integration of transcendental functions, integration tech, general mean value theorem, numerical tech, and series. Prereq: 180.

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.

200 Analytic Geometry and Calculus III (3 cr). Vectors, functions of several variables, and multiple integration. Prereq: 190.

R201 Analytic Geometry and Calculus III (3 cr). Two- and three-dimensional analytic geometry, vectors, hyperbolic functions, parametric equations, and polar coordinates. Prereq: perm.

202; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

205 Intro to Computer Programming (3 cr). Same as CS 205. Intro to PL/1 programming and the operating system.

R211 Analytic Geometry and Calculus IV (3 cr). Partial derivatives, infinite series, and complex numbers and functions. Prereq: perm.

215 Seminar in Topology of the Plane (2 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.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

305 Computer Org and Programming (3 cr). Same as CS 305. OS 360/370 assembler language, macros, linkages to other languages. Prereq: one of the following: CS 131, 150, 205, 210, or 233.

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).

326 Linear Programming (3 cr). Alt/yrs 83-84. Geometric solutions, simplex method, duality and revised simplex method, sensitivity, integer programming, appl. Prereq: 180 or 111, 160.

330 Linear Algebra: Appl and Numerical Methods (3 cr). Linear equations, matrices, linear transformations, eigenvalues, diagonalization; emphasis on appl incl numerical tech. Prereq: 111 or 180; one of the following is recommended: CS 131, 150, 205, 210, or 233.

346 Applied Combinatorics (3 cr). Alt/yrs 84-85. Elem counting methods, generating functions, recurrence relations, Polya's enumeration, enumeration with graphs, trees and searching, network algorithms. Prereq: 190.

390 Postulational Geometry (3 cr). Alt/yrs 84-85. Postulates of Hilbert and Euclid; non-Euclidean geometries; the Erlanger program; projective geometry. Prereq: 180 or 160.

405 Analysis of Computer Algorithms (3 cr). Models of computation, measures of efficiency, set manipulations, algorithms on graphs, and appl. Prereq: CS 313, and either 160 or 180.

407 Discrete Math Structures (3 cr). Alt/yrs 84-85. Appl of algebra and combinatorics to computer sc; groups, group codes, finite state machines, graph theory, enumeration.

411 Elem Topology (3 cr). Alt/yrs 84-85. Topology of metric spaces; compactness, connectedness, continuity. Prereq: 200 or perm.

420 Complex Variables (3 cr). Alt/yrs 83-84. Complex numbers; elem functions; derivatives; the residue theorem; conformal mappings; contour integration; infinite series; appl. Prereq: 200.

430 Optimization (3 cr). Alt/yrs 84-85. Classical optimization, convexity, one-dimensional searches, non-linear programming, numerical considerations. Prereq: 200 and 330, or perm.

433 Numerical Analysis (3 cr). Alt/yrs 83-84. 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 one of the following: CS 131, 150, 205, 210, or 233.

440 Linear Algebra (3 cr). Vector spaces, linear transformations and matrices, quadratic forms, characteristic vectors and roots.

451-452 Probability Theory and Math Stat (3 cr). Same as ApSt 451-452. Random variables, limit theorems, distribution of sample stat, estimation, testing hypotheses. Prereq: 200.

453 Stochastic Models (3 cr). Alt/yrs 83-84. Markov chains, stochastic processes, and other stochastic models; appl. Prereq: 451 or perm.

461-462 Higher Algebra (3 cr). Alt/yrs 83-84. Abstract algebra.

471-472 Adv Calculus (3 cr). Alt/yrs 84-85. Topology of Euclidean n-space, limit and continuity, differentiation, integration. Prereq: 200.

480 Partial Differential Equations (3 cr). Alt/yrs 84-85. Intro to Fourier analysis, appl to solution of partial differential equations; classical partial differential equations of engr and physics. Prereq: 310.

482 Adv Applied Math (3 cr). Selected topics. Prereq: 310.

490 Intro to Set Theory (3 cr). Alt/yrs 83-84. Set operations, functions, binary operations and relations, cardinal and ordinal numbers, axiom of choice, partially ordered sets, and Zorn's lemma. Prereq: 200.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

500 Master's Research and Thesis (cr arr).

511-512 Topology (3 cr). Alt/yrs 83-84. Basic concepts of point set and algebraic topology.

516 Topics in Topology (3 cr). Algebraic methods and topics in topology.

521 Seminar in Topology (1-2 cr, max arr). Current lit.

523-524 Algebraic Topology (3 cr). Alt/yrs 84-85. Basic homotopy theory, covering spaces, homology theory, and appl.

525-526 Adv Topics in Topology (3 cr, max 12).

531-532 Complex Variables (3 cr). Alt/yrs 84-85. Theory of functions of a complex variable.

535-536 Real Variables I-II (3 cr). Alt/yrs 83-84. Theory of functions of real variables.

539 Theory of Ordinary Differential Equations (3 cr). Alt/yrs 84-85. First-order systems, equations with analyt coefficients, self-adjoint boundary value problems.

541 Seminar in Analysis (1-2 cr, max arr). Current lit.

545-546 Adv Topics in Analysis (3 cr, max 12).

550 Linear Algebra (3 cr). Alt/yrs 84-85. Vector spaces, direct sums, quotient spaces, similarity, Jordan forms, inner products, eigenvalues, eigenvectors, spectral theory.

551 Ring Theory (3 cr). Alt/yrs 84-85. Ideals, quotient rings, modules, radicals, semisimple Artinian rings, Noetherian rings.

552 Galois Theory (3 cr). Alt/yrs 83-84. Field extensions, automorphisms, normality, splitting fields, radical extensions, finite fields, separability. (A knowledge of group theory is presumed.)

553 Group Theory (3 cr). Alt/yrs 83-84. Permutation groups, isomorphisms, direct products, Sylow theory, normal series, abelian groups.

561 Seminar in Algebra (1-2 cr, max arr). Current lit.

565-566 Adv Topics in Algebra (3 cr, max 12).

R570 Adv Numerical Analysis (3 cr). Interpolation; numerical differentiation, integration, and solution of algebraic and differential equations. Prereq: numerical analysis.

571-572 Functional Analysis (3 cr). Alt/yrs 84-85. Linear topological spaces and linear operators. Prereq: 536.

574 Topics in Applied Math (3 cr). Integral and differential equations.

R577-R578 Adv Math Stat (3 cr). Dev and appl of math stat to problems in the engr sc. Prereq: perm.

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.

585-586 Recent Dev in Math (3 cr). For students with extensive background in specific phases.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

APPLIED STATISTICS—ApSt

251 Prin of Statistics (3 cr). Cr not given for both 251 and 301. Intro to stat methods incl descriptive 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.

301 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 200.

401 Statistical Analysis (3 cr) (406). 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.

WS412 Biometry (3 cr). WSU Biom 412. Prin and methods of stat analysis as applied to biol experimentation. Equiv to ApSt 401.

422 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.

433 Intro to Econometrics (3 cr). See Econ 433.

437 Stat for Business Decisions (2 cr). See Bus 437.

451-452 Probability Theory and Math Stat (3 cr). See Math 451-452.

456 Quality Control (2 cr). See Bus 456.

457 Nonparametric Stat (2 cr). Methodology of nonparametrical statistical tests. Prereq: 251 or 301.

499 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

ID502 (s) **Directed Study** (cr arr). Prereq: perm.

503 (s) **Workshop** (cr arr).

504 (s) **Special Topics** (cr arr).

R505 Engr Stat (1-3 cr). See ES R505.

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.

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.

ID521 Multivariate Analysis (3 cr). The multivariate normal, Hotelling's T^2, multivariate general linear model, discriminant analysis, covariance matrix tests, canonical correlation, and principle component analysis. Prereq: 401 or perm.

522 Stat Genetics (3 cr). See AnSc 522.

525 Econometrics (3 cr). See AgEc 525.

WS530 Stat Ecology (3 cr). See WLF WS507.

R547 Applied Time Series Forecasting (3 cr). See EE R547.

597 (s) **Practicum** (cr arr). Prereq: perm.

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 186 Theory of Numbers or 215 Seminar in Topology of the Plane	2-3
Math 330 or 440 Linear Algebra	3
Math 461 Higher Algebra	3
Math 462 Higher 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 220, 221, 222 Engr Physics I, II, III (to acquaint the student with an area in which math is applied; upon the approval of the dept, substitution of other courses to meet this objective may be allowed)	9

45-Credit Teaching Major

Majors seeking certification to teach in secondary schools should consult the chairman 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 150 Intro to PASCAL Programming	3
CS 210 Intro to FORTRAN 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
ApSt 301 Probability & Statistics	3
At least two courses from the following	6

Math 405 Analysis of Computer Algorithms
Math 430 Optimization
Math 433 Numerical Analysis
Math 440 Linear Algebra
Math 471-472 Advanced Calculus
CS 313 Data Structures
At least two courses from the following:.....5-6
ApSt 401 Statistical Analysis
ApSt 422 Sampling Methods
ApSt 507 Experiment Design
ApSt ID514 Nonparametrics
ApSt ID521 Multivariate Analysis
ApSt 525 Econometrics
Approved electives in fields where statistics is applied (not to be in applied stat courses).....6

B. COMPUTATION OPTION

Course	Credits
Math 405 Analysis of Computer Algorithms	3
Math 433 Numerical Analysis	3
CS 313 Data Structures	3
At least four courses from the following	12
Math 310 Ordinary Differential Equations	
Math 326 Linear Programming	
Math 346 Applied Combinatorics	
Math 407 Discrete Math Structures	
Math 430 Optimization	
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
ApSt 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 433 Numerical Analysis	
Five additional math courses selected from 326, 346, or courses numbered 400 or above	15

Department of Mechanical Engineering

Richard T Jacobsen, Dept. Chairman (202 Gauss Lab. Bldg.). Faculty: Jasper R. Avery, William P. Barnes, Charles E. Cartmill, Ronald F. Gibson, Richard T Jacobsen, T. Alan Place, Terrence A. Precht, Richard B. Stewart, Richard E. Warner, J. Richard Williams.

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 the trained professionals in industry, business, government, and universities. Positions are available in design, testing, manufacturing, research, development, operation, 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 from the basis for the curriculum. The program also includes specialized courses in thermal sciences and applied mechanics. Development of creativity 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 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.

Some 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, Richard E. Warner, or the department chairman (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 and prescribes the method of their removal. The graduate adviser and chairman of the Graduate Committee is Richard B. Stewart, Office JEB 237 (telephone 208/885-7064).

Courses

MECHANICAL ENGINEERING—ME

200 Soph Seminar (0 cr). Disc on topics of current concern to the profession. Graded P/F.

223 Mech Design Analysis (2 cr). Fundamentals of engr design, graphic representation and computer-aided design (CAD) of engr systems. One lec and one 2-hr lab a wk. Prereq: Engr 101, CS 135, or perm.

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.

261 Engr Materials (3 cr). Fundamental factors in influencing properties and selection of materials. Prereq: Chem 111.

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.

299 (s) **Directed Study** (cr arr). Indiv study of selected topics. Detailed report reqd. Prereq: perm.

300 Junior Seminar (0 cr). See 200.

304 Materials Selection for Mech Design (2 cr). Selection of engr materials related to service conditions. Prereq: 261.

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.

324 Kinematics and Dynamics of Machines (3 cr). 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. Prereq: ES 221; coreq: 223.

326 Mech Engr Project (1-3 cr). Indiv investigation and report. Prereq: jr standing and perm of dept.

330 Experimental Methods for Engineers (2 cr). Instrumentation and engr measurement systems using short lab experiments; calibration tech and error determination; analysis of experimental data and report writing. One lec and one 2-hr lab a wk. Prereq: jr standing.

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.

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.

380 Math Modeling of Mech Engr Systems (3 cr). 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: ES 211, Math 310.

404; 504 (s) **Special Topics** (cr arr).

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.

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.

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.

ID422 Analyt Thermodynamics (3 cr). Thermodynamic properties of real fluids; computer modeling and analysis of thermodynamic systems. Prereq: 322 or perm.

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.

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. Prereq: 324, 425.

427 Optimum Design (3 cr). Tech for optimum design, appl to mech elements with practical constraints. Prereq: 425.

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.

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.

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.

440 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. Prereq: ES 340, Math 310.

441 Thermal Systems Design (3 cr). Design of integrated thermal systems; steam power plants; econ, variable output, environmental problems. Prereq: 322.

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.

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.

ID461 Fracture Mechanics (3 cr). Fracture mechanics approach to structural integrity, fracture control, transition temperature, microstructural and environmental effects, fatigue and failure analysis. Prereq: perm.

WS470 Kinematic Synthesis (3 cr). Analyt and graphical tech applied to analysis and synthesis of planar mechanisms. Cr not granted for both WS470 and WS570. Prereq: 324 or perm.

472 Mech Vibrations (3 cr). 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 221, ES 340, Math 310.

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.

WS481 Control Systems (3 cr). Analysis and design of feedback control systems. Cr not granted for both WS481 and WS581. Prereq: 380 or perm.

491-492 Seminar (1/2 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.

499 (s) **Directed Study** (cr arr). Selected topics. Detailed report reqd. Prereq: sr standing and perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Engr and engr-related topics. Graded P/F. Prereq: perm.

502 (s) **Directed Study** (cr arr). Supervised study, incl critical reading of current lit. Prereq: perm.

503 (s) **Workshop** (cr arr). Prereq: perm.

ID&WS505 Dynamics (3 cr). WSU 540. Dynamic specs of solid bodies; rectangular, angular, and plane motion; three-dimension dynamics; beams. Prereq: ES 221, Math 310, or perm.

507 Machine Design (3 cr). Adv mech design to meet needs and interests of students; special projects. Prereq: 425 or perm.

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.

ID&WS512A Adv Gas Dynamics (2-3 cr). WSU 524. Compressible flow; transonic, supersonic, hypersonic flow; turbulent boundary layer and shock wave boundary layer interactions. Prereq: 322, ES 320.

WS512B Physical Gas Dynamics (2-3 cr). Kinetic theory of gases; molecular view of fluid dynamics; appl to momentum, energy, mass transport, molecular dynamics in laser scattering. Prereq: ID&WS522 or perm.

515 Transport Phenomena (3-4 cr). See ChE ID515.

ID&WS520A 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.

WS520B Continuum Mechanics (2 cr). Dev of basic laws governing a continuum; continuity, momentum, and energy.

WS521 Transport Phenomena (2 cr). Appl of basic laws of continuum mechanics to fluids; momentum, heat, mass, and species conservation. Prereq: 520B.

ID&WS522 Stat Thermodynamics (2-3 cr). WSU 511. Probability theory and quantum mechanics, stat mechanics, thermodynamic probability, molecular interp of first and second laws; kinetic theories. Prereq: ES 321.

ID523 Computational Methods for Thermal Systems (3 cr). Thermodynamic property formulations for computer modeling of thermal systems; availability and irreversibility concepts. Prereq: ID422 or perm.

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.

R525A Adv Heat Transfer (2-3 cr). See ChE 525.

WS525B Flow of Ideal Fluids (1 cr). Potential flow over cylinders, air foils, and other configurations, appl. Prereq: 380 and Math 310 or perm.

ID526 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: ID422 or perm.

R528 Adv Thermodynamics (3 cr). Same as ChE R528. 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.

WS531 Elasticity (2 cr). Systematic treatment of stress, strain, and displacement of a linear, homogeneous body under the influence of external forces. Prereq: 520B.

WS533 Mech Behavior of Materials (3 cr). Quantitative methods of dealing with material behavior; plastic and brittle response materials to external loads and deformation. Prereq: 548.

WS534A Adv Production Engr (3 cr). Appl of analyt tech and computer programs in a computer-aided manufacturing environment.

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.

535 Failure of Structural Materials (3 cr). See Met R535.

R537 Adv Fluid Mechanics (2-3 cr). See ChE 537.

541 Mech Engr Analysis I (2-3 cr). See ChE 541.

WS542 Optimal Control of Dynamics Systems (3 cr). Intro to optimal control theory, differential games, and multiple criteria systems; appl in engr, biol, econ, ag, and medicine.

ID545 Conduction Heat Transfer (3 cr). Steady-state and transient conduction of heat; rectangular, cylindrical, and spherical coordinate systems. Prereq: 345 or perm.

ID&WS546 Convection 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.

ID&WS547 Radiation Heat Transfer (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.

548 Elasticity (3 cr). See CE 548.

549 Finite Element Analysis (3 cr). See CE ID546.

ID&WS550 Adv Vibration Analysis (3 cr). Analysis of discrete and continuous vibrating systems, finite difference and transfer matrix methods, frequency analysis, random vibrations. Prereq: 472 or perm.

WS551 Turbulent Flow and Diffusion (1-3 cr). Theories of turbulent motion; stat description and numerical models. Prereq: ES 320.

WS552 Experimental Methods in Thermal-Fluid Sc (2-3 cr). Theory and practice in use of instrumentation of measuring temperature, velocity, pressure, and concentration; measurement of classical flow fields.

WS553 Two-Phase Flow (1-3 cr, max 3). Fundamentals of flow of fluids with two phases and appl. Prereq: 515.

WS556 Numerical Modeling in Fluid Mechanics (3 cr). Fundamentals underlying fluid mech modeling; physical bases of tech being used.

WS561 Combustion (2-3 cr). General combustion phenomena, chem reactions, combustor modeling, laminar and turbulent flame theory, emissions. Prereq: ID&WS522 or ID&WS524.

WS570 Kinematic Synthesis (3 cr). Grad level counterpart of WS470; additional requirements. Cr not granted for both WS470 and WS570.

WS581 Control Systems (3 cr). Grad level counterpart of WS481; additional requirements. Cr not granted for both WS481 and WS581.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

ENGINEERING TECHNOLOGY/MECHANICAL ENGINEERING—ET/ME

R222 Mech Engr Drawing (2 cr). Same as IEd R222. Dimensioning, shop drawings, fastenings; weld specs, working drawings, jigs, fixtures, piping. Prereq: Engr 101 or equiv.

R332 Selection and Design of Machine Elements (3 cr). Same as IEd R332. Prin and characteristics of machine elements in mech design; bearings, gears, bolted joints, linkages.

R334 Energy Analysis of Machines (3 cr). Same as IEd R334. Thermodynamics and heat transfer, properties of substances, steady flow, cycles and their appl to equipment, simple heat exchangers.

R335 Materials Appl (3 cr). Same as IEd R335. Materials appl in design, material properties, material selection as related to service conditions.

R336 Fluid Systems Design (3 cr). Same as IEd R336. Fluid flow in pipes, incl pressure losses, seals, series and parallel flow, measurements and control, selection of equipment.

R337 Tool Design (3 cr). Same as IEd R337. 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:

First and Second Years	Credits
Courses common to engineering curricula (see part 4)	39
ME 200 Sophomore Seminar	0
ME 223 Mech Design Analysis	2
ME 253 Materials Processing	3
ME 261 Engineering Materials	3
ME 262 Engineering Materials Laboratory	1
Econ 151, 152 Principles of Economics	6
EE 200 Electrical Circuits I	3
EE 203 Electrical Circuits II	4
ES 221 Dynamics of Rigid Bodies	2
ES 321 Thermodynamics & Heat Transfer	3
Phys 212-213 Engineering Physics Laboratory	2
Third and Fourth Years	
ME 300 Junior Seminar	0
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	1
ES 320 Fluid Mechanics	3
ES 340 Mechanics of Materials	3
Eng 317 Tech & Engr Report Writing	3
Humanities and social sciences electives	10
Technical electives	11

Medical Education Program

Guy R. Anderson, Director, WAMI (Washington, Alaska, Montana, Idaho) Medical Science Program (302 Student Health Services Bldg.). Faculty: Guy R. Anderson, Mark E. DeSantis, Victor P. Eroschenko, Dale O. Everson, Jeffrey Hummel, Dwain A. Leonhardt, Thomas A. McKean, Philip J. Mohan, Victor E. Montgomery, David P. Olson, Mary C. Presol (Consultant), Arthur W. Rourke, Nancy S. Sasser (Consultant), Stewart C. Schell, Francis K. Spain, Erik H. Stauber, Lynn F. Woodard.

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, John M. Ayers, Jr., Eugene M. Baldeck, Norris A. Biggerstaff, Christina M. Bjornstad, John B. Britzmann, Rolland D. Brooks, Charles A. Brown, Gregory J. Burrato, Donald K. Chin, Harry Chinchinian, Robert C. Colburn, Lester C. Crismon, Omar H. Drury, Ronald E. Dunn, Charles R. Hamlin, Ronald R. Helm, Cameron D. Hinman, Jeffrey Hummel, Jay A. Hunter, Richard A. Jacobs, Frederick J. Kassis, Carl T. Koenen, Michael J. Lemberger, Dwain A. Leonhardt, Spencer M. Long, Dean Mahoney, William Mannschreck, William P. Marineau, Carl M. Melina, Cyril V. Novak, Robert L. Olson, Mary C. Presol, Kay Rusche, John C. Sherris, David D. Shupe, Donald J. Soltman, Francis K. Spain, David A. Spencer, John A. Staniewski, Richard D. Thorson.

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 also utilizes the physician expertise in the states by providing clinical clerkships in the four-state area via a network of 18 community training sites 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 80 positions at UWSM. These 80 positions, 20 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 a five-year Idaho resident and meeting other special residency requirements related to family and employment or residence status as of June 30, 1979. UI's Admissions Office is responsible for residency certification.

Students interested in WAMI follow the normal application procedures of UWSM. Idaho residents (20) 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 subject 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 over 10 years (since 1972), community clinical units in Boise and Pocatello have been training upper-division medical students in the areas of obstetrics, 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 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 postdoctoral (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 six years of study.

Medical Science Courses—MedSc

Note: All courses in this subject field are open only to students who have WAMI medical student status or by perm of the instructor.

501 (s) Seminar (cr arr).

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.

504 (s) Special Topics (cr arr).

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.

ID&WS510 Histology (3 cr). Microscopy of cells in tissues and organs of the human body; emphasis on function. Three lec and one 3-hr lab a wk.

ID&WS511 Anatomy of the Trunk (3 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.

ID&WS512 Basic Mechanisms in Cellular Physiology (4 cr). Basic physiological mechanisms, primarily at the cellular level.

513 Intro to Clinical Medicine (1 cr). Comm skills and interview tech to form the basis for the eventual doctor-patient relationship.

ID&WS514 Molecular and Cellular Biol I (3 cr). Classical molecular and cellular biochem, cellular physiology, and molecular genetics.

ID&WS515 The Ages of Man (2 cr). Human dev from birth to senescence emphasizing disorders that occur during various life phases.

516 Cell Biol (2 cr). Integrates and expands studies of human cell biol inherent in other medical sc courses; incl elements of cell structure and function, cell interactions, and cell differentiation.

ID&WS520 Cell and Tissue Response to Injury (4 cr). Cell and tissue injury, immunity and immune responses, immediate and delayed hypersensitivity, inflammation, and neoplasia.

ID&WS521 Natural Hist of Infectious Diseases and Chemotherapy (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.

522 Intro to Clinical Medicine (2 cr). Continuation of comm skills especially as related to and dealing with affective material.

523 Systems of Human Behavior I (2 cr). Conceptual systems and models of behavior, normality and abnormality, environment and social learning, conditioning, learning in the autonomic nervous system, catecholamines and behavior, illness behavior, feelings, emotion and cognition, physician-patient interaction, diseases and technics of behavior change.

ID&WS524 Molecular and Cellular Biol II (2 cr). Continuation of ID&WS514.

ID&WS530 Epidemiology (2 cr). Intro to biostatistical inference; interaction of agent, host, and environment in disease causation and transmission.

ID&WS531 Head, Neck, Ear, Nose, and Throat (4 cr). Gross anatomy, incl skull, pharynx, and larynx; audition and balance.

ID&WS532 Nervous System (5 cr). Normal structure and function of the nervous system, incl the eye.

535 Intro to Clinical Medicine (2 cr). Screening physical exam.

Curricular Requirements

PRE-MEDICAL STUDIES (B.S.Pre-Med.)

Required course work includes the university requirements (see regulation J-3) and the following.

Where electives are specified in the first 3 years, the following are suggested: Math 180, 190, 200, Analytic Geom & Calculus I, II, III, and Phys 220, Intro to Mechanics.

FIRST THREE YEARS

Course	Credits
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 253 Quantitative Analysis	5
Chem 277, 278 Organic Chem I & Lab	4
Chem 372, 376 Organic Chem II & Lab	5
Math 140 College Algebra **or** Math 111 Finite Math **and** Math 160 Survey of Calculus	3-8
Phys 113-114-115-116 General Physics **or** 220-221-222-223-224-225 Engr Physics & Labs	8-12
Zool 323 Comparative Vertebrate Embryology	4
Zool 324 Comparative Vertebrate Anatomy	4
Social sciences electives	6
Electives to complete 96 cr for the first 3 yrs	11-18
Recommended elective: Foreign language	14-16

SENIOR YEAR

Completion of either of the options below:

Option A—Completion of the first year of medical study at an approved college of medicine.

Option B—Completion of sufficient credits to total 128, including at least 36 credits in courses numbered 300 or above, and at least 12 of these upper-division credits must be in the social sciences and/or humanities. One course in math or statistics beyond Math 111 and 160 or 140. Suggested senior-year electives:

Bact 304-305 Pathogenic Bact & Lab	5
Bact 409-410 Immunology & Lab	5
Biol 351 General Genetics	3
Chem 305-306, 307-308 Physical Chem & Lab or 302, 303 Principles of Physical Chem & Lab	4-8
Chem 481-482 **or** Biochem 380, 382 Biochemistry & Lab	4-6
Zool 414 Cell Physiology	3
Zool 416 Mammalian Physiology	4
Zool 488 Parasitology	3

PRE-DENTAL STUDIES (B.S.Pre-Dent.)

Students in the four-year pre-dental program satisfy the requirements of the pre-medical curriculum (see below), except that the senior-year option A for pre-dental students reads as follows: Option A—Completion of the first year of dental study at an approved college of dentistry.

Department of Metallurgical and Mining Engineering

John R. Hoskins, Dept. Head (217 Mines Bldg.).

Metallurgy Faculty: Gene E. Bobeck, Batric Pesic, Keith A. Prisbrey, Patrick R. Taylor.

Mining Engineering Faculty: Samuel S. M. Chan, William R. Green, Christopher J. Hall, 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 the rock 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.

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), elec-

trometallurgy, 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 by 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

102 Materials and Their Manufacture (1 cr). Intro to materials for students who wish to know how and from what the material things of our civ are made. One 3-hr lab a wk; one 1-day field trip.

200; 501 (s) **Seminar** (cr arr). Prereq: perm.

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.

202 Apparatus and Practices (2 cr). Measure and control tech and instruments, metallography, pyrometry, quality control. One 2-hr lec-dem and one 3-hr lab a wk. Coreq: 201.

204; 404; 504 (s) **Special Topics** (cr arr). Prereq: perm.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

308 Intro to Met Thermodynamics (3 cr). Review of thermodynamic laws, thermodynamics of solutions, appl to kinetic processes. Prereq: Chem 305, ES 321.

309 Met Transport Phenomena (3 cr). Intro to prin of met transport phenomena incl heat, mass, and momentum transfer. Coreq: Math 310.

310 Met Kinetics (3 cr). Fundamental prin. Prereq: Math 310.

400 (s) **Seminar** (cr arr). Review of current lit. One 3-day field trip. Prereq: perm.

ID412 Mech Met (2 cr). Mech properties of solids, testing, brittle and ductile fracture, plasticity, mech processes in met. One 1-day field trip. Prereq: 201.

413 Physical Met I (4 cr). Theory, structure, and properties of metals and alloys; their relation to industrial problems. Two lec and one 3-hr lab a wk. Prereq: 201, 308.

414 Met Design (cr). Factors involved in design problems; selected problems on mineral processing plant, hydromet plant, pyromet plant; costing and the economic decision.

416 Physical Met II (3 cr). Continuation of 413 with emphasis on precipitation, diffusion, phase diagrams, and transformations in steel. Prereq: 413 or perm.

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.

WS 418 Polymeric Materials (3 cr). Alt/yrs 83-84. WSU MSE 402. Structural characterization, syntheses, and reactions of polymeric materials; relationships between structure and properties; viscoelasticity, deformation, and physical behavior of polymers. Prereq: 201 or jr standing in engr, chem, or physics.

WS420 Fracture in Solids (3 cr). WSU MSE 433. Fracture initiation and propagation in metals, ceramics, polymers, wood, and composites; effect of environment; relationship to microstructure. Prereq: sr standing in engr, chem, or physics.

421 Ceramic Materials (3 cr). Properties and uses; cermets and related materials. Prereq: Phys 113-114 or 210-211, and Chem 103 or 111 or 114.

422 Ceramics Lab (2 cr). Ceramic fabrication; PCE and DTA determinations. Two 3-hr labs a wk. Prereq: 421.

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.

ID442 Extractive Met (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.

443 Mineral Processing Examples (3 cr). Adv and new technology examined in depth.

444 Extractive Met II (3 cr). Intro to prin of hydromet and electromet. Prereq: 308.

500 Master's Research and Thesis (cr arr).

ID503 Adv Extractive Met (3 cr). Topics in the extraction and refining of metals. Prereq: ID442 or perm.

505 Adv Rate Phenomena in Met Engr (3 cr). Prin of rate phenomena in met engr. Prereq: perm.

ID506 Adv Ore Dressing (3 cr). Theories of comminution; flotation and related surface phenomena; elec and magnetic concentration; process control. Prereq: 441 or perm.

ID507 Adv Ceramics (3 cr). Alt/yrs 84-85. Theoretical aspects; constitution of green bodies; shrinkage; porosity; sintering; effect of structure on mech, elec, and magnetic properties; glasses. Prereq: perm.

508 Control of Met Processes (3 cr). Control variables of met processes. Prereq: perm.

510 Research Methods (3 cr). Alt/yrs 84-85. Experimental methods and apparatus; planning and eval. Two lec and one lab a wk. Prereq: perm.

511 Adv Physical Met (3 cr). Alt/yrs 84-85. Theory of metals and alloys; appl to problems of structure; properties of engr metals. Prereq: perm.

512 Metallurgical Thermodynamics (3 cr). Alt/yrs 83-84. Aspects of thermodynamics most used in met; appl to problems. Prereq: perm.

514 Phase Rule and Phase Relations (3 cr). Alt/yrs 84-85. Phase rule constr and interp of phase diagrams; metastable and unstable phase relations. Prereq: perm.

517 Kinetics of Met Reactions (3 cr). Alt/yrs 83-84. Appl of absolute rate theory; time and temperature dependence; kinetics of gas-solid reactions; corrosion, diffusion, and recrystallization. Prereq: perm.

518 Adv Mech Met (3 cr). Alt/yrs 83-84. Micro- and macroscopic theories of deformation; materials-forming processes; mech tests. Prereq: perm.

ID520 Nucleation in Solids (3 cr). Alt/yrs 84-85. Theories of Volmer-Weber and Becker-Doring; appl to solid-state nucleation; relation to solid-state transformations. Prereq: perm.

ID522 Surface Reactions of Metals (3 cr). Alt/yrs 83-84. Surface chem and physics; illustrative examples from met. Prereq: perm.

R525 Physical Chem of Metals (3 cr). Thermodynamics, heterogeneous equilibria, electrochem, diffusion, and kinetics. Prereq: perm.

R531 Behavior of Engr Materials (3 cr). Static and dynamic properties; relation of mech properties to physical properties and crystal imperfections. Prereq: perm.

R533 Adv X-Ray Diffraction (3 cr). Prin and appl to adv problems. Prereq: perm.

R534 Radiation Effects in Materials (3 cr). Interactions between radiation and solids. Prereq: perm.

R535 Failure of Structural Materials (3 cr). Same as ME 535. Mechanisms by which failure can occur in structural materials. Prereq: perm.

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.

R538 Corrosion in Met (3 cr). Corrosion by aqueous media, gases, liquid metals, and fused salts. Prereq: physical chem, incl electrochem, or perm.

R539 Electron Metallography (3 cr). Alt/yrs 83-84. Operation and appl in met of the electron microscope, microprobe, and other instruments applying charged particle optics. Prereq: perm.

WS542 High Temperature Phenomena in Solids (3 cr). Alt/yrs 84-85. WSU MSE 542. Kinetics and mechanisms of diffusion in solids; high-temperature deformation; oxidation. Prereq: 416 or one sem of chem thermodynamics.

WS544 Adv Topics in Materials Sc (3 cr, max 6). WSU MSE 501. Chem crystallography, microstructure, ultrastructure, theories of crystalline and noncrystalline solids, rheology and fracture mechanics of material.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

MINING ENGINEERING—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.

130 Using Programmable Calculators (2 cr). Wrtg simple engr progs for desk-top calculators.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

204; 404; 506 (s) **Special Topics** (cr arr).

212 Mine Surveying (2 cr). Triangulation, trilateration, sun and star shots, shaft plumbing, auxiliary telescopes. Prereq: CE 211.

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.

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.

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.

350 Mineral Econ (3 cr). Minerals as resources and commodities; importance of minerals, charcteristics of their occurrence and production systems, and nature of mineral resources reserves; factors affecting supply and demand, pricing and marketing of mineral materials.

352 Mine Mgt (3 cr). Mgt of mineral-producing systems; finance, cost analysis, decision making, resource scheduling, personnel mgt. Prereq: 103.

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.

372 Mine Ventilation II: Quantity and Quality Control (3 cr). Gases, dust, airflow, instrumentation, circuits, fans. Prereq: 371.

390 Mine Dev (2 cr). Ore deposits, exploration techniques, mine eval, and dev.

391 Mining Prin (3 cr). Mine design, planning, problem solving; and elec distribution. One 4-day field trip. Prereq: 103, ES 211; coreq: ES 340.

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.

410 Mine Plant Design (2 cr). Alt/yrs 83-84. 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.

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.

421 Engr Geophysics (3 cr). Same as Geol 421. Quantitative treatment of surface and borehole geophysics with emphasis on engr problems. Three 1-day field trips.

422 Prin of General Geophysics (3 cr). See Geol 422.

425 Mineral Land Mgt (3 cr). See Geog 425.

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.

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.

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.

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.

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.

450 Mine Planning I (3 cr). Design of systems and controls for surface mines; wrtg desk-top-computer progs and engr reports.

451 Mine Planning II (3 cr). Design of systems for underground mines; wrtg engr reports. Eight hrs of lab a wk.

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 211, ES 320.

490 Exploration and Engr Geophysics (3 cr). Same as GeolE 423. Prin and practical methods; magnetic, elec, electromagnetic, seismic, gravitational, radioactive, and geothermal methods; geophysical well logging. One 3-day field trip. Prereq: physical geol and physics; calculus is recommended.

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

503 Mine Stress Analysis (3 cr). Alt/yrs 84-85. Appl of tech in experimental stress analysis for structural design in all phases of the engr system; photoelastic modeling and coating; strain gage tech; stress patterns in frameworks, rock masses, and foundations. One lec and two 3-hr labs a wk. Prereq: ES 340.

504 Rock Mechanics II (3 cr). Alt/yrs 84-85. 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.

505 Design of Mine Structures (4 cr). Alt/yrs 84-85. 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.

510 Mine Plant Design II (3 cr). Alt/yrs 83-84. 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.

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.

514 Adv Mine Ventilation II (3-5 cr). Thermodynamic network analysis; individual projects. Prereq: 513.

520 Mining Geophysics (3 cr). Same as Geol 521. Alt/yrs 84-85. 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: 490 or perm.

522 Exploration Seismics (3 cr). See Geol 522.

530 Mining Exploration Tech (3 cr). Alt/yrs 84-85. 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: 490 or perm.

540 Mine Valuation (3 cr). Mine exam and valuation; sampling methods and calculations; determining present value of a deposit.

560 Mine Mgt (3 cr). Financing, mgt labor relations, operations, and govt regulations. Prereq: perm.

561 Mine Industrial Engr (3 cr). Alt/yrs 84-85. Industrial engr, operations research, and computer programming; appl to mining engr problems. Prereq: perm.

570 Mine Systems Design (3-6 cr). Alt/yrs 83-84. Integration and synthesis of equipment, methods, and design; use of latest operation research tools to provide a complete mine plan of operation. Prereq: perm.

573 Haulage Systems Design (3 cr). Alt/yrs 84-85. 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.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

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.

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.

200 (s) **Seminar** (0 cr). Appropriate speakers and unscheduled activities relating to the mineral field. Graded P/F.

400 (s) **Seminar** (0 cr). Appropriate speakers and unscheduled activities relating to the mineral field. Graded P/F.

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.)

Required course work includes the university requirements (see regulation J-3) and the following.

Note: A sequence of technical electives should be chosen before the first technical elective course is taken. All electives must be approved by the student's adviser.

Course		Credits
Met 102	Materials & Their Manufacture	1
Met 201	Elements of Materials Science	3
Met 202	Apparatus & Practices	2
Met 308	Intro to Metallurgical Thermodynamics	3

Met 309 Metallurgical Transport Phenomena 3
Met 310 Metallurgical Kinetics 3
Met ID412 Mechanical Metallurgy 2
Met 413 Physical Metallurgy I 4
Met 414 Metallurgical Design 3
Met 441 Mineral Processing 4
Met ID442 Extractive Metallurgy 4
Chem 111 Principles of Chemistry 4
Chem 112 Inorganic Chem & Qual Analysis 5
Chem 305-306 Physical Chemistry 6
CS 135 FORTRAN Programming for Engr 2
EE 207 Intro to Electrical Engr 3
EE 324 Electrical Machinery 3
Engr 101 Engineering Graphics 2
ES 211 Intro to Mechanics 4
ES 320 Fluid Mechanics 3
ES 340 Mechanics of Materials 3
Eng 317 Tech & Engr Report Wrtg or 313 Bus Wrtg 3
Math 180, 190, 200 Analytic Geom & Calculus 11
Math 310 Ordinary Differential Equations 3
Phys 210, 211 Engr Physics I, II (students are also encouraged to elect Phys 212 & 213 Engr Phys Lab 6-8
Math electives (one upper-div course or equiv) 3
Humanities and social sciences electives 17
Metallurgical electives 6-9
Technical electives 11-14

The minimum number of credits for the degree is 136. Students will select at least one additional course from one of the following areas: extractive metallurgy, mineral processing, or physical metallurgy.

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. This curriculum is administered by the Department of Metallurgical and Mining Engineering.

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 Mine Management	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 470 Mine Services	3
Chem 111 Principles of Chemistry	4
Chem 114 General Chemistry	4
CE 211 Engineering Measurements	3-4
CS 135 FORTRAN Programming for Engr	2
EE 207 Intro to Electrical Engr	3
EE 324 Electrical Machinery	3
Engr 101 Engineering Graphics	2
ES 211 Intro to Mechanics	4
ES 301 Engr Statistics (or equiv)	3
ES 320 Fluid Mechanics	3
ES 340 Mechanics of Materials	3
Eng 317 Tech & Engr Report Wrtg or 313 Bus Wrtg	3
Geol 101, 102 Physical Geology & Lab	4
Geol 345 Structural Geology	3
Math 180, 190, 200 Analytic Geom & Calculus	11
Math 310 Ordinary Differential Equations (or approved upper-div math course or substitute)	3
Met 441 Mineral Processing	4
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)	12
Electives	3

The minimum number of credits for the degree is 136.

Department of Military Science

Edward J. Lindahl, Dept. Head (West End, Mem. Gym.). Faculty: Peter C. Dempsey, Edward J. Lindahl, Warren E. Mills, W. David Santhuff, Terrance L. Steinhebel.

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 during each semester of the freshman and sophomore years, 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 attend one hour of classroom instruction each week and 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 service. 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

101-102 Fundamentals of Military Leadership and Mgt (1 cr). Org, missions, and functions of the Army; basic map reading; intro to military leadership and mgt.

201-202 Applied Leadership and Mgt (1 cr). Leadership training, command experience, org and employment of basic military units; unit mgt and leadership problems. Prereq: 101-102 or perm of dept.

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.

210 Military Small Unit Tactics Lab I (2 cr). Classroom and practical field training in military small unit tactics and indiv skills; rappelling, mountaineering, small boat operations, land navigation, rope bridging, warm weather survival tech, first aid; emphasis placed on practical dev of indiv skills necessary for small military unit leadership.

211 Military Small Unit Tactics Lab II (2 cr). Classroom and practical field training in advanced military small unit tactical skills; patrolling, squad offensive and defensive tactics, camouflage, cold weather survival, military weapons, marksmanship, and physical training; emphasis placed on practical dev of small unit leadership skills, teamwork, and unit cohesiveness.

298 Leadership Activities (0 cr). Leadership training and dev of military-related skills intended to supplement basic military science leadership fundamentals.

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

301-302 Adv Leadership and Mgt (3 cr). Leader's role in offensive and defensive missions at squad and platoon level; prep for adv camp. Prereq: 201-202 or perm.

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.

489 Adv Encampment (cr arr). Intensive six-wk summer encampment at Ft. Lewis, Wash. Graded P/F. Prereq: 301-302 and perm of dept.

School of Music

Thomas E. Richardson, Director (205 School of Music Bldg.). Faculty: Dorothy T. Barnes, William A. Billingsley, Daniel J. Bukvich, J. Roger Cole, Mary H. DuPree, Stephen R. Folks, Richard R. Hahn, Sandra L. Hahn, Harry A. Johansen, Ronald J. Klimko, G. Jay Mauchley, Robert T. McCurdy, Richard S. Neher, Floyd H. Peterson, Robert C. Probasco, James E. Reid, Thomas E. Richardson, Lynn J. Skinner, Robert J. Spevacek, Charles W. Walton, William C. Wharton.

Music has been part of the UI curriculum from its first days. A department of music was created in 1893. The present School of Music was so designated in 1969, and is a unit of the College of Letters and Science. The School of Music is a full member of the National Association of Schools of Music.

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 the School of Music 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 of Music 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 faculty studios, ensemble rehearsal areas, a record and score library, 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 School of Music offers graduate degrees at the master's level — M.Mus., M.A., and M.A.T. 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. The Master of Arts in Teaching is a terminal degree for students whose preparation is the equivalent of an undergraduate teaching minor.

Courses

APPLIED PERFORMANCE STUDIES—MusA

100 (s) **Indiv Instruction** (1-3 cr). Max 12 cr for the major performing area in MusA 100, 101, and 201 may be counted toward the B.Mus. degree. All freshmen normally take 100 their first sem. Areas normally offered are voice, piano, organ, harpsichord, harp, violin, viola, cello, string bass, clarinet, saxophone, oboe, flute, bassoon, French horn, trumpet, trombone, baritone, tuba, percussion, and guitar. Special fee course. Consult the School of Music for proficiency requirements for admission to the various levels (MusA 100, 101, 201, 301, 407, 505, and 507). Enrollment may be limited to majors in the School of Music. Prereq: audition and perm of dept.

101 (s) **Indiv Instruction** (1-3 cr). Max 12 cr for the major performing area in MusA 100, 101, and 201 may be counted toward the B.Mus. degree. See MusA 100 for description and areas. Pereq: audition by committee and perm of dept; coreq for piano: MusA 102.

J102/J402 Accompanying (1 cr, max arr). Prin of accompanying with the use of keyboard instruments; lab assignments under supervision. Two lec-labs a wk. Prereq for 102: completion of one sem of MusA 100 in piano or equiv, or perm. Prereq for 402: perm.

J103/J303 Concert Choir (1 cr, max arr). Three to five rehearsals a wk. Prereq for 103: audition and perm. Prereq for 303: 4 cr in choral groups, audition, and perm.

J104/J304 (s) **Chorus** (1 cr, max arr). Section 1, swing choir; section 2, chamber choir; section 3, mixed chorus. All sections: 1 to 3 rehearsals a wk. Prereq for 104: perm. Prereq for 304: 4 cr in choral groups, audition and perm.

J105/J305 (s) **Orchestra** (1 cr, max arr). Three to five rehearsals a wk, with occasional evening rehearsals. Prereq for 105: perm. Prereq for 305: 4 cr in instrumental groups, audition, and perm.

J106/J306 (s) **Band** (1 cr, max arr). Separate sections for marching band, wind ensemble, concert band, and basketball band. Three to five rehearsals a wk. Prereq for 106: perm. Prereq for 306: 4 cr in instrumental groups, audition, and perm.

J108/J308 Chamber Orchestra (1 cr, max arr). One to five rehearsals a wk; may incl evening rehearsals. Prereq for 108: perm. Prereq for 308: 4 cr in instrumental groups, audition, and perm.

J109/J309 Festival Choir (1 cr, max arr). Two to five rehearsals a wk; open to all students. Prereq for J309: 4 cr in choral groups and perm.

J112/J312 (s) **Jazz Ensemble** (1 cr, max arr). Prereq for 112: audition and perm. Prereq for 312: 4 cr in jazz ensemble, audition, and perm.

145-146 Piano Class (1 cr). Two lec-labs a wk. Prereq: perm of dept.

147-148 Voice Class (1 cr). Two lec-labs a wk. Prereq: perm of dept.

J149-J150/J349-J350 Voice for Actors (1 cr, max arr). Group voice instruction based on theatre and musical theatre materials. Prereq: perm of dept.

151-152 Guitar Class (1 cr). Two lec-labs a wk. Prereq: perm of dept.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201 (s) **Indiv Instruction** (1 or 3 cr). Max 12 cr for the major performing area in MusA 100, 101, and 201 may be counted toward the B.Mus. degree. See MusA 100 for description and areas. Prereq: audition by committee and perm of dept; coreq for piano: MusA 102.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

245-246 Piano Class (1 cr). Two lec-labs a wk. Prereq: perm of dept.

J265/J365/J565 (s) **Chamber Ensemble** (1 cr, max arr). Chamber music performing groups; organized each sem. Prereq for 265: perm. Prereq for 365 and 565: audition and perm.

J266/J366/J566 Collegium Musicum (1 cr, max arr). Prereq for 266: perm. Prereq for 366 and 566: audition and perm.

J267/J367/J567 Percussion Ensemble (1 cr, max arr). Prereq for 267: perm. Prereq for 367 and 567: audition and perm.

J280/J480 Opera Workshop (1 cr, max 4, for 280; 1-3 cr, max 8, for 480). Analysis, rehearsal, and performance of operatic lit. Prereq for 280: perm. Prereq for 480: 2 cr in 280 or perm.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

301 (s) **Indiv Instruction** (1-3 cr, max arr). See MusA 100 for description and areas. Prereq: audition by committee and perm of dept.

387 Conducting I (2 cr). Baton tech, score reading, and problems of conductor of large choral and instrumental orgs. Prereq: MusC 122 or MusC 141.

407 (s) **Indiv Instruction** (1-3 cr, max arr). Not open to undergrads. Limited to grad students who are not concentrating in applied performance studies (who need to earn degree cr in an applied area), and to grad students concentrating in applied performance studies (who need to earn degree cr in a secondary applied area). See MusA 100 for areas offered. Prereq: perm of dept.

J454/J554 Performance Practices (2 cr). Performance practices of music from all periods. Prereq: perm.

487 Conducting II (2 cr). Prereq: MusA 387 or perm.

490 (s) **Senior Recital** (0 cr). Cr is granted under MusA 301. Graded P/F. Prereq: perm of dept.

498 Proseminar (2 cr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

505 (s) **Indiv Instruction** (1-6 cr, max arr). For majors concentrating in musical performance. See MusA 100 for description and areas. Prereq: audition by committee and perm of dept.

507 (s) **Indiv Instruction** (1-3 cr, max arr). For grad students who are studying a major instrument. Not applicable towards degree requirements for students enrolled in the performance emphasis of the M.Mus. degree. Prereq: audition by committee; proficiency equivalent to 301 level.

513-514 Seminar in Conducting (1-4 cr, max 8). Prereq: perm.

590 (s) **Master's Recital** (0 cr). Registration for recital related to degree. Cr is granted under MusA 505. Graded P/F. Prereq: perm of dept.

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 MusC 121 or 141. Max 8 cr in any combination of MusC 120, 121-122, 141, 142.

121-122 Elements of Music Theory (4 cr). For minors and students majoring in fields other than music. Singing, playing, dictation, writing scales, intervals, chords, and progressions. Not open for cr to students who have taken MusC 141, 142. Max 8 cr in any combination of MusC 120, 121-122, 141, 142. Five lec a wk. Prereq: 121 for 122.

133 Theory Keyboard Lab (1 cr). Fundamentals of keyboard tech as related to theoretical concepts and skills. Coreq: MusC 141.

139-140 Aural Skills I-II (1 cr). Exercises and drill in sight-singing and ear training.

141 Theory of Music I (3 cr). Primarily for and may be limited to majors. Melodic and harmonic materials, part-writing skills, and analysis. Prereq: perm of dept; coreq: MusA 145 and MusC 139.

142 Theory of Music II (3 cr). Primarily for and may be limited to majors. Harmonic materials, part-writing skills, and analysis. Prereq: MusC 141; coreq: MusC 140.

149 Rudiments of Music (3 cr, max 6). Flexible content to meet the needs of students. Prereq: perm.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201 Indiv Instruction: Composition (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

239-240 Aural Skills III-IV (1 cr).

241 Theory of Music III (3 cr). Primarily for and may be limited to majors. Prereq: MusC 142; coreq: MusC 239 and MusH 221.

242 Theory of Music IV (3 cr). Primarily for and may be limited to majors. Prereq: MusC 241; coreq: MusC 240 and MusH 222.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

301 Indiv Instruction: Composition (cr arr). Prereq: perm.

325 Composition (2 cr, max arr). Study and practice of composing with 20th-century tech and devices. Prereq: MusC 242 or perm.

327 Orchestration I (2 cr). Elem prin of transcription and orchestration; emphasis on instrument ranges, idiomatic characteristics, and score prep. Prereq: MusC 242 or perm.

331 Modal Counterpoint (2 cr). Stylistic approach to writing two-part counterpoint; emphasis on the vocal polyphony of the 16th century. Prereq: MusC 242 or perm.

332 Tonal Counterpoint (2 cr). Stylistic approach to writing counterpoint; emphasis on the *Two-Part Inventions* and *French Suites* of J. S. Bach. Prereq: MusC 242 or perm.

341 Twentieth-Century Music Theory and Lit (4 cr). Tech of composition studied through aural and visual analysis of significant works by 20th-century composers. Prereq: MusC 242 or perm.

345 Theory Review (3 cr). For adv-degree candidates. Summary of subject matter covered in MusC 141, 142, 241, 242, 341.

423-424 Adv Composition (2 cr). Continuation of MusC 325. Increasing emphasis on varied media and larger forms, but with value being placed on student's originality. Prereq: MusC 325 or perm.

426 Electronic Music (2 cr, max arr). Tech of musical composition using electronic media such as tape recorders and synthesizers. Prereq: MusC 325 or perm.

427 Orchestration II (2 cr, max arr). Instrumental scoring; orchestral styles of various periods; creativity in orchestral writing. Prereq: MusC 327 or perm.

428 Choral Arranging (2 cr). For music ed students and other generally interested in composition. Devices and tech. Prereq: MusC 122 or 142, or perm.

429 Theoretical Basis of Jazz (2 cr). Harmonic, melodic, rhythmic, and stylistic analysis of principal trends. Prereq: perm.

431 Adv Modal Counterpoint (2 cr). Continuation of MusC 331. Emphasis on three- and four-part vocal polyphony of the 16th century. Prereq: MusC 331 or perm.

432 Adv Tonal Counterpoint (2 cr). Continuation of MusC 332. Emphasis on three- and four-part counterpoint, including the fugue, beginning with the style of the 18th century. Prereq: MusC 332 or perm.

441 Twentieth-Century Tech (3 cr). Compositional tech of the 20th century; compositional and analyt projects.

442 Musical Analysis (3 cr). Study of traditional forms and analyt tech.

461 Band Arranging (2-4 cr, max 4). Scoring for wind instruments; range, transposition, and tone color. Prereq: MusC 242 or perm.

498 Proseminar (2 cr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

507 Indiv Instruction: Composition (cr arr). Prereq: perm.

513-514 Seminar in Music Theory (1-4 cr, max 8). Prereq: perm.

515-516 Seminar in Composition (1-4 cr, max 8). Prereq: perm.

521 Musical Analysis (3 cr, max 6). Analysis of selected musical compositions. Prereq: perm.

523-524 Counterpoint (2 cr). Adv contrapuntal writing, incl canon and fugue. Prereq: MusC 431.

527 Adv Orchestration (2-4 cr, max 4). Orchestral scoring; recent trends. Prereq: MusC 427 or perm.

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). Not open for cr to majors or to those who have taken MusC 141. Intro to the art and nature of music; emphasis on aural skills, hist styles, musical forms, and the lit of music.

101 Intro to Music (2 cr). Reqd of majors. Intro to the art and nature of music; emphasis on aural skills, hist styles, musical forms, and the lit of music.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

221-222 Music in Western Civ (3 cr). Hist of music from early middle ages to the mid-20th century; musical styles in cultural context of each period. These courses may be taken in either order; students may enroll in 222 without having had 221. Prereq: MusH 100 or MusC 141 or perm.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

410 Hist Survey of Jazz (2 cr). Origins, sources, evolution, styles, and performers of jazz music.

J412/J512 Medieval and Renaissance Music (3 cr). Prereq: perm.

J413/J511 Music in the Baroque Era (3 cr). Prereq: perm.

J415/J515 Classical and Romantic Music (3 cr). Prereq: perm.

J418/J518 Music in the Twentieth Century I (3 cr). From 1900 to 1950. Prereq: perm.

J419/J519 Music in the Twentieth Century II (3 cr). From 1950 to present, incl avant garde. Prereq: perm.

J431-J432/J531-J532 Piano Lit (2 cr). Baroque through contemporary period. Prereq: perm.

J435-J436/J535-J536 Solo Vocal Lit (2 cr). Baroque through contemporary period. Prereq: perm.

440 American Music (3 cr) (340). Survey, incl native American and European folk influences, early American traditional music, and 20th-century popular and concert music.

451 Guitar Lit (2 cr). Guitar hist and repertoire from earliest available sources to contemporary music.

457 Symphonic Music (3 cr). May be taken by students majoring in fields other than music, as well as music majors and minors. Masterworks of symphonic lit. Prereq: perm.

458 Chamber Music Lit (2 cr). May be taken by students majoring in fields other than music, as well as music majors and minors. Masterworks of chamber music lit. Prereq: perm.

459 Opera Lit (3 cr). May be taken by students majoring in fields other than music, as well as music majors and minors. Masterworks of operatic lit. Prereq: perm.

498 Proseminar (2 cr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

513-514 Seminar in Music Hist (1-4 cr, max 8). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

MUSIC TEACHING—MusT

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

250 (s) **Instrumental Tech** (1 cr, max 12). Group instruction. Problems in playing and teaching instruments in elem and secondary schools. Normally offered in violin, viola, cello, string bass, flute, clarinet, saxophone, oboe, bassoon, French horn, trumpet, trombone, and percussion. Each area may be repeated for cr. Prereq: perm.

251 String Instrument Tech (1 cr). Group instruction. Problems of playing and teaching stringed instruments in elem and secondary schools. Prereq: perm.

252 Clarinet Tech (1 cr). Group instruction. Problems of playing and teaching clarinet in elem and secondary schools. Prereq: perm.

253 Brass Instrument Tech (1 cr). Group instruction. Problems of playing and teaching brass instruments in elem and secondary schools. Prereq: perm.

254 Percussion Tech (1 cr). Group instruction. Problems of playing and teaching percussion instruments in elem and secondary schools. Prereq: perm.

255 Voice for Instrumentalists (1 cr). Group instruction for instrumental musicians; intro to singing tech and vocal production.

256 Intro to Instrumental Music (1 cr). Group instruction for vocal musicians; basic concepts of band and orchestral music.

286 Instrumental Ensemble Rehearsal Tech (1 cr). Various tech of rehearsing string, wind, and percussion players in an ensemble. May not be taken concurrently with MusT 386.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

351 Adv String Tech (1 cr). Group instruction. Prereq: MusT 251 or perm.

352 Double Reed Tech (1 cr). Group instruction. Prereq: MusT 252 or perm.

353 Adv Brass Tech (1 cr). Group instruction. Prereq: MusT 253 or perm.

354 Flute and Saxophone Tech (1 cr). Group instruction. Prereq: MusT 252 or perm.

381 Elem School Music Methods I (3 cr). Same as Ed 381. Curriculum, org, 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.

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 org of the school music prog. Must be taken before enrolling in Ed 432. Prereq: MusC 122 or 142.

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: MusC 122 or 142; prereq or coreq: MusT 383, MusA 387, or perm.

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 122 or 142; prereq or coreq: MusT 383, MusA 387, or perm.

J433/J533 Piano Pedagogy (2 cr). Methods and materials of teaching piano. Prereq: perm.

J434/J534 Piano Materials and Tech Studies (2 cr). Survey of intermediate piano materials and tech of playing the piano. Prereq: perm.

437 Vocal Pedagogy (2 cr). Methods and materials of teaching voice. Prereq: perm.

438 (s) **Practicum** (cr arr). Studio teaching of secondary music majors, minors, or electives. Prereq: perm.

441 String Pedagogy (2 cr). Methods and materials of teaching stringed instruments. Prereq: perm.

443 Class Piano Methods (2 cr). Modern training in group piano teaching; survey of current courses and tech. Prereq: perm.

451 Guitar Pedagogy (2 cr). Methods and materials of guitar instruction. Prereq: perm.

463 (s) **Instrumental Tech** (1-3 cr, max 6). Group instruction. Problems involved in the playing and teaching of instruments in elem and secondary schools. Prereq: perm.

466 Marching Band Tech (1 cr). Tech of drilling; materials for field and street maneuvers; prep of shows. Prereq: MusC 242.

467 Lit for Instrumental Ensembles (2 cr). Chamber music materials suitable for use in schools.

468 Lit for Vocal Ensembles (2 cr). Chamber music materials suitable for use in schools.

481 Elem School Music Methods II (3 cr). Prereq: MusT 381 or perm.

486 Instrumental Ensemble Rehearsal Tech (1 cr). See MusT 286 for description.

498 Proseminar (2 cr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

513-514 Seminar in Music Teaching (1-4 cr, max 8). Prereq: perm.

538 (s) **Practicum** (cr arr). Studio teaching of secondary music majors, minors, or electives. Prereq: perm.

562 Choral Lit and Tech (2 cr). Prereq: MusT 385, MusA 387, or perm.

563 Orchestral Lit and Tech (2 cr). Prereq: MusT 386, MusA 387, or perm.

564 Band Lit and Tech (2 cr). Prereq: MusT 386, MusA 387, or perm.

581 (s) **College Music Teaching** (3 cr, max 6). 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.

583 School Music Admin (2 cr). Prin underlying sound policies in the supervision and admin of school music. Prereq: one yr of teaching experience or perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

GENERAL—MusX

140 Convocation (0 cr). For majors. Attendance at designated musical events. Graded P/F.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

283-284 Diction for Singers (2 cr). MusX 283: German. MusX 284: French.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

469 Research Tech in Music (2 cr). Prin of research design and tech. Prereq: perm.

498 Proseminar (2 cr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

511 Intro to Musical Scholarship (2 cr). Orientation to grad study; bibliography and research procedures.

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.

Academic Junior Standing (AJS). Each major in the School of Music must be admitted into 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. 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 to enroll in MusA 301, he or she must have passed the requirements of the major area; this involves a special jury examination and demonstrates the successful completion of the fundamentals of the student's major area of performance and the ability to continue improving in a manner that will lead to the performance requirements of the degree and the major emphasis.

Convocation. Majors in the School of Music are required to attend a specific number of musical events as a part of their musical education. In order to certify this attendance, registration in MusX 140, Convocation, is required during every semester until the requirement is fulfilled. It is a graduation requirement that all B.A. and B.Mus. candidates receive a passing grade in MusX 140 for seven semesters of their residence at the University of Idaho. 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).

BASIC REQUIREMENTS FOR THE B.A. DEGREE IN MUSIC

Course	Credits
MusA 145 Piano Class	1
MusC 139-140, 239-240 Aural Skills I, II, III, IV	4
MusC 141, 142, 241, 242 Theory of Music I, II, III, IV	12
MusH 221-222 Music in Western Civ	6
MusX 140 Convocation (seven semesters)	0

Note: Of the minimum of 128 credits required for the B.A. degree, at least 78 credits must be in courses **outside** of the School of Music.

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, the basic requirements for the B.A. degree in music, and:

Course	Credits
MusA 100, 101, 201, 301 (2 cr each semester; at last 4 cr in 301) Indiv Instruction	16
MusA 490 Senior Recital	0
One course from MusC or MusH (300 or 400 level)	2-3
Electives to total 128 cr for the degree	--

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, the basic requirements for the B.A. degree in music, and:

Course	Credits
MusA 100, 101, 201, 301 (1 cr each semester) Individual Instruction	8
MusC courses (upper-div)	4
MusH courses (upper-div)	4-6
Electives to total 128 cr for the degree	--

MUSIC: THEORY (B.A.)

Required course work includes the university requirements (see regulation J-3), the L & S requirements for the B.A. degree, the basic requirements for the B.A. degree in music, and:

Course	Credits
MusA 100, 101, 201, 301 (1 cr each semester) Individual Instruction	8
MusC courses (upper-div)	10
Electives to total 128 cr for the degree	--

BASIC REQUIREMENTS FOR THE B.MUS. DEGREE

Course	Credits
MusA 100, 101, 201, Indiv Instr (major area)	12
MusA 145-146, 245-246 Piano Class	4
MusC 139-140, 239-240 Aural Skills I, II, III, IV	4
MusC 141, 142, 241, 242 Theory of Music I, II, III, IV	12
MusH 101 Intro to Music	2
MusH 221-222 Music in Western Civilization	6

MusX 140 Convocation (seven semesters) . . . 0
Large performance ensembles—to be selected from MusA 103, 104, 105, 106, 303, 304, 305, 306, or 402 (registration is normally reqd during the first two yrs of residence; registration in some performance ensemble, large or small, is reqd throughout the student's first eight semesters) . . . 4
Elective ensembles—from MusA 108, 112, 265, 266, 267, 280, 308, 312, 365, 366, 367, or 480 (additional large-ensemble cr may be selected from MusA 102, 103, 104, 105, 106, 303, 304, 305, or 306 to satisfy this requirement) . . . 2

Note: To fulfill the basic requirements for the B.Mus. degree, vocal music education majors who are preparing to teach solely at the elementary-school level are only required to achieve sophomore-level proficiency and pass 6 credits in individual instruction.

MUSIC: INSTRUMENTAL PERFORMANCE (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree and the specific requirements in one of the three sections below. It is strongly recommended that instrumentalists elect literature or pedagogy courses appropriate to their major fields.

A. KEYBOARD

Course	Credits
MusA 100, 101, 147-148, 151, or 201 Individual or Class Instruction (secondary fields)	4
MusA 301 Individual Instruction (major)	12
MusA 387 Conducting I (recommended)	0-2
MusA 454 Performance Practices	2
MusA 490 Senior Recital	0
MusH 431-432 Piano Literature	4
MusT 433 Piano Pedagogy	2
MusT 434 Piano Materials & Tech Studies	2
Additional electives ensemble performing groups (may be taken as 102 or 402)*	2
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-6 cr; MusC, 6-10 cr; MusH, 6-10 cr; MusT, 0-6 cr; MusX, 0-6 cr)**	16
Electives to total 128 cr for the degree	--

B. ORCHESTRAL INSTRUMENTS OR GUITAR

Course	Credits
MusA 100, 101, 147-148, 151, or 201 Individual or Class Instruction (secondary fields)	0-4
MusA 108, 265, 266, 308, 365, 366 Ensemble	2
MusA 301 Individual Instruction (major)	12
MusA 387 Conducting I	2
MusA 454 Performance Practices	2
MusA 490 Senior Recital	0
Additional elective ensemble performing groups	2
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-6 cr; MusC, 6-12 cr; MusH, 6-12 cr; MusT, 0-6 cr; MusX, 0-6 cr)	22
Electives to total 128 cr for the degree	--

C. WOODWINDS

Course	Credits
MusA 100, 101, 201 Individual Instruction (3 secondary woodwinds) including, at a minimum: MusA 201 (1st secondary woodwind), 1 cr; MusA 101 (2nd secondary woodwind), 1 cr; MusA 101 (3rd secondary woodwind), 1 cr	3-9
MusA 305, 306, 365 Large or small ensemble (principal woodwind)	1
MusA 105, 106, 108, 265 Large or small ensemble (1st secondary woodwind)	2
MusA 105, 106, 108, 265 Large or small ensemble (2nd secondary woodwind)	1
MusA 105, 106, 108, 265 Large or small ensemble (3rd secondary woodwind)	1
MusA 301 Indiv Instruction (principal woodwind)	2
MusA 387 Conducting I	2
MusA 454 Performance Practices	2
MusA 490 Senior Recital (on at least 2 instruments, one of which must be flute, oboe, or bassoon)	0
MusT 252 Clarinet Techniques	1
MusT 352 Double Reed Techniques	1
MusT 354 Flute & Saxophone Techniques	1
MusT 438 Practicum (in applied performance studies or music education)	2
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-6 cr; MusC, 6-12 cr; MusH, 6-12 cr; MusT, 0-6 cr; MusX, 0-6 cr)**	22
Electives to total 128 cr for the degree	--

MUSIC: VOCAL PERFORMANCE (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree, and:

Course	Credits
MusA 100, 101, 151, or 201, Individual or Class Instruction (secondary fields)	4
MusA 301 Individual Instruction (major)	12
MusA 387 Conducting I	2
MusA 490 Senior Recital	0
MusH 435 Solo Vocal Literature	2
MusT 437 Vocal Pedagogy	2
Additional elective ensemble performing groups	2
Foreign language (two yrs of one language or one yr each of two languages)	16
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-4 cr; MusC, 6-10 cr; MusH, 6-10 cr; MusT, 0-4 cr; MusX, 0-6 cr)**	16
Electives to total 128 cr for the degree	--

MUSIC: COMPOSITION (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree, and:

Course	Credits
MusA 387 Conducting I	2
MusC 325 Composition	2
MusC 327 Orchestration I	2
MusC 331, 332 Modal and Tonal Counterpoint	4
MusC 427 Orchestration II	2
MusT 251, 252, 253, 254, 352 Instrumental Techniques	5
Additional composition (from MusC 200 and/or 400)	6
Additional music electives (to be selected from courses in the 300-400 series in the following proportions: MusA, 0-6 cr; MusC, 4-6 cr; MusH, 6-9 cr; MusT, 0-4 cr; MusX, 0-6 cr)**	12
Electives to total 128 cr for the degree	--

MUSIC EDUCATION: VOCAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree, and completion of one of the two sections below:

A. PREPARATION FOR JR.-SR. HIGH SCHOOL MUSIC TEACHING

Course	Credits
MusA 100, 101, ot 201 Individual Instruction (piano)	0-2
MusA 151 or 152 Guitar Class	1
MusA 301 Individual Instruction (major area)	2-4
MusA 387 Conducting I	2
MusT 256 Intro to Instrumental Music	1
MusT 381 Elementary School Music Methods I	3
MusT 383 Principles of Music Teaching	3
MusT 385 Choral Music in Secondary Schools	2
MusX 283 Diction for Singers	2
Additional elective ensemble performing groups	2
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
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-4 cr; MusC, 2-6 cr; MusH, 3-6 cr; MusT, 0-4 cr; MusX, 0-4 cr)**	8
Electives to total 128 cr for the degree	--

B. PREPARATION FOR ELEMENTARY SCHOOL MUSIC TEACHING

Note: Students who choose this program must enroll in vocal ensembles to fulfill the elective ensembles under the basic requirements for the B.Mus. degree.

Course	Credits
MusA 147-148 Voice Class	2
MusA 151 or 152 Guitar Class	1
MusA 301 Individual Instruction*	2
MusA 387 Conducting I	2
MusT 381, 481 Elem School Music Methods I, II	6
MusT 383 Principles of Music Teaching	3
Comm 131 Fundamentals of Speech	2
Ed 201 Intro to Teaching	2
Ed 314 Strategies for Teaching	2
Ed 328 Audiovisual Aids	1
Ed 432 Practicum: Music Teaching	9
Ed 434 Children's Literature	3
Ed 436 Reading: Alternatives to Basals	2
Ed 445 Proseminar in Teaching	1
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-4 cr; MusC, 206 cr; MusH, 3-6 cr; MusT, 0-4 cr; MusX, 0-4 cr)**	8
Electives to total 128 cr for the degree	--

Recommended, but not required:
Ed 415 Educational Psychology

MUSIC EDUCATION: INSTRUMENTAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree, and:

Course	Credits
MusA 100, 101, 147-148, 151-152, or 201 Individual or Class Instruction (secondary area)	0-4
MusA 301 Individual Instruction (major area)	2
MusA 387 Conducting I	2
MusT 251, 252, 253, 254, 351, 352, 353, 354 Instrumental Techniques	8
MusT 255 Voice for Instrumentalists	1
MusT 381 Elementary School Music Methods I	3
MusT 383 Principles of Music Teaching	3
MusT 386 Instrumental Music in Secondary School	2
Additional elective ensemble performing groups*	2
Ed 201 Introduction 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
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-4 cr; MusC, 2-6 cr; MusH, 3-6 cr; MusT, 0-4 cr; MusC, 0-4 cr)**	8
Electives to total 128 cr for the degree	--

Recommended for keyboard principals:
MusT 433 or 434 Piano pedagogy course work

MUSIC EDUCATION: VOCAL-INSTRUMENTAL (B.Mus.)

Required course work includes the university requirements (see regulation J-3), the basic requirements for the B.Mus. degree, and:

Course	Credits
MusA 100, 101, 147-148, 151-152, or 201 Individual or Class Instruction (secondary area)	0-4
MusA 301 Individual Instruction (major area)	2
MusA 387 Conducting I	2
MusT 251, 252, 253, 254, 351, 352, 353, 354 Instrumental Techniques	8
MusT 381 Elementary School Music Methods I	3
MusT 383 Principles of Music Teaching	3
MusT 385 Choral Music in Secondary School	2
MusT 386 Instrumental Music in Secondary School	2
Additional elective ensemble performing groups*	2
Ed 201 Introduction 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
Additional music electives (to be selected from courses in the 300-499 series in the following proportions: MusA, 0-4 cr; MusC, 2-6 cr; MusH, 3-6 cr; MusT, 0-4 cr; MusX, 0-4 cr)**	8
Electives to total 128 cr for the degree	--

Recommended for keyboard principals:
MusT 433 Piano Pedagogy

*Students whose principal instrument is piano should consult the School of Music Handbook for the piano accompanying requirement.

**Individual instruction and large or small ensembles may be applied to the general electives, but are not applicable to this requirement.

Department of Naval Science

James V. Davis, Dept. Head (101 Navy Bldg.). Faculty: James V. Davis, Philip W. Hinrichs, Homer Jones, Barbara J. Kelly, Lawrence C. McBride, Michael C. Wade.

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. Because of this economic interdependency among nations and the heavy volume of trade that it has necessitated, transportation by sea has risen in importance because it is by far the most economical means to date.

Because protection of these sea lanes is paramount to our country's survival, 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.

The focal point on the UI campus for NOEP students is the Navy Building. 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 in advanced standing (usually the 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 and active duty 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 22 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 six to eight 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 reserve 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 year 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

100 Drill/Lab (0 cr). Reqd of all Navy-Marine Corps OEP students. One 1-hr lab a wk.

101 Intro to Naval Science (2 cr). Roles of major elements of naval science; design and structure of ships.

102 Ships Systems I (3 cr). Intro to damage control and propulsion systems of naval ships; nuclear and conventional power.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

201 Ships Systems II (3 cr). Naval weapons: ballistics, control, propulsion, components, systems analysis.

202 Seapower and Maritime Affairs (2 cr). U.S. Navy and merchant marine seapower, dev, and policy.

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

301 Navigation (3 cr). Theory, prin, and procedures of terrestrial and celestial navigation. Three lec and one 1-hr lab a wk.

302 Naval Operations (3 cr). Naval operations and tactics, relative motion, "rules of the nautical road." Three lec and one 1-hr lab a wk. Prereq: 301.

311 Evolution of Warfare (3 cr). Alt/yrs 83-84. Evolution of war through tactics; strategy from Sun Tzu to J.F.C. Fuller. Three lec and one 1-hr lab a wk.

401 Naval Org and Mgt (2 cr). Theories of mgt and mgt resources, motivational theories and leadership.

402 Naval Leadership (2 cr). Prin and style of leadership, personal attributes, and U.C.M.J.

412 Amphibious Operations (3 cr). Alt/yrs 84-85. Amphibious doctrine from Gallipoli to the *Mayaguez*.

451 Navy Flight Indoctrination Prog I (2 cr). Includes 30 hrs intro to naval aviation emphasizing org and mission, navigation, prin of flight, types of aircraft, and duties of naval aviators and flight officers.

452 Navy Flight Indoctrination Prog II (2 cr). Includes 20 hrs ground school, 15 hrs flying time. Prereq: jr or sr midshipman and perm of dept.

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 205 Intro to Computer Programming	3
Hist 456 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.

Nuclear Engineering

William P. Barnes, Program Director (245 Gauss Engr. Lab.). Faculty: Jasper R. Avery, William P. Barnes, J. Richard Williams.

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.

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: R120 or perm.

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: R220 or perm.

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.

360 Nuclear Reactor 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.

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.

404 (s) **Special Topics** (cr arr).

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.

R462 Nuclear Reactor Codes and Standards (3 cr). Same as IEd R464. 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.)

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.

473 Nuclear Instrumentation (3 cr). Alt/yrs 83-84. Radiation detection instruments and associated circuitry as applied to nuclear engr. Prereq: EE 314 or equiv.

R500 Master's Research and Thesis (cr arr).

R501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

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.

R550 Topics in Adv Nuclear Engr (3 cr). Prereq: perm.

WS556 Nuclear Engr Lab (2 cr). WSU ChE 516. Detection and measurement of phenomena involving neutrons in reactor assemblies; appl of theory of neutron distribution and control. Prereq: perm.

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.

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

Francis Seaman, Dept. Chairman (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.

Students admitted to the Master of Arts program must fulfill the requirements of the Graduate School and those established by the faculty members of the Philosophy Department. The specific course requirements for each student will be worked out by the student and his or her major professor and approved by the student's committee. Because course offerings and staff are limited, to be admitted to the program the student must give evidence of being able to do some independent work. For further information, see the Graduate Bulletin.

Philosophy Courses—Phil

101 Ethics (3 cr) (C) (151, 201). Dev of ethical thought.

102 Types of Phil (3 cr) (101). Not open to students who have taken 103. Chief types of philosophic thought through a study of their more distinguished representatives; Plato, Lucretius, Descartes, Spinosa, and James.

103 Prin and Problems (3 cr). Not open to students who have taken 102. Topics explored include the nature of reality, the existence of God, free will, political phil, and ethical problems such as abortion, war, etc.

111 Intro to the Phil of Religion (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.

204; 404 (s) **Special Topics** (cr arr).

211 Logic (3 cr). Methods of reasoning; function of logic in the methods of sc. Prereq: 102 or 103 or soph standing.

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.

306 Oriental Thought I (3 cr). Phil and religion of Zoroaster, the Vedas, the Upanishads, the Bhagavad Gita, Jainism, and later Hindu thought.

307 Oriental Thought II (3 cr). Phil and religion of Gautama Buddha as it developed in India, China, and Japan—Taoism and Confucianism.

309 Hist of Ancient Phil (3 cr) (C). Phil thought from the early Greeks through the Middle Ages; concentration on metaphysics and theory of knowledge.

310 Hist of Modern Phil (3 cr) (C). Phil and political thought from Descartes through Kant.

400 (s) **Seminar** (cr arr). Prereq: perm.

401 Phil of the Arts (3 cr). Chief conceptions of the nature of the arts and their interpretation.

403 Adv Logic (3 cr). Ideas and tech of contemporary logic.

411 Social Phil (3 cr). Phil theories of the origin and nature of society and of the state.

412 Phil of Science (3 cr). Basic concepts of modern sc.

414 Ethical Theory (3 cr). Main points of view.

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.

421 Existentialism (3 cr). Readings in such writers as Kierkegaard, Nietzsche, Camus, and Sartre.

422 Phil Ideas in Recent Lit (3 cr). Ethical, social, and political trend; Nietzsche, Stein, Sartre, Maugham, Joyce, Hardy.

425 American Phil (3 cr). Phil ideas of the U.S.; emphasis on period since 1875.

431 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.

442 Phil of Mind (3 cr). Recent disc of the concept of mind, action, emotion, and private language; identity theory.

499 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Normally offered in hist of phil, value theory, contemporary phil, phil of sc, metaphysics, and medieval phil. Prereq: perm.

502 (s) **Directed Study** (cr arr). Normally offered in hist of phil, value theory, contemporary phil, phil of sc, and metaphysics. Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

PHILOSOPHY (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 chairman 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

Department of Physics

Henry Willmes, Dept. Chairman (13 Phys. Sc. Bldg.). Faculty: Michael E. Browne, Lawrence W. Davis, Jr., Philip A. Deutchman, Thomas E. Ingerson, Lawrence H. Johnston, Robert J. Kearney, George Patsakos, Everett F. Sieckmann, 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., M.Nat.Sc., M.Nuc.Sc., 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—Phys

CREDIT LIMITATIONS: Maximum 9 credits in Phys 210, 211, 220, 221, 222; maximum 3 credits in Phys 212, 213, 223, 224, 225. Phys 113 carries no credit after Phys 210 or 220; Phys 114 carries no credit after Phys 211 or 221; Phys 115 carries no credit after Phys 212 or 223; Phys 116 carries no credit after Phys 213 or 224.

101 Fundamentals of Physical Sc (4 cr). For students in nontech fields. Basic physical laws and concepts, and their appl. Three lec and one 2-hr lab a wk.

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.

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.

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.

106 Physics and Society Lab (1 cr). Lab to accompany 105. One 2-hr lab a wk.

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, microphones, amplifiers, recording systems, AM-FM modulation, stereophonic and quadraphonic systems. No background reqd beyond high school math.

108 Physics of Music and Sound Lab (1 cr). Lab to accompany 107. One 3-hr lab a wk. Coreq: 107.

113-114 General Physics (3 cr) (C, 113 only). 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.

115-116 General Physics Lab (1 cr). Lab to accompany 113-114. One 2-hr lab a wk.

R208-R209 Intro to Radiological Health Physics (3 cr). Sources, properties, detection, and measurement of radiation; interaction of radiation with matter and with biol systems; shielding; contamination, waste disposal; control of radiation hazards. Prereq: 113-114.

210 Engr Physics I (3 cr). 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.

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.

212-213 Engr Physics Lab (1 cr). Lab to accompany 210-211. One 2-hr lab a wk.

220 Intro to Mechanics (3 cr). Vectors, statics and dynamics, linear and rotational motion in one and two dimensions, Newton's laws, gravity and central forces, conservation laws of energy, linear and angular momentum, collisions. Three lec and one recitation a wk. Prereq or coreq: Math 180.

221 Intro to Electricity and Magnetism (3 cr). Electric fields, Gauss' law, electric potential, capacitance and dielectrics, currents and circuits, the magnetic field, Ampere's law, Faraday's law, inductance, AC circuits, electromagnetic waves, Maxwell's equations. Three lec and one recitation a wk. Prereq: 220; coreq: Math 190.

222 Intro to Waves and Thermodynamics (3 cr). Waves in elastic media, sound waves, temperature, heat and thermodynamics, kinetic theory, nature of light, geometric optics, reflection, refraction, interference, diffraction, lasers and optical instrumentation. Three lec and one recitation a wk. Prereq: 220, 210 or 221, or perm; prereq or coreq: Math 190.

223-224-225 Intro Physics Lab (1 cr). Lab to accompany 220-221-222. One 2-hr lab a wk.

307 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.

308 Acoustics Lab (1 cr). Basic experiments in physical, physiological, musical, and arch acoustics. One 3-hr lab a wk. Coreq: 307.

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.

R311 Health Physics in Industrial Safety (3 cr). Basic concepts of physics, biol, and radiation control as related to personnel protection from ionizing radiation.

315 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.

R317 Electronics (3 cr). Electron ballistics, vacuum and gaseous tubes. Prereq: perm.

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.

330 Energy Sources (3 cr). Physics of existing and ultimate sources of energy; emphasis on solar and wind energy. Prereq: 220-221 or 113-114, or 210-211, and Math 180.

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.

343 Electricity and Magnetism Lab (1 cr). Lab to accompany 342. Use, calibration, and care of precision elec engr instruments. One 3-hr lab a wk.

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.

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.

361 Intro to Modern Physics Lab (1 cr). Lab to accompany 360. One 3-hr lab a wk.

400; 501 (s) Seminar (cr arr). Prereq: perm.

403; 503 (s) Workshop (cr arr). Prereq: perm.

404; 504 (s) Special Topics (cr arr).

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.

413 Adv Physics Lab (2 cr). Two 3-hr lab a wk. Prereq or coreq: 412.

431-432 Thermodynamics and Kinetic Theory (3 cr). Laws of thermodynmaics, kinetic theory, and their appl to topics in physics. Coreq: 360.

443 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.

444 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.

445 Optics Lab (1 cr). Lab to accompany 443. One 3-hr lab a wk.

446 Quantum Optics Lab (1 cr). Lab to accompany 444. One 3-hr lab a wk.

463 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.

465 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.

466 Nuclear Physics Lab (1 cr). Lab to accompany 465. One 3-hr lab a wk.

R471 Intro to Theoretical Physics (3 cr). Vector and tensor methods in conjuction with Newtonian and Lagrangian methods in solving problems in mech systems. Prereq: general physics, differential equations, and perm.

485 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.

486 Adv Astronomy Lab (1 cr). Adv professional work in experimental astronomy; photography, photometry, spectrometry, radio astronomy. Prereq: 104 or perm.

491 Proseminar (1 cr). Recent dev. Prereq: sr standing in physics.

497 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

498 Research (1-6 cr, max 6). Undergrad thesis. Prereq: jr standing in physics and perm of dept.

499; 502 (s) Directed Study (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

R506 Radiological Shielding and Design Concepts (3 cr). Radiation shielding and engr design prin of materials, structures, and facilities. Prereq: basic differential and integral calculus, and perm.

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.

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.

R517 Radiation Dosimetry Instrumentation (3 cr). Radiation detection methods, stat, instrumentation, and dose determination; emphasis on radiation protection.

R518 Radiation Biol (3 cr). Mechanisms and patterns of energy deposition by ionizing radiation in biol systems.

R519 Radiation Physiology (3 cr). Selected topics from human physiology and methods of internal dosimetry. Prereq: radiation biol and calculus.

521 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.

531 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.

541-542 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.

551-552; 553 Quantum Methods (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, field theory and quantum electrodynamics; appl to theory of radiation, pair production, and scattering. Prereq: 322, 360 for 551-552; 552 for 553.

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.

ID562 Molecular Spectra (3 cr). Molecular spectra and their relations to molecular structure; emphasis on diatomic and triatomic molecules. Prereq: ID561 or perm.

563-564 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.

566 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, beta decay, nuclear shell structure, nuclear models, mesons and meson theory; topics in high energy physics. Prereq: 465, and 351 or 551.

571-572 Theoretical Physics (3 cr). Methods and problems. Prereq: 322 or perm.

573 Physical Appl of Group Theory (3 cr). Intro to group theory with appl to atoms, molecules, and solids; no previous knowledge of group theory assumed. Prereq: 551 or equiv.

581 (s) Topics in Adv Physics (1-9 cr, max 9). Topics of interest to students and staff.

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.

R587 Reactor Physics for Engineers (3 cr). Review of nuclear physics, nuclear fission, chain reaction, and reactor theory. Prereq: Math 310 or equiv.

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.

R589 Adv Reactor Theory (3 cr). Integrodifferential Boltzmann equation, integral Boltzmann equation; Pn and double Pn approximation; diffusion theory as obtained from transport theory; microscopic heterogeneous reactor theory, small source theory, reactor kinetics; perturbation theory; burnable poisons and control rod theory. Prereq: perm.

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 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Intro Physics Lab	3
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
Phys 498 Research	1
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 3 cr of lab)	9
And, for the B.S. only:	
Upper-div physics courses (incl at least 3 cr of lab)	15

PHYSICS (B.Appl.Phys.)

Required course work includes the university requirements (see regulation J-3) and:

Course	Credits
Phys 220 Intro to Mechanics	3
Phys 221 Intro to Electricity & Magnetism	3
Phys 222 Intro to Waves & Thermodynamics	3
Phys 223-224-225 Intro Physics Lab	3
Phys 321 Analytical Mechanics	3
Phys 341-342 Electricity & Magnetism	3
Phys 351 Elementary Quantum Mechanics	3
Phys 360, 361 Intro to Modern Physics & Lab	4
Phys 411-412 Physical Instrumentation I-II	6
Phys 443, 445 Optics & Lab	4
Phys 444, 446 Quantum Optics & Lab	4
Phys 498 Research	6
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
Math 205 Intro to Computer Programming or CS 131 Intro to Computer Programming	2-3
Math 310 Ordinary Differential Equations	3
Physics, applied math, or computer sc courses (upper-div)	6
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.

Physiology

Faculty: Arthur A. Boe, Richard C. Bull, Ross E. Christian, Joseph G. Cloud, Donald L. Crawford, Steven L. Davis, Victor P. Eroschenko, J. Homer Ferguson, Kim L. Hossner, Marc J. Klowden, Walter J. Kochan, Duane J. Le Tourneau, Robert L. Mahler, Thomas A. McKean, Alexander W. McNeill, Rodney A. Mead, Glen A. Murray, Lawrence E. O'Keeffe, Robert C. Ritter, Lorin W. Roberts, Robert E. Roffler, Arthur W. Rourke, R. Garth Sasser, Peter J. South, Donald C. Thill, Edmund E. Tylutki.

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 and Veterinary Sciences, Biological Sciences, and Plant, Soil, and Entomological Sciences.

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 sections.

ANIMAL PHYSIOLOGY

AnSc 352 Physiology of Reproduction and Lactation (3 cr).

AnSc 353 Physiology of Reproduction and Lactation Lab (1 cr).

AnSc WS413 Physiology of Lactation (3 cr).

AnSc 451 Endocrine Physiology (3 cr).

AnSc ID454 Artificial Insemination and Pregnancy Detection (2 cr).

AnSc ID513 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 Adv Endocrine Physiology (3 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 Systems (5 cr).

PE 418 Physiology of Exercise (3 cr).

PE 518 Adv Prin in Physiological Assessments of Human Performance (3 cr).

Psych 441 Physiological Psych (3 cr).

VS 371 Anatomy and Physiology (4 cr).

VS 516 Methods of Animal Experimentation (4 cr).

Zool 119 Human Anatomy and Physiology (5 cr).

Zool J411/J511 Comparative Vertebrate Reproduction (3 cr).

Zool 412 Comparative Vertebrate Reproduction Lab (2 cr).

Zool J414/J514B Cell Physiology (3 cr).

Zool 415 Cell Physiology Lab (2 cr).

Zool 416 Mammalian Physiology (4 cr).

Zool 417 Endocrine Physiology (3 cr).

Zool 513 Comparative Animal 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).

PISc 401 Crop Physiology (3 cr).

PISc 405 Biol of Weeds (3 cr).

PISc 461 Pomology (3 cr).

PISc 517 Tree Physiology (3 cr).

PISc ID518 Plant Stress Physiology (2 cr).

PISc ID519 Physiology of Flowering (2 cr).

PISc WS535 Physiology and Genetics of Parasitism (3 cr).

PISc ID538 Properties and Function of Herbicides (2 cr).

PISc 569 Seed Physiology (2 cr).

Soils 446 Soil Fertility (3 cr).

Soils 448 Mineral Nutrition (3 cr).

Soils ID515 Chem of Plant Nutrients (3 cr).

Soils WS546 Adv Soil Fertility (3 cr).

Department of Plant, Soil, and Entomological Sciences

Gary A. Lee, Dept. Head (242 Iddings Wing, Ag. Sc. Bldg.).

Entomology Faculty: Craig R. Baird, Edward J. Bechinski, Guy W. Bishop, Merlyn A. Brusven, Gene P. Carpenter, Malcolm M. Furniss, Arthur R. Gittins, Hugh W. Homan, James B. Johnson, Leslie P. Kish, Marc J. Klowden, Joseph P. McCaffrey, Lawrence E. O'Keeffe, Larry E. Sandvol, Donald R. Scott, Robert L. Stoltz.

Plant Science Faculty: Dick L. Auld, Arthur A. Boe, Robert H. Callihan, William M. Colt, James R. Davis, Steven A. Dewey, Robert B. Dwelle, Ronald D. Ensign, Harry S. Fenwick, Robert L. Forster, John J. Gallian, Harold R. Guenthner, Lloyd C. Haderlie, Audus W. Helton, Gale E. Kleinkopf, Gary D. Kleinschmidt, Walter J. Kochan, John J. Kolar, Gary A. Lee, Harry A. Menser, Jr., Glen A. Murray, Richard E. Ohms, John C. Ojala, Steven E. Petrie, R. Robert Romanko, Norman W. Schaad, William R. Simpson, Robert L. Skiles, Jeffrey C. Stark, Donald C. Thill, Maurice V. Wiese.

Soils Faculty: Maynard A. Fosberg, John E. Hammel, Glenn C. Lewis, Robert L. Mahler, Robert E. McDole, Raymond J. Miller, 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 commercial nurseries, greenhouses, recreational parks, and related industries.

In the soil science degree program, students may choose either an agribusiness major or soil science major. The agribusiness major is offered for students who are interested in careers in the businesses and industries associated with soils and farm chemicals. The curriculum provides a strong background in soil sciences with supporting courses in accounting, agricultural economics, business, and economics. The soil science major is offered for students who 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. Those interested in continued study in soils at the graduate level are encouraged to enroll in this curriculum.

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.

211 General Ent (4 cr). Structure, dev, classification, habits, and ecology of insects. Three lec and one 3-hr lab a wk.

217 Intro to Integrated Pest Mgt (2 cr). Same as PISc 217. Prin, theory, and methodology of regulating populations of organisms detrimental to ag.

322 Economic Ent (3-4 cr). Insect relationship to man and his environment; ident, biol, and control. Two lec and one 2-hr lab a wk. A student who has no previous ent course must register for 4 cr (incl 1 hr cr of directed study).

342 Insect Ident (4 cr). Survey of major families; collecting and preservation tech. Two lec and two 2-hr labs a wk; two 1-day field trips. Prereq: 211.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

400; 501 (s) Seminar (cr arr). Prereq: perm.

438 Mgt of Pesticides in the Environment (3 cr). Same as Inter ID438 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, and pesticide laws and regulations.

442 Immature Insects (3 cr). Alt/yrs 84-85. Structure, behavior, and ident of immature insects. One lec and two 2-hr labs a wk; one 1-day field trip. Prereq: 211.

WS443 Insect Ecology (3 cr). Alt/yrs 83-84. Interrelationships of insects with the physical and biotic environment; population dynamics and community relations. Two lec and one 3-hr lab a wk. Prereq: 211 or 322.

WS444 Insect Morphology (5 cr). Alt/yrs 83-84. Comparative external morphology and internal anatomy of insects. Two lec and three 3-hr labs a wk. Prereq: 211 or 322.

ID-J446/ID-J546 Host Plant Resistance and Cultural Suppression of Insect Pests (2 cr). Alt/yrs 84-85. 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 PlSc 217, or perm.

ID447 Biol Control of Arthropod Pests and Weeds (2 cr). Alt/yrs 84-85. Intro to hist and dev of biol control and biol and ecological factors involved; emphasis on entomophagous and phytophagous insects. Prereq: perm.

WS448 Medical Ent (4 cr). Insects and related arthropods in relation to human and animal health; means of control. Prereq: adv standing in ent.

468 Forest and Rangeland Ent (4 cr). Alt/yrs 83-84. Insects of forest and rangeland environments: their biologies, ecological relationships, and ident. Three lec and one 2-hr lab a wk; two 1-day field trips. Prereq: perm.

ID472 Aquatic Ent (1 cr). Ident and biol of insects associated with aquatic and subaquatic environments. Prereq: perm.

ID474 Aquatic Ent Lab (2 cr). Lab to accompany ID472. Two 3-hr labs a wk; two 1-day field trips. Coreq: ID472.

ID484 Insect Anatomy and Physiology (4 cr). Alt/yrs 83-84. Organ systems of insects and their functions. Three lec and one 3-hr lab a wk. Prereq: 211.

485 Pesticide Chemistry and Toxicology (3 cr). Alt/yrs 84-85. Pesticide chemistry and mode of action, toxicity and metabolism of pesticides in animals and plants. Prereq: course in organic chem and Ent ID484 or PlSc 338, or perm.

491 Prin of Integrated Pest Mgt (3 cr). Ecological, biological, econ, and soc considerations involved in pest mgt decisions. Prereq: sr standing.

ID-J496/ID-J596 Developmental Systems in Insects (3 cr) (ID498). Alt/yrs 83-84. 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.

499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

500 Master's Research and Thesis (cr arr).

ID513 Ent Research Methods (2 cr). Basic lab and field research methods, tech, and equipment; chemical formulation; insect rearing, population and disease control; basic bee keeping.

ID517 Entomological Lit (2 cr). Survey of lit and bibliographic aids.

522 Insect Pathology (3 cr). Alt/yrs 84-85. Theory, prin, and tech in insect pathology; survey and ident of major pathogenic groups; disease etiology and diagnosis; epizootiological relationships; role of insect diseases in integrated pest mgt. Two lec and one 2-hr lab a wk; one 1-day field trip. Prereq: perm.

ID541 Adv Insect Ecology (3 cr). Alt/yrs 84-85. 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.

WS542 Insect Behavior (4 cr). Alt/yrs 83-84. Behavior of insects; orientation to environmental conditions. Three lec and one 3-hr lab a wk.

WS543 Population Mgt (2 cr). Alt/yrs 83-84. Concepts and methods of pest mgt; population and econ analysis; modeling and simulation; strategic mgt decision-making. Prereq: perm.

544 Systematic Ent (3 cr). Alt/yrs 84-85. Prin and concepts of insect classification; taxonomic procedures and rules of zoological nomenclature.

WS545 Toxicology of Insecticides (4 cr). Alt/yrs 83-84. Mode of action of insecticides at neural membrane and molecular levels; mechanisms of selectivity and resistance to poisons. Prereq: organic chem or perm.

WS549 Biol and Integrated Control (2 cr). Alt/yrs 83-84. Use of natural organisms for control of insect and weed pests; dev of integrated programs. Prereq: perm.

WS550 Insect Physiology (4 cr). Alt/yrs 83-84. Mechanisms of vital processes in insects; the organ, cellular, subcellular, chem, and physical levels. Prereq: courses in organic chem and cell physiology.

568 Systems Analysis in Integrated Pest Mgt (2 cr). Alt/yrs 84-85. Appl of systems sc and methodology to integrated pest mgt in ag, forest, and urban situations. Prereq: perm.

ID582 Insect Physiological Ecology (2 cr). Alt/yrs 84-85. Interrelationships of environment with selected metabolic functions, structure, and behavior of insects. Prereq: ID484 or perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

PLANT SCIENCE—PISc

102 Intro to Plant Sc (3 cr). Propagation, growth, and culture of crop and ornamental plants.

104 Plant Sc Lab (1 cr). Greenhouse operation, plant culture and propagation; crop ident, uses, distribution, and growth. One 2-hr lab a wk. Coreq: 102.

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.

217 Intro to Integrated Pest Mgt (2 cr). See Ent 217.

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.

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.

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.

340 Nursery Mgt (3 cr). Alt/yrs 83-84. 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.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

399 (s) **Directed Study** (1-2 cr, max 2). Prereq: perm.

400 (s) **Seminar** (1 cr). Prereq: perm.

401 Crop Physiology (3 cr). Appl of physiology to crop mgt. Prereq: Bot 311.

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.

405 Biol of Weeds (3 cr). Biol, ecology, and physiology of weeds with emphasis on crop and weed interactions. One lec and one 4-hr lab a wk; an additional 2 hrs of lab time a wk (arranged) is reqd. Prereq: Bot 311 or perm.

406 (s) **Special Topics** (cr arr).

407 Field Crop Production (3 cr). Mgt and use of crops in Idaho and the Northwest. One 1-day field trip.

438 Mgt of Pesticides in the Environment (3 cr). See Ent 438.

440 Econ Nematology (3 cr). Tech of isolation, ident, crop loss assessment, and control of plant parasitic nematodes. Six hrs lec/lab a wk. Prereq: 305.

446 Plant Breeding (3 cr). Same as Genet 446. Appl of genetic prin to the improvement of crop plants. Prereq: Genet 314 or equiv.

461 Pomology (3 cr). Alt/yrs 84-85. Production and mgt of tree fruit, physiology of the trees and stored fruit. One 2-day field trip.

462 Greenhouse Mgt (3 cr). Alt/yrs 84-85. Greenhouse structures and heating; culture of greenhouse crops. Two lec and one 2-hr lab a wk; one 1-day field trip.

463 Olericulture (3 cr). Alt/yrs 83-84. Prin of commercial and home garden vegetable production; culture, marketing, storage, and use. One 2-day field trip. Prereq: 102 or equiv.

464 Ornamental Plants and Their Mgt (3 cr). Use and culture of plants to enhance man's environment. Two lec and two 2-hr labs a wk. Prereq: 102 and 104 or perm.

ID469 Vegetable Seed Crop Production (1 cr). Alt/yrs 84-85. Crops indigenous to the Northwest; seedhouse operations and seed regulation. Prereq: perm.

ID470 Potato Sc (2 cr). Alt/yrs 84-85. Origin, culture, harvesting, handling, storage, and marketing. Prereq: perm.

480 Field Trip (1 cr). Five-day field trip to production areas. Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

504 (s) **Special Topics** (cr arr). Prereq: perm.

WS505 Adv Plant Breeding (4 cr). WSU Agron 504. Alt/yrs 84-85. Genetic, cytogenetic, and stat theories and prin underlying modern methods. Prereq: 446 or equiv.

WS507 Technology of Herbicide Dev and Appl (3 cr). Exam of herbicide discovery and formulation; toxicology and tech used to evaluate chem toxicity; appl equipment; fate of herbicides in soil; overview of professions in weed sc.

ID508 Ecology of Soilborne Plant Pathogenic Organisms (3 cr). Effects of climate, crop mgt, and microbial association on the prevalence and pathogenic activity of soilborne plant pathogenic organisms.

WS509 Physiology in Plant Breeding (3 cr). Alt/yrs 83-84. Theory and methodology associated with use of physiological and biochem tech in plant breeding programs. Prereq: Bot 311 and Genet 314.

ID&WS511 Viruses and Virus Diseases of Plants (3 cr). WSU Pl P 511. Nature of plant viruses, vector-virus relationships, and virus diseases of plants. Prereq: perm.

517 Tree Physiology (3 cr). Alt/yrs 83-84. Physiology of woody perennial plants of econ importance. Prereq: Bot 311.

ID518 Plant Stress Physiology (2 cr). Alt/yrs 83-84. Responses of plants to temperatures, water, radiation, and other environmental stresses.

ID519 Physiology of Flowering (2 cr). Alt/yrs 83-84. Vernalization, photoperiodism, and biochem of flowering; models.

532 Adv Weed Studies (1-3 cr, max 6). Alt/yrs 83-84. Specialized training in selected phases.

WD535 Physiology and Genetics of Parasitism (3 cr). Alt/yrs 83-84. WSU Pl P 535. Genetic and physiologic aspects of host-parasite interactions. Prereq: perm.

ID538 Properties and Functions of Herbicides (2 cr). Alt/yrs 84-85. 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.

ID540 Seed Pathology (3 cr). Alt/yrs 83-84. Seed-borne pathogens, incl fungi, bacteria, and viruses; influence on disease spread.

569 Seed Physiology (2 cr). Alt/yrs 84-85. 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.

WS570 Realizing Potato Production & Processing Potentials (2 cr). Alt/yrs 83-84. WSU Hort 520. Physiological, physical, chem, and tech basis for modern potato production and processing. One lec and one 3-hr lab a wk; one 2-day field trip. Prereq: Bot 311, Soils 205.

600 Doctoral Research and Dissertation (cr arr).

SOILS

205 General Soils (3 cr). Chem, physical, and biol nature of soils. Prereq: Chem 111 or equiv; coreq for ag students: 206.

206 General Soils Lab (1 cr). Lab study relevant to 205. Experiments, demonstrations, and AV tutorial instruction of basic soil physical and chem properties. One 2-hr lab a wk. Coreq: 205.

344 Soil Conservation and Mgt (3 cr). Alt/yrs 84-85. 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.

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.

389 Internship (1-6 cr, max 6). Graded P/F. Prereq: perm of dept.

401 Undergrad Research (1-2 cr, max 4). Indiv study. Prereq: sr standing and perm.

404; 504 (s) **Special Topics** (cr arr).

408 Forest Soils (2 cr). See For 408.

412 Soil Chem (4 cr). Alt/yrs 84-85. Chem properties of soils and their eval. Three lec and one 3-hr lab a wk. Prereq: 205 and Chem 112 or 114.

417 Soil Clay Mineralogy (2 cr). Alt/yrs 84-85. Structure, chem, and physical properties of clay minerals found in soils. Prereq: Chem 112 or 114.

425 Soil and Aquatic Microbiol (3 cr). See Bact 425.

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.

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.

447 Fertilizer Technology and Use (2 cr). Alt/yrs 84-85. Manufacture, use, placement, and factors influencing choice of fertilizers. Prereq: 446 or perm.

448 Mineral Nutrition (3 cr). Alt/yrs 83-84. See Bot 413.

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.

490 Proseminar (1 cr, max 2). Prereq: jr standing and perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID&WS510 Adv Soil Analysis (1-3 cr, max 6). Soils research tech and appl of modern instrumentation to soil analysis. Prereq: perm.

ID511 Soil Organic Matter (2 cr). Alt/yrs 84-85. Formation, chem properties, and significance of the soil organic fraction. Prereq: 412, Bact 425, and course in organic chem, or perm.

ID&WS512 Adv Soil Chem (3 cr). Alt/yrs 83-84. WSU 500. Chem properties of soil colloidal systems. Prereq: 412, Chem 253, or perm.

ID515 Chem of Plant Nutrients (3 cr). Alt/yrs 83-84. Chem of nutrients in the soil; relationship to uptake and use by plants. Prereq: 412 or perm.

WS517 Adv Soil Biochem and Microbiology (2 cr, max 4). WSU 507. Biochem and microbiological processes in soil-water environments; nutrient cycling, pesticide behavior, ag waste disposal; nitrogen fixation; adv tech. Prereq: 412, 425, Biochem 380, or perm.

WS519 Soil Mineralogy (3 cr). WSU 505. Alt/yrs 83-84. Structures, properties, and ident of major clay minerals; solution equilibria and clay mineral weathering. Prereq: perm.

521 Adv Forest Soils (3 cr). See For 521.

WS536 Adv Soil Physics (2 cr). Alt/yrs 83-84. WSU 511. Physics of the soil-water system. Prereq: 435 or perm.

WS546 Adv Soil Fertility (3 cr). Alt/yrs 83-84. Eval of nutrient availability and soil fertility. Prereq: 446, ID515, or perm.

ID547 Fertilizer Sc (1 or 3 cr). Alt/yrs 84-85. Fertilizer technology, forms, and field uses; project reqd. Prereq: 446 or perm.

ID555 Adv Soil Genesis and Classification (3 cr). Alt/yrs 83-84. 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.

598 (s) **Internship** (cr arr). Prereq: perm.

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 342 Insect Identification	4
Ent ID484 Insect Anatomy & Physiology	4
ApSt 251 Principles of Statistics	3
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
Comm 131 Fundamentals of Speech	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
PlSc 305 Intro to Plant Pathology	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 131 Intro to Computer Programming	2
Math 180 Analyt Geometry & Calculus I	4
Zool 484 Invertebrate Zoology	5

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, 104 Intro to Plant Science and Lab	4
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
PlSc 400 Seminar	1
AgMech 315 Irrigation & Drainage	3
Biol 201 Intro 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
Comm 131 Fundamentals of Speech	2
Eng 313 Bus Wrtg or 317 Tech & Engr Report Wrtg	3
Genet 314 General Genetics	3
Math 111 Finite Math or 140 College Algebra	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 Engineering Appl in Agriculture	3
AnSc 109 Science of Animals that Serve Mankind or 205 Intro to Animal Nutrition	3
Econ 151, 152 Principles of Economics	6
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 278 Organic Chem I: 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 278 Organic Chem I: 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 Engineering Appl in Agriculture	3
AgMech 115 Graphical Representation	1
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	--

Soil Sciences

The two curricula, agribusiness and soil science, allow students to prepare for a wide variety of professional careers in soil science-related areas. The agribusiness curriculum is designed for students who are preparing for a career in agricultural business enterprises. Emphasis is on courses in agricultural economics and business in combination with courses in the soil science area. The soil science curriculum is designed for students preparing for professional careers in soil science. Emphasis is on basic sciences in preparation for a wide variety of jobs in industry or government or for graduate study.

CORE COURSES FOR B.S.SOIL SC.

Course	Credits
Soils 205, 206 General Soils and Lab	4
Soils 435 Soil Physics	3
Soils 446 Soil Fertility	3
Soils 454 Soil Development & Classification	3
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Advanced writing electives	3
Humanities and social science electives	14
Life science electives	4

SOIL SCIENCE (B.S.Soil Sc.)

Required course work includes the university requirements (see regulation J-3), the soil science core, and:

Course	Credits
Soils 412 Soil Chemistry	4
Soils 425 Soil & Aquatic Microbiology	3
Bact 250 General Microbiology	4
Bot 311 Plant Physiology	3
Chem 111 Principles of Chemistry	4
Chem 112 Inorganic Chem & Qual Analysis	5
Chem 253 Quantitative Analysis	5
Chem 275 Carbon Compounds or 277 Organic Chem I	3
Geol 101, 102 Physical Geology & Lab	4
Math 111 Finite Math and 160 Survey of Calculus or 180 Analytic Geometry & Calculus I	4-8
Phys 113-114 General Physics	6
Electives to total 132 cr for the degree	--

AGRIBUSINESS (B.S.Soil Sc.)

Required course work includes the university requirements (see regulation J-3), the soil science core, and:

Course	Credits
Acctg 201 Principles of Accounting	3
AgEc 278 Principles of Farm & Ranch Management	4
AgEc 289 Ag Markets & Prices	3
AgEc 391 Agribusiness Management	3
AgEc 451 Land Resource Economics	3
ApSt 251 Principles of Statistics	3
Econ 151, 152 Principles of Economics	6
Accounting, bus, and economics electives	9
Chemistry electives	8
Math electives	4
Soils electives	7
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 Engineering Applications in Ag	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 Carbon Compounds	3
Chem 278 Organic Chem I: Lab	1
Comm 131 Fundamentals of Speech	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	4
PlSc 305 Intro to Plant Pathology	3
PlSc 338 Weed Control	3
PlSc 404 Plant Disease Recognition & Control	3
PlSc 405 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
Humanities and social sciences electives	14
Electives to total 136 cr for the degree	--

Department of Political Science

Alwyn R. Rouyer, Chairman, Dept. of Political Science and Public Affairs Research (207 Admin. Bldg.). Faculty: Robert H. Blank, H. Sydney Duncombe, Florence A. Heffron, Neil D. McFeeley, Alwyn R. Rouyer, Amos Yoder.

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 from Idaho and other states that it maintains through reciprocal exchange agreements with other bureaus and state agencies throughout the nation.

Four graduate degrees are offered by the department: Master of Arts, Master of Arts in Teaching, 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—PolSc

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.

101 U.S. Govt: Structures and Functions (3 cr) (C). Basic concepts, processes, and major structural elements of the national govt.

102 U.S. Govt: Policies and Issues (3 cr) (C). Survey of major policies and issues conflicts in the U.S.

105 Intro to Political Sc (3 cr). Prin of political sc and nature of the discipline; comparative processes in political systems; ideas and theories of politics; problems of govts; international politics.

C152 Politics and Pollution (1 cr) (C). Political, govt, and admin aspects of overcoming air, water, and other types of pollution of our environment.

155 Politics and Contemporary Issues (1 cr, max 3). Consult the dept office for course topic currently offered.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

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.

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.

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.

280 Canadian Political System (3 cr). General exam of Canadian constitutional prin, federalism, govt structure, political process, and electoral behavior.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

C353 Local Govt Procedures Simplification and Forms Design (1 cr). Procedures simplification, forms design, office layout, and related mgt tech.

C354 City Govt Budgeting (1 cr). Budgeting procedures and tech useful for city officials in Idaho; laws governing city budgeting in Idaho.

C355 Local Improvement District Admin (1 cr). Establishment, financing, and admin of local improvement districts in Idaho.

C356 Local Govt Purchasing (1 cr). Purchasing procedures and tech useful for local officials in Idaho; laws governing Idaho purchasing.

C376 Community Politics (3 cr). Strategy and tactics of community leaders and groups, power relationships, and issues such as planning and zoning.

381 Politics of Western Europe (3 cr) (285). Different approaches used by the discipline of political sc to try to understand political process of Britain and several selected European nations; emphasis on appl of theory to current problems and issues to the recent past (since 1945).

382 Communist Politics (3 cr) (286). 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.

425 Western Political Thought (3 cr). Analysis of basic concepts and themes from Plato to the early modern period; special attention to related contemporary political issues and controversies.

426 Recent Political Thought (3 cr). Political ethics, economy, and theories of justice from Adam Smith and Karl Marx to contemporaries John Rawls, Yves Simon, and Robert Nozick.

428 American Political Thought (3 cr). Clash of political ideas throughout our hist, analysis of evolving concepts and dissent of various eras incl dominant issues of the present.

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. Prereq: perm.

431 Political Parties (3 cr). Public opinion and the political process, party machines, spoils system, nominating methods, conduct of elections.

432 The Legislative Process (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.

433 Public Opinion and Electoral Behavior (3 cr). Review of psych and soc concepts in the opinion-formation process, opinion measurement and basic tech of survey research, and exam of linkages between public opinion and policy in a democratic society.

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.

436 Political Participation (1 cr). Planning a political career, understanding the political environment of your constituency, ident of issues, campaign org and tech, responsibilities and political opportunities in elective office. Prereq: 12 cr in pol sc and perm.

437 American Presidency (3 cr). Roles, power, and functions of the presidency; relationships with other structures and institutions in the U.S. political system.

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.

439 Public Policy (3 cr). Processes by which domestic policies are formulated and administered; analysis of intentional and unintentional impact of these policies on society.

440 International Org and International Law (3 cr). 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.

443 Foreign Policies of Asian Govts (3 cr). Foreign politics of Asian govts; security and dev problems; stress on wars and econ problems.

446 Admin of the Criminal Justice Systems (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.

447 Political Systems of East Asia (3 cr). Chinese and Southeast Asian govts.

449 World Politics and War (3 cr). Problems of war; arms limitation attempts, incl Strategic Arms Limitation Talks (SALT), Nonproliferation Treaty, and recent agreements. Cr not granted for both PolSc 449 and MIHB 490.

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.

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.

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.

454 Admin Org and Behavior (3 cr). Characteristics of indiv decision-making, behavior of small work groups and org theory, leadership in admin.

455 The Politics of Bureaucracy (3 cr). Concepts of bureaucracy; role of bureaucracy in a democratic system.

457 Staff Mgt Tech in State Govt (4 cr). Primarily for students planning to enter state govt admin. Personnel, budgeting, mgt, surveys, data processing, purchasing, and public relations.

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. Prereq: perm.

459 Legislative Internship (1-9 cr, max 9). Directed internship in a national, state, municipal, or corporate legislative body. Supervised work experience. Report required. Prereq: perm.

C461 Local Govt and Intergovt Relations in Idaho (3 cr) (C). Org, 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.

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.

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.

469 The Judicial Process (3 cr). Judicial and legal processes, court structure, procedures; judicial behavior and decision-making; selection of judges.

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.

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.

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.

484 Politics of India and the Subcontinent (3 cr). Comparative analysis of the political process in India, Pakistan, Bangladesh, Sri Lanka, and Nepal; hist dev; cultural and social influences on politics; political institutions and behavior.

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.

493-494 Seminar in Urban Studies (2 cr). See Inter 493-494.

496 Proseminar in Political Sc (1 cr). Professional practice and careers in govt, politics, law, and other political sc fields. Graded P/F.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

ID501 (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.

WS520 Water Resources Politics and Policy (3 cr). Alt/yrs 83-84. Significant controversies and major dev in western water resources policy.

531 Seminar in American Political Institutions (3 cr). Hist of social and econ bases in the dev of U.S. political institutions and govt.

WS550 Seminar in British Politics (3 cr). Institutions and policy-making process of major parliamentary political systems.

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.

557 Govt Budgeting (3 cr). Theory and tech of govt budget prep and analysis; line item budgeting, performance budgets, PPB, and zero base budgeting.

WS560 Comparative State Political Systems (3 cr). Alt/yrs 83-84. Institutions, processes, and functions of U.S. state govts; their responses to modern needs in an evolving federal system.

WS565 The Govt of Metropolitan Areas (3 cr). Alt/yrs 84-85. Political processes, roles, institutions, and problems.

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.

WS582 Seminar in Comparative and Dev Admin (3 cr). WSU Pol S 592. Prereq: 451 or 453.

WS585 International Politics in the Communist World (3 cr). Alt/yrs 83-84. Political relations among communist nations.

590 Scope and Methods of Political Sc (3 cr). Relation of political sc to other disciplines, scientific methods, traditional approaches, and research strategies.

591 American Govt and Politics (3 cr). Review of significant issues and methodological problems in the field.

592 Comparative Govt (3 cr). Review of significant issues and methodological problems in the field.

593 International Relations (3 cr). Review of significant issues and methodological problems in the field.

594 Political Thought (3 cr). Review of significant issues and methodological problems in the field.

595 Public Admin (3 cr). Review of significant issues and methodological problems in the field.

596 Public Law (3 cr). Review of significant issues and methodological problems in the field.

597 (s) Practicum (cr arr). Prereq: perm.

598 (s) Internship (cr arr). Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

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 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, and at least 3 cr in PolSc 425 or 426)	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. Political science courses should be distributed so as to include at least three dealing primarily with U.S., and at least three dealing primarily with non-U.S., political processes, ideas, or government. 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 College Algebra 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 requirement. Political science courses should be distributed so as to include at least three dealing primarily with U.S., and at least three dealing primarily with non-U.S., political processes, ideas, or government. The choice of specific electives must be approved by the department.

Department of Psychology

Robert L. Solso, Dept. Chairman (103 Psych. Bldg.). Faculty: Mary K. Biaggio, Mark K. Covey, James E. Crandall, W. Harold Godwin, Robert J. Gregory, Maria Krasnec, Philip J. Mohan, Victor E. Montgomery, Robert L. Solso.

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. degree in clinical psychology, though a limited number of applicants can also be considered for the M.S. program in experimental psychology. A 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—Psych

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.

100 Intro to Psych (3 cr) (C). Intro to psych topics, incl sensation and perception, learning and thinking, motivation, personality and adjustment, social processes, psych testing; emphasis on fundamental prin.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr). Prereq: perm.

205 Developmental Psych (3 cr) (C). Conception to preadolescence; genetics, anatomy, physiology, biol changes during dev, learning, socialization, cognition, and personality.

210 Human Sexuality (2 cr) (C). Intro to the fundamentals of human sexuality; emphasis on current trends and research. No prereq.

218 Intro to Research in the Behavioral Sc (4 cr). Primarily for majors in psych. Logic and method of empirical research in the behavioral sc; design, execution, and reporting of psych experimentation and research. Three lec and one 3-hr lab a wk. Prereq: ApSt 251.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

310 Psych of Personality (3 cr) (C). Theories of personality, basic concepts, tech of measurement, and experimental methods; the normal personality.

311 Abnormal Psych (3 cr) (C). Nature, causes, treatment, and prevention of patterns of emotional disturbances and personality disorg, incl neuroses and psychoses. One or two 1-day field trips.

316 Industrial Psych (3 cr). Contributions of experimental, social, counseling, and clinical psych to the everyday problems of org; emphasis on industrial orgs.

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.

325 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.

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.

421 Psych and Religion (3 cr). Psych models of human nature related where possible to religious teaching, conversion and purpose in life, emotions and religious experience, "Good Samaritanism," concepts of sin and guilt, religious orientation, theories of religion, religious counseling and adjustment.

422 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.

441 Physiological Psych (3 cr). Physiological bases of animal and normal human behavior. Prereq: Biol 201-202, Zool 119, or perm.

444 Sensation and Perception (3 cr). Fundamental processes and variables in sensory perceptual and cognitive experiences of man.

455 Psych of Motivation (3 cr). Biol and social variables influencing the activation, direction, and self-maintenance of behavior. Prereq: 6 cr in psych.

485 Adv Research Methods (3 cr). Methods and projects; various approaches (e.g., social, personality, experimental). Prereq: 218 or equiv, ApSt 251, sr standing, and perm.

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.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

505 Current Topics in Developmental Psych (3 cr). Recent research in selected area. Prereq: perm.

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.

513 Community Psych (3 cr). Theory, research, and issues, incl strategies of intervention for the mental health professional.

520 Adv Social Psych (3 cr). Theory and research on current social psych topics; social psych perspectives as complementary to other perspectives.

525 Adv Cognitive Psych (3 cr). Major theories and research in info processing, pattern perception, memory, and thought.

528 Descriptive Psychopathology (3 cr). Assessment, description, and classification of adult psychopathology; supervised practice in admin and interp of objective tests of psych disturbance.

530 Intro to Clinical Psych (3 cr). Practical, theoretical, research, and professional aspects; breadth of the area; social-professional issues.

540 Projective Tech (3 cr). Issues and supervised practice in admin, scoring, and interp of the most frequently used devices. Prereq: 511, 528, 530, perm of dept.

545 Adv Clinical Psych (3 cr). Theory, research, and tech of psychotherapy. Prereq: 530 and perm.

561 Current Research in Personality (3 cr). Research topics of current interest; content, methodology, and relation of theory.

571 Clinical Assessment (3 cr). Training in the use of test batteries: selection of appropriate assessment devices and interp and integration of test results; content and format of written reports. Prereq: 511, 528, 530, 540.

585 Research Methods (3 cr). Phil of research, types of design, data analysis, research report. Prereq: ApSt 401 or equiv.

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.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

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
ApSt 251 Principles of Statistics	3
Electives from Psych 300-499 (minimum)	20
Mathematics (minimum)	3
Courses in biol or zool incl 4 cr of lab	6

Department of Range Resources

David A. Bryant, Dept. Head (205 FWR Bldg.). Faculty: David A. Bryant, Stephen C. Bunting, John H. Ehrenreich, Minoru Hironaka, Winifred B. Kessler, James L. Kingery, Leon F. Neuenschwander, Kenneth D. Sanders, Lee A. Sharp, 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 Range 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. and M.F. degrees are 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.

Prospective students in range resources are urged to consult the departmental office for further information (208/885-6536).

Range Resources Courses—Range

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

221 Forest Ecology (3 cr). See For 221.

299 (s) **Directed Study** (cr arr). Prereq: perm.

300 Forest Resource Measurements (1-4 cr). See For 300.

301 Wildland Ecology (4 cr). See For 301.

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.

367 Wildland Fire Mgt (2 cr). See For 367.

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.

401 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

426 Fire Ecology (2 cr). See For 426.

427 Prescribed Burning Lab (2 cr). See For 427.

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.

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, ApSt 251.

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.

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, 453; coreq: 452, 454, and For 383.

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.

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.

484 Forest Policy and Admin (3 cr). See For 484.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

526 Fire Mgt and Ecology (3 cr). See For 526.

ID551 Range Ecology: Concepts (3 cr). Alt/yrs 84-85. 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.

552 Range Ecology: Quantitative (2 cr). Alt/yrs 83-84. Quantitative treatment of ecological data to show species interaction, soil-vegetation relations, and classification and characterization of plant communities. Prereq: ID551, ApSt 251.

553 Range Forage Productivity and Mgt (3 cr). Alt/yrs 84-85. 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.

555 Current Issues in Range Resource Mgt (1-3 cr, max 3). Alt/yrs. Investigation and disc of current issues in range resources and closely related fields.

595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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:

First and Second Years	Credits
AnSc 205 Intro to Animal Nutrition	3
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Bot 241 Systematic Botany	3
Chem 103 Intro to Chemistry	4
Chem 275 Carbon Compounds	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
Econ 151, 152 Principles of Economics or 272 Foundations of Economic Analysis	4-6
ForPr 230 Forest Land Measurements	2
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
Soils 205 General Soils	3
Electives	7
Forestry Summer Camp	
For 300 Forest Resource Measurements	4
For 301 Wildland Ecology	4
Third and Fourth Years	
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 Management	4
Range 459 Rangeland Ecology	3
AnSc 321 Beef Cattle Science or ID&WS322 Sheep Science	3
ApSt 251 Principles of Statistics	3
Bot 311 Plant Physiology	3
Bot 441 Agrostology	3
Eng 317 Tech & Engr Report Wrtg or 313 Bus Wrtg	3
For 370 Principles of Forest Management	2
For 462 Watershed Management	2
ForPr 383 Economics of Conservation or AgEc 451 Land Resource Economics	3
ForPr 494 Models for Resource Decisions	4
Soils 454 Soil Development & Classification	3
WLF 390 Principles of Fish & Wildlife Ecology	3
Electives to total 136 cr	--

Religious Studies

Nicholas F. Gier, Coordinator (Admin. 305C).

The following nonsectarian courses are offered by two privately sponsored agencies adjacent to the campus: the Idaho School of Religion 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.

104 Biblical Hist and Thought (3 cr). Comprehensive study of the salvation hist, persons, and theology of the two testaments to give a total view of the biblical books.

106 Hist of Christian Doctrine (2 cr). Prin of Christian religion from its foundation until modern times.

133 Religion and Marriage (2 cr). Religious viewpoints as they relate to dating, courtship, and family life.

190 (s) **Great Religious Thinkers** (1 cr, max 4). Life and thought of major contributors to the world's religious traditions, such as Augustine, Calvin, Gandhi, Luther, and Wesley. Consult the Time Schedule for the special emphasis each sem.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

273 World Religions (2 cr). Main beliefs of Islam, Hinduism, Buddhism, Confucianism, Judaism, and Christianity within the context of the internationalization of culture.

282 The New Morality (2 cr). Dev of religious ethics in the West and its bearing upon contemporary expressions.

284 Religion and World Problems (1 cr). Issues such as war and peace, population and environment, identity and alienation considered in international perspective.

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

321 Twentieth Century Theology (3 cr). Recent dev in Christian theology, writing of such men as Teilhard de Chardin, Dietrich Bonhoeffer, Paul Tillich, and Karl Barth, evangelical theology, and process theology.

322 Religious Institutions (2 cr). Comparative study of contemporary religious institutions, such as Baptist, Lutheran, and Roman Catholic churches in America; special attention to reform and unity movements.

323 Religion and Society (2 cr). Analysis of the societal manifestation of religion, soc significance of schisms, sect, and church in soc theory. Prereq: 101 or perm.

490 Technology and Human Values (2-3 cr). See Inter ID490.

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	3
RelSt 106 History of Christian Doctrine	2
RelSt 204 Special Topics: Bible Studies	3
RelSt 321 Twentieth Century Theology	3
RelSt 322 Religious Institutions	2
RelSt 323 Religion & Society	2
RelSt 404 Special Topics: Bible Studies	3
Anthr 327 Belief Systems	3
Eng 375 The Bible as Literature	3
Phil 111 Intro to Philosophy of Religion	3
Phil 305 Philosophy of Religion	3
Phil 306, 307 Oriental Thought I, II	6

Collateral Courses	Credits
RelSt 133 Religion & Marriage	2
Art 101-102 Survey of Art	4
FL/EN 211-212 Classical Mythology	4
Hist 101 History of Civilization	3
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 102 Types of Phil or 103 Prin & Problems	3
Psych 320 Intro to Social Psychology	3
Soc 321 The Community	3

Department of Sociology and Anthropology

Richard W. Beeson, Dept. Head (101 Faculty Office Complex West).

Anthropology Faculty: G. Ellis Burcaw, Frank C. Leonhardy, Roderick Sprague.

Sociology Faculty: Richard W. Beeson, Zaye Chapin (social work), Eric L. Jensen, Marie L. Lassey, James K. Owens. Adjunct Faculty: John E. Carlson, Gary E. Machlis.

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 department deal with aspects of the practical application of sociological knowledge. 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. Grad-

uates 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. or M.A.T. degrees, about which more information will be found in the Graduate Bulletin. Questions concerning courses and degree programs should be addressed to the department head, Faculty Office Complex West, Room 101 (208/885-6751).

Courses

ANTHROPOLOGY—Anthr

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.

100 Intro to Anthropology (3 cr). Basic theories, methods, and findings of human paleontology, prehistory, and culture.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

220 Peoples of the World (3 cr) (320). Societies of Eurasia, Africa, Americas, Australia, and islands of the Pacific.

225 North American Indians (3 cr) (C). Origins, physical types, languages, and cultures of North American Indians.

230 World Prehistory (3 cr) (330). Prehistoric cultures of Old and New Worlds; tech of excavation; methods of archaeological analysis.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

321 Culture and Personality (3 cr). Method and theory of the interrelationships between the indiv and culture.

322 Racial and Ethnic Relations (3 cr). See Soc 322.

323 Western Ranching Culture (3 cr). Cultural ecology of livestock ranching; sheepmen, cattlemen, settlers. Prereq: upper-div standing.

324 Intro to Museology (3 cr) (C) (Museo 301). Theory and practice of sc, hist, and art museums. One 1-day and two ½-day field trips.

325 Indians of Idaho (3 cr). Aboriginal American Indian societies of northwestern North America; emphasis on Idaho.

327 Belief Systems (3 cr) (421). Method and theory of comparative anthro study of religion.

332 Ancient Civ (3 cr). Lit, phil, sc, and society in ancient Mesopotamia and ancient Egypt.

335 North American Prehist (3 cr) (435). Theories, methods, and findings of prehistoric North American archaeology.

409 Anthro Field Methods (1-8 cr, max 8). Field training in archaeology and/or social anthro.

413 Early Social Theory (3 cr). See Soc 413.

414 Modern Social Theory (3 cr). See Soc 414.

420 Ethnological Issues (3 cr, max 9). Theoretical debates as presented in the classical anthro lit. Prereq: upper-div standing.

422 Museum Admin (2 cr) (Museo 420). Admin of the total museum program. Prereq: 324.

ID425 Contemporary North American Indian (3 cr). Current state of American Indian societies.

428 Social and Political Org (3 cr). Bases of social and political org; kin based units; non-kin units; political units through primitive states. Prereq: upper-div standing.

441 Intro to the Study of Language (3 cr). Same as Eng 441.

497 (s) **Practicum** (cr arr).

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

500 Master's Research and Thesis (cr arr).

509 Anthro Field Methods (1-8 cr, max 8). Indiv field work in approved areas. Prereq: perm.

513 Adv Early Social Theory (3 cr). See Soc 513.

514 Adv Modern Social Theory (3 cr). See Soc 514.

522 Northwest Ethnography (3 cr). Readings in standard ethnographic lit of native peoples of Pacific Northwest.

523 Environmental Archaeology (3 cr). Theoretical and empirical bases for reconstructing past environments as framework for interpreting prehistoric cultures.

ID531 Hist Archaeology (3 cr). Excavation and analysis of hist archaeological sites. Three 1-day field trips. Prereq: perm.

WS573 Ident of Faunal Remains (4 cr). Relevance of faunal remains in archaeological context; excavating, preserving, and ident bones commonly encountered in archaeological sites. Field trip.

WS575 Cultural Resource Mgt (3 cr). Archaeology and preservation of nation's heritage; environmental impact statements; antiquity laws; archaeologist as cultural resource mgr.

WS579 Lithic Technology (3 cr). Manufacture of stone implements; theory of rock fractures; nonhuman production of pseudo artifacts.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

SOCIOLOGY — Soc

PREREQUISITE: Ordinarily three cr in lower-div courses in sociology are reqd for registration in upper-div courses in this field; exceptions by permission.

110 Intro to Soc (3 cr) (C). 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.

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.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

220 Marriage and the Family (3 cr) (320). Intro to basic components and prin of marriage and the family incl status of these institutions in American life.

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.

235 Soc of Natural Resources (2 cr). See RcMgt 235.

299 (s) **Directed Study** (cr arr). Prereq: perm.

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.

311 Urban Soc (3 cr). Population, spatial, social patterns characteristic of urban communities. One 1-day field trip.

312 Soc of Organizations (3 cr). Analysis of positions, roles, norms, and authority structures in orgs.

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.

321 The Community (3 cr) (C). Origins, types, patterns, and processes of the community. Two 1-day field trips.

322 Racial and Ethnic Relations (3 cr). Same as Soc 322 and AfrAm 322. Theories of race relations, hist and contemporary exper of minority groups in U.S.

323 Social Stratification (3 cr). Major dimensions of status and power in modern society with emphasis on the American social class structure.

324 Comparative Family Systems (3 cr). Cultural and evolutionary basis of family institutions utilizing current comparative research and theory.

330 Juvenile Delinquency (3 cr) (C). Extent, causes, and control of juvenile delinquent behavior.

331 Criminology (3 cr). Extent, criminal patterns, causes, correctional institutions, alternatives to incarceration. One 1-day field trip.

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: 110, 140, 230.

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 soci, psych, rec, or prephysical therapy, or perm.

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.

360 Population Dynamics and Distribution (3 cr) (420). See Geog 360.

409 Field Methods in Soc and Social Work (3-15 cr, max 15). Supervised field training in soc research and/or social work field methods. Prereq: perm.

410 Intro to Social Research (3 cr). Principal methods of data collection, analysis, and interp. Prereq: ApSt 251 or comparable introductory stat.

412 Social Structure 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.

413 Early Social Theory (3 cr). Same as Anthr 413. Social and anthropological thought from the ancient Greeks to the evolutionists.

414 Modern Social Theory (3 cr). Same as Anthr 414. Modern sociological and anthropological theory primarily from a conceptual and systemic perspective; incl functionalism, symbolic interactionism, structuralism, and exchange theories.

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.

431 Problems of the Aging (3-4 cr). Social, psych, and physical problems of aging and impact of elderly population on society. Incl 24 hrs of field work with the aging when taken for 4 cr. May be concurrent with 409 with perm.

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.

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.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

499 Directed Study (cr arr). Intended to accommodate a wide variety of soc topics. Prereq: perm.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Subjects normally offered: soc research, social problems, and social theory. Prereq: perm.

502 (s) **Directed Study** (cr arr). Subjects normally offered: soc theory, human ecology, and race relations. Prereq: perm.

511 Applied Soc Methods (3 cr). Proposal dev, social impact assessments, and eval research.

512 Soc of Org (3 cr, max 9). Soc analysis of bureaucracies and other orgs; topics incl authority, comm, informal networks, leadership, legitimacy, medical, and rural.

513 Adv Early Social Theory (3 cr). Same as Anthr 513. Adv early sociological and anthropological theory primarily from a hist and conceptual perspective; from the Greeks to the evolutionists.

514 Adv Modern Social Theory (3 cr). Same as Anthr 514. Adv modern sociological and anthropological theory primarily from a conceptual and systemic perspective; incl functionalism, symbolic interactionism, structuralism, and exchange theories.

530 Seminar in Deviance (3 cr). Theoretical perspectives on deviant behavior incl functionalism, strain and control, interactionism, and social learning.

531 Aging and Retirement (3 cr). Analysis of social-psych theories of aging, retirement, and leisure.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 230 World Prehistory	3
Anthr 327 Belief Systems	3
Anthr 420 Ethnological Issues	3
Anthr 441 Intro to Study of Language	3
Soc 110 Intro to Sociology	3
Soc 413 or 414 Early or Modern Social Theory	3
Anthropology electives (upper-division)	15
Related fields, incl at least 3 courses selected from the following	15
Biol 150 Heredity and Man	
Econ 490 Comparative Economic Systems	
Hist 433-434 Social & Cultural History of the U.S.	
Phil 411 Social Philosophy	
Psych 320 Intro to Social Psychology	
Soc 321 The Community	
Soc 323 Social Stratification	
Soc 324 Comparative Family Systems	
Soc 360 Population Dynamics & Distribution	

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 230 Social Problems	3
Soc 410 Intro to Social Research	3
Soc 412 Social Structure & Personality	3
Soc 413 Early Social Theory	3
Soc 414 Modern Social Theory	3
Anthr 100 Intro to Anthropology	3
ApSt 251 Principles of Statistics	3
Soc electives (upper-division—9 hrs min in 400 level)	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 140 Intro to Social Services	3
Soc 230 Social Problems	3
*Soc 340 Social Welfare Policy	3
*Soc 409 Field Methods in Soc & Social Work	3-15
Soc 410 Intro to Social Research	3
Soc 413 or 414 Early or Modern Social Theory	3
*Soc 440 Methods of Social Work	3
Anthr 100 Intro to Anthropology	3
ApSt 251 Principles of Statistics	3
Sociology electives (upper-division)	12
Related fields (to include Psych 205, 310, and 311)	18

*Basic social work courses.

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	3-4
Two courses from the following	5-7
Anthr 100 Intro to Anthropology	
Biol 150 Heredity & Man	
Biol 201 Intro to the Life Sciences	
CS 131 Intro to Computer Prog (or equiv)	
Phil 412 Philosophy of Science	
Zool 119 Human Anatomy & Physiology	
Any advanced statistics course	

Division of Teacher Education

Judith D. George, Div. Director (301 Educ. Bldg.).

Education Faculty: Eldon D. Archambault, Terry R. Armstrong, Thomas O. Bell, George F. Canney, Jack L. Dawson, Zeph H. Foster, Mark L. Freer, Judith D. George, Michael L. Heikkinen, Paul F. Kaus, Edward L. Kelly, Gwendolyn N. Kelly, Joseph T. Kelly, Elinor L. Michel, Raymond B. Miller, Marvin A. Nottingham, William W. Pfeiffer, Everett V. Samuelson, Lewis B. Smith, Florence A. White, Edward C. Woolums, Larry K. Wriggle, Maynard F. Yutzy.

Guidance and Counseling Faculty: Thomas N. Fairchild (Chairman), W. Harold Godwin, Thomas E. Hipple, Elaine I. Johnson, Donald J. Kees, James D. Morris, Marilyn K. Murray, Theodore H. Murray, Bruce M. Pitman, Gerald L. Tuchscherer.

Industrial Education Faculty: William R. Biggam (Chairman), James M. Cassetto, John A. Ristow.

Special Education Faculty: Diane M. J. Baumgart, Janice F. Fletcher, N. Dale Gentry (Chairman), Jennifer Olson, A. Lee Parks, Mark P. Posluszny.

Six program areas comprise the Division of Teacher Education: elementary education, secondary education, industrial education, special education, school administration, and guidance and counseling.

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, secondary education (including industrial education), and special education are also provided.

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.

The undergraduate program in special education prepares teachers to work with individuals who have sensory, motor, intellectual, language, emotional, or behavioral impairments, or who have exceptional abilities. Special education is characterized by application, to the individual learner, of the best available information about how learning occurs, how to arrange the teaching environment to maximize learning, and how to monitor learning. Perhaps the most distinctive characteristic is the design of an individualized instructional/learning plan for each exceptional learner.

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.

The programs in school administration and in guidance and counseling are offered only at the graduate level. School administration programs prepare students for certification for administrative positions, such as those of school principal and superintendent, and provide advanced professional development for administrators in school, agency, and other settings. Guidance and counseling programs prepare helping professionals for school and agency settings; graduates serve as school counselors, agency counselors, vocational counselors, school psychologists, university counselors, counselor educators, and system or state directors of counselors.

Professional education coursework is conducted in the Education Building and the Industrial Arts Building. The Education Building houses preschool and kindergarten classrooms; specialized facilities for diagnostic testing, counseling practica, and microteaching; a reading laboratory, and 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. The Industrial Arts Building contains classrooms and specialized areas for electricity-electronics, plastics, metals, and woodwork.

Advanced programs in the Division of Teacher Education are (a) the planned fifth year, which results in an Advanced Elementary, Secondary, or Exceptional Child Certificate; (b) master's degree programs (either Master of Education or Master of Science) in educational administration, elementary education, guidance and counseling, industrial education, secondary education, and special education; (c) sixth-year or specialist-degree programs in education, educational administration, guidance and counseling, school psychology, and special education; and (d) doctoral degree programs (either Doctor of Education or Doctor of Philosophy) with concentrations in educational administration, elementary education, guidance and counseling, secondary education, and special education.

Courses

RELATED AREAS: For other offerings in the field of education, see: agricultural education, art, business education, home economics, music, physical education, and vocational teacher education.

EDUCATION — Ed

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.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

201 Intro to Teaching (2 cr). Interpersonal comm and human relations, teaching strategies, classroom eval tech, and clinical experience in the public-school classroom (teaching aide experiences).

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

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.

299; 499 (s) **Directed Study** (cr arr). Graded P/F. Prereq: perm.

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.

303 Kindergarten Ed (2-3 cr). Hist, theory, equipment, and practices; helping the child become oriented to school routine.

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.

315 Secondary School English Methods (2-3 cr). Specific methods, research, curricula, and media in teaching secondary-school English.

316 Secondary School Social Studies Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school social studies.

317 Secondary School Sc Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school science.

318 Secondary School Math Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school math.

319 Secondary School Art Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school art.

320 Language Arts Methods (3 cr). Strategies for teaching oral language, listening, and composition; all topics dealing with language, other than reading and lit.

326 Elem School Math Ed (3 cr). Specific methods, research, curricula, and media in teaching elementary-school math.

328 (s) **AV Aids** (1-3 cr, max 3). Prin and methods of AV instruction. Four 1-cr short courses offered each sem. Areas of instruction are: equipment operation, display tech, television, photography, and microcomputers for the teacher.

336 Intro to Reading (4 cr). Basic prin and tech for teaching reading in the elem school; emphasis on content, methods, and materials.

341 Secondary School Foreign Language Methods (2 cr). Specific methods, research, curricula, and media in teaching secondary-school foreign language.

375 Elem School Art Methods (3 cr). Tech, materials, and processes used in teaching elem art; relationship of art to the elem curricula.

381 Elem School Music Methods I (3 cr). See MusT 381.

402 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm of dept.

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.

411 The Jr High School (3 cr). Prin, org, admin, and methods of instruction.

415 Ed Psych (3 cr). Processes of human growth, dev, and learning, and the practical appl of this knowledge to teaching.

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.

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).

421 Elem School Social Studies Methods (2-3 cr). Specific methods, research, curricula, and media in teaching elementary-school social studies.

426 Org and Admin of School Media Centers (3 cr). Standards for media prog, physical facilities, staffing, budget, media services, and in-service prog.

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.)

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.)

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.)

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.)

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.

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.)

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.

437 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.

438 Elem School Math Lab (3 cr). Constr and solution of problems based on experiments that may be easily performed in elem schools.

439 Comparative Ed (3 cr). Ed systems in relation to the cultural backgrounds that give rise to them.

440 Methods of Teaching Content Reading (3 cr). Strategies to extend reading skills in content-area textbooks.

443 Teaching of Geog (3 cr). Trends, methods, AV materials, planning the prog, specialized skills and forces contributing to change in geographic ed.

444 Elem School Sc Methods (2-3 cr). Specific methods, research, curricula and media in teaching elementary-school sc.

445 Proseminar in Teaching (1 cr). Offered each nine wks. Orientation to practicum. Graded P/F.

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.

468 Contemporary Ed (3 cr). Role of ed and problems of the profession in society as related to hist and philosophical backgrounds.

473 International Ed Scene (1-9 cr, max 9). See 273.

500 Master's Research and Thesis (cr arr).

502 (s) Directed Study (cr arr). Prereq: perm.

504 Ed Admin (3 cr). Prin and problems of org and admin of city, county, and state systems. Two field trips.

505 School Finance (3 cr). Theory of financing schools; appl to Idaho problems. Prereq: 504.

506 Elem Ed Admin (3 cr). Patterns of org of grades 1-6; problems and tech. Prereq: 10 cr in ed.

507 Supervision of Instruction (3 cr). Prep of supervisors to aid teachers in the improvement of instruction.

508 Secondary Ed Admin (3 cr). Problems of org, admin, and supervision of the secondary school; problems of small high schools.

510 Philosophy of Ed (3 cr). Analysis of ed objectives, concepts, and theories.

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.

512 Prog Dev and Eval (3 cr). Types of instructional systems, systematic ed prog dev; eval models, issues in measurement and eval design.

513 Hist of Ed Thought (3 cr). Writings that have influenced ed theory and practice.

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.

515 Logic of New Media (3 cr). Technological dev in ed; adv forms that influence learning, teaching, and curriculum content and org.

517 Adv Elem School Math Ed (3 cr). Recently developed methods and materials in elem school math. Prereq: qualified for a standard elem certificate.

520 Elem School Sc and Social Studies (3 cr). Methods and tech; foundations of the unit as a means of instruction. Prereq: qualified for a standard elem certificate.

521 Adv Language Arts (3 cr). Research and implications of data related to modern tech of teaching.

523 Creative Arts and Creative Teaching (3 cr). Creativity in children; art, music, socio-drama-creative writing. Prereq: qualified for a standard elem certificate.

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.

525 Problems in Secondary Social Studies (3 cr). Recent research and interp in social studies content, methods, and materials.

526 Adv Ed Psych (3 cr). Selected psych theories and their appl to instruction, classroom mgt, reading, testing, and related ed research.

530 Ed Law (3 cr). Statutory and case materials; prin applied to all states.

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.

538 Student Teaching Supervision (3 cr). Nature and scope of student teaching; role of cooperating agencies; role of participants; tech; planning; eval.

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.

560 Research and Wrtg (3 cr). Tech of research in ed.

561 Issues in Reading (3 cr). Current issues in reading and their impact on classroom instructional practice. Prereq: 336 and perm.

565 Psycholinguistics and Reading (3 cr). Contributions of psych and linguistics, readings, disc, and activities to broaden the instructional base.

566 Corrective Reading (3 cr). Nature, causes, and diagnosis of moderate reading difficulties; translation of diagnostic info into instructional practice. Prereq: 336, 437 or equiv.

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.

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.

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.

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.

580 Seminar in Admin and Contemporary Issues (3 cr). See Inter 580.

581 Systematic and Objective Analysis of Instruction (4 cr). Supervision as a change process and analysis of supervisory cycle; appl of supervisory cycle in actual classroom situations; designed to improve individual skill in analysis of instruction and to relate theory to practice.

586 Planning and Design of Ed Research (3 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: ApSt 251 or equiv, and perm.

590 Hist of Ed (3 cr). Dev and influence of ed ideals and practices.

591 Admin of Personnel (3 cr). Selection, placement, and eval of teachers; salaries and salary schedules; tenure; leave of absence; teacher orgs and related matters.

592 School-Community Relations (3 cr). Interp the schools to the public; two-way flow of ideas between school and community.

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.

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: 504.

595 Higher Ed (3 cr). College and university ed in the U.S.; hist, objectives, org, finance, instructional methods, faculty, and student problems.

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 agreement; impact of collective negotiations.

597 (s) Practicum (cr arr). Graded P/F. Prereq: perm.

598 (s) Internship (cr arr). Currently offered in public school teaching, college teaching, ed admin, and higher ed. Graded P/F. Prereq: perm.

599 (s) Research (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

GUIDANCE AND COUNSELING — Guid

200; 400; 501 (s) Seminar (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

415 Prin and Practices in Guid (3 cr). Nature of the guid process and the services provided by counselors and other interested persons.

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.

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.

500 Master's Research and Thesis (cr arr).

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: ApSt 251 or perm.

523 (s) **Practicum in Guidance** (3 cr). 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.

525 Tech of Counseling (3 cr). Dev of basic counseling tech; case studies, role playing, tape and video recordings.

527 Psychometric Assessment (3 cr). Developmental assessment procedures used by counselors in various settings. Prereq: 520, 525.

529 (s) **Practicum in Counseling** (3 cr). One hundred hrs of supervised exper as a counselor (incl critiques of 30 hrs of successful, taped counseling) conducted in a professional setting. Prereq or coreq: 415, 460, 525, 527, and perm.

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.

561 Org 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.

562 Intro to School Psychology (3 cr). Hist, role and status, and current issues.

564 Group Counseling (3 cr). Prin and tech of counseling groups; dev skills in group. Prereq: 525 or perm.

565 Theories of Counseling (3 cr). Consideration and eval of contemporary theories. Prereq: 525 and perm.

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.

568 Group Counseling Practicum (cr arr). Involves co-leading groups and debriefing on the group process. Prereq: 525, 564, and perm.

598 (2) **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.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

INDUSTRIAL EDUCATION — IEd

ID130 Basic Elec (3 cr). See ET/EE 130.

ID131 Basic Electronics (3 cr). See ET/EE 131.

R132 Basic Electronics II (3 cr). Continuation of IEd ID131. Basics of AC circuits; reactance, impedance, power, time constraint, resonance, coupling networks, and filters. Prereq: ID131 or perm.

R135 Elec Systems (3 cr). See ET/EE R135.

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.

170 Wood Product Design and Fabrication (3 cr). Prin of design applied to a wide variety of wood products and fabrication processes: furniture, cabinetwork, laminated products, molding, wood turning, silicon rubber mold production. Prereq: 140.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

R210 Intro to Industrial Efficiency (3 cr). Industrial engr tech and approaches for supervisors.

R211 Intro to Quality Assurance (3 cr). Overview; emphasis on nuclear industry; planning, managing, conducting, and evaluating quality assurance prog.

R212 Elements of Quality Assurance (3 cr). Continuation of R211.

R215 Electronic Components (3 cr). See ET/EE 215.

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.

R217 Prin of Dimensional Inspection (3 cr). Concepts, prin, classification, and control in dimensional inspection for quality assurance.

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.

R222 Mech Engr Drawing (2 cr). See ET/ME R222.

235 Comm Electronics (3 cr). See ET/EE R235.

236 Industrial Electronics (3 cr). Continuation of 235. Theory and test procedures common to industrial control and automatic processing; computer electronics. Prereq: 235.

237 Integrated Circuits and Semiconductor Devices (3 cr). Basic theory and appl of field effects; transistors, integrated circuits, opto-amps, opto-electronic devices, thyristors and miscellaneous semiconductor devices. Prereq: ID130 and ID131 or equiv.

238 Digital Electronics (3 cr). Basic logic circuits used in digital devices and/or NAND, NOR, Exclusive, or gates; appl of these gates to construct flip-flops, counters, adders, converters, logic families, and memory devices. Prereq: 237.

R240 Electronics and Control Systems (3 cr). See ET/EE R240.

R245 Minicomputer Fundamentals (3 cr). See ET/EE R245.

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.

251 Plastic (2 cr). Materials and industrial methods of fabrication; vacuum, blow, and pressure forming; laminating; extrusion; plastisol and injection molding.

253 Metals Processing Lab I (3 cr). Use of machine tools and selected processes in fabricating metal and metal products.

254 Metals Processing Lab II (2 cr). Theory and practice of casting metals, incl sand-, shell-, lost-wax process, plaster-, full mold, and CO^2 casting, and core making.

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.

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.

R262 Piping Design (3 cr). Piping schedules, pressure ratings, specifications, pipe stress calculations, and hanger selection; system component selection and specification. Prereq: R261, R336.

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.

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.

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: ⅓ with soph-level standing and completion of 15 cr of formal course work in the prog; ⅓ upon completion of the jr yr; and ⅓ upon completion of all other degree requirements. Max 36 cr in any combination of 270, 370, 470, 490, 491, and 492.

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. Prereq: 140, 170.

290 Industrial Arts Crafts (2 cr). Alt/yrs 84-85. Creative craftwork in leather, Keene cement, metal tooling and enameling, craft plastics, and mosaic tile.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

300 Finishing Materials and Methods (2 cr). Alt/yrs 84-85. Methods and materials for finishing wood, metal, composition board, plastics, and other industrial products.

303 Adv Machine Tool Lab (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. Prereq: 254 or perm.

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.

315 Industrial Design (2 cr). Alt/yrs 83-84. Planning, designing, and fabricating products from a variety of industrial materials; period furniture and prin of product design. Prereq: 170 or perm.

R320 Electronic Drafting (3 cr). See ET/EE R320.

R330 Industrial Instrumentation I (3 cr). See ET/EE R330.

R331 Industrial Instrumentation II (3 cr). See ET/EE R331.

R332 Selection and Design of Machine Elements (3 cr). See ET/ME R332.

R333 Computer Electronics (3 cr). See ET/EE R333.

R334 Energy Analysis of Machines (3 cr). See ET/ME R334.

R335 Materials Appl (3 cr). See ET/ME R335.

R336 Fluid Systems Design (3 cr). See ET/ME R336.

R337 Tool Design (3 cr). See ET/ME R337.

R340 Nondestructive Exam Tech and Methods (3 cr). Intro to nondestructive testing, liquid penetrant exam, magnetic particle exam, and radiography in modern industry.

350 Alternate 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.

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.

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.

R363 Fire Protection Safety (1 cr). Basic industrial safety practices as applied to fire protection services and inspection of facilities.

R364 Hazardous Materials (1 cr). Handling, transportation, and storage of hazardous materials; how to protect and suppress fires that occur in hazardous materials.

365 Industrial Supervision (2-3 cr). Alt/yrs 84-85. 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.

R366 Fire Dept Org 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.

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.

R369 Airport Fire Protection (3 cr). Prin and practices of fire protection and fire suppression for small- to medium-sized municipal and private airports.

370 Tech Competence (1-6 cr, max 12). See IEd 270.

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. Prereq: perm.

R401 Prin of Quality Assurance (3 cr). Prep for Quality Engr Certificate Exam offered by American Society for Quality Control.

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.

405 Adv Woodwork (3 cr). Alt/yrs 84-85. Design and constr; use of fixtures, jigs, and templates; structural details of cabinet constr; fastening devices; materials and processes. Prereq: 140, 170, or perm.

410 Adv Metals (3 cr). Materials, tools, and processes of metal technology; students may specialize in one or several areas. Prereq: 250, 253, 254, 303, or perm.

WS416 Automotive Technology (3 cr). Theory and practice related to recent automotive technology. Prereq: 218.

420 Eval in Industrial Ed (3 cr). Same as VocEd 420. Methods and tech; constr and use of objective tests, performance tests, rating scales, check lists; grading industrial products and projects.

R424 Computer Hardware Org and Control (3 cr). Arithmetic and related hardware; timing and control of computers; description of computer hardware/software interface.

425 Adv Electricity-Electronics (3 cr). Independent readings, research, and lab experimentation. Prereq: 235, 236, or perm.

R430 Systems Safety Analysis (3 cr). Prin of system safety; analyt trees; hazard and risk analyses; accident investigation.

R431-432 Reactor and Nuclear Instruments (3 cr). Nuclear electronics, incl detection; appl of instruments for reactor control and for experimental data acquisition.

R434 Quality Assurance Org and Mgt (3 cr). Industrial mgt prin applied to effective econ control of quality assurance activities.

R435 Industrial Transportation Safety (3 cr). Prin of safety in all aspects of industrial transportation; roads, railroads, air, water, pipeline.

R436 Quality Assurance Appl (3 cr). Prin of quality assurance applied in a morphological manner to industrial operations.

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.

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.

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.

R452 Fire Protection System Design (3 cr). Methods and practical design of fire protection systems (water, gas, chemicals); testing and maintenance of systems. Prereq: perm.

R456 Industrial Fire Protection Hazards (3 cr). Investigation, analysis, and protection of industrial processes that require specialized fire protection. Prereq: perm.

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.

460 Industrial Ed for Elem Teachers (3 cr). Common hand tools and processes useful in developing creative craft prog in elem-school classes; projects in wood, metals, plastics; correlation and integration of manual activities with instruction in elem-school subjects.

462 Industrial Ed Curriculum (3 cr). Same as VocEd 462. Prin of occupational analysis and course constr; subject content; state curriculum patterns; special-ed prog; trends and new concepts.

R464 Nuclear Reactor Codes and Standards (3 cr). See NE R462.

470 Tech Competence (1-6 cr, max 12). See 270.

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.

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.

490-491-492 Adv Tech Competence (1-12 cr, max 36). Supervised practicum or on-the-job work 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.

500 Master's Research and Thesis (cr arr).

510 Professional Problems (1-3 cr, max 6). Prereq: perm.

511 Tech Problems (1-3 cr, max 6). Prereq: perm.

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.

540 Instructional Media for Industrial Ed (3 cr). Prep and use of new industrial media and systems for industrial-tech arts and vo-tech subjects.

545 Facility Planning (3 cr). See VocEd 545.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

LIBRARY SCIENCE — LibSc

299; 499 (s) **Directed Study** (cr arr). Prereq: perm.

400 (s) **Seminar** (cr arr). Prereq: perm.

404 (s) **Special Topics** (cr arr).

420 Classification and Cataloging (4 cr). Org of library materials, prin of cataloging, subject analysis, classification, bibliographic methods, Dewey decimal system.

421 Selection of Books and Related Materials (3 cr). Eval and selection of books and other materials for libraries; analysis of community library needs and interests.

422 Use of the School Library (2 cr). Methods of interesting students in the library and using it to best advantage.

423 Reference in School Libraries (3 cr). Reference books in school and public libraries; selecting reference collections.

425 School Library Problems (2-4 cr, max 4). Org and mgt of school libraries.

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.

SPECIAL EDUCATION — SpEd

190; 290; 390 (s) **Special Ed Lab** (1-3 cr, max 3). Supervised observation and participation with exceptional persons. Graded P/F.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

204; 404 (s) **Special Topics** (cr arr).

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.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

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.

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.

403 (s) **Workshop** (cr arr). Prereq: perm of dept.

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.

425 Diagnostic Eval of the Exceptional Individuals (3 cr). Diagnostic procedures for ident behavioral and ed deficits in individuals with special learning problems. Prereq: 377 or 378, 323, or perm.

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.

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.

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.)

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.

497 Teaching Gifted Individuals (3 cr). Ident and teaching of gifted individuals in public schools. Prereq: 275 or perm.

500 Master's Research and Thesis (cr arr).

503 (s) **Workshop** (cr arr). Prereq: perm.

522 Diagnostic and Remedial Instruction (3 cr). Methods and materials; problems of acceleration as well as retardation. Prereq: 425 or perm.

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.

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.

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.

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.

545 Community Service Seminar (3 cr). Analysis of needed ancillary services; planning for and implementing community services; role of the educator on the interdisciplinary team. Prereq: 275 or perm.

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.

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.

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.

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.

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.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Supervised field experience in an appropriate public or private agency. Graded P/F. Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

600 Doctoral Research and Dissertation (cr arr).

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 200 Children's Dance	2
ThA 381 Drama in Education	3

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 in part 4:

A. One 20-credit, single-subject 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, 319, 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 options below:

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.

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 ID130 Basic Electricity	3
IEd ID131 Basic Electronics	3
IEd 140 Wood Technics	3
IEd 170 Wood Product Design & Fabrication	3
IEd 218 Power Technology	3
IEd 250 General Metals	3
IEd 253-254 Metals Processing Lab I-II	5
IEd 310 Maintenance of Tools & Equipment	3
IEd 360 Graphic Arts	3
IEd 420 Eval in Industrial Ed	3
IEd 451 School Shop Planning & Admin	3
IEd 462 Industrial Ed Curriculum	3
IEd 472 Industrial Ed Methods	3
AgMech 101 Oxy-Acetylene Welding	1
AgMech 107 Arc Welding	2
AgMech 115 Graphical Representation	1
Engr 101 Engineering Graphics	2
IEd electives (see below)	13

The following two options are available to satisfy completion of the 13 IEd elective credits:

A. General Option: 13 credits in approved IEd courses distributed throughout several technical fields.

B. 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 chairman of the department for a list of approved courses that may be applied toward each area.

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
ApSt 251 Prin of Stat or ApSt 301 Probability & Stat	3
Bus 265 Legal Environment of Business	3
Bus 311 Intro to Management Theory	3
Bus 370 Industrial Management	3
Bus 441 Labor Relations	3
Bus 456 Quality Control	3
Bus 470 Motion Study, Time Study & Job Design	2
Bus 471 Product Design, Value, & Engr Analysis	1
CS 100 Intro to Computers and Programming	3
CS 131 Intro to Computer Programming	2
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

Psych 100 Introduction to Psychology	3
Business electives	4
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, or (5) computer management. For a listing of the specific courses required in each of these blocks, consult the chairman of the department.

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).

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 ID130 Basic Electricity	3
IEd ID131 Basic Electronics	3
IEd 140 Wood Technics	3
IEd 250 General Metals	3
IEd 310 Maintenance of Tools & Equipment	3
IEd 365 Industrial Supervision	2
IEd 450 Industrial Safety	3
IEd 451 School Shop Planning & Admin	3
IEd 462 Industrial Ed Curriculum	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 less than 60 credits in technical education and closely related courses must complete one 20-credit teaching minor.

Department of Theatre Arts

Roy S. Fluhrer, Dept. Chairman (U-Hut 102). Faculty: Bruce C. Brockman, Frederick L. Chapman, Roy S. Fluhrer, Jon G. Putnam, Forrest E. Sears.

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. or B.S. 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 acting. Requirements are stringent and include an audition and 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 429-seat, semithrust auditorium is complemented by one of the best equipped shops, costume inventories, and lighting and sound systems in the Rocky Mountain Region. Additionally, the Jean Collette Theatre has been recently renovated. This 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, technical theatre, history and criticism, and drama-in-education. 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 chairman (telephone 208/885-6465).

Theatre Arts Courses—ThA

ADVANCEMENT PLACEMENT: Courses in this subject field that are vertical in content are: 105-106-272-305-306-407-408.

101 Intro to the Theatre (2 cr). 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.

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.

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.

104 Adv Stagecrafts (3 cr) (483). Continued study of stagecraft incorporating plastics, steel usage, 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.

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 participate to create imaginative and original work through elements of silhouettes, movement, rhythm, texture, sound, and color.

125 Summer Theatre I (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.

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.

163 Basics of Scene Design and Graphics (3 cr). Practical experience in all forms of design graphics required in dev and execution of a stage design, incl floor plan, section, designer's and painter's elevation, and color rendering.

190 Theatre Practice I (1 cr, max 4). Open to nonmajors. Practical experience in all aspects.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

263 Tech Production (3 cr). Tech planning for single- and multiple-set theatre productions; incl drafting, scheduling, budgets, and selected tech design problems.

265 Children's Theatre (3 cr). Alt/yrs. Selection, prep, and presentation of theatre for children; story telling; rec and special occasion prog.

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.

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.

273 Stage Lighting (3 cr). Basic equipment and lighting methods for theatrical production; basic drafting and design of a realistic production.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

305 Methods in Characterization (3-4 cr). Alt/yrs. "Physicalizing" the actor's body and emotions through rehearsal tech, incl animals, paintings, props, transformational characterization. Three lec a wk; B.F.A. students must register for 4 cr, which incl 1 hr of lab a wk.

306 Adv Acting (3-4 cr). Alt/yrs. Intensive work in auditioning; theory and practice in major stage dialects. Three lec a wk; B.F.A. students must register for 4 cr, which incl 1 hr of lab a wk. Prereq: 372.

362 Costume for the Stage (3 cr). Historical overview of costume from Greek to the 19th century; costume design and rendering emphasized.

363 Costume Constr (3 cr). Methods of pattern drafting, fitting, and constr of theatrical costumes.

364 Scene Design I (3 cr). Dev of stage designs emphasizing basic production schemes and exploring adv rendering and drawing tech. Prereq: 163, 271 or perm.

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.

381-382 Drama in Ed (3 cr) (481-482). 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.

390 Theatre Practice II (1 cr, max 4). Open to nonmajors. Continuation of 190. Set constr, costumes, lights, and properties.

395 Summer Theatre II (2-8 cr, max 8). Continuation of 125. Max 10 cr in 125 and 395 combined. Prereq: perm of dept.

407-408 Styles of Acting (3-4 cr). Alt/yrs. ThA 407: cultural backgrounds, manners, and customs in classic acting styles from the Greeks through Shakespeare. ThA 408: 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. Prereq: perm.

420 Production Mgt (2 cr). Alt/yrs. Stage and bus mgt methods for theatre orgs and productions.

ID460 Seminar in Dramatic Criticism (3 cr). Analysis of past and present criticisms of drama.

464 Scene Design II: Evolution of Design (3 cr). Dev of a conceptual approach to design through assorted design projects. Prereq: 364.

467-468 The Theatre (3 cr). Alt/yrs. Survey of European and American theatres, dramatists, and actors from the Greeks to Ibsen.

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.

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.

471-472 Directing (3 cr). ThA 471: prep of a play from casting to performance. ThA 472: staging and interp of a play; developing a production concept; coaching actors. Prereq: perm of dept.

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.

484 Adv Stage Lighting (3 cr). Adv lighting design theories and practice through design of assorted productions in realistic drama, dance, arena, thrust, and musical theatre. Prereq: 273 or perm.

500 Master's Research and Thesis (cr arr).

505 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 theatre arts and perm of dept.

ID510 Costume Design and Rendering Techniques (2 cr). Emphasis on developing characterization, stylization, and rendering tech applicable to costume design; continuation of portfolio. Prereq: 362.

ID515 Adv Stage Costuming (2 cr). Design responsibility for a major production. Prereq: perm of dept.

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.

ID522 Directing the Period Play (3 cr). Interp and staging of classical texts in major dramatic periods; social and cultural view of each period.

530 Scene Design III: Theatrical Arch and Decor (3 cr). Adv design problems emphasizing research and design in various hist styles of decorative art, arch, and furniture. Prereq: 464 or perm.

ID535 Adv Scene Design (3 cr). Design responsibility for a major production. Prereq: perm of dept.

ID560 Seminar in Dramatic Criticism (3 cr). Analysis of past and present criticism of drama.

WS568 Seminar in Theatre (3 cr, max arr). WSU Spe 568. Research in a specific area of theatre.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

Curricular Requirements

THEATRE ARTS (B.F.A.)

This degree is designed to give the student professional training in theatre production and performance. Further, it is geared to provide the student with a strong background in humanities and to strengthen perceptions of the vital role of the arts in Western civilization.

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
All theatre arts courses listed under the theatre arts B.A. or B.S. (see below)	46
ThA 150 Performance Lab (additional reqd cr)	6
ThA 305 Methods in Characterization (incl lab)	4
ThA 306 Advanced Acting (incl lab)	4
ThA 372 Intermediate Acting (incl lab)	4
ThA 407-408 Styles of Acting (incl lab)	8
MusA J149-J150/J349-J350 Voice for Actors or Individual voice instruction	5

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 102 Theatrical Makeup	2
ThA 103 Introduction to Stagecrafts	3
ThA 104 Advanced Stagecrafts	3
ThA 105-106 Basics of Performance	4
ThA 150 Performance Lab	2
ThA 163 Basics of Scene Design & Graphics	3
ThA 271 Play Analysis	3
ThA 272 Intermediate Acting	3
ThA 273 Stage Lighting	3
ThA 362 Costume for the Stage	3
ThA 420 Production Management	2
ThA 467-468 The Theatre	6
ThA 469 Modern Theatre	3
ThA 471-472 Directing	6
Courses in related fields approved by dept chmn	20

Division of Vocational Teacher Education

James A. Bikkie, Div. Director (210 Educ. Bldg.)

Business Education Faculty: Geraldine F. Dacres, John P. Holup, Robert M. Kessel.

Vocational Education Faculty: William R. Biggam (industrial education), James A. Bikkie (vocational teacher education), James L. Black (adult education), Richard M. Foster (agricultural education), Thomas E. Hipple (counselor education), John P. Holup (distributive education), Jack J. Kaufman (vocational special needs), Robert M. Kessel (business education), Shirley O. Kiehn (home economics), Laura J. Miller (home economics), Douglas A. Pals (agricultural education), G. Cleve Taylor (trade and industrial/technical education), Gerald L. Tuchscherer (guidance and counseling).

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.

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-III (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.

115-116 Shorthand I-II (4 cr). BusEd 115: theory of Gregg shorthand simplified. BusEd 116: dictation and intro to transcription.

185 Machine Calculation (2 cr). Operation of commonly used office adding-calculation machines for the solution of bus problems.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 403; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

271-272 Shorthand III-IV (3 cr). BusEd 271: speed dev. BusEd 272: transcription skills to occupational competency level. Prereq: perm.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

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.

313 Office Mgt (2 cr). Appl of generally accepted prin to admin services.

395-396 Secretarial Procedures (3 cr). BusEd 395: admin secretarial procedures and responsibilities; forms analysis; records mgt. BusEd 396: adv dictation and transcription. Prereq: perm.

418 Teaching Consumer Econ (2 cr). Methods and materials for teaching consumer econ. Prereq: Econ 151 or 100 or equiv.

491-492 Teaching Bus Ed I-II (2-3 cr). Methods and materials. BusEd 491: office occupations. BusEd 492: basic bus subjects. Prereq: perm.

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.

494 Distributive Ed Materials (2 cr). Same as Voc Ed 494. Exam, dev, and appl of instructional materials in distributive ed.

495 Supervising DECA Programs (2 cr). Same as VocEd 495. Role of DECA in distributive ed; org and implementation of youth activities.

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.

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.

498 (s) **Practicum in Tutoring** (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

520 Office Occupations Subjects (3 cr). Methods and materials; achievement standards; review of lit and research. Prereq: perm.

521 Basic Bus Subjects (3 cr). Methods and materials; achievement standards; review of lit and research. Prereq: perm.

522 Issues in Bus Ed (3 cr). Philosophies, objectives, trends, and org patterns of bus ed in secondary schools. Prereq: perm.

523 Adult Distributive Ed (3 cr). Establishing and developing adult prog in distributive ed. Prereq: perm.

524 Issues in Distributive Ed (3 cr). Same as VocEd 524. Philosophies, objectives, trends, and org patterns of distributive ed in secondary schools. Prereq: perm.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

VOCATIONAL TEACHER EDUCATION—VocEd

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.

200; 400; 501 (s) **Seminar** (cr arr). Prereq: perm.

203; 503 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

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.

299; 499; 502 (s) **Directed Study** (cr arr). Prereq: perm.

351 Prin of Voc Ed (2 cr). See AgEd 351.

370 Tech Competence II (1-15 cr, max 15). See 270. Prereq: completion of jr yr in voc teacher ed.

403 (s) **Workshop** (cr arr). Graded P/F. Prereq: perm.

420 Eval in Voc Ed (3 cr). See IEd 420.

443 Intro to Special-Needs Ed (1 cr). History, background, and concept of special needs.

444 Identifying Special-Needs Students (2 cr). Emphasis on methods of assessment and eval. Prereq or coreq: 443.

450 Industrial Safety (3 cr). See IEd 450.

451 School Shop Planning and Admin (3 cr). See IEd 451.

453 Task Analysis (1 cr) (461). Intro to task analysis methods, tech, and procedures.

454 Occupational and Job Analysis (2 cr) (461). Methods, tech, and procedures in analyzing occupations and jobs into their basic elements. Prereq: 453.

460 Occupational-Ed Info (3 cr). See Guid 460.

462 Voc Ed Curriculum (3 cr). See IEd 462.

464 Voc Guidance (3 cr). See Guid 464.

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.

471 Practicum: Voc Ed (3-9 cr, max 9). Offered each nine wks. Supervised teaching in approved voc prog primarily at area voc-tech schools. Graded P/F. Prereq: 462, GPA of 2.5, and perm of dept.

472 Voc Ed Methods (3 cr). See IEd 472.

473 Intro to Adult Ed (1-2 cr) (C). Orientation to adult ed; adult populations, prog, and importance. Registration for 2 cr requires prep of a research paper.

C474 Psych of Adult Learners (3 cr). Psych, social, and physiological characteristics of adult learners; relationships to family, friends, and fellow citizens.

475 Prog Dev in Adult Ed (3 cr). Adult ed prog dev, org, and instructional prog; problems and trends.

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.

493 Teaching Distributive Ed (3 cr). See BusEd 493.

494 Distributive Ed Materials (2 cr). See BusEd 494.

495 Supervising DECA Programs (2 cr). See BusEd 495.

496 Directed Work Experience (2 cr, max 6). See BusEd 496.

497 Coordination Tech (3 cr). See BusEd 497.

498 Practicum in Tutoring (1 cr, max 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

500 Master's Research and Thesis (cr arr).

ID507 Foundations of Voc Ed (3 cr). The interpretation of phil, social, and econ factors that influence voc ed; current issues and trends.

ID&WS512 Curriculum Dev in Voc Ed (3 cr). Curriculum construction; occupational analysis; selection and org of instructional materials.

ID&WS515 Instructional Strategies (3 cr). Prin, concepts, aims and appl of prog and teaching strategies.

524 Issues in Distributive Ed (3 cr). See BusEd 524.

ID&WS530 Career Ed (2 cr). Trends and new perspectives in career ed.

ID&WS543 Admin and Supervision in Voc Ed (3 cr). Theory and practice of administering and supervising voc ed prog at all levels.

ID544 Modifying Voc Prog for Students with Special Needs (3 cr). Product oriented course aimed at dev skills of voc ed teachers in dev courses for students with voc special needs. Prereq: 443, 444.

ID&WS545 Facility Planning (3 cr). Same as IEd 545. Prin and procedures in planning secondary and postsecondary voc facilities.

ID&WS555 Prog Eval in Voc Ed (3 cr). Prin and procedures used in the eval of voc prog.

560 Theories of Voc Choice (3 cr). See Guid 560.

ID&WS564 Special Needs Comm Skills (3 cr). Dev of comm skills for use in mainstreaming handicapped and disadvantaged voc students; makes use of simulations.

ID571 Accessing, Organizing, and Synthesizing Data (3 cr). Uses of computer-based stat packages, document retrieval services, and text-editing systems in research. Prereq: ApSt 251 or perm.

574 Psych of Adult Learners (3 cr). Psych, social, and physiological characteristics of adult learners; relationships to family, friends, and fellow citizens.

597 (s) **Practicum** (cr arr). Appl of theories and tech; supervised field experiences in selected settings. Graded P/F. Prereq: perm.

598 (s) **Internship** (cr arr). Supervised experience in teacher ed, admin, supervision, or ancillary services in voc ed. Graded P/F. Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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 I-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 131 Intro to Computer Programming	2
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 Intermediate Acctg	
Bus 407 Financial Institutions and 401 Investments	
Bus 418 Org 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 of Vocational Ed	3
VocEd 453 Task Analysis	1
VocEd 454 Occupational & Job Analysis	2
VocEd 464 Vocational Guidance	3

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
VocEd 351 Principles of Vocational Ed	2
Electives (approved by distributive ed teacher educator)	9

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 271-272 Shorthand III-IV	6
BusEd 395-396 Secretarial Procedures	6
BusEd 400 Seminar	1
BusEd 496 Directed Work Experience	2
Acctg 201-202 Prin of Acctg and Managerial Acctg	6
ApSt 251 Principles of Statistics	3
Bus 265 Legal Environment of Business	3
Bus 311 Intro to Management Theory	3
Bus 321 Marketing	3
Bus 412 Personnel Mgt or 413 Human Relations in Bus	3
Bus 418 Organization Theory	3
Comm 131 Fundamentals of Speech	2
CS 131 Intro to Computer Programming	2
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
Literature electives	6
Natural science electives requiring lab work	4
Social science electives	6
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 271-272 Shorthand III-IV	6
BusEd 395 Secretarial 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 11 Intro to Computer Programming	2
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 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

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 Prin of Vocational Education	2
VocEd 420 Evaluation in Vocational Ed	3
VodEd 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 Vocational Ed or Ed 431 Secondary School Teaching*	3-9
VocEd 472 Vocational Ed Methods	3
VocEd 497 Coordination Techniques	3
Comm 131 Fundamentals of Speech or 132 Oral Interpretation	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

James R. Fazio, Dept. Head (19F FWR Bldg.). Faculty: James R. Fazio, Sam H. Ham, Edwin E. Krumpe, Gary E. Machlis, William J. McLaughlin.

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. As an academic discipline, wildland recreation management is of relatively recent origin. It 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 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 wildland recreation 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 county, state, and national parks, private enterprise, 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.

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 three general areas: management or administration of resource areas and facilities, environmental interpretation or resource communication, or recreation planning. All students, therefore, select an option in one of these areas to supplement the core courses with appropriate electives.

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 tourism, 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—RcMgt

PREREQUISITE: Courses in this subject field numbered above 299 are not open to any student who is on academic probation.

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.

200; 400 (s) **Seminar** (cr arr). Prereq: perm.

203; 403 (s) **Workshop** (cr arr). Prereq: perm.

204; 404; 504 (s) **Special Topics** (cr arr).

205 Wildland Resource Conservation (3 cr). See For 205.

206 Wildland Resource Conservation Lab (1 cr). See For 206.

235 Soc of Natural Resources (2 cr). Same as Soc 235. Sociological perspective applied to natural resources mgt; relationship between natural resources and human social systems; analysis of resource issues.

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.

288 Law Enforcement 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.

299 (s) **Directed Study** (cr arr). Prereq: perm.

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.

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.

385 Wildland Rec Mgt (3 cr). Goals and objectives, mgt tools, prog implementation and eval, specific mgt problems. Prereq: 287 or perm.

386 Wildland Rec Planning (3 cr). Integrates macro and micro aspects of land-use planning with multiple-use mgt, national environmental and land-use policies.

387 Environmental Interpretive Methods (3 cr). Comm of natural resource messages by interpretive naturalists and other wildland mgr to user publics.

388 State Parks and Related Rec Systems (2 cr). Org 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.

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.

401 Practicum in Tutoring (1 cr, mx 2). Tutorial services performed by adv students under faculty supervision. Graded P/F. Prereq: perm.

486 Integrated Wildland Rec Planning (4 cr). Rec planning and analysis tech and philosophies appl to wildland rec settings; indiv and team projects and workshops. Two lec and two 2-hr labs a wk. Prereq: 386 or perm.

487 Intro to Field Environmental 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.

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 environment to visitors. One 3-day field trip. Prereq: 387 or perm.

489 Personalities and Philosophies in Conservation (2 cr). Same as WLF 485. Lives and thinking of people who have significantly influenced conservation practice or issues surrounding it.

490 Wilderness Mgt (3 cr). Hist and legal aspects of the wilderness concept; conceptual and applied approaches, considering both ecological and soc elements; recent research.

498 International Wildland Mgt (1-3 cr, max 3). World approaches and problems. Prereq: sr standing and perm.

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.

500 Master's Research and Thesis (cr arr).

501 (s) **Seminar** (cr arr). Major phil, mgt, and research problems of wildlands; presentation of indiv studies on assigned topics. Prereq: perm.

502 (s) **Directed Study** (cr arr). Prereq: perm.

ID503 (s) **Workshop** (cr arr). Selected topics in the conservation and mgt of natural resources. Prereq: perm.

505 Fundamentals of Research (2-3 cr). See For 505.

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.

587 Adv Wildland Rec (2 cr). Problems, practices, and econ of the use of lands and waters for rec. Two days of field trips. Prereq: course in wildland rec.

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.

595 (s) **Problems in World Resources** (1-3 cr, max 3). Prereq: 498 or equiv.

597 (s) **Practicum** (cr arr). Prereq: perm.

598 (s) **Internship** (cr arr). Prereq: perm.

599 (s) **Research** (cr arr). Research not directly related to a thesis or dissertation. Prereq: perm.

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.)

Required course work includes the university requirements (see regulation J-3) and:

First and Second Years — **Credits**

RcMgt 102 Intro to Rec Professions 1
RcMgt 287 Principles of Wildland Recreation Mgt 2
RcMgt 288 Law Enforcement in Natural Resource Mgt 3
Biol 201 Intro to Life Sciences 4
Biol 203 General Botany 4
Bot 241 Systematic Botany 3
Chem 103 Intro to Chemistry 4
Comm 131 Fundamentals of Speech 2
CS 131 Intro to Computer Programming 2
Econ 272 Foundations of Econ Analysis or
  151, 152 Prin of Econ 4-6
ForPr 230 Forest Land Measurements 2
For 221 Forest Ecology 3
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
Soc 110 Intro to Soc or RcMgt 235
  Soc of Natural Resources 2-3
Electives 8

Forestry Summer Camp

RcMgt 302 Wildland Recreation Field Studies 3
For 300 Forest Resource Measurements 1
For 301 Wildland Ecology 4

Third and Fourth Years

RcMgt 384 Recreation Operations & Facilities Mgt 2
RcMgt 385 Wildland Recreation Management 3
RcMgt 386 Wildland Recreation Planning 3
RcMgt 387 Environmental Interpretive Methods 3
RcMgt 489 Personalities & Philosophies in Conservation 2
ApSt 251 Principles of Statistics 3
Comm 332 Communication & the Small Group 3
Eng 317 Technical & Engr Report Writing 3
For 383 Economics of Conservation 3
For 484 Forest Policy & Administration 3
For 494 Models for Resource Decisions 4
WLF 390 Principles of Fish & Wildlife Ecology 3
Upper-division course in soc or psych 3
Approved electives from one of the specialty
  areas listed below 12
Electives to total 136 cr ..... --

Specialty Areas

Lists of related electives to fulfill one of the specialty areas are available from the departmental office.

A. MANAGEMENT/ADMINISTRATION

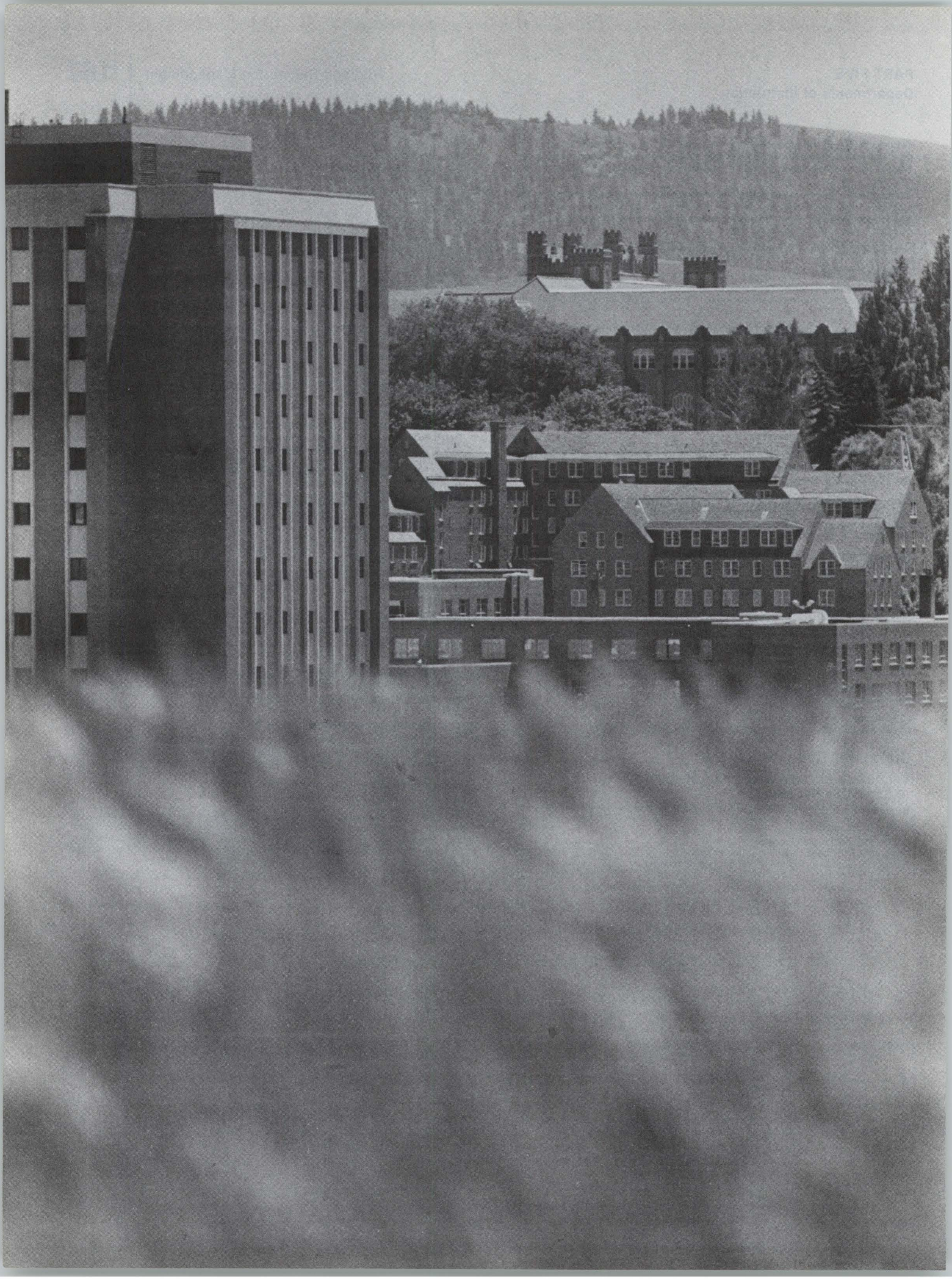
This area allows particular concentration on management problems, their solutions through various strategies, and the exploration of administrative approaches to the provision of recreational opportunities compatible with protective resource management.

B. INTERPRETATION/COMMUNICATION

The objective of this area is to allow students to strengthen their abilities in interpreting the natural environment, natural resources, and resource management for various publics. It includes interpretation for on-site visitors as well as the dissemination of resource-related information using the whole spectrum of audio-visual, mass media, and interpersonal communication channels.

C. PLANNING/DESIGN

The purpose of this area is to provide educational preparation for students interested in land use and management planning for recreation areas. The approach to recreation planning emphasizes development of integrative abilities. These include land evaluation for recreation, use management and projection, computer mapping, and economic, social, and physical impact assessment techniques.



General Faculty

Richard D. Gibb, President; Robert R. Furgason, Vice President for Academic Affairs and Research; Peter A. Haggart, Chairman of the Faculty Council (1982-83); R. Bruce Bray, Secretary of the University Faculty.

The general faculty includes all active and emeritus members of the university faculty, cooperative extension faculty, adjunct faculty, and affiliate faculty. The university faculty—one segment of the general faculty—is the faculty's highest legislative body and is responsible, under the university's charter and article IX, section 10, of the state constitution, for the immediate government of the university. Membership in the university faculty is limited to the following: president, vice presidents, deans, professors, associate professors, assistant professors, senior instructors, instructors (including those whose academic ranks have research and visiting designations), and such administrative and service officers as the president may designate each year.

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 academic or extension rank shown.

The following list was compiled November 1, 1982, and includes the members of the general faculty with the exception of the affiliate professors at the UI/Idaho Falls Center for Higher Education, who are listed in that center's bulletin.

*FAY C. AANERUD, 1977 (1980), Assistant Extension Professor and Jerome County Extension Home Economist, Jerome; B.S., 1974, North Dakota State; M.S., 1976, Texas Woman's.

*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.).

*FRANCIS R. ABINATI, 1978, Affiliate Professor of Veterinary Medicine, Pullman, Wash.; B.S., 1941, D.V.M., 1941, Washington State; Ph.D., 1958, Cambridge.

ERNEST D. ABLES, 1973, Professor of Wildlife Resources; Head, Department of Fish and Wildlife Resources, 1982- (Associate Dean for Academics, College of Forestry, Wildlife and Range Sciences, 1974-1982); B.S., 1961, Oklahoma State; M.S., 1964, Ph.D., 1968, Wisconsin.

*BARBARA B. ABO, 1976 (1979), Assistant Extension Professor and Minidoka County Extension Home Economist, Rupert; B.S., 1972, Wisconsin; M.S., 1975, Iowa State.

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; Department Head, 1979-; 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.

CHARLES H. AINSWORTH, 1980, Assistant Professor of Home Economics (child development and family relations); B.A., 1959, M.A., 1964, Northwestern State; M.A., 1968, Alabama; Ed.D., 1975, Sarasota; Ph.D., 1982, 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 (1972), Associate Extension Professor and Caribou County Extension Agricultural Agent, Soda Springs; B.S.Ag., 1950, Idaho.

*ALVIN R. ALLER, 1959 (1972), Professor Emeritus of Botany; B.S., 1931, Bethany; M.S., 1932, Kansas State; Ph.D., 1949, Oregon State. Emeritus since 1972 (now residing in Moscow).

*FLORENCE D. ALLER, 1962 (1971), Professor of Home Economics and Department Head Emerita (Head, Department of Home Economics, 1971-1974); B.A., 1930, Bethany-Peniel; M.S., 1947, Oregon State; Ed.D., 1962, Idaho. Emerita since 1974 (now residing in Moscow).

*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, and Management Information Specialist (Head, Department of Biological Sciences, 1967-1975); B.Sc., 1952, M.S., 1957, Ph.D., 1959, Ohio State.

*BRUCE C. ANDERSON, 1978, Associate 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 Extension Professor; Associate Agricultural and Extension Editor; B.S., 1947, Wisconsin; M.A., 1954, California (Berkeley).

GUY R. ANDERSON, 1946 (1968), Professor of Bacteriology; Bacteriologist; Adviser, Pre-Medical Studies; Director, WAMI Medical Program, 1972-; B.S.Ag., 1942, M.S.Ag., 1947, Idaho; Ph.D., 1956, Washington State.

MARK D. ANDERSON, 1982, Associate Professor of Law; B.A., 1973, Macalester; J.D., 1977, Chicago.

*MOSELLE W. ANDERSON, 1967 (1977), Extension Professor Emerita; B.A., 1967, Idaho State. Emerita since 1977 (now residing in Pocatello).

*RUTH ANDERSON, 1946 (1970), Professor Emerita of Office Administration; B.A., 1926, M.S.Ed., 1941, Idaho. Emerita since 1970 (now residing in Moscow).

AHMED A. ARAJI, 1968 (1977), Professor of Agricultural Economics (production economics); Agricultural Economist; B.Sc., 1962, M.Sc., 1964, Nebraska; Ph.D., 1968, Missouri.

ELDON D. ARCHAMBAULT, 1971, Professor of Education; B.A., 1945, Northern Iowa; M.A., 1948, Ph.D., 1967, Iowa.

*WILLIAM B. ARDREY, 1939 (1945), Professor of Veterinary Science and Veterinary Microbiologist Emeritus; B.S., 1934, Monmouth; M.S., 1936, Ph.D., 1939, Michigan State. Emeritus since 1974 (now residing in Bandon, Oreg.).

TERRY R. ARMSTRONG, 1969 (1975), Professor of Education; Executive Assistant to the President, 1978-; Coordinator of Student Services, 1979-; B.S., 1958, Southern Mississippi; M.Nat.Sc., 1964, Ed.D., 1969, Idaho.

*JAMES R. ARTHURS, 1981, Affiliate Clinical Professor of Medical Science, Coeur d'Alene; B.S., 1964, Washington State; M.D., 1968, Washington.

*NANCY I. ATKINSON, 1943 (1972), Catalog Librarian Emerita with rank of Professor (Head, Catalog Department, 1943-1972); A.B., 1935, A.B.L.S., 1936, Michigan. Emerita since 1972 (now residing in Moscow).

JORG A. L. AUGUSTIN, 1968 (1978), Research Professor of Food Science and Biochemistry; Diplomierter Ingenieur Agronom, 1955, Eidgenoessische Technische Hochschule, Zurich; M.S., 1957, Illinois; Ph.D., 1964, Michigan State.

DICK L. AULD, 1976 (1981), Associate Professor of Plant Science (plant breeding and genetics); B.S., 1970, M.S., 1973, New Mexico State; Ph.D., 1976, Montana State.

*ROBERT C. AVERETT, 1977, Affiliate Professor of Fishery Resources, U.S. Geological Survey, Sacramento, Calif.; B.S., 1957, Oregon State; M.S., 1963, Idaho; Ph.D., 1965, Washington (Seattle); Ph.D., 1968, Oregon State.

JASPER R. AVERY, 1959 (1962), Assistant Professor of Mechanical Engineering; B.S.M.E., 1957, Idaho.

*JOHN M. AYERS, 1975, Affiliate Clinical Professor of Medical Science, Moscow; B.S., 1940, Idaho; M.D., 1942, Rush.

*JOHN M. AYERS, JR., 1977, Affiliate Clinical Professor of Medical Science, Moscow; B.A., 1966, Idaho; M.D., 1970, Washington (Seattle).

*EVERETT M. BAILY, 1978, Affiliate Professor of Electrical Engineering, Hewlett-Packard Co., Boise; B.S.E.E., 1961, M.S.E.E., 1964, Idaho; Ph.D., 1968, Stanford.

*JAMES W. BAILEY, 1953 (1972), Professor Emeritus of Veterinary Science; B.Ed., 1935, Western Illinois State Teachers; D.V.M., 1943, Texas A & M. Emeritus since 1972 (now residing in Mesa, Ariz.).

*CRAIG R. BAIRD, 1974 (1979), Associate Extension Professor and District II Extension Entomologist, Parma; B.S., 1967, M.S., 1970, Utah State; Ph.D., 1973, Washington State.

DENNIS W. BAIRD, 1974 (1978), Social Science Librarian with rank of Associate Professor; B.A., 1966, Hawaii; M.A., 1970, Michigan State; M.L.S., 1970, Michigan.

LYNN C. BAIRD, 1974 (1977), Head, Serials Department, University Library, with rank of Assistant Professor; B.A., 1972, Pacific (Stockton, Calif.); M.L.S., 1974, Oregon; M.P.A., 1979, Idaho.

*WILLIAM H. BAKER, 1948 (1958), Professor Emeritus of Botany (Head, Department of Biological Sciences, 1956-1967); B.S., 1935, M.S., 1942, Ph.D., 1949, Oregon State. Emeritus since 1972 (now residing in Eugene, Oreg.).

*EUGENE M. BALDECK, 1981, Affiliate Clinical Professor of Medical Science, Lewiston; B.S., 1955, Idaho; M.D., 1959, Washington.

DONALD C. BALDRIDGE, 1969 (1974), Associate Professor of History (Latin American history); B.A., 1960, Idaho; Ph.D., 1971, Arizona.

JO ANN BALDRIDGE, 1972 (1974), Associate Registrar; B.A., 1968, Southern State (Arkansas); M.A., 1971, Idaho.

*RONALD J. BALDUS, 1981, Affiliate Professor of Chemical Engineering, Camas, Wash.; B.S., 1974, M.S., 1975, Ph.D., 1979, Idaho.

DAVID S. BARBER, 1968 (1974), Associate Professor of English; A.B., 1962, Hamilton; M.A., 1963, Ph.D., 1968, Michigan.

*J. WARREN BARBER, 1920 (1955), Extension Professor Emeritus; B.S.Ag., 1920, M.S.Ag., 1927, Idaho. Emeritus since 1955 (now residing in Boise).

EROL BARBUT, 1967 (1976), Associate Professor of Mathematics; B.A., 1963, California (Berkeley); M.A., 1965, Ph.D., 1967, California (Riverside).

DOROTHY T. BARNES, 1969 (1982), Professor of Music (voice); B.Mus., 1948, M.Mus., 1964, Idaho.

WILLARD BARNES, 1965 (1970), Associate Professor of History (American history); B.S.Ed., 1949, M.S.Ed., 1950, Idaho; Ph.D., 1968, Washington State.

WILLIAM P. BARNES, 1957 (1963), Professor of Mechanical Engineering (Department Chairman, 1974-1980), B.S.M.E., 1947, Idaho; M.M.E., 1949, Yale; Ph.D., 1973, Illinois; P.E.

ROBERT M. BARON, 1974 (1979), Associate Professor of Architecture; B.Arch., 1972, Oregon; M.Arch., 1973, Washington (Seattle); R.A.

*WILLIAM F. BARR, 1947 (1958), Professor of Entomology and Department Head Emeritus (Head, Department of Entomology, 1978-1982); M.S., 1947, Ph.D., 1950, California (Berkeley). Emeritus since 1982 (now residing in Moscow).

*ROBERT M. BARRETT, JR., 1982, Affiliate Professor of Aerospace Studies, Pullman, Wash.; B.A., 1968, M.B.A., 1970, Tennessee.

*JAMES L. BARRUS, 1949 (1982), Professor Emeritus of Chemistry; B.S., 1948, Wyoming; M.S., 1956, Idaho. Emeritus since 1982 (now residing in Moscow).

*CHARLES G. BARTELL, 1950 (1968), Professor Emeritus of Architecture; B.Arch., 1949, Washington (Seattle); M.S.Arch., 1950, Columbia. Emeritus since 1973 (now residing in Moscow).

*ELBERT M. BARTON, 1960 (1981), Professor of Naval Science and Director of Personnel Services Emeritus; B.S., 1942, Oklahoma State; M.S., 1963, Idaho. Emeritus since 1981 (now residing in Moscow).

*LeROY O. BAUER, 1956 (1961), Professor Emeritus of Music; B.S.Mus.Ed., 1941, Wisconsin (Milwaukee); M.Mus., 1946, Northwestern. Emeritus since 1982 (now residing at Moscow).

DIANE M. J. BAUMGART, 1981, Assistant Professor of Special Education; B.S., 1970, Wisconsin (Stevens Point); M.S., 1978, Ph.D., 1981, Wisconsin (Madison).

*RANDY R. BEAN, 1978, Affiliate Professor of Veterinary Medicine, Homedale; D.V.M., 1972, Washington State.

*MABEL R. BEATTIE, 1925 (1965), Professor Emerita of Foreign Languages; B.A., 1923, Idaho; M.A., 1925, Radcliffe. Emerita since 1967 (now residing in Moscow).

*R. GARY BEAVER, 1982, Associate Extension Professor and Extension Potato Specialist, Parma; B.S., 1966, California (Davis); M.S., 1968, Ph.D., 1970, Oregon State.

*EDWARD J. BECHINSKI, 1982, Assistant Extension Professor and Extension Integrated Pest Management Coordinator, Twin Falls; B.S., 1977, Purdue; M.S., 1980, Ph.D., 1981, Iowa State.

*CLARENCE D. BECHTOLT, 1944 (1965), Extension Professor Emeritus; B.S.Ag., 1924, Colorado State. Emeritus since 1965 (now residing in Caldwell).

*R. DALE BECK, 1979, Assistant Extension Professor and Twin Falls County Extension Agricultural Agent, Twin Falls; B.S., 1967, M.S., 1970, Southern Illinois (Carbondale).

RICHARD J. BECK, 1957 (1971), Associate Director of Libraries with rank of Professor; B.A., 1949, St. Thomas; B.S.L.S., 1950, M.A., 1955, Minnesota.

SIDNEY M. BECK, 1951 (1972), Professor of Bacteriology; Bacteriologist; A.B., 1941, M.A., 1948, Brigham Young; Ph.D., 1951, Pennsylvania State.

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