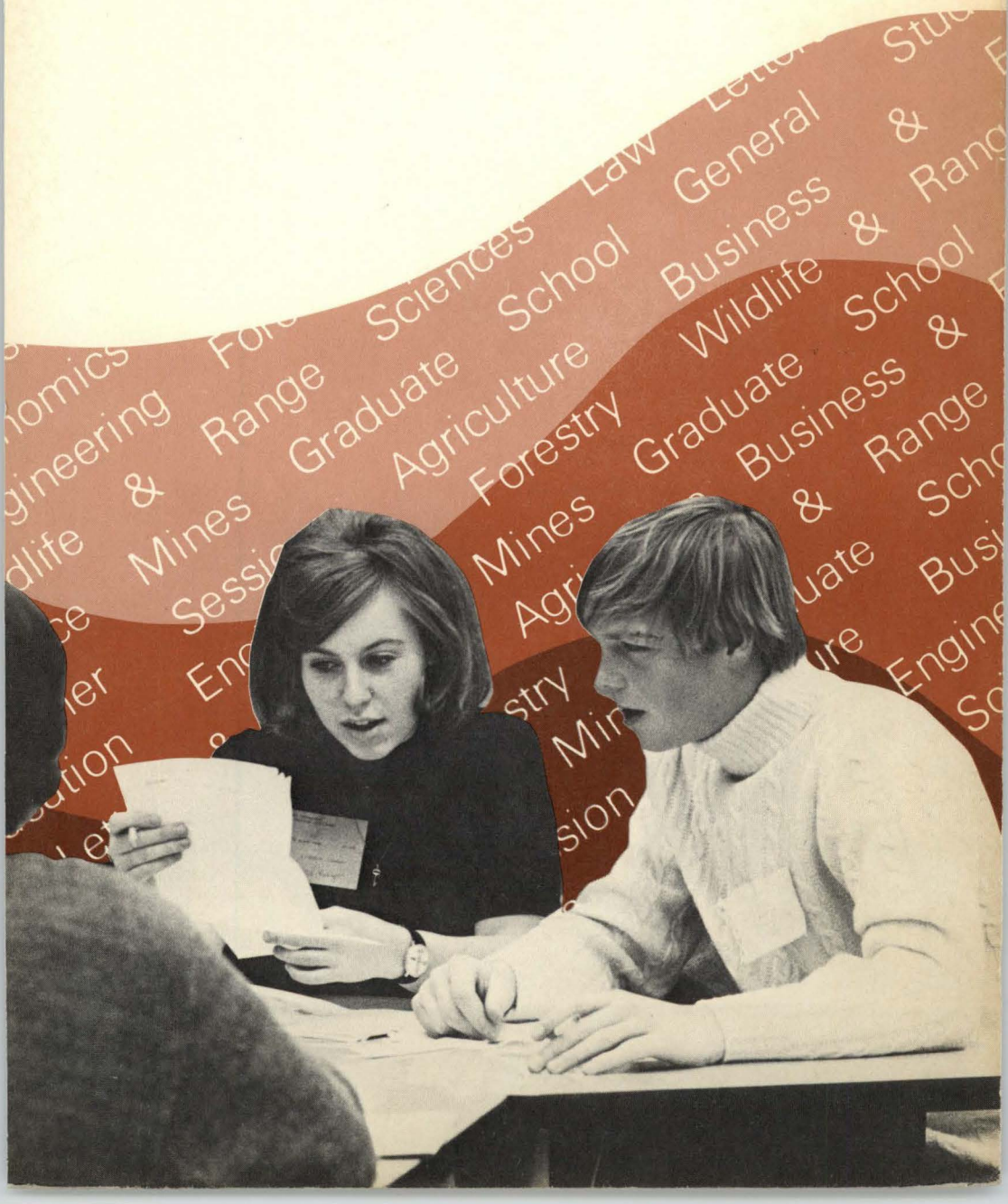
University of Idaho

Catalog 1971-72



A university is not so much a place
as it is an association of people . . .
people with ideas.

Curious people begin as the essential
resource. Ideas and thoughts fill
them with energy. And the release of
energy, the expression of thoughts and
ideas, provide the basis upon which
people find meaning in the experience
of one another and the world
around them.

But all of this leads to an additional
end . . . the sharpening of skills, the development
of talents, the growth and progress
of the individual. Specific directions
are his alone to determine.

The University of Idaho, then, is a
format, a context . . . the function of
which is to explore thoughts efficiently,
to study ideas with system.
As such, it is, itself, a resource . . .

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five times a year, February, March, April, July,
and November, by the University of Idaho, Moscow,
Idaho 83843. Second-class postage is paid at
Moscow, Idaho.

Moscow, Idaho

Correspondence Directory

University of Idaho, Moscow, Idaho 83843

Telephone: (Area Code 208) 885-6111

Further information may be obtained from the following officers. On campus dial the number listed.

	Telephone Ext. (Off campus add prefix 885)
Academic Matters ..... Dean of the college in which the student plans to major	--------
Admissions ..... Director of Admissions (204 Ad. Office Bldg.)	6326
Adult Education ..... Coordinator of Continuing Education (103 Adult Ed. Bldg.)	6486
Associated Students (student government) ..... Student Union Bldg.	6331
Career Placement ..... Director of the Career Planning and Placement Center (103 Adult Ed. Bldg.)	6121
Continuing Education (Correspondence/Extension) ..... Coordinator of Continuing Education (103 Adult Ed. Bldg.)	6486
Counseling and Entrance Testing ..... Director of the Student Counseling Center (309 Univ. Classroom Center)	6716
Financial Aids (scholarships, loans, work/study) ..... Director of Student Financial Aids (228 Univ. Classroom Center)	6312
Foreign Students ..... Foreign Student Adviser (241 Univ. Classroom Center)	6757
Graduate Fellowships, Assistantships, Financial Aid .... Executive officer of the individual department in which the student plans to major	--------
Housing—Married Students ..... Director of Family Housing (Wallace Residence Center)	6571
Housing—Single Students ..... Director of Residence Halls (Wallace Residence Center)	6571
Information Center	6424
On campus Employment ..... Director of Personnel (228 Univ. Classroom Center)	6269
Policy Matters ..... President's Office (105 Ad. Bldg.)	6365
Registration, Academic Regulations and Procedures ..... Registrar (104 Ad. Office Bldg.)	6731
Residence Status ..... Business Manager (201 Ad. Office Bldg.)	6174
Student Activities ..... ASUI Program Adviser (First floor, Student Union Bldg.)	6484
Study Abroad ..... Director of Intercultural Programs (314 Ad. Bldg.)	6179
Summer Sessions ..... Director of Summer Sessions (103 Adult Ed. Bldg.)	6486
Veterans Affairs ..... Veterans Adviser (241 Univ. Classroom Center)	6757

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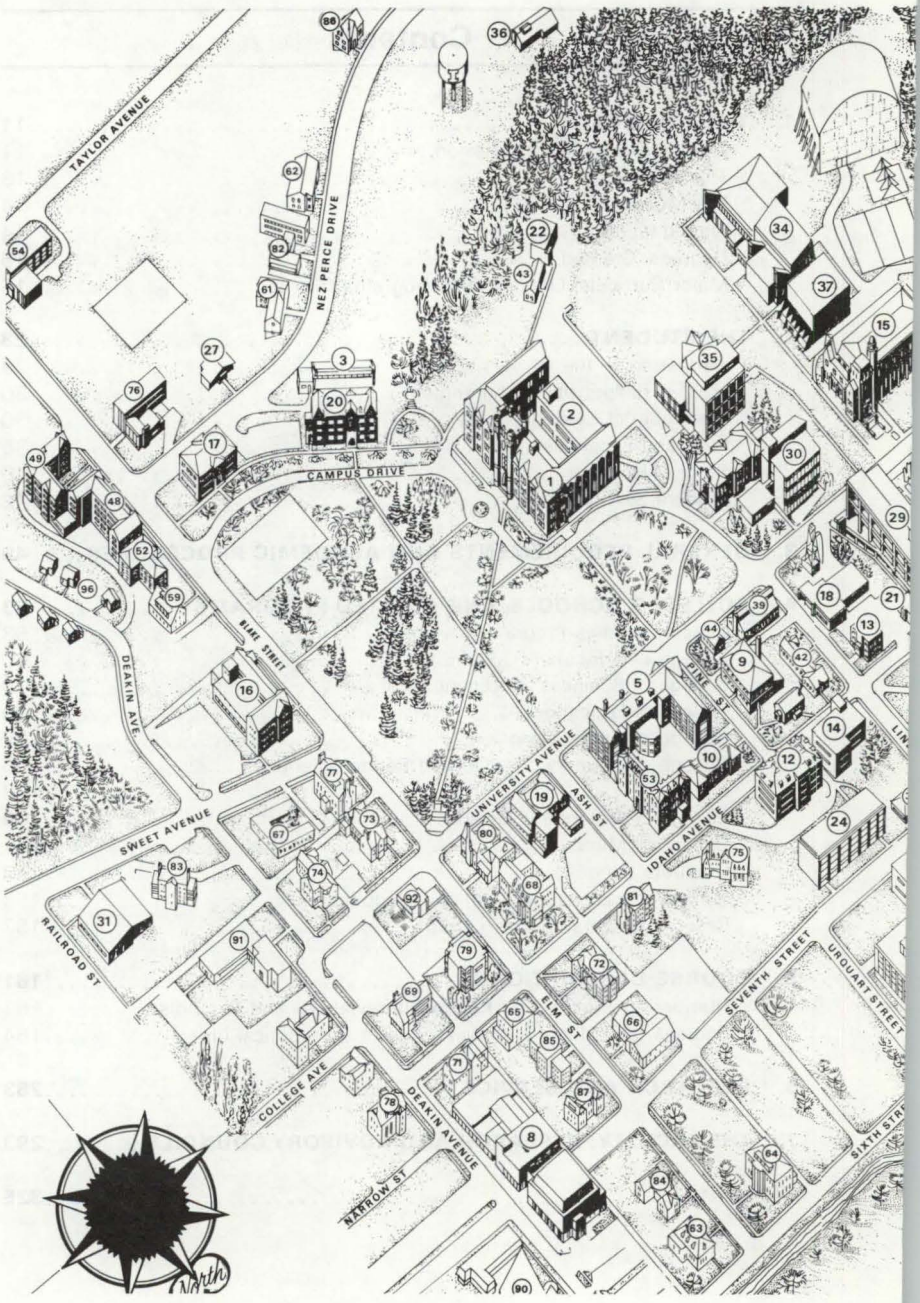
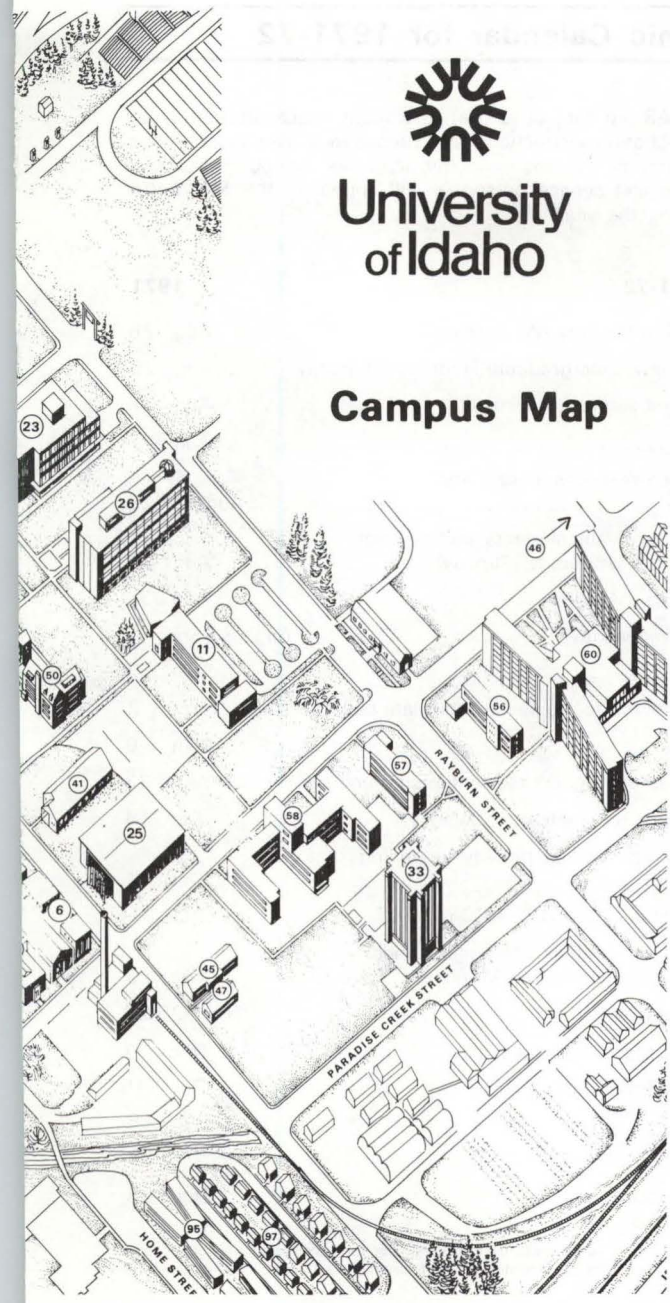


University of Idaho

Campus Map



CAMPUS BUILDINGS

1. Administration Building
2. Administration Office Building
3. Forestry Research Annex
4. Engineering Classroom Building
5. Life Science Building
6. Gauss Mech. Engr. Lab
7. Johnson Engineering Laboratory
8. Student Union and Bookstore
9. Adult Education Building
10. Museum
11. Agricultural Science Building
12. Old Forestry Building
13. Agricultural Education
14. Food Science Building
15. Memorial Gymnasium
16. Music Building
17. Ridenbaugh Hall
18. Agricultural Engineering Building
19. Student Health Center
20. Niccolls Home Ec. Bldg.
21. Small Animals Laboratory
22. Television Laboratory
23. Library
24. Mines Building
25. New Forestry Building
26. Physical Science Building
27. Home Management House
28. Information Center
29. University Classroom Center
30. Art and Architecture Building
31. Industrial Education Building
32. Buchanan Engineering Laboratory
34. Women's Health Education Building
35. Education Building
36. President's House
37. Swimming Center
38. Entomology Building
39. U-Hut
40. Faculty Office Building
41. Navy Building
42. Journalism Building
43. Radio Building
44. Drama Annex
45. Graduate Art Students
46. Veterinary Science Classroom Building
47. Entomology Research Laboratory

48-49. Alumni Center

RESIDENCE HALLS AND UNIVERSITY HOUSING

33. Theophilus Tower
52. Steele House
53. Vandal Hall
54. Campus Club
56. Shoup Hall
57. McConnell Hall
58. Gault-Upham Hall
60. Wallace Residence Center
95. Park Village Apts.
96. South Hill Homes
97. Park Village Prefabs

SORORITIES AND FRATERNITIES

Sororities

61. Alpha Chi Omega
62. Alpha Gamma Delta
63. Alpha Phi
64. Delta Delta Delta
65. Delta Gamma
66. Gamma Phi Beta
67. Kappa Alpha Theta
68. Kappa Kappa Gamma
69. Pi Beta Phi

Fraternities

59. Alpha Kappa Lambda
71. Alpha Tau Omega
72. Beta Theta Pi
73. Delta Chi
74. Delta Sigma Phi
75. Delta Tau Delta
76. Farmhouse Fraternity
77. Kappa Sigma
78. Lambda Chi Alpha
79. Phi Delta Theta
80. Phi Gamma Delta
81. Phi Kappa Tau
82. Pi Kappa Alpha
83. Sigma Alpha Epsilon
84. Sigma Chi
85. Sigma Nu
86. Tau Kappa Epsilon
87. Theta Chi

RELIGIOUS INSTITUTES

90. St. Augustine's Catholic Center
91. L.D.S. Institute
92. Campus Christian Center

Academic Calendar for 1971-72

DATES IN THIS CALENDAR are subject to change without notice; those appearing in admission and registration instructions take precedence over those in this catalog. This calendar primarily governs academic activities. Announcements of holidays for administrative and service personnel will appear in the *Staff Letter* at appropriate times during the year.

FIRST SEMESTER 1971-72 **1971**

New faculty members report for duty (Wednesday) ..... Aug. 25

Residence halls open for new undergraduate students (Thursday) ..... Aug. 26

Official opening date for first semester (Friday) ..... Aug. 27

Faculty meeting (Friday) ..... Aug. 27

Freshman pre-registration conferences (Friday) and orientation (Saturday) ..... Aug. 27-28

Residence halls open for graduate students and students previously enrolled in the University (Sunday) ..... Aug. 29

Pre-registration conferences (Monday) ..... Aug. 30

*Registration (Tuesday-Wednesday) ..... Aug. 31-Sept. 1

Classes begin (Thursday) ..... Sept. 2

*Last day for graduate students to register without late fee (Thursday). . Sept. 2

Labor Day holiday (Monday) ..... Sept. 6

*Last day to add courses or change course sections (Thursday) ..... Sept. 23

Last day to remove or extend incompletes (Thursday) ..... Oct. 14

Last day to change study list without penalty for failing work (Thursday) ..... Oct. 14

Mid-semester grade reports due (Monday, 1:00 p.m.) ..... Oct. 25

Last day to report grades for courses challenged under regulation "D-4" during first semester (Monday) .. .. Oct. 25

Thanksgiving recess (Thursday-Friday) ..... Nov. 25-26

Last day to complete field trips (Thursday) .... Dec. 9

Last day to drop courses (Wednesday) ..... Dec. 15

No classes (Wednesday) ..... Dec. 15

Final examinations (Thursday-Thursday) ..... Dec. 16-23

Winter recess begins (Thursday, 5:00 p.m.) ..... Dec. 23

*As provided in general regulation "B-10," students may register for accelerated and other short courses at any time up to and including the starting date of the course without petition and without late registration fee.

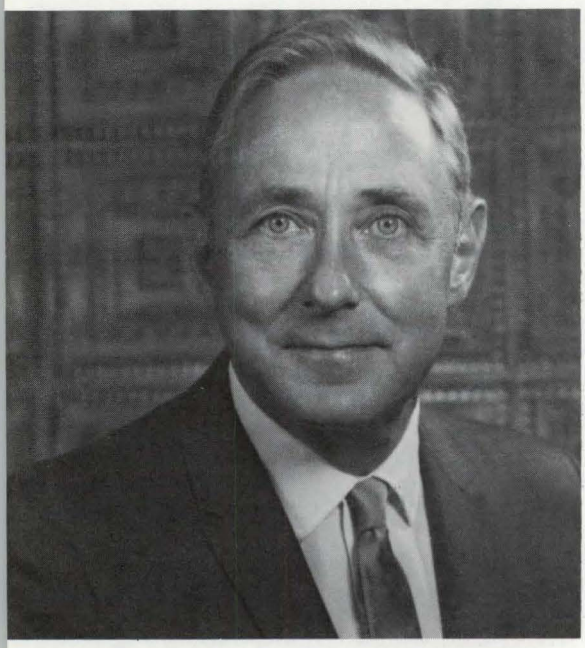
SECOND SEMESTER 1971-72

	1972
Winter recess ends (Monday, 8:00 a.m.)	Jan. 17
Official opening date for second semester (Monday)	Jan. 17
Pre-registration conferences (Monday)	Jan. 17
*Registration (Tuesday-Wednesday)	Jan. 18-19
Classes begin (Thursday)	Jan. 20
*Last day for graduate students to register without late fee (Thursday)	Jan. 20
Last day to file applications for baccalaureate degrees to be conferred at the 1972 Commencement (Monday)	Jan. 31
Last day to file applications for graduate degrees to be conferred at the 1972 Commencement (Monday)	Feb. 7
*Last day to add courses or change course sections (Wednesday)	Feb. 9
Washington's Birthday holiday (Monday)	Feb. 21
Last day to remove or extend incompletes (Wednesday)	Mar. 1
Last day to change study list without penalty for failing work (Wednesday)	Mar. 1
Mid-semester grade reports due (Monday, 1:00 p.m.)	Mar. 20
Last day to report grades for courses challenged under regulation "D-4" during second semester (Monday)	Mar. 20
Spring vacation (Monday-Friday)	Mar. 27-31
Last day to complete field trips (Friday)	Apr. 28
Last day to drop courses (Thursday)	May 11
No classes (Thursday)	May 11
Final examinations (Friday-Friday)	May 12-19
Commencement (Sunday)	May 21

SUMMER SESSIONS 1972

Last day for receiving applications for regular eight-week session (Monday)	May 22
Forestry summer camp begins (Monday)	May 22
Summer pre-session	May 22-June 9
Official opening date for regular eight-week summer session (Monday)	June 12
*Registration (Monday)	June 12
Classes begin (Tuesday)	June 13
Last day to remove or extend incompletes (Monday)	July 3
Summer sessions close (Friday)	Aug. 4

*See footnote on opposite page



ERNEST W. HARTUNG
President
1965-

University Administration

Ernest W. Hartung, *Ph.D.* . . . . . *President of the University*

Robert W. Coonrod, *Ph.D.* . . . . . *Academic Vice President*

Sherman F. Carter, *Ph.D.* . . . . . *Financial Vice President/Bursar*

. . . . . *Vice President for Administrative and Student Services*

Ronald W. Stark, *Ph.D.* . . . . *Coordinator of Research/Dean of the Graduate School*

Warren S. Owens, *M.A.L.S.* . . *Dean of Instructional Services/Director of Libraries*

Matt E. Telin, *B.S.* . . . . . *Registrar*

Frank Young, *M.S.* . . . . . *Director of Admissions*

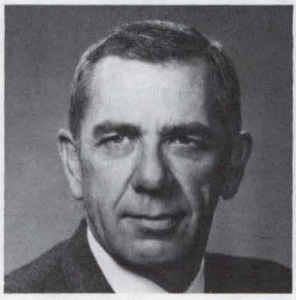
Regents of the University of Idaho

JOSEPH D. McCOLLUM
President
Twin Falls

JOHN J. PEACOCK
Vice President
Kellogg

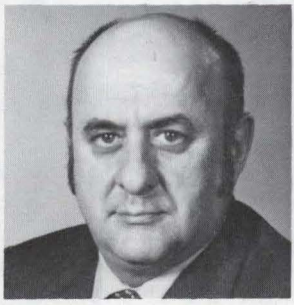
STEELE BARNETT
Secretary
Boise

MALDEN T. DEATON
Pocatello



JOHN W. SWARTLEY
Boise

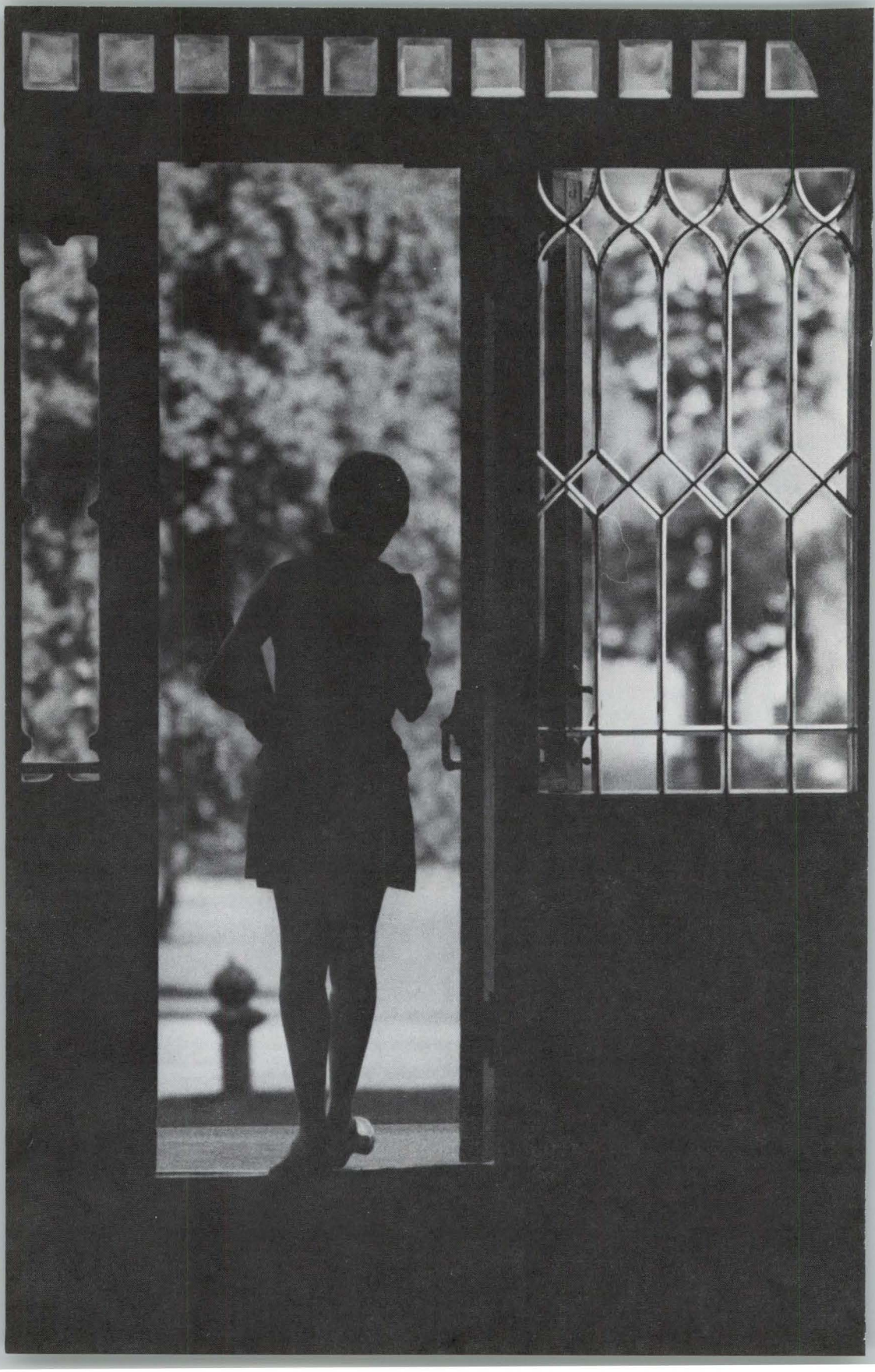
J. KENNETH THATCHER
Idaho Falls



J. P. MUNSON
Sandpoint

DELMAR F. ENGELKING
State Superintendent of Public Instruction
Boise

DONALD F. KLINE
Executive Director for Higher Education
Boise



The University and Its Mission

EVEN BEFORE IDAHO REACHED STATEHOOD there was the University. It was founded as a land-grant institution in 1889. In seeking an identity of its own, the University of Idaho has developed an educational format that applies directly to the many-faceted dimensions of the Idaho environment.

Each year some 7,000 young people come from every corner of the State and from almost every state in the Union. Foreign students come as well to share the unique aspects of their varied cultures as they, too, seek to know themselves through the University experience.

The faculty-to-student ratio is one to ten, a fact attested to by the success of the University's graduates. But even beyond teaching, the contributions of the faculty extend throughout Idaho, through extension services and research projects focusing on the farms and livestock ranges, forests and mines, highways and industries of the State.

The University is organized into eight colleges and the Graduate School. The largest college, Letters and Science, is a central force within the University. Offering a liberal and professional education in the arts and sciences, its emphasis is on insight, awareness, curiosity, and self-reliance — the basics for leadership performance in all fields.

The professional colleges — Agriculture, Business and Economics, Education, Engineering, as well as the College of Forestry, Wildlife and Range Sciences, and the Colleges of Law and Mines — challenge specific interests with advance information and technological sophistication in new and specialized areas.

All academic divisions coordinate their programs sufficiently to assure the emergence of well-qualified professional competence in any of the more than 130 subject-matter areas. Idaho's Graduate School offers the master's degree in seventy-five areas, and the doctorate in thirty fields. For a current listing of these programs, see the section headed "Major Curricula, Options, and Programs Offered" at the end of this part of the catalog.

Size is an important factor. The campus is intimate enough for each student to build enduring friendships and enjoy contrasted personal attention. On the other hand there is the maturity of a state university. With its nearly 700,000-volume library, its museum, and extensive teaching resources within each of its colleges, the University of Idaho is the academic and cultural center of Idaho. A unique asset is the close proximity of Washington State University. Moscow, Idaho, and Pullman, Washington, may be described as "youth cities," throbbing with a combined student population in excess of 20,000.

Covering 1,200 acres of land, the spacious campus is its own resident community. There are twenty-one residence halls, nineteen fraternities, and ten sororities. Learning, inevitably the product of the whole environment, is a round-the-clock experience.

Each living group conducts its own program of recreational and social activities. Exchange dinners, firesides, dances, sports, and intramural athletics broaden physical and social dimensions and continue on as lasting memories.

The Student Union Building, headquarters for much of this, is also the center of student government activities.

Varsity sports include football, basketball, baseball, track, wrestling, golf, swimming, tennis, cross-country, and skiing. Facilities for these sports, including an excellent student-owned, eighteen-hole golf course and winter sports areas, are to be found on or near the campus. Two indoor swimming pools, among the finest in the West, were recently completed.

Three religious institutes — Catholic, Latter-day Saint, and Protestant — are located adjacent to the campus. The relevance of these institutions is an important input to the process of growth and understanding. These centers cooperate with the University by conducting courses in religious studies.

At a time when change — and the rapidly-increasing pace of change — exert unpredictable pressures on every facet of the American scene, the University has achieved a unique dynamism. This energy takes the form of a distinctively productive relationship, an effective collaboration of the diverse interests of the faculty, staff, and student body. It is the reflection of an attitude, one that says each individual has a contribution to make, and it is the willingness to extend the learning process well beyond the classroom, to draw from lessons that have yet to be written into texts. It is both a context for rewarding social progress and a model for democratic involvement and participation. Altogether, it is a contemporary presentation of the University's purpose that will undoubtedly have far-reaching benefits.

The University's effectiveness might be summed up as "coming closer to producing what we promise" than most other institutions of higher learning. One final part of that promise includes the goals, objectives, careers, and alternatives that go along with higher education. The University's inspirational horizons exceed the broadest visual panoramas the state of Idaho has to offer.

THE UNIVERSITY'S MISSION

President Ernest W. Hartung has said, "In looking and planning for the future, it is necessary that past performances be given careful assessment; for planning, in essence, is the art of projection based upon the reality of experience. New programs, reorientation and reorganization of existing colleges and departments and innovative approaches toward campus government have been hallmarks of the past. These promise a future that will be educationally provocative, intellectually stimulating, and increasingly useful to our state. It is thus clear that our obligation to the future is to ensure that this rich promise of the University of Idaho will be fulfilled in every measure."

If the measure of strength of a university is to be defined, it must be defined in terms of its relevance to the people it serves. Relevance today might well be measured through change. The ability of a university to change to meet the needs of current education undergirds its capacity to respond to student demands that their education be "more meaningful."

At the University of Idaho the development of human awareness has long been of major concern. While the body of the institution is made up of many separate colleges or divisions, the avoidance of a fragmented educational experience for the student has ever been the goal. Since its foundation was first laid in 1889,

the University of Idaho has been striving to build upon the efforts of the many dedicated men and women who brought to the university community a diversity of talents — all of which were relevant to the needs of their day.

Today we must continue to enlarge upon the foundation created by the efforts of these dedicated men and women. In so doing, it should be noted that as the State's land-grant, co-educational institution, the mission of the University of Idaho is to focus on the individual student, regardless of his academic endeavor, so that he can become an aware and responsive citizen at the same time that he learns to recognize and develop his own inner potential. It is here that real relevance in education must start. Its goal is to move toward interdisciplinary work, toward community government, and toward greater flexibility in curriculum. The objectives are many, but of primary importance is to be relevant to the needs of today, responsive to the demands of the student and dedicated to providing the most meaningful and fitting education attainable.

Frank P. McCreary
Director, University Relations

The Library

THE UNIVERSITY LIBRARY, which was completed and occupied in 1957, cost 1.5 million dollars and contains a collection of nearly 700,000 volumes, to which approximately 25,000 volumes are added annually. The Library receives more than 7,000 serials (periodicals), including 125 newspapers and, as the regional depository in Idaho for U.S. Government documents, houses a collection of 260,000 official publications. The U.S. Geological Survey and the Army Map Service also use the Library as a depository, with the result that there are now more than 60,000 maps in the Library's collection.

Subject librarians administer three open-stack divisional libraries (Humanities, Social Science, 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 room contains rare and curious books and books that constitute a unique assemblage, such as the Day-Northwest Collection which consists of more than 3,000 volumes on Idaho and the Pacific Northwest.

The Library also maintains a Browsing Room which is comprised of books of current interest, popular periodicals, and state, out-of-state, and foreign newspapers.

The Library is air-conditioned, is open eighty-six hours a week during the regular school term, and provides coin-operated electric typewriters and photocopy machines at a nominal fee.

As a member of the Pacific Northwest Bibliographic Center located in Seattle, the Library has access to the collections of other academic libraries within the region.

The Museum

THE UNIVERSITY MUSEUM exists to serve the campus, the region, and the State in all fields. It is an all-university service and its role is to teach, using objects, with no limitations as to subject field.

A busy schedule of changing, temporary exhibitions is maintained throughout the year except during vacation periods. The Museum is open to visitors seven afternoons per week. Exhibitions deal with all possible fields including a wide range of the sciences and engineering, as well as anthropology, history, and the arts and crafts. In addition, students may learn about museums and museum work through actual experience and through courses in museology. (Museology is one of the subject-matter areas within the Department of Sociology/Anthropology. See Part 5 of this catalog for the courses offered.)

Students, alumni, employees, and other friends of the University can help to build the Museum's collections of scientific, historic, and artistic objects by calling the museum director's attention to significant, available material.

Accreditation

THE UNIVERSITY OF IDAHO is a member of the National Commission on Accrediting and is accredited by the Northwest Association of Secondary and Higher Schools. This accreditation embraces the entire University, including the various colleges and schools. The following organizations have granted additional approval or accreditation:

American Bar Association (College of Law)

American Chemical Society (Department of Chemistry)

American Dietetics Association (curricula in home economics and nutrition)

Association of American Law Schools (College of Law)

Engineers' Council for Professional Development (engineering curricula in the College of Engineering and the College of Mines)

National Architectural Accrediting Board (curriculum in architecture)

National Association of Schools of Music (School of Music)

National Council for Accreditation of Teacher Education (teacher education program)

Society of American Foresters (College of Forestry, Wildlife and Range Sciences)

In addition to the above, the University has long possessed nationally-recognized marks of excellence, including chapters of the following general honorary societies: Phi Beta Kappa (since 1926), Phi Kappa Phi (since 1960), Sigma Xi (since 1922), and chapters of national honorary and scholarship societies in practically every specialized field.

Degrees Granted

UPON COMPLETION of appropriate programs of study and recommendation of the faculty, the following degrees and certificates are granted by the University of Idaho:

BACCALAUREATE DEGREES

Bachelor of Architecture, *B.Arch.*
Bachelor of Arts, *B.A.*
Bachelor of Fine Arts, *B.F.A.*
Bachelor of Landscape Architecture, *B.L.Arch.*
Bachelor of Music, *B.Mus.*
Bachelor of Naval Science, *B.N.S.*
Bachelor of Physics, *B.Phys.*
Bachelor of Science, *B.S.*
Bachelor of Science in Agricultural Engineering, Agriculture, Business, Business Education, Chemical Engineering, Civil Engineering, Education, Electrical Engineering, Forestry, Geography, Geological Engineering, Geology, Home Economics, Mechanical Engineering, Metallurgical Engineering, Mining Engineering, Pre-Dental Studies, Pre-Medical Studies, *B.S.* *

MASTER'S DEGREES

Master of Agriculture, *M.Ag.*
Master of Architecture, *M.Arch.*
Master of Arts, *M.A.*
Master of Arts in Teaching, *M.A.T.*
Master of Arts in Teaching Art, Biological Sciences, Chemistry, Drama-Speech, Earth Science, English, French, Geography, German, History, Home Economics, Mathematics, Music, Physics, Political Science, Social Sciences, Sociology-Anthropology, Spanish, *M.A.T.* *
Master of Education, *M.Ed.*
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 Science, *M.S.*

DOCTORAL DEGREES

Juris Doctor, *J.D.*
Doctor of Education, *Ed.D.*
Doctor of Philosophy, *Ph.D.*

PROFESSIONAL DEGREES IN ENGINEERING

Agricultural Engineer, *Ag.E.*
Chemical Engineer, *Ch.E.*
Civil Engineer, *C.E.*
Electrical Engineer, *E.E.*
Geological Engineer, *Geol.E.*
Mechanical Engineer, *M.E.*
Metallurgical Engineer, *Met.E.*
Mining Engineer, *E.M.*

CERTIFICATES

Lower Division

**Certificate of General Proficiency in Accounting, Commercial Purchasing, Computer Programming (Commercial), Computer Programming (Scientific), Health Physics, Management, Mathematics, Office Operations, Secretarial Science, Subcontract Management.

Professional Certificates in Education (Sixth-Year Level)

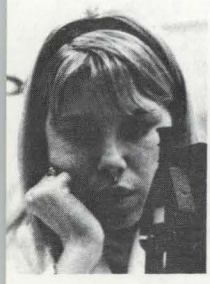
Specialist in Education, Guidance and Counseling, School Administration, School Psychology, Special Education, Vocational Education, *Prof.Cert.* *

* The abbreviation of the subject or field signature is added in each instance.

** Limited to students enrolled in the educational program of the National Reactor Testing Station, Idaho Falls.

Major Curricula, Options, and Programs Offered

MAJOR CURRICULA, OPTIONS, and programs offered by the University are shown in the two lists below. Entries followed by degree abbreviations are major curricula leading to the baccalaureate and advanced degrees indicated. Graduate programs are shown separately, following the undergraduate list.



UNDERGRADUATE

Accounting—*B.S.Bus.*

Acting
- *see* Drama

Advertising
- *see* Journalism

Aerospace Studies (AFROTC)

Agribusiness—*B.S.Ag.*
- Agricultural Economics Option
- Agricultural Mechanization Option
- Animal Industries Option
- Food Science Option
- Soils Option

Agricultural Biochemistry
- *see* Agricultural Science

Agricultural Economics—*B.S.Ag.*
- *see also* Agribusiness

Agricultural Education—*B.S.Ag.*

Agricultural Engineering—*B.S.Ag.E.*

Agricultural Mechanization
- *see* Agribusiness

Agricultural Science—*B.S.Ag.*
- Agricultural Biochemistry Option
- Animal Industries Option
- Range Livestock Management Option
- Bacteriology Option
- Entomology Option
- Food Science Option
- Plant Science Option
- Soils Option
- Veterinary Science Option

Air Force ROTC
- *see* Aerospace Studies

American Studies — *B.A.*

Animal Industries
- *see* Agribusiness and Agricultural Science

Anthropology—*B.A.*

Applied Mathematics
- *see* Mathematics

Applied Music
- *see* Music and Music Education

Architecture—*B.Arch.*
- *see also* Landscape Architecture

Army ROTC
- *see* Military Science

Art—*B.A., B.F.A.*
- Art Education Option
- Design Option
- Painting Option
- Sculpture Option

Art Education
- *see* Art

Arts and Law
- *see* Law (Combined Program)

Bacteriology—*B.S.*
- *see also* Agricultural Science

Bacteriology: Medical Technology—*B.S.*

Biochemistry
- *see* Agricultural Science

Biology—*B.A., B.S.*

Botany—*B.A., B.S.*

Business (General)—*B.S.Bus.*
- *see also* Accounting, Agribusiness, Business and Applied Science, Business and Law, Business Education, Economics, Finance, Forest Resources, Home Economics, Management, Marketing, and Office Administration

Business and Applied Science—*B.S.Bus.*

Business and Law
- *see* Law (Combined Program)

Business Education—*B.S.Bus.Ed.*
- Distributive Education Option
- General Business Option
- Office Occupations Option

Cartography
- *see* Geography

Chemical Engineering—*B.S.Ch.E.*

Chemistry—*B.S.*
- Professional Option
- Technical Literature Option
- Technological Option

Child Development—*B.S.H.Ec.*

Civil Engineering—*B.S.C.E.*

Classical Studies—*B.A.*

Clothing, Textiles and Design—*B.S.H.Ec.*
- Clothing Option
- Interiors Option

Composition
- *see* Music

Computer Programming
- *see* Mathematics

Dental Studies (Pre-Dental Studies)—*Two-Year Prog. and B.S.Pre-Dent.*

Design
- *see* Art

Dietetics
- *see* Food and Nutrition

Distributive Education
- *see* Business Education

Drama—*B.A., B.S., B.F.A.*
- Acting-Directing Option
- Technical Theatre Option

Economics—*B.A., B.S., B.S.Bus.*
- *see also* Agricultural Economics

Education
- *see* Agricultural Education, Art Education, Business Education, Elementary Education, Home Economics Education, Industrial Education, Music Education, Physical Education, Secondary Education, Special Education, Technical Education, and Vocational Teacher Education.

Electrical Engineering—*B.S.E.E.*

Elementary Education—*B.S.Ed.*
- *see also* Physical Education and Special Education

Engineering
- *see* Agricultural Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Geological Engineering, Mechanical Engineering, Metallurgical Engineering, Mining Engineering, and Wood Utilization.

English—*B.A.*

Entomology
- *see* Agricultural Science

Finance—*B.S.Bus.*

Fishery Resources
- *see* Wildlife-Fishery Resources

Food and Nutrition—*B.S.H.Ec.*
- Dietetics and Institutional Management Option
- Food and Nutrition Research Option

Food Science
- *see* Agribusiness and Agricultural Science

Forest Resources—*B.S.For.*
- Forest Business Option
- Forest Management Option
- Forest Science Option
- *see also* Range Resources, Wildlife-Fishery Resources, and Wood Utilization

Forest Products
- *see* Wood Utilization

French—*B.A.*

General Studies Program

Geography—*B.A., B.S., B.S.Geog.*

Geological Engineering—*B.S.Geol.E.*

Geology—*B.S.Geol.*

German—*B.A.*

History—*B.A., B.S.*

Home Economics—*B.S.H.Ec.*
- General Home Economics Option
- Business Option
- Journalism Option

Home Economics Education—*B.S.H.Ec.*
- Teaching Option
- Extension Option

Industrial Education—*B.S.Ed.*

Institutional Management
- *see* Food and Nutrition

Interdisciplinary Studies—*B.A., B.S.*

Interior Design—*B.F.A.*
- *see also* Clothing, Textiles and Design

Journalism—*B.A., B.S.*
- News-Editorial Option
- Advertising Option
- Radio-Television News Option
- *see also* Home Economics

Landscape Architecture—*B.L.Arch.*

Latin—*B.A.*

Latin American Studies—*B.A.*

Law (Combined Program)—*B.A., B.S., B.S.Bus.*

Management—*B.S.Bus.*
- *see also* Agricultural Science, Food and Nutrition, and Forest Resources

Marketing—*B.S.Bus.*
Real Estate Option
Mathematics—*B.A., B.S.*
Mathematics: Applied Mathematics—*B.S.*
Computer-Programming Option
Statistics Option
Mechanical Engineering—*B.S.M.E.*
Mechanization (Agricultural)
see Agribusiness
Medical Studies (Pre-Medical Studies) — *B.S.Pre-Med.*
Medical Technology
see Bacteriology
Metallurgical Engineering—*B.S.Met.E.*
Military Science (AROTC)
Mining Engineering—*B.S.Min.E.*
Music: Applied Music—*B.A.*
Music: Applied Instrumental—*B.Mus.*
Music: Applied Vocal—*B.Mus.*
Music: Composition—*B.Mus.*
Music: History and Literature—*B.A.*
Music: Theory—*B.A.*
Music Education: Instrumental—*B.Mus.*
Music Education: Vocal—*B.Mus.*
Music Education: Vocal-Instrumental—*B.Mus.*
Naval Science (NROTC)—*B.N.S.*
News-Editorial
see Journalism
Nursing (Pre-Nursing Studies)—*One-Year and Two-Year Prog.*
Nutrition
see Food and Nutrition
Office Administration—*B.S.Bus.*
see also Business Education
Office Occupations
see Business Education
Painting
see Art
Philosophy—*B.A., B.S.*
Physical Education: Elementary—*B.S.Ed.*
Physical Education: Men—*B.S.Ed.*
Physical Education: Women—*B.S.Ed.*
Physical Therapy (Pre-Physical Therapy Studies) — *B.S.*
Physics—*B.A., B.S., B.Phys.*
Plant Science
see Agricultural Science
Political Science—*B.A., B.S.*
Pre-Professional Programs
see Dental Studies, Law, Medical Studies, Nursing, and Physical Therapy
Psychology—*B.A., B.S.*
Radio-Television—*B.A., B.S.*
see also Journalism
Range Livestock Management
see Agricultural Science
Range Resources—*B.S.For.*
Real Estate
see Marketing
Recreation—*B.S.Ed.*
Science and Law
see Law (Combined Program)
Sculpture
see Art
Secondary Education—*B.S.Ed.*
Social Work
see Sociology
Sociology—*B.A., B.S.*
Sociology: Social Work — *B.A., B.S.*
Soils
see Agribusiness and Agricultural Science
Spanish—*B.A.*
Special Education—*B.S.Ed.*
Elementary Option
General Option
Secondary Option
Speech—*B.A., B.S.*
Statistics
see Mathematics
Technical Education—*B.S.Ed.*
Technical Theatre
see Drama
Trade and Industrial Education
see Vocational Teacher Education
Veterinary Science
see Agricultural Science
Vocational Teacher Education—*B.S.Ed.*
Trade and Industrial Option
Vocational-Technical Option
see also Agricultural Education, Distributive Education, Home Economics Education, and Office Occupations
Wildlife-Fishery Resources—*B.S.For.*

Wood Utilization—*B.S.For.*
Forest Products Option
Science-Engineering Option
Zoology—*B.A., B.S.*

ADVANCED AND GRADUATE

Agricultural Biochemistry—*Ph.D., M.S.*
see also Chemistry
Agricultural Economics — *M.S., M.Ag.*
see also Economics and Forestry Economics
Agricultural Education—*M.S., M.Ag.*
Agricultural Engineering—*Ph.D., M.S., Ag.E.*
Applied Music
see Music
Animal Industries—*M.S., M.Ag.*
Anthropology—*M.A.*
see also Sociology-Anthropology
Architecture—*M.A., M.Arch.*
see also Interior Design
Art—*M.A., M.F.A., M.A.T.Art*
Bacteriology—*Ph.D., M.S.*
Biochemistry
see Agricultural Biochemistry
Biological Sciences—*M.Nat.Sc.*
see also Bacteriology, Biology, Botany, and Zoology
Biology—*M.A.T.Biol.*
see also Biological Sciences
Botany—*Ph.D., M.S.*
see also Biological Sciences and Biology
Business—*M.S., M.B.A.*
see also Business Education
Business Education—*M.S., M.Ed.*
includes Distributive Education and Office Occupations
Chemical Engineering—*Ph.D., M.S., M.Nuc.Sc.*, Ch.E.*
Chemistry—*Ph.D., M.S., M.Nuc.Sc.* M.A.T.Chem.*
see also Agricultural Biochemistry, Chemical Engineering, and Physical Sciences
Civil Engineering—*Ph.D., M.S., C.E.*
Composition
see Music
Distributive Education
see Business Education
Drama—*M.A.*
see also Drama-Speech
Drama-Speech—*M.A.T.Dr.-Sp.*
Earth Science—*M.Nat.Sc., M.A.T.Ea.Sc.*
see also Geography and Geology
Economics — *Ph.D., M.S.*
see also Agricultural Economics, Forestry Economics, and Social Sciences
Education—*Ph.D., Ed.D., Prof.Cert., M.A.T.*
see also Agricultural Education, Art, Biological Sciences, Biology, Business Education, Drama-Speech, Earth Science, Elementary Education, English, Geography, Guidance and Counseling, History, Home Economics, Industrial Education, Mathematics, Music, Physical Education, Physical Sciences, Physics, Political Science, School Administration, School Psychology, Secondary Education, Social Sciences, Sociology-Anthropology, Special Education, Trade-Technical Education, and Vocational Education
Electrical Engineering—*Ph.D., M.S., M.Nuc.Sc.*, E.E.*
Elementary Education—*Ph.D., Ed.D., M.S., M.Ed.*
Engineering
see Agricultural Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Geological Engineering, Mechanical Engineering, Metallurgical Engineering, Mining Engineering, Mining Engineering-Metallurgy, and Nuclear Engineering
English—*M.A., M.A.T.Eng.*
Entomology—*Ph.D., M.S.*
see also Forest Entomology
Fishery Management—*M.S., M.F.*
see also Wildlife Management and Wildlife Science
Food Science—*M.S.*
Forest Entomology—*M.S., M.F.*
see also Entomology and Forestry Science
Forest Genetics—*M.S., M.F.*
see also Forestry Science
Forest Management—*M.S., M.F.*
see also Forestry Science
Forest Pathology—*M.S., M.F.*
see also Forestry Science
Forest Products
see Wood Utilization
Forest Recreation—*M.S., M.F.*

Forest Soils—*M.S., M.F.*
see also Forestry Science and Soils

Forestry Economics—*M.S., M.F.*
see also Agricultural Economics, Economics, and Forestry Science

Forestry Science—*Ph.D.*
see also Forest Entomology, Forest Genetics, Forest Management, Forest Pathology, Forest Soils, Forestry Economics, Range Science, Silviculture, Watershed Science, and Wildlife Science

French — *M.A., M.A.T.Fr.*

Geography—*M.S., M.A.T.Geog.*
see also Earth Science and Social Sciences

Geological Engineering—*M.S., Geol.E.*

Geology—*Ph.D., M.S.*
see also Earth Science

German — *M.A., M.A.T.Ger.*

Guidance and Counseling—*Ph.D., Ed.D., Prof.Cert., M.S., M.Ed.*
see also School Psychology

History—*Ph.D., M.A., M.A.T.Hist.*
see also Social Sciences

Home Economics — *M.S., M.A.T.H.Ec.*
includes Home Economics Education

Hydrology—*M.S.*
see also Watershed Science

Industrial Education—*M.S., M.Ed.*

Interior Design—*M.A.*
see also Art

Law—*J.D.*

Mathematics—*Ph.D., M.S., M.Nuc.Sc.*, M.Nat.Sc., M.A.T.Math.*

Mechanical Engineering—*M.S., M.Nuc.Sc.*, M.E.*

Metallurgical Engineering—*M.S., Met.E.*
see also Mining Engineering-Metallurgy

*Metallurgy — *M.S., M.Nuc.Sc.**
see also Mining Engineering-Metallurgy

Mining Engineering—*M.S., E.M.*
see also Mining Engineering-Metallurgy

Mining Engineering-Metallurgy—*Ph.D.*

Music—*M.A., M.Mus., M.A.T.Mus.*
includes Music Education

Nuclear Engineering—*M.S., M.Nuc.Sc.**

Office Occupations
see Business Education

Philosophy—*M.A.*
see also Social Sciences

Physical Education—*M.S., M.Ed.*

Physical Sciences—*M.Nat.Sc.*
see also Chemistry and Physics

Physics—*Ph.D., M.S., M.Nuc.Sc.*, M.A.T.Phys.*
see also Physical Sciences

Plant Science—*Ph.D., M.S., M.Ag.*

Political Science—*Ph.D., M.A., M.A.T.Pol.Sc.*
see also Social Sciences

Psychology—*Ph.D., M.S.*
see also School Psychology and Social Sciences

*Radiological Science—*M.S.*

Range Management—*M.S., M.F.*
see also Range Science

Range Science—*Ph.D.*
see also Forestry Science, Range Management, and Wildlife Science

Recreation
see Forest Recreation and Physical Education

School Administration—*Ph.D., Ed.D., Prof.Cert., M.S., M.Ed.*

School Psychology—*Prof.Cert.*
see also Guidance and Counseling

Secondary Education—*Ph.D., Ed.D., M.S., M.Ed.*

Silviculture—*M.S., M.F.*
see also Forestry Science

Social Sciences—*M.A.T.Soc.Sc.*

Sociology—*M.A.*
see also Sociology-Anthropology

Sociology-Anthropology—*M.A.T.Soc.-Anthr.*

Soils—*Ph.D., M.S., M.Ag.*
see also Forest Soils

Spanish—*M.A., M.A.T.Span.*

Special Education—*Ph.D., Ed.D., Prof.Cert., M.S., M.Ed.*

Speech
see Drama-Speech

Trade-Technical Education—*M.S., M.Ed.*
see also Vocational Education

Veterinary Science—*M.S.*

Vocational Education, *Prof.Cert., M.S.,*

M.Ed.

see also Agricultural Education, Business Education, Distributive Education, Home Economics, Office Occupations, and Trade-Technical Education

Watershed Science—*M.S., M.F.*

see also Forestry Science and Hydrology

Wildlife Management—*M.S., M.F.*

see also Fishery Management and Wildlife Science

Wildlife Science—*Ph.D.*

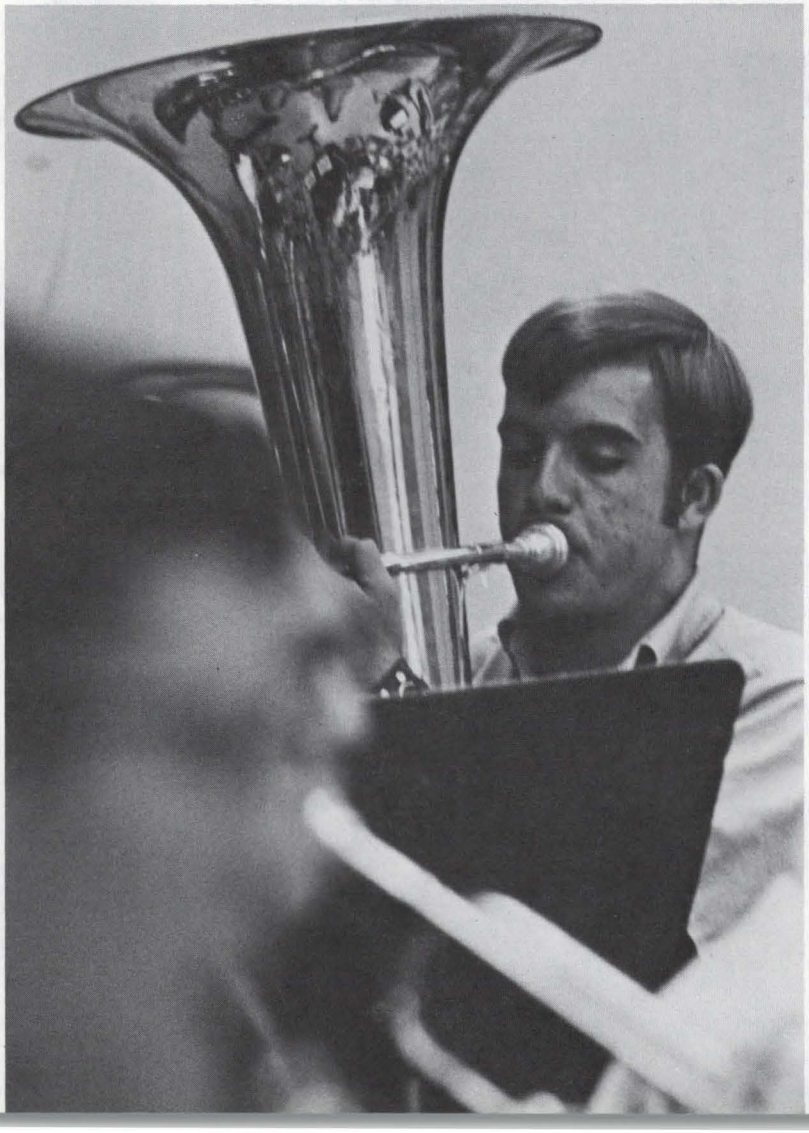
see also Fishery Management, Forestry Science, Range Science, and Wildlife Management

Wood Utilization—*M.S., M.F.*

Zoology—*Ph.D., M.S.*

see also Biological Sciences

*The graduate majors in metallurgy and radiological science, as well as the degree of Master of Nuclear Science, are limited to students enrolled in the educational program of the National Reactor Testing Station, Idaho Falls.



Admission to the University

STUDENTS DESIRING TO ENTER the University for the first time should write to the Admissions Office and request an admissions folder. This publication gives detailed instructions on the application procedure and provides a means of requesting information on housing and various types of financial aids.

Students who have not earned a college degree are classified as undergraduates. This catalog section contains general information pertinent to all applicants for admission to the University. See "Admission to the Graduate School and the College of Law" near the end of this catalog section for additional information related to graduate study and admission to the College of Law.

Undergraduate students are classified as freshmen (less than twenty-six credits), sophomores (less than sixty credits), juniors (less than ninety-four credits), or seniors.

Applicants who are still in high school should apply during the first semester of their senior year and should request 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 acceptance for fall entrance based on this record.

ADMISSION PROCEDURES

Credentials. Applicants for admission are required to submit the following:

1. Personal data on the regular application-for-admission blank. Failure to list all institutions attended as specified on the application form is considered fraud and subjects the applicant to immediate cancellation of his registration.

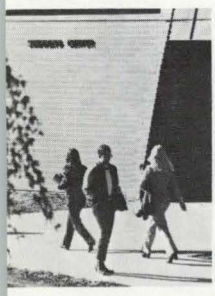
2. A certificate of secondary-school record from the last high school attended and a transcript and statement of honorable dismissal from each institution attended beyond high school. TRANSCRIPTS SUBMITTTED IN SUPPORT OF AN APPLICATION MUST BE OFFICIAL AND MUST BE SENT DIRECTLY TO THE ADMISSIONS OFFICE 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 (this includes transfer students with less than twenty-six semester credits) is required to have the scores he attained on the College Entrance Examination Board tests sent to the Admissions Office to become a part of his personal file. These tests must include the Scholastic Aptitude Test and achievement tests in English and two other subjects (the latter should include mathematics if it is basic to the applicant's proposed major). Scores attained on tests of the American College Testing program may be submitted in lieu of CEEB scores.

4. Each student entering the University for the first time, except those enrolling for summer session only, is required to file with the University a complete

physical examination report. It must be filed before registration is initiated. The physical examination should be accomplished by the applicant's physician before coming to the University and special forms are provided for this purpose. University physicians do not make entrance physical examinations. The University may require other or further physical examinations if deemed necessary.

5. All new non-resident undergraduate applicants, except those applying for summer sessions, must remit a fee of $25.00 for review of credentials and other services in connection with the application process. This fee is not refundable after the application has been submitted to the Admissions Office, except as follows:



a. If the applicant is not accepted for admission to the University, $20.00 of this fee will be refunded to him. It is recognized that this decision cannot be final until all supporting credentials are on file.

b. If the applicant is accepted by the University, the $25.00 will be applied as partial payment of his registration fees for the semester for which he applied. If the applicant, once accepted, does not enroll at the University for the particular semester for which he applied for admission, he will not thereafter receive any refund or any credit toward fees.

Final Dates for Application. In order to provide time for evaluation and for notice of acceptance to reach the applicant before registration days, applications and credentials should be received by the Admissions Office by August 1 for first-semester entrance and by December 15 for the second-semester entrance. Applications and credentials for summer sessions should be received by the Admissions Office at least three weeks prior to 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 may 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 has been found eligible, a letter of acceptance and a physical examination report form will be sent to him. A permit to register will be among the registration materials furnished the applicant upon arrival at the University.

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

ADMISSION REQUIREMENTS

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

Applicants Without Previous College Credit.

1. Applicants who are either residents of Idaho or sons or daughters of non-resident alumni of the University are eligible for admission if they are graduates of accredited high schools.

2. Non-resident applicants who are graduates of accredited high schools are selected for admission from among 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 fifteen 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 of the principal and approval of the director of admissions.

b. **By Examination.** Applicants who are graduates of non accredited 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. In addition to their previous academic records and scores on specified standardized tests, special consideration will be given to evidence of maturity as indicated by their record of experience in the armed forces or in other employment. Applicants to whom this provision applies should write to the Admissions Office for detailed information and instructions.

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. Certificates of secondary-school record should show the length of each course in weeks, the number of class meetings per week, the length of each meeting, and the grade of scholarship attained, including a record of all failures, conditions, and repeats.

a. **Definition of High School Units.** A "unit" represents a subject taught five times per week in periods of not less than forty minutes duration (eighty minutes for laboratory periods) for a school year of at least thirty-six 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" and "non-academic." Academic units are those earned in English (composition and literature), foreign languages, mathematics, natural sciences, and social sciences. Acceptance of units is subject to the following limitations:

(1) Units are not accepted in spelling, penmanship, reviews, project work (unless in conjunction with regular courses), and work which is primarily in the nature of extracurricular activities.

(2) Units are not accepted for less than one year in a foreign language, typewriting, shorthand, or bookkeeping.

(3) Less than one-half unit in any subject is not accepted.

(4) A maximum of one unit each in physical education and military training is accepted.

COLLEGES OF THE UNIVERSITY

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

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

5 Chemistry strongly recommended.

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

b. **Subject Requirements.**

(1) The subject-matter content of an applicant's secondary education does not enter directly into the determination of his eligibility for admission. It does, however, provide a basis for evaluating the adequacy of his preparation, for advising him as to his choice of college or major, and for placement in certain college subjects. The required preparation for admission without deficiency, as established by various colleges, is set forth in the table in this catalog section.

(2) Students who are admitted to the University with fewer academic units than the minimum total indicated for their particular college will be required to make up the deficiency. It may be made up by college courses for which credit will be deducted at the rate of four semester credits for each unit of deficiency.

(3) If a student has the required minimum number of academic units but is deficient in one or more subjects, his college will identify the deficiencies and prescribe the means by which they are to be removed or satisfied. Generally the college will waive these deficiencies for students who are older, are veterans, or transfer from accredited institutions of higher learning with twenty-six or more semester credits and a satisfactory scholastic average, unless the deficiency is in a subject specifically needed as preparation for a course required in the student's college curriculum.

(4) All entrance deficiencies should be made up during the student's first year at the University.

Applicants With Previous College Credit.

1. Applicants who have been enrolled in other colleges or universities which have been accredited by one of the regional agencies, such as the Northwest Association of Secondary and Higher Schools, 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 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.

2. Upon admission of a transfer student, all credits earned or attempted, and all grades received in college-level courses at accredited institutions will be recorded; however, no grade points for this work will be included in the computation of his grade-point average at the University of Idaho. (This revised procedure is effective for all students who enter the University at the time or or after initial registration for the 1971-72 academic year.)

3. Students admitted to the University of Idaho from other collegiate educational institutions must have complied with the scholarship regulations for continuance in the institution or institutions which they have attended in addition

to those scholarship regulations which are applied to students enrolled in this institution.

4. Advanced placement granted by other accredited institutions will be honored on transfer.

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 twenty-six 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, consid-

eration will be given to recommendations made by the American Council on Education and other appropriate agencies and to University degree requirements.

8. No credit will be accepted on transfer to the University for work done at a junior college after the student has earned, at any institution or institutions, a total of sixty-four credits (or one half the total credits required for his intended degree program, whichever is larger).

Admission As A Non-Matriculated 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. No credentials are required in support of the application. However, if the student wishes to change to a formal program he will be required to file a regular application form and furnish the required supporting credentials and meet all the admissions requirements. 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 of the instructor of the course is required to enroll in courses numbered 500 or above.

The applicant is required to complete a non-matriculated student application form on which he attests as to his status at previously-attended institutions of higher education and certifies that he: (1) understands that acceptance in this category does not constitute acceptance to a degree-granting program. (2) has sufficient educational background to qualify for the course or courses in which enrollment is sought, and (3) accepts personal responsibility for the applicability of credits earned while registered in this category.

Admission of International Students. The University of Idaho accepts qualified students from other countries to the extent that space is available. International applicants are expected to meet the requirements for admission from high school or from other colleges or universities as outlined above.

1. **Credentials.** Official transcripts and/or certified copies of the certificate, diploma, or government examination report received on completion of any college or university must be translated into English and must be sent by the certifying agency directly to the Admissions Office.

2. **English Proficiency.** All international student applicants whose native language is other than English are required to take and receive a satisfactory score on the Test of English as a Foreign Language (TOEFL) or other examination acceptable to the University of Idaho. Arrangements to take the TOEFL examination may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 592, Princeton, New Jersey 08540. The test must be taken and the scores received by the University prior to a decision on admission of the applicant.

3. **Financial Statement.** All 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 of Idaho.

Admission to the Graduate School and the College of Law. See the Graduate School section in Part 4 of this catalog for basic information on admission to graduate standing. Students interested in graduate study should re-

quest a copy of the catalog of the Graduate School. The special procedures for admission to the College of Law are described in that division's section in Part 4 of this catalog. See "Fees and Expenses" in this Part 2 for the application fee for the Graduate School and the College of Law.

Mutual Responsibility Agreement

THE ACCEPTANCE OF A STUDENT for admittance and enrollment at the University of Idaho constitutes an agreement of mutual responsibility. The student's part of this agreement is to accept established University rules and policies, to respect the laws of governmental units, and to act in a responsible manner appropriate to these laws, rules, and policies. The University's part is to recognize its commitment to higher education, to fulfill its responsibilities pursuant to the attainment of the academic goals and objectives of all members of the University community, and to meet its obligations for an appropriate atmosphere which will provide an opportunity for students to be heard in matters pertaining to their welfare as students. Appropriate disciplinary action on the part of the University must be taken when it has been determined by established procedures that a student has acted contrary to University regulations and thus has violated this agreement.

Statement of Student Rights

THE FOLLOWING STATEMENT of student rights was adopted by the Board of Regents of the University, November 12, 1970. As a companion to this document, a codification of the rules and regulations covering the conduct of students on campus and at University-sponsored events is available. In addition, a revised code of conduct is in the process of formulation.

PREAMBLE

The Board of Regents of the University of Idaho recognizes that all students enjoy the same inalienable rights as all citizens under the Constitution and laws of the United States. The Board, therefore, adopts the following "Statement of Student Rights," the purpose of which is to guarantee basic and fundamental rights to students at the University of Idaho.

For purposes of applying this statement, a student is defined as any person who is regularly enrolled in the University as an undergraduate student, graduate student, or special student, or who is admitted as a non-matriculated student or as a summer non-matriculated student, and who is not a member of the Faculty.

SECTION I—FREEDOM OF ASSOCIATION

1. Students shall be free to organize and join associations to promote their common interests.

2. University approval shall not be required for the organization of any student association. The operation of such an association is subject to regulations necessary for the orderly scheduling of events, but in no case shall the views or objectives of the association be a basis for exercising these or other regulatory powers. In the event that University regulations are violated, disciplinary action will be taken only against individual students and not against the association. (*Note:* The intent of this paragraph is to allow students to join, organize, and form associations to promote their common interests. Students and student associations are not to use University facilities for unlawful means and are subject to rules regulating the use of University facilities. However, the views, objectives, and beliefs of the association shall not be used as a basis for subjecting the association to University regulations.)

3. Student associations may be required by the University to submit a current list of officers and objectives, but they shall not be required to otherwise disclose their membership.

SECTION II—FREEDOM OF INQUIRY AND EXPRESSION

1. Students and student associations shall be free to examine and discuss all questions of interest to them and to express their opinions publicly or privately, subject only to civil and criminal law. (*Note:* This paragraph is in accordance with the state and federal constitutions. Every aspect of the educational process should promote the free expression of ideas. At the same time, however, it should be made quite clear to the academic and larger community that in their public expressions, students or student associations speak only for themselves.)

2. Students shall be free to support causes by any lawful means. (*Note:* This paragraph means that students have the right to support any cause as long as that support is done by lawful means. However, in supporting a cause students and student associations cannot use unlawful means that would disrupt and endanger the essential operation of the University, violate the rights of others, or interfere with the orderly execution of duly authorized functions of the University.)

3. Student associations shall be free to invite and to hear any person at their meetings. (*Note:* The intent of this paragraph is to allow students and student associations to hear any speaker of their own choosing. Routine procedures required by the University before a guest speaker is invited to appear on campus should be designed only to insure that there is orderly scheduling of facilities and adequate preparation for the event. After the speaker is invited, the student association may be subject to limitations in cases of clear and present danger of immediate violence.)

4. All official student communications media shall have the right to establish and maintain internal control of operations and content, free from prior censorship. Only for proper and stated causes will editors and managers be subject to removal, and then only by procedures prescribed at a prior date. (*Note:* The intent of this paragraph is to allow student publications to print any material free from prior censorship. The editorial staff of the paper is subject to removal for breach of reasonable standards of journalism, such as libel, intentional distortion, and a reckless disregard for the facts. The ASUI Communications Board is responsible for insuring that all publications adhere to the laws and adhere to standards

set forth by the ASUI Regulations. Editors have editorial freedom, but editorial policy is made by Communications Board.)

SECTION III—DISCIPLINARY REGULATIONS

1. Disciplinary regulations may be enacted only to govern the conduct of students on campus or at authorized University activities. All such disciplinary regulations shall be approved by the Faculty and shall be codified and published under the title of a "Student Code of Conduct."

2. Internal regulations of University residence halls need not be included in the Student Code of Conduct, but shall otherwise conform with the provisions of this Section.

3. No disciplinary regulation shall take effect until after it has been published. No *ex post facto* regulation shall be enacted. (*Note: Ex post facto* refers to an act committed before the regulation is in force. Thus, this paragraph prohibits punishment for an act committed before a regulation governing that act is in force.)

4. No disciplinary regulation shall discriminate against any student because of race, religion, or national origin, nor shall any regulation in any way deny to any student equal protection of the laws. No disciplinary regulation shall discriminate irrationally, unreasonably, or invidiously on the basis of sex. (*Note:* While no regulation may discriminate in any way on the basis of race, religion, or national origin, the University may have a legitimate, rational, and reasonable interest in classifying students on the basis of sex. For example, a classification of male restrooms and female restrooms is rational and reasonable. Such regulations, however, may not discriminate irrationally, unreasonably, or invidiously.)

SECTION IV—DISCIPLINARY HEARINGS AND PROCEDURES

1. "Disciplinary action" is defined as any penalty imposed for misconduct, including cheating and plagiarism. Disciplinary action, except that action necessary to stop a violation, shall not be taken against any student until his guilt has been ascertained at a fair and impartial hearing before a hearing body authorized by the Faculty for that purpose. Basic requirements of due process and fair play must be, observed. (*Note:* This paragraph makes clear that cheating and plagiarism are violations of disciplinary regulations. Action necessary to stop a violation means, for example, that the President could eject a group of students unlawfully occupying his office without first providing a hearing. Further disciplinary action must await completion of disciplinary hearings. Basic requirements of both procedural and substantive due process must be observed.)

2. Disciplinary hearings shall be commenced only for alleged violations of regulations that have been properly enacted and which are in force at the time of the violation.

3. Students who are suspected of violations may be questioned but the student must be informed at the beginning of such questioning of the right to remain silent. No form of coercion or harassment shall be used in questioning.

4. Neither the premises inhabited by students nor their personal possession shall be searched or seized in violation of Federal or state law.

5. A disciplinary hearing may be waived and informal disposition of disciplinary action may be made by agreed settlement with the student or an order

by the hearing board consented to by the student. If the student pleads guilty or fails to appear after receiving proper notice, an appropriate penalty may be imposed.

6. Except as provided in Paragraph 5, the student charged with the violation:

(a) shall be entitled to a prompt hearing;

(b) shall be informed in writing of the specific charges for proposed disciplinary action;

(c) shall be given sufficient time to prepare for the hearing;

(d) shall state in writing whether he wishes the disciplinary hearing to be public or private.

7. During the disciplinary hearing and except as provided in Paragraph 5, the student charged with the violation:

(a) may be assisted by an advisor of his choice;

(b) shall be given the opportunity to testify and to present evidence and witnesses on his behalf;

(c) shall have the opportunity to hear and question adverse witnesses;

(d) must have all testimony or evidence introduced in his presence unless he refuses to appear or fails to appear after having received proper notice;

(e) shall not be forced to testify against himself, and his refusal to testify shall not be considered as evidence against him.

8. The hearing board:

(a) shall disregard any evidence secured by improper questioning or by illegal search and seizure;

(b) shall assume the innocence of the student charged with the violation and shall place the burden of proof upon the party seeking disciplinary action;

(c) shall base its findings and decision exclusively upon proper evidence and testimony and upon facts which are universally regarded as true (*Note:* Hearing boards should hear evidence on any disputed points. However, the board may itself take notice of facts that everyone agrees are true. For example, evidence does not have to be introduced to show that it was dark if the act in question is clearly shown to have occurred at midnight.);

(d) must state its findings and its decision in writing.

9. A student may be expelled or suspended from school as a penalty for violating disciplinary regulations only if his misconduct seriously and critically endangers the essential operation of the University or the safety of members of the University community.

10. No student shall be tried twice for the same offense within the University system of disciplinary hearings.

11. Any party to a disciplinary hearing shall have the right to appeal the decision to the Faculty or its duly authorized representative. Subsequent appeals may be taken to the Board of Regents when the Board agrees to hear the appeal:

(a) A student found guilty of a disciplinary violation will be entitled

to a new hearing if prejudicial error is found on appeal. If the appellate body affirms the action of the hearing body, the severity of the penalty shall not be increased.

(b) Except in extraordinary circumstances, any disciplinary action shall be held in abeyance until appeals have been completed.

(c) Appellate bodies may consider the validity of the regulations under which a disciplinary hearing was held, the compliance of the hearing body with provisions of this Statement, and the adequacy of the hearing body findings and decision.

(d) Appellate bodies shall establish their own procedures which must include adequate notice to the parties and sufficient opportunity for the parties to prepare their arguments.

(e) The final appellate body authorized to represent the Faculty pursuant to Paragraph 11 of Section IV shall consist of a standing Committee of Review composed of five members of the Faculty. One member shall be from the Faculty of the College of Law, and no two members shall be from the same college or other major division of the University. The members shall be appointed by the President of the University after consultation with the Chairman of Faculty Council and the President of the ASUI. The regular term of membership shall be two years and shall run from the beginning of the academic year to the beginning of the academic year two years thereafter. The first members of the committee to be selected following the adoption of this Statement of Student Rights shall be appointed as soon as convenient and serve until the beginning of an academic year to be designated by the President for each, in such manner as to establish a regular system of rotation whereby the terms of two committee members expire during one year and three in the next. A vacancy which occurs during a term shall be filled for the unexpired part thereof by appointment in the same manner as regular vacancies are filled.

SECTION V—PROTECTION AGAINST IMPROPER DISCLOSURE

1. Students shall be protected from improper disclosure of data from their disciplinary records. Such data shall only be made available:

(a) in cases of legal compulsion;

(b) when the student's written permission is secured;

(c) to persons within the University directly involved in the disciplinary proceedings established in this Statement, and then only to the extent that consultation of the record is essential to determining the charge against the student or to determine penalties.

(d) Transcripts of academic records shall not contain information about disciplinary action except when such action affects the eligibility of the student to continue as a member of the academic community.

2. Information about a student contained in academic and counseling records shall be considered confidential. Specifically:

(a) Information about the views, beliefs, and associations of students acquired by instructors and advisors may be released only with the written consent of the student. Judgments of ability and character may be provided.

(b) Information accumulated in counseling students on personal prob-

lems of a private or confidential nature shall be available only to those persons authorized by the student's written permission.

3. Information in academic and counseling records may be released when:

(a) such release is legally compelled;

(b) the student gives written authorization for such release;

(c) faculty and staff members have adequate reasons, as defined by the Faculty, to consult academic records;

(d) individual students are neither identified nor identifiable in statistical summaries of academic records.

SECTION VI—CONSTRUCTION AND ENACTMENT

1. The enumeration of rights in this Statement shall not be construed to deny or disparage other rights retained by students.

2. This Statement of Student Rights may be amended by the Board of Regents. Proposals for amendments from the University community will be made upon a two-thirds (2/3) affirmative vote of the students voting in an election in which at least thirty-five per cent (35%) of the students vote, together with the affirmative vote of a majority of the Faculty at a meeting at which a quorum was present.

3. No legislation enacted by students or the Faculty shall supercede or conflict with the provisions of this Statement of Student Rights.

4. This Statement shall take effect upon approval by the Board of Regents; except that the second sentence of Section III, Paragraph 1, and the first sentence of Section III, Paragraph 3, shall not take effect until the approval of a Code of Conduct by the Board of Regents.

Fees and Expenses

EXPENSES FOR ATTENDING the University of Idaho vary with the taste and financial means of the individual. The University prides itself for its record in providing high-quality instruction at reasonable cost.

The largest item in the estimated school expense is board and room which are available at relatively low rates because more than two-thirds of the single undergraduate students live on campus. For about $101.50 a month ($35.50 for room; $66.00 for board), or $460.00 a semester, students secure excellent board and room in the University-operated dormitories. The University also maintains cooperative residence halls where students may reduce their living costs by sharing the work. These cooperatives cost about $75.00 a month ($26.00 for room; $49.50 for board), or $337.50 a semester. These figures are based upon rates in effect on February 1, 1971, and are subject to change depending upon change in costs.

Students joining fraternities or sororities may pay slightly more than those living in University halls, but the costs are still well below the average for similar living standards at most colleges and universities.

ESTIMATED COSTS PER SEMESTER

	Idaho Resident	Non-Resident
Tuition	$ -0-	400.00
Registration fees	173.00	173.00
Books, supplies, etc	45.00 to 65.00	45.00 to 65.00
Room and board*	337.50 to 460.00	337.50 to 460.00
TOTAL**	550.50 to 698.00	955.50 to 1098.00

*In University-owned dormitories. The lower figure represents the costs in cooperative dormitories in which residents provide their own janitorial and dining hall services.

**Not including personal and incidental costs or travel.

ANNUAL EXPENSES

In forecasting total costs for the academic year, double the semester estimates above 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.

A student coming to the University needs about $465.00 to meet initial payments, including the first installment on the board payment. Out-of-state students need an additional $400.00 to cover tuition. Personal checks, bank drafts, money orders, or travelers checks are all accepted by the University.

STUDENT FEES

All students who register as regular students for undergraduate or graduate study pay the regular registration fees. Special fees are charged under the special conditions indicated below. Any person, other than a faculty or staff member, who registers for more than six credits, or its equivalent, must pay the full registration fee.

Fees are payable in full at the time of registration on the scheduled registration days. Students registering late pay a late-registration fee.

Payment of the regular registration fee entitles all students registered for academic credit to the services maintained by the University for the benefit of students, subject to charges for special services. No reduction in fees can be made for students who may not desire to use any part of these services.

The University reserves the right to change the registration fee and charges listed herein without notice (see general regulation "0-3" in Part 3 of this catalog).

REGULAR FEES PER SEMESTER

All regular students who are legal residents of the state of Idaho pay the uniform registration fees. The payment includes all laboratory, course, and other charges, except those listed under "Special Fees," below.

Registration Fees ($173.00). The registration fees include all laboratory and course charges, including membership in the Associated Students of the University of Idaho (ASUI), except that a small greens fee is charged for using the golf course. If the student pays these fees for both semesters, he is entitled to a yearbook without additional charge. Free clinic advice is furnished by the university physician, including privileges of the Student Health Center up to seven days per semester. When confinement in the Stu-

dent Health Center exceeds seven days in any one semester, an additional $3.00 per day charge is made; also, additional charges are made for hospital meals, x-rays, special medicines, and special services. In addition, the registration fees entitle the student to physical education services, use of the Student Union Building, and services of the director of alumni relations. Student accident insurance coverage is also provided.

SPECIAL FEES

Non-resident Tuition ($400.00 per semester). Students who are classified as non-residents of the state of Idaho pay this special fee in addition to the registration fees of $173.00, making a total of $573.00 per semester. For tuition purposes, a student may be classified as a resident of Idaho by meeting one or more of the following qualifications:

1. Any student under the legal voting age whose parents or court-appointed guardian is domiciled in the state of Idaho. Domicile is deemed to exist when the parent or guardian has established residence in Idaho for an indefinite time and the former residence is abandoned. 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.

2. Any student, legal voting age or older, who has continuously resided in the state of Idaho for six months next preceding the opening day of the period of instruction during which he proposes to attend the University. Provided, however, that no student shall be deemed to have gained residence while attending any college or university in the state of Idaho; however, students carrying less than seven credit hours (or equivalent) are not considered attending school.

3. Any student under the legal voting age 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 residence of his parent or guardian.

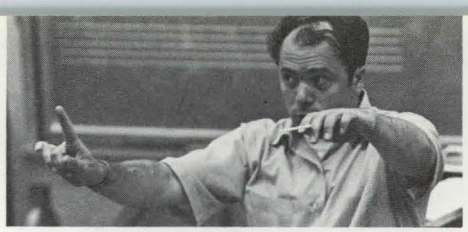
4. The spouse of a person who is classified, or is eligible for classification, as a resident of the state of Idaho for the purpose of attending a college or university.

5. A member of the armed forces of the United States, stationed in the state of Idaho on military orders (not for the purpose of attending school).

6. A student under the legal voting age whose parent or guardian is a member of the armed forces and stationed in the state of Idaho on military orders. The student, while in continuous attendance, shall not lose his residence when his parent or guardian is transferred on military orders.

7. A person under the legal voting age, married, and who together with spouse, has continuously resided in the state of Idaho for six months next preceding the opening day of the period of instruction during which he proposes to attend the college or university. Provided, however, that no student shall be deemed to have gained residence while attending any college or university in the state of Idaho.

8. 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 home of record and enters a college or uni-



versity in the state of Idaho within one year of the date of separation.

Application Fee for Non-Resident Undergraduates ($25.00). This fee applies to out-of-state undergraduate applicants, except those applying for summer sessions. If the applicant is not accepted for admission to the University, $20.00 will be refunded. If the applicant is accepted for admission, the entire amount will be applied in partial payment of the non-resident tuition for the semester for which the student has applied for admission. If the student is accepted for admission for a particular semester, but does not complete his matriculation in the University during that semester, no credit or refund will be available.

Application Fee for the Graduate School and College of Law ($10.00). This fee is non-refundable; however, the $10.00 will be applied toward the payment of student fees for the semester or summer session for which the applicant is accepted.

Late Registration Fee ($5.00). Charged when the student's registration is completed after the scheduled registration days (see the academic calendar in the front of this catalog).

Registration Packet Replacement Fee ($5.00). Charged when it is necessary to replace a student's registration packet.

Part-Time Fee ($18.00 per credit or equivalent). Students who register for six credits or less may pay this fee in lieu of regular fees and tuition. Part-time students are entitled to instructional and library privileges only.

Audit, Zero-Credit, or In-Absentia Fee ($18.00 per credit or equivalent). This fee is not charged if the courses are part of a normal registration for a specific semester or other academic session for which the student has already paid the full registration fees.

Music Fees for Individual Instruction in Performance Studies ($25.00 per credit) All students, including graduate-student appointees, enrolling in courses numbered MusA 101, 301, 401, or 505, Individual Instruction, pay this fee. The fee is waived for students whose programs of studies specifically require these courses for graduation.

Credit by Examination Fee ($5.00 per credit). This fee is charged for the privilege of earning credit by examination (challenge procedure). See regulation "D-4" in Part 3 of this catalog.

Vocational Competence Credit Fee ($5.00) Charged for each petition for academic credit for technical competence under the vocational teacher education program.

Diploma Fee ($10.00). This fee is payable at the time the student applies for each degree or certificate to be awarded by the University. An additional fee of $5.00 is charged when a special diploma insert must be made. If the application if filed after the last day to submit such applicatons (see the academic calendar in the front of this catalog), an additional fee of $5.00 is assessed.

Thesis/Dissertation Binding Fee ($7.00). At the time the application for the degree is filed, evary candidate for an advanced degee who is submitting a thesis or dissertation (including such terminal projects as musical compositions, etc.) pays this fee to have two copies of the document bound.

Publication and Microfilming Fee ($20.00). 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 ($1.00). Every individual who has established an academic record at the University (including extension and correspondence study) shall be furnished, upon request, one official copy of his academic record without charge. Additional copies, when requested, are $1.00 per copy.

Miscellaneous Fees.

1. Students participating in field trips must pay their proportionate share of travel expenses, including transportation in University vehicles.
2. For library fines and charges consult the University Library.
3. For costs of special equipment for certain courses, consult the instructor.

FACULTY-STAFF EDUCATIONAL PRIVILEGES

Special educational privileges for members of the faculty and staff of the University are outlined in the current edition of the *University of Idaho Handbook of Policy and Procedure.*

REFUND OF FEES

Students who withdraw in accordance with the regulations governing withdrawals are entitled to the following refund of fees, except that $6.00 of the registration fee is non-refundable once registration is completed.

a. When withdrawal is accomplished during period of registration and before the beginning of classes, fees (less $6.00) refunded in total.

b. When withdrawal is completed after classes have begun but prior to the close of the second week of classes, seventy-five per cent of the fee balance refunded.

c. When withdrawal is completed after the close of the second week but prior to the close of the fourth week of classes, fifty per cent of fee balance refunded.

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

Refunds are based upon date of application for refund after completion of withdrawal and not from the date of last attendance of class, except in cases of illness.

The above schedule does not apply for applied music lessons. Special fees for individual instruction in applied music 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 will be 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 residence halls 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 the twenty-one residence halls for single students, the University also provides a number of accommodations for married students, and additional housing is available in Moscow and the surrounding area.

Appropriate regulations are established by the University to assure acceptable living arrangements for all students.

HOUSING REQUIREMENTS FOR FRESHMEN

All single freshman students are required to live on campus, either in University residence halls or in fraternities or sororities. Exceptions to this policy may be made with the approval of the dean of men or the dean of women, as appropriate, for students who (1) are over twenty-one years of age or who reach their twenty-first birthday during the year in question; (2) live with their parents or relatives either in Moscow or in surrounding communities; (3) for health reasons, as certified by a physician, must not live in group housing; or (4) are earning their room and/or board by performing services in a non-student household which requiries that they live there.

RESIDENCE HALLS

The University operates twenty-one residence halls and provides meal services for the students who live in them. Two of the halls, Steele House (women), and Campus Club (men) are cooperatives where students contribute their share of the labor in the kitchen, dining room, and public areas to reduce living costs. Each residence hall has ample study and recreation areas, lounges, and complete laundry facilities, and commercial linen services is also available. Personal items, such as sheets, pillow slips, 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, University of Idaho, Moscow, Id. 83843.

SORORITIES

Chapters of ten national sororities are represented on the University of Idaho campus. Each sorority 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, Lambda Delta Sigma, and Pi Beta Phi. The average cost for living in a sorority ranges between

$100.00 and $120.00 per month, which includes charges for room, board, and social fees. In addition there are special membership fees — pledge, initiation, and house corporation reserve fund — which are paid only once. Panhellenic Council coordinates intersorority relationships and formulates policies regarding rushing procedures.

Arrangements for Sorority Living. Membership in a sorority is by invitation only. Those women who are interested in sorority living should complete form C of the application for admission blank, which indicates their interest in sorority living, or write a letter to Panhellenic Council, c/o Student Advisory Services. The selection of members in each sorority is made during participation in a program known as "rushing," which is held prior to the beginning of the fall semester. Registration for rushing **must be completed no later than August 10.**

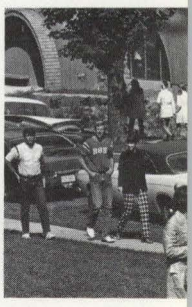
FRATERNITIES

Nineteen national fraternities maintain chapters and houses on the University of Idaho campus. 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 $100.00 and $120.00 a month, which includes charges for room, board, and social fees.

The following chapters of national fraternities maintain houses on the University of Idaho campus: Alpha Kappa Lambda, Alpha Tau Omega, Beta Theta Pi, Delta Chi, Delta Sigma Phi, Delta Tau Delta, Farmhouse, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Tau, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Gamma 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.

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, University of Idaho, Moscow, Idaho 83843. Individuals who indicate an interest in fraternity living will be contacted by the various fraternities during the spring and summer prior to their matriculation in the University of Idaho. Invitation for living in a fraternity will generally be extended by the fraternities during the summer prior to matriculation; however, if necessary, these arrangements can be made through the Interfraternity Council upon arrival on campus for the fall semester.



FAMILY HOUSING

The University operates the Park Village housing project for student family accommodations. Furnished, one-bedroom apartments rent for $90.00 per month which includes furniture, heat, hot and cold water, TV cable, and garbage disposal service. Laundry facilities are available. Telephones may be installed at the tenant's expense. Parking space is adequate, but transportation is not necessary because of campus location of the housing. Size of family is limited to couples and

those with one child. Pets are not permitted. Tenants should furnish china, utensils, and linen.

The University also operates three other housing projects for married students with larger families. These rent from $65.00 to $135.00 per month. Some units are not furnished.

To apply for an apartment, write to the Family Housing Office. A $25.00 advance deposit is required.

Student Services

ACADEMIC ADVISING

Statement of Policy. Under the freedom of choice that is inherent in the American system, career objectives are the choice of the individual. Having enrolled at the University of Idaho as a means of fulfilling career and educational objectives, the individual student by such an act agrees to meet the requirements of a curriculum as specified by the faculty and the Board of Regents.

Each matriculating student is provided with the assistance of an adviser. The adviser is a faculty member established in his chosen field and is assigned because of his experience, interest and desire to aid students in pursuing their objectives. The role of the adviser is to aid the student to evaluate further his career objectives and to help him select courses required in his selected curriculum.

In the event of uncertainty on the part of the student regarding career objectives or difficulty with required curricula, the student should be referred to the Student Counseling Center or to the Career Planning and Placement Center. The specialists at the Counseling Center or Placement Center provide further aid to the student in reaffirming or in modifying his career objectives and personal goals.

In all these matters, the primary responsibility rests with the student. His career objective is his personal choice and he is personally responsible for meeting the curriculum requirements as specified. The role of the adviser and the specialists at the Counseling Center or Placement Center is to assist the student.

The responsibility of faculty members to serve as advisers is second only to the assigned responsibility of teaching. To this end each assigned adviser is available a reasonable number of scheduled hours each week to aid individual students. When faculty schedules require, a faculty member may elect to require that students make appointments in advance.

In seeking the aid of the adviser, individual students must use discretion in the amount of time which they require of their adviser. They are held responsible for making appointments during scheduled conference hours and for meeting appointments promptly.

Definitions. Student advisement and counseling at the University of Idaho

consists of three phases: pre-registration advisement, curriculum advisement, and counseling and career planning.

A. **Pre-registration Advisement.** Pre-registration advisement is done by faculty members during the scheduled pre-registration periods. The purposes are:

1. To see that student is in the course that he should be taking that semester as determined by:
   a. a standard curriculum that is either published in the catalog or distributed by the subject matter area, or
   b. an individual program worked out either during the pre-registration period if the adviser's load is light enough so that time is available or during a curriculum advisement session at some other time.
2. To see that the registration pack is filled out properly.

B. **Curriculum Advisement.** Curriculum advisement is done by faculty members at a time convenient to the faculty member and to the student. The purposes are:

1. To provide the student with data to assist him in determining his goals within the framework of his chosen curriculum.
2. To assist the student in selecting the various options available within a given curriculum with a view to the student's goals in his chosen career.
3. To assist the student in selecting the elective courses best suited to support his basic curriculum and his other educational goals.

C. **Counseling and Career Planning.** Counseling is done by members of the Faculty, the Counseling Center, and the Placement Center as the needs of the student require. The purpose is to assist individual students in understanding and resolving their educational, vocational and personal problems.

Responsibilities.

A. The principal responsiblities of the student are:

1. To select an educational goal and the curriculum to follow in order to achieve that goal.
2. To be informed on rules and regulations in the catalog and with the requirements of his curriculum.
3. To take the initiative when the need arises to consult with his adviser before the problems become critical.
4. To take into account the advice given in regard to his curriculum.
5. When a change in goal or curriculum becomes desirable, to weigh the matter carefully, seek the services of the Counseling Center if necessary, make a decision and follow the decision.

B. The principal responsibilities of members of the faculty are:

1. To be informed on rules and regulations in the catalog.
2. To know his own curricula thoroughly.
3. To be aware of developments and opportunities in his own field that would influence the student's choice of options and elective courses.
4. To provide information concerning graduate study and/or extended professional preparation.
5. To be ready to use the resources of the University, such as

specialists in other curricula, the Counseling Center, and the Placement Center to assist the student.

6. To be patient and to offer advice in a pleasant, accommodating and professional manner.

7. To be available, by appointment and at an appropriate number of posted, scheduled office hours.

C. The principal duties of the administrators are:

1. In consultation with their faculties, to develop plans of pre-registration advisement and curricular advisement that meet the needs of their curricula and the educational philosophy of their college.

2. To assign well-prepared faculty members and adequate physical arrangements to the advisement programs so that they may be accomplished with maximum effect and maximum convenience to students and to the faculty.

3. To take advising duties into account in assigning routine tasks to the various members of their faculties.

4. To give due credit for student advisement in evaluating the performance of faculty assigned advising duties, bearing in mind that with these members of their faculties, advising is second only to actual classroom teaching in the priorities of duty.

5. In recruiting new faculty members, to keep in mind the need of possible additional advisers.

STUDENT ADVISORY SERVICES

The Office of Student Advisory Services has the responsibility to assist students with problems which arise in their non-academic lives. The office deals with individual and group problems and serves as a communication link within the university structure. Special advisory services for the residence hall system, the fraternity/sorority system, off-campus dwellers, veterans, and international students are provided to work with the unique group involved. Close contact is maintained with student government. Referrals to other student-service agencies are arranged. Resident advisers in each residence hall are also provided.

COUNSELING CENTER

The Student Counseling Center offers specialized counseling and testing services to students without charge. Counselors, all professionally trained in educational and counseling psychology, are available to talk over with the individual student his educational and vocational plans, personal problems, concerns about study skills, and any other matters of concern related to his progress in college. The Center maintains an up-to-date library of information on over 250 occupations for students who wish to obtain additional knowledge about various vocational fields. Students may use this library at any time during the normal operation of the Center. The Counseling Center also serves as the University representative for a variety of national testing programs including the Graduate Record, Law School Admissions, Admission Test for Graduate Study in Business, Miller Analogies, Dental Aptitude, and Medical Aptitude. Bulletins of information and application blanks are available in the Center.

STUDENT HEALTH SERVICES

A portion of the regular semester fee charged each student who enrolls for more than six hours is allocated to the support of the Student Health Center, which provides certain medical services to regularly enrolled students in residence at the University during their regular school year (except vacation periods): advisory and consulting services concerning problems of physical and mental health; treatment at the clinic during regular clinic hours for most illnesses and most injuries; limited surgery; hospitalization for most illnesses. Facilities provided include a modern seventy-bed hospital and an out-patient clinic. Staff includes three full-time physicians, a part-time psychiatrist, six graduate nurses and a laboratory x-ray technician. Services provided cover practically all types of treatment except the following: major surgery; major fractures; examination and care by specialists where indicated; special drugs and certain x-rays. Students are entitled to hospitalization for a period of seven days in any one semester. If hospitalized for more than seven days in the University Hospital in any one semester, a fee of $3.00 per day is charged. The right is reserved to assess charges for more than normal services provided any student in any semester.

HEALTH AND ACCIDENT INSURANCE COVERAGE

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 Center described above and is designed to offset expenses resulting from a major accident or serious illness which might require medical care, hospitalization and/or surgery beyond services provided through the Student Health Center. This plan does **not** cover office and home calls except as provided by the Student Health Center. There is a deductible provision for dependent spouses and children of students since these dependents are not covered by regular student health services. This student health and accident insurance plan provides coverage for the entire twelve month period whereas Student Health Center services are available only during the time the University is in session.

FINANCIAL AIDS

Financial aids, including employment, are available through the Office of Student Financial Aids 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, loans, scholarships, and other grants. Students applying for admission to the University of Idaho and seeking financial aid assistance may make application for such assistance through a financial aids application blank which is part of the general admissions blank. A brochure describing types of approved financial aids programs available to University of Idaho students, together with procedures for applying, is available from the Office of Student Financial Aids, University of Idaho, Moscow, Ida. 83843.

The University of Idaho participates in the College Work-Study Program under Title I, Part 6, of the Economic Opportunity Act of 1964. Students who qualify under this program both with respect to a definite and demonstrable financial need and academic potential may obtain part-time employment up to a maximum of fifteen hours per week. Applications for work-study are made as part of the general application for financial aid. The Non-academic Personnel Office

of the University also assists students in finding part-time employment other than work-study arrangements while they are on campus. In most cases part-time job placements cannot be made before a student actually arrives in Moscow and has registered. Students who do find it necessary to earn money while attending the University should complete registration and then contact the Non-academic Personnel Office for such assistance.

SPECIAL AWARDS

Many awards are made each year in recognition of outstanding achievement in both academic and non-academic 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 Office of Student Financial Aids.

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, weekend movies, concerts, and games tournaments are scheduled in the Student Union building during the school year. The twice-weekly campus newspaper, *The Idaho Argonaut,* and the yearbook, *The Gem of the Mountains,* are published by ASUI (Associated Students of the University of Idaho). These publications offer opportunities for those interested in journalism or photography. ASUI (to which every regularly enrolled student belongs) supports drama and music groups, provides occasions for entertainment and participation. The University of Idaho competes in the Big Sky Conference in football, basketball, baseball, track, tennis, swimming, golf, cross country, skiing and wrestling. Extensive intramural athletic programs are available for both men and women under the direction of the Physical Education Department. The ASUI operates an 18 hole golf course adjacent to the campus. Recreational facilities located on the campus include tennis courts, which are lighted for night play, indoor and outdoor handball courts and swimming pools.

STUDENT ORGANIZATIONS

University of Idaho students may organize or join associations to promote their common interests. There is a large number of 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 director, Student Union. The annual publication of the ASUI, entitled *Student Handbook,* contains a description of current student organizations.

CAREER PLANNING AND PLACEMENT CENTER

The Career Planning and Placement Center is the central contact agency between all colleges of the University and employers. The Center is organized to assist all University of Idaho graduates in obtaining employment according to their training, ability, and experience. At specific times throughout the year business, government, industry, and education send their representatives to the campus for the purpose of interviewing students and graduates. Arrangements for these visits are made with the Career Planning and Placement Center. This service is avail-

able to all students purposefully identified with programs of study at the University of Idaho and who are sufficiently well-known by faculty members to be worthy of their recommendations. The initial contact with the Career Planning and Placement Center must be made by the students. There is no charge for this initial registration.

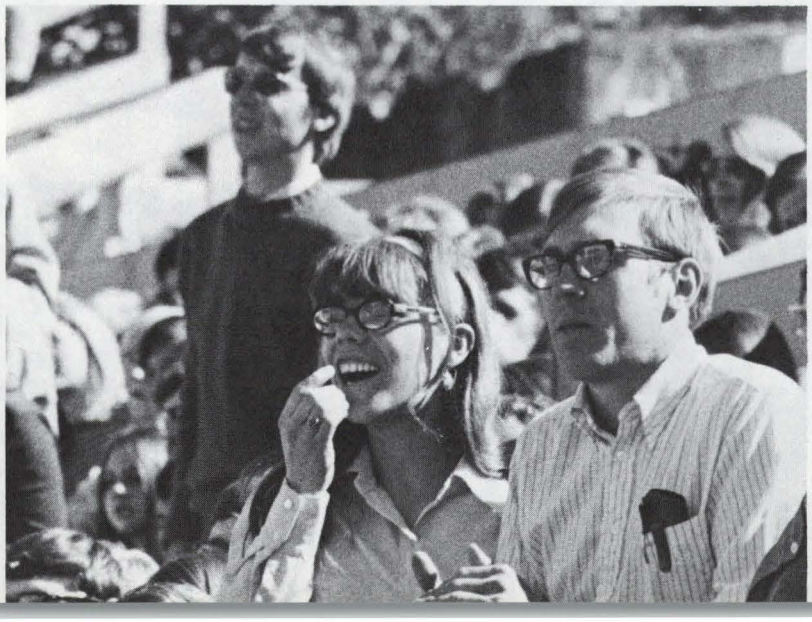
ALUMNI ASSOCIATION

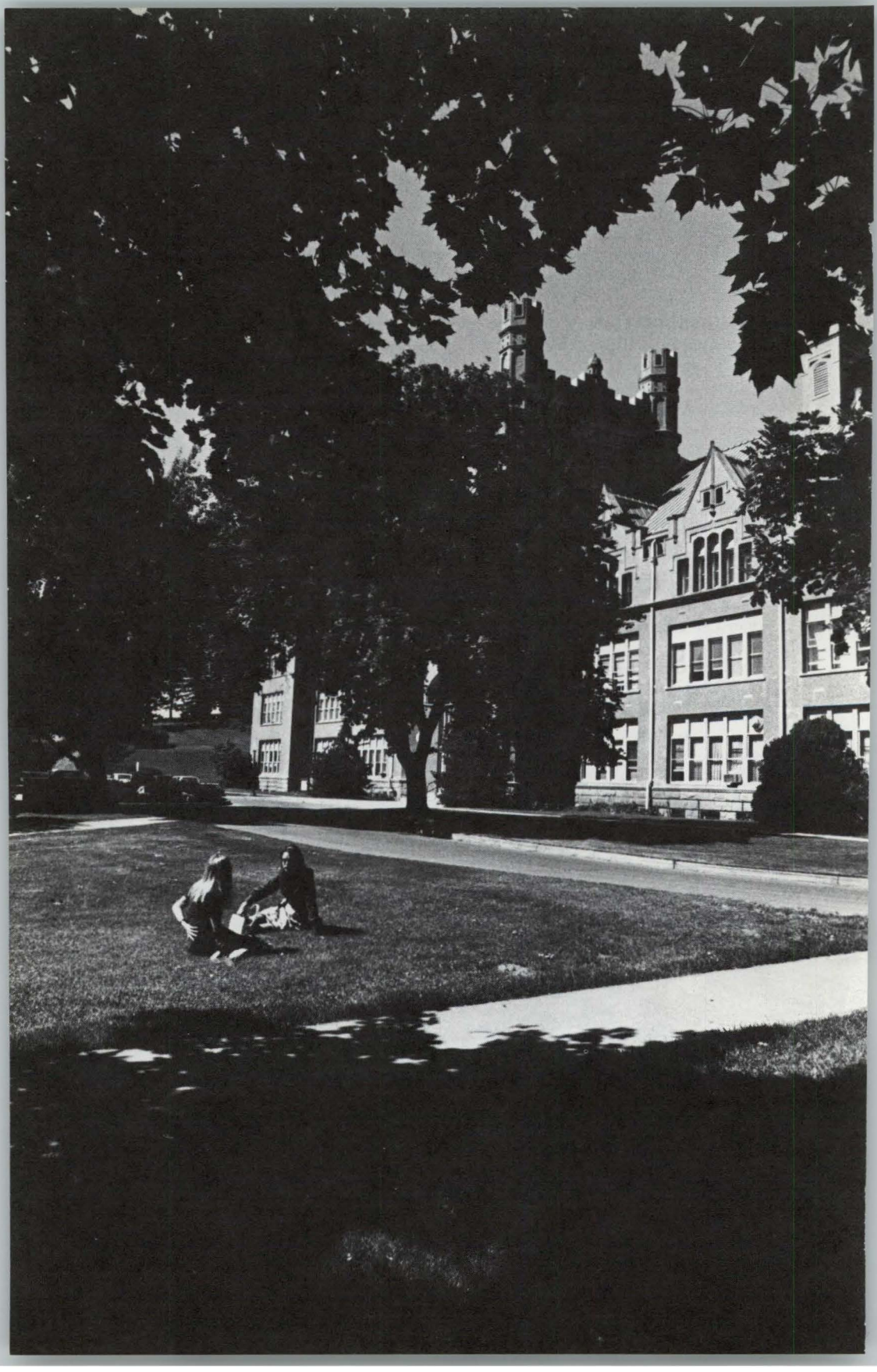
The University of Idaho Alumni Association is composed of all graduates, former students, and newly elected honorary alumni. Activities of the 40,000 plus members are led by a full-time director of alumni relations and an elected executive board, including the ASUI president. These leaders keep alumni informed of their alma mater, encourage their support of its operation, and apprise University officials of alumni opinions. The Alumni Association honors outstanding graduates by electing them to the Alumni Hall of Fame, selects honorary alumni, honors superior intramural athletes, and presents scholarships to children of alumni. Areas of recent emphasis include utilizing alumni experts on University advisory boards, in forming and building alumni chapters nationally and strengthening liaison with present students.

RELIGIOUS ACTIVITIES

The University of Idaho is served by three campus religious centers: Campus Christian Center, corner of University and Elm; LDS Institute of Religion, 902 Deakin Street; 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. Church away from home is provided by the local churches of Moscow. A challenge for growth and development of one's religious perspective is offered by the campus religious centers.





General Requirements and Academic Procedures

THE FOLLOWING PROCEDURES AND REGULATIONS have been adopted to help students, faculty and staff members, and administrators successfully carry out the overall academic program of the University. Careful adherence to the items in this section will enable everyone concerned to cooperate effectively. It is the responsibility of the registration adviser, major professor, or dean to assist the student to understand and comply with academic procedures. The registrar assists by checking student records for compliance with catalog regulations. Students, with the help of faculty advisers, should check their records at each registration to assure that they are systematically and progressively fulfilling their degree requirements. The student is 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 the student successfully petitions the appropriate University committee.

REGULATION "A"—MATRICULATION

An applicant for enrollment in any course offered by the University for college credit, except correspondence and non-matriculated categories, files certain personal data and credentials covering all previous academic work. (See procedures for applying for admission under the section headed "Admission to the University" in Part 2 of this catalog.) After the University has received these credentials and approved the application, a packet of registration forms is prepared for him and his initial registration in the University concludes the matriculation process.

REGULATION "B"—REGISTRATION

1. **Preparation of Registration Materials.** Registration packets are prepared for new students as described immediately above. They are also prepared for every student enrolled in a given semester for his use in the succeeding semester. However, individuals enrolled in the spring semester who plan to enroll in the summer must apply for a packet at least three weeks prior to the opening of summer session. Similarly, students entering the University in the summer who plan to continue in the fall semester must apply for a packet at least three weeks prior to the opening of the fall semester. Former University of Idaho students who have been out of the school for a semester or longer should complete an application for a temporary permit to register at least one month prior to the opening of the term. Such individuals may also be required to complete a residence questionnaire and will be required to submit transcripts from institutions that have been attended since their last registration at the University of Idaho. Note that failure to meet the deadline may cause a delay in completing registration.

2. **Admission to Classes.** At the beginning of each semester or summer session the student, with the aid of his adviser, completes a trial study list. The information is then transcribed to the student's official registration card which is approved by his academic dean. After receiving his class permit for each course

to be taken for credit, for zero credit, or as an auditor, he files his completed official registration card with the registrar. After payment of fees, registration is complete.

3. **Auditing Classes.** Auditing a course consists of attendance without participation or credit. Only lecture classes may be audited.

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

a. The registrant is expected to do the assigned work of the course and attend its sessions. He receives a grade on the same basis as the other students and the grade is entered on his permanent record.

b. A student enrolled in a course for zero credit may take it on a pass-fail basis. This is separate from the "pass-fail option" outlined in regulation "B-11," below.

c. Courses taken for zero credit do not fulfill requirements.

d. By definition, zero-credit grades have no effect on a student's grade-point average. Neither do they affect eligibility for academic disqualification or reinstatement.

e. Zero-credit students count as regular registrants for statistical purposes, such as listing of course enrollments, computing instructors' loads, and determining departmental services.

5. **Non-Resident Courses.** Students, while in residence, are permitted to carry extension or correspondence courses for college credit only with the prior written approval of their academic deans. Credit for extension or correspondence courses will not be accepted without this written approval.

6. **Registration for Courses without Completion of the Prerequisites.** If a student has not completed the stated prerequisite to a course for which he is otherwise eligible, he may register for the course with the instructor's approval.

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 generally acquiring the foundation for advanced study; therefore, lower-division students shall not take upper-division courses (those numbered 300 and above). Exceptions may be made for the student who can meet the prerequisites and who is well prepared in his field of study. In such cases, the instructor of the upper-division course concerned may, with the concurrence of the student's adviser and his academic dean, authorize an exception.

8. **Registration of Undergraduate Students in Graduate Courses.** Undergraduate students may register in graduate courses (those numbered 500 and above) under procedures outlined in the Graduate School catalog with the prior written approval of the instructor of the course, the student's adviser, and the dean of the Graduate School.

9. **Registration of Students with Baccalaureate Degrees as Undergraduates.** To register as an undergraduate, a student with a baccalaureate degree must secure the permission of the dean of the undergraduate college and file a statement with the registrar indicating that he understands that his work will not be classified as graduate work and cannot be used toward an advanced degree at a later date.

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 and without late registration fee.

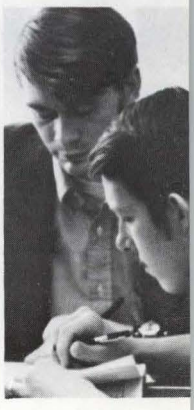
11. **Pass-Fail Option.** With the approval of his adviser, an undergraduate student who has attained junior standing (sixty credits) and has a cumulative grade-point average of 2.00 or higher is permitted to enroll in one course per semester under this "pass-fail option." Courses which may be taken under the pass-fail option are those which are outside the student's major field *and* are not excluded from this option by the academic department in which the student is majoring. Courses in the latter category are those closely related to the major field. A maximum of twelve credits earned in courses under this regulation may be counted toward a baccalaureate degree. A grade of P will not be counted in the student's grade-point average. A grade of F shall be computed in the average. A student may add or drop a pass-fail option course in the same manner as a regular course. A student may change his option from pass-fail to regular-course classification or vice versa if he does so prior to the last date for change of study list without having a grade recorded. A student may make this change by securing the approval of his adviser and dean and filing the study list without penalty for failing work. (The instructor of a course is not notified as to which students are enrolled in it under this pass-fail option. Grades under the pass-fail option are reported in the same manner as grades in courses taken on a regular basis. The registrar is charged with the responsibility of converting a grade of D or above in a course taken under the pass-fail option to a P on the student's grade report and on his transcript.)

REGULATION "C"—CHANGES IN REGISTRATION

A student may change his registration in accordance with the schedule on the following page. Students should contact their academic dean concerning changes in registration. All registration changes are effective or official on the date they are filed with the registrar. Students may not drop a course by simply staying out of class. Petitions to withdraw from courses will not be accepted after the start of the scheduled final examination period.

REGULATION "D"—CREDIT

1. **Credit Defined.** Each course is evaluated by a system of semester credits related to time spent in class, laboratory, study/preparation, or field investigation. A credit is expected to require a total of three clock hours of scholarly activity per week throughout the semester. Ordinarily one hour of class attendance is scheduled for each credit, but any combination of class attendance, laboratory, 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.



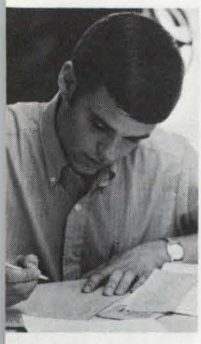
2. **Credit Limitation.** A full-time undergraduate student may register for up to twenty credits per semester. This number may be increased to twenty-two with the approval of the student's academic dean. Registration for more than

SEMESTER SCHEDULE FOR CHANGES IN REGISTRATION

(See Regulation "C" on the previous page)

See calendar in the front of this catalog for dates. (The schedule for changes during summer sessions is substantially different. See the calendar in the front of the summer sessions bulletin for exact dates.)

DESIRED CHANGE	First through third week of classes	Fourth through sixth week of classes	Seventh to final week of classes
Drop course	File form. No grade recorded.	File form. Grade recorded as withdrawal (W).	Through dean's office. Grade recorded as withdrawal (W) or failure (F).
Add course	File form.	File form. Only for accelerated courses or by petition through dean's office. Permission of instructor required.	
Change course section	File form.	By petition through dean's office in special cases only.	
Withdraw from University	File form. No grade recorded.	File form. Grade recorded as withdrawal (W).	File form. Grade recorded as withdrawal (W) or failure (F).
Change in curriculum (major)	Anytime. File form. If filed after registration, the change will become effective at the next registation.		



twenty-two credits must be approved by the Petitions Subcommittee of the Administrative Council. The corresponding limitations during the regular eight-week summer session are ten and eleven respectively. (See also regulation "J-5," below.)

3. **Transfer Credit.** Credit is given for work completed in accredited higher institutions in accordance with the regulations covering the admission of transfer students.

4. **Challenging Courses (Credit by Examination).** Undergraduate students may petition to challenge courses given at the University covering work done in non-accredited institutions, high school, private study, or employment. Regulations governing these examinations are as follows:

a. Students are not permitted to challenge a prerequisite course after having completed the advanced course.

b. The course shall not be one in which the student has been previously enrolled as an auditor.

c. Graduate credit or credit in courses offered by the College of Law may not be obtained by this procedure.

d. The student must submit evidence to the instructor concerned that he has sufficient knowledge for the course in question. After the student has secured the approval of the instructor and the chairman of the department in which the course is offered, as well as the student's academic dean, he pays the required examination fee and the petition is then filed with the

registrar. The registrar will check the student's official record and if the student is eligible to take the advanced-credit examination the instructor will be notified by card to proceed with the examination.

e. The student must score C or higher to obtain credit. A passing grade is entered as a P and is not included in grade-point computations. If the student scores a D or F, there is no entry made on his transcript.

f. Results of the challenged courses must be submitted to the registrar no later than the date for reporting mid-semester grades.

5. **Review and Prerequisite Courses.** Students will not receive credit for courses taken in review or for courses which are prerequisites of courses they have already completed, except as stated in item 1, or regulation "I."

REGULATION "E"—GRADES

1. **Grades in Undergraduate Courses.** For purposes of reporting and record, the academic work of undergraduates is graded as follows: A—superior; B—above average; C—average; D—below average; F—failure; Inc—incomplete work of passing quality (see regulation "F" concerning the removal of incompletes); W—withdrawal according to proper procedure while the student is doing passing work or before he has established a definite record to the contrary (see regulation "C" concerning withdrawal procedures); P—pass (used in special situations and not counted in the grade-point average).

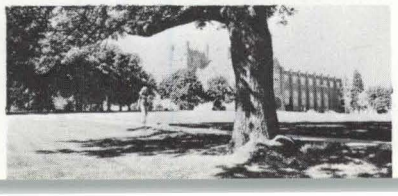
2. **Grades in Graduate Courses.** In courses numbered 500 and above, grades of A, B, C, D, F, W, or Inc (as defined in item 1, above) must be reported, except as specified below:

a. A grade of P may be reported at the option of the department, on a course-by-course basis in non-competitive graduate courses (seminars, directed study, and independent study). In those graduate courses in which P grades are to be used, the method of grading will be made known to the students at the beginning of the course, and the grading system will be uniform for all students in the course.

b. The grade of IP (in progress) is used to indicate progress in courses 500 (Master's Research and Thesis) and 600 (Doctoral Research and Dissertation). When the thesis or dissertation is finally accepted, the IP grades are removed and other grades are assigned according to the following procedure: Departments may use on a department-wide basis either the P or 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 the fifteen credits of IP grades removed with different grades for each of the blocks of credits for which he registered each semester, such as: six credits of A, four credits of B, and five credits of P). (This revised regulation "E-2-b" is effective first semester, 1970-71.)

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

4. **Computing Grade-Point Averages.** The following scale of grade points shall be used in computing grade-point averages for all residence courses attempted at the University: A — 4, B — 3, C — 2, D — 1, F — 0. Grade points are not given for transfer, correspondence, extension, resident extension, ad-



vanced placement, credit by examination, or for courses graded on "P or F" basis.

5. **Raising a Grade by Repeating the Course.** A student who has received a D or F in a course may repeat that course in an attempt to raise his grade. Regardless of the number of times such a course is repeated, all grades (except as specified below) are included in the computation of the student's cumulative grade-point average. The exception to this general rule is that a student who received F in a course at the University of Idaho while classified as a freshman may repeat the course once in residence for grade-point purposes, and when the course is thus repeated the second grade only counts in computing the student's cumulative grade-point average, although the first grade remains on the record. Prerequisite courses cannot be repeated after the completion of the advanced courses. (This regulation "E-5" is effective for all such repeated courses taken after September 1, 1969.)

6. **Reports of Grades.** Grades are reported to the registrar for all courses at the end of each term and also for undergraduate courses at mid-semester. Students are furnished copies of these grade reports. Grades of Idaho high school graduates may be reported by name to their high schools at the end of each semester of attendance at the University of Idaho with the student's written permission. (This revised regulation "E-6" is effective first semester, 1970-71.)

REGULATION "F"—INCOMPLETES

1. An incomplete is given at the end of the semester only in case the student has been in attendance and done satisfactory work to a time within three weeks of the close of the semester, i.e., the end of the examination period, or within one week of the close of the summer session. It may not be given in the case of withdrawal from the University unless the withdrawal occurs within the last three weeks of the semester. If a final grade of incomplete is given, the instructor shall indicate in writing with the class list what the student must do to remove the deficiency. The instructor shall also indicate with the foregoing written statement what permanent grade (A, B, C, D, F) is to be recorded on the student's transcript in the event that the incomplete is not removed by the applicable deadline.

2. **Removal of Incompletes.** Incompletes should be removed within six weeks after the first day of classes of the semester or summer session in which the student next returns to the University. Incompletes not made up before that date automatically revert to the grade indicated by the instructor with the class list (see item 1 above) unless the student has previously filed with the registrar a permit-for-extension-of-time card, signed by his academic dean and the instructor concerned. In case an extension is granted, incompletes not made up before the expiration automatically revert to the grade indicated by the instructor with the class list. It is the student's responsibility to see that incompletes are made up before the expiration date. Removal-of-incomplete cards must be received by the registrar prior to these dates. In some cases a student's eligibility to reregister is contingent upon removal of incompletes. In such cases an extension of time for removal of incomplete grades may not be granted. If the student becomes academically disqualified (see regulation "L") after removal of the incomplete, his registration may be cancelled.

3. **Extension Courses.** Incompletes in extension courses must be removed

within one year. Incompletes not made up within one year automatically become withdrawals. No extension of time will be granted. Students may register for courses during the allotted time provided that the total load, including the incompletes, does not exceed six semester credits. If during the year the student enrolls for residence courses, regulation "F-2" becomes applicable.

REGULATION "G"—WITHDRAWAL FROM THE UNIVERSITY

A student who wishes to withdraw from the University obtains an indefinite-leave-of-absence card from his academic dean and files it with the registrar. In the case of withdrawal, grades will be recorded in accordance with regulation "C." A student may not officially withdraw from the University after the start of the scheduled final examination period. The date the indefinite-leave-of-absence card is filed with the registrar is the official date of the withdrawal. (See "Refund of fees" in the Index.) A student who leaves the University without filing an indefinite-leave-of-absence card will receive an F in all courses in which he is registered.

REGULATION "H"—EXAMINATIONS

1. **Final Examinations.**

a. Final examinations will be given in those courses in which the instructor *or* the department concerned deem a final examination desirable. In those courses which have more than one section, the department and the various instructors will determine a uniform policy for all sections of the course. The examinations will be given in accordance with the schedule approved by the Faculty Council. Instructional personnel may deviate from the approved examination schedule only upon the recommendation of the appropriate college dean and the prior approval of the academic vice president.

b. Final grades for each course must be filed with the registrar within seventy-two hours after its scheduled examination period.

c. A student who misses a final examination without valid reason receives an F in the examination. A student who is unavoidably absent from a final examination shall present evidence in writing to the instructor concerned to prove that the reasons for the absence are indeed compelling.

d. Instructors, at their discretion and with the concurrence of their departments, may excuse individual students from final examinations when such students have a grade average of A or B in the course. In such instances the A or B shall be assigned as the final grade for the course.

e. A student who involuntarily enters active duty in any of the armed forces within one month of the last day of a semester is permitted, at the discretion of his academic dean, to take early final examinations. Other students, on an individual basis, may be permitted to take early final examinations for compelling reasons clearly stated in writing; however, requests for early final examinations for students not involuntarily entering the armed forces must be approved by the instructor of the course, the chairman of the department and the dean of the college in which the course is offered.

2. **No-Examination Period.** No hour examinations or quizzes are to be given during lecture-recitation periods following the last Friday prior to the start

of final examinations. Examinations during laboratory periods are permitted during this time, as well as examinations in certain courses (e.g., physical education activity courses, etc.) in which a final examination is not an appropriate test of the work covered.

REGULATION 'I"—ADVANCED PLACEMENT

1. With the approval of the chairman of the department concerned, a student may bypass a more elementary course and enroll in the more advanced 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 grade of C or better in the advanced course automatically receives credit and a grade of P for any bypassed courses in the same subject-matter area. **Advisers should make sure that students are aware of this opportunity for obtaining advanced-placement credit.**

2. The University also grants credit for advanced-placement courses completed in high school in which a rating of 5, 4, or 3 is attained in CEEB advanced placement tests.

3. The University grants credit for the successful completion of tests under the College Level Examination program (CLEP) as approved for specific courses by university departments.

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

REGULATION "J"—REQUIREMENTS FOR DEGREES

A candidate for a baccalaureate degree must have met the following requirements. (See the Graduate School catalog for the requirements for graduate degrees and certificates. See the College of Law section in Part 4 of this catalog for the requirements for the degree of Juris Doctor.)

1. **Credit Requirements.** For the minimum number of credits required in each degree program, see the curricula of the various colleges in Part 4. A minimum of thirty-six credits in courses numbered 300 or above is required for a baccalaureate degree.

2. **Residence Requirements.**

a. After a candidate is within forty credits of completing the total number of credits required for his degree, he must complete in residence, on the University of Idaho campus, a minimum of thirty-two credits in the curriculum and in the college from which he graduates. In addition to these thirty-two residence credits, a student may earn credits by correspondence, extension, advanced placement, credit by examination, or at another senior college or university. Exceptions are made for study abroad by prior approval of the student's academic dean. Senior-year residence in the combined program in law may be counted in either or both colleges concerned.

b. Students in the combined program in law must also do the work of the junior year in the College of Letters and Science or the College of Business and Economics as the case may be.

c. Candidates for pre-professional degrees (i.e., B.S.Pre-Med., etc.)

which require the completion of professional courses not offered at the University of Idaho must complete their junior year in residence at the University of Idaho.

3. **Subject Requirements.**

a. *ENGLISH COMPOSITION.* Eng 101-102, six credits, or equivalent proficiency as certified by the Department of English.

b. *PHYSICAL EDUCATION.* Two activity courses, one credit per course; each course taken during a different academic session, for a total of two credits. It is expected that these courses will be taken during the freshman year; they must be completed prior to graduation. This requirement does not apply to students who are: (1) excused by the university physician, (2) thirty years of age or over, (3) majoring or minoring in physical education, (4) mothers, (5) veterans whose military service was of at least one year's duration, or (6) certified by the Department of Health, Physical Education and Recreation as having demonstrated equivalent proficiency. No credit shall be permitted in connection with such exemptions. Students transferring from other accredited institutions with 0-13 semester credits must complete two activity courses in physical education; those with 14-25 semester credits must complete one activity course in physical education; those with 26 or more semester credits are not required to take physical education. *NOTE:* Each former course for men which met on the basis of once a week is computed as fulfilling one-half credit toward the two-credit requirement. A student who still lacks one-half credit of the total requirement may fulfill it by completing one-half of a one-credit activity course. (This revised regulation "J-3-b" is effective for all students who graduate after September 1, 1971.)

4. **Grade Requirements.** To qualify for the baccalaureate degree, a candidate must present a cumulative grade-point average of 2.00 or better for all residence courses attempted at the University of Idaho. See exception under regulation "E-5." (This revised regulation "J-4" is effective for all students who enter the University at the time of or after initial registration for the 1971-72 academic year.)

5. **Credit Limitations.** A candidate may count toward a baccalaureate degree no more than thirty-two credits in any combination of credits earned by correspondence, extension, advanced placement, or credit by examination, and no more than twelve credits earned under the pass-fail option (see regulation "B-11," above).

6. **Assignment of Curricular Requirements (Catalog Issue).** In addition to fulfilling the general University requirements for degrees, as set forth in this regulation "J," a candidate must satisfy the particular requirements specified for his curriculum as published in Part 4 of this catalog.

a. The pertinent requirements are, unless otherwise specified, those contained in the catalog issue in effect at the time of the candidate's entry into the University.

b. If the student changes from one curriculum (major) to another, or if the requirements for his curriculum change, he may elect to satisfy the requirements of a later catalog issue.

c. A transfer student may elect to satisfy the requirements of the catalog issue which was in effect at the time of entry into the University of the class to which he was assigned on the basis of the number of credits transferred.

d. 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 his degree.

7. **Application for Degrees.** A candidate for a degree must, at the beginning of his last semester or summer session in residence, file an application for the degree and pay the diploma fee. (See "Fees and Expenses" in Part 2.) The last day for filing applications for baccalaureate degrees is the beginning of the third week of second semester. The last day for filing applications for graduate degrees is the beginning of the fourth week of second semester. If applications are received by the registrar after these dates, there is an additional fee if the student wishes to receive his degree at the next commencement. No applications will be accepted less than thirty days prior to commencement. (See the academic calendar in the front of this catalog for exact dates.)

8. **Second Baccalaureate Degree.**

a. A student may concurrently receive two baccalaureate degrees from the University upon fulfilling the general University requirements for one baccalaureate degree and the subject-matter requirements for both. Each student planning to receive two baccalaureate degrees concurrently must submit a study plan for the approval of the dean(s) of the college(s) concerned prior to the end of his junior year. If the two degrees are offered by two distinct colleges of the University, the student must enroll in both colleges his last two semesters.

b. A student who has earned a baccalaureate degree at the University of Idaho and who wishes to receive a second baccalaureate degree must complete the subject-matter requirements for the second degree and earn at least sixteen credits while enrolled in the college granting the degree. (A student may return to the University and complete a second degree carrying the same name as one previously granted to him by the University, so long as the requirements of a different program of studies — different major — are satisfied.)

c. A student who has a baccalaureate degree from another recognized institution and who wishes to earn a second baccalaureate degree at the University of Idaho must complete the subject-matter requirements for that degree. He must earn at the University of Idaho a minimum of thirty-two credits while enrolled in the college granting the degree.

REGULATION "K"—HONORS

Honors are awarded at graduation on the basis of the student's entire academic record, but are granted only to those who have completed at least the last sixty-four credits in residence at the University of Idaho, except that as many as eight of these credits may be earned by extension, correspondence, credit by examination, advanced placement, or at another senior college or university. Credits earned in special programs, such as study abroad, which have the prior approval of the student's academic dean, may be included in the required mini-

mum residence credits. Students receiving an average between 3.30 and 3.80 will be graduated *cum laude,* and those receiving an average of 3.80 or higher will be graduated *summa cum laude*. In the College of Law, honors are based on grades in law courses only. Honors are not awarded with degrees earned in the Graduate School.

REGULATION "L"—PROBATION, DISQUALIFICATION, AND REINSTATEMENT

1. **Probation.**

a. If, at the end of a semester, an undergraduate student attains a cumulative grade-point average below that required for his rank, he is placed on academic probation for his next semester of enrollment and referred to his academic dean for advisement. The effect of this probationary status is to put the student on notice that if his cumulative record at the end of that next semester in residence is unsatisfactory he will be disqualified and ineligible to continue in the University.

b. If a student on academic probation attains a cumulative grade-point average higher than the minimum required for his rank, he is automatically removed from probation.

2. **Disqualification.** If at the end of a probationary semester, an undergraduate student attains a cumulative grade-point average below that required by his rank, the student is placed on academic disqualification. To be eligible to register, the student must be reinstated.

3. **Reinstatement.**

a. After a disqualification, a student may be reinstated (i.e., have his eligibility to continue restored) by petition and favorable action of his college.

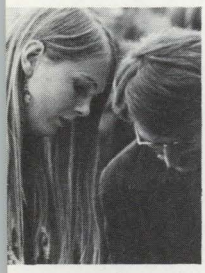
b. After his first disqualification, a student may be automatically reinstated on probation by remaining out of the University for at least one semester.

c. A student who has been reinstated may continue to be reinstated with the approval of his dean so long as he attains a 2.00 or better grade-point average for each semester following his first disqualification.

d. If a student attends another institution while disqualified then he must meet requirements applying to the admission of transfer students in order to re-enter the University.

e. Any student who is disqualified and reinstated by his college is reinstated on academic probation.

4. **Dean's Referral.** Any undergraduate student who attains below a 1.50 grade-point average during a given semester without dropping his cumulative grade-point average below that required for his rank, receives a dean's referral. Although this does not affect his eligibility to register, the student is referred to his academic dean for advisement.



5. **Academic Probation And Disqualification Cut-Off By Rank**

Credits Earned	Minimum Cumulative Grade-point Average
0 to (but not incl.) 33	1.60
33 to (but not incl.) 65	1.80
65 and up	2.00

6. **Registration Pending Removal of Incompletes.** Regulation "F-2" provides that in cases where a student's eligibility to re-register is contingent upon his removal of incomplete grades, he may not be granted an extension of time for such removal.

7. **Summer Sessions.** If a student is disqualified at the end of a spring semester, it does not affect his eligibility to continue in the immediately ensuing summer, but he must secure a reinstatement in order to register in any subsequent term.

8. This regulation "L" does not apply to students in the College of Law or in the Graduate School.

REGULATION "M"—ATTENDANCE

1. **General Attendance.** Class attendance is the responsibility of the student. This includes responsibility for making mutually-satisfactory arrangements with his instructor regarding course work missed.

2. **Official Absences.**

a. Official absences from classes for recognized activities, field trips, athletic, and similar events, require the prior approval of the appropriate University agent. Students are responsible for making their own advance arrangements with the instructors of the classes which will be missed.

b. A leave of absence from the University may be granted for reasonable cause by the student's academic dean.

c. Students confined in the University Hospital are automatically reported in the *Staff Letter* with the appropriate dates included.

3. **Repeated Absences.** Instructors are responsible for reporting to the registrar students who are repeatedly absent from class. A special form is available for this purpose.

REGULATION "N"—CLASS RATING

The following table determines the class rating of undergraduate students:

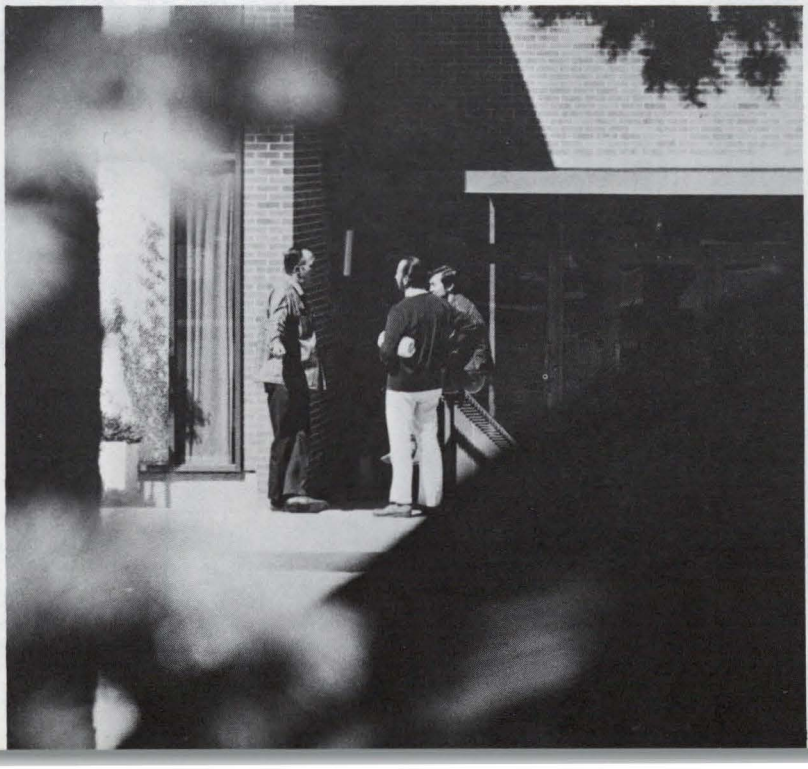
Class Rating	Credits
Sophomore	26
Junior	60
Senior	94

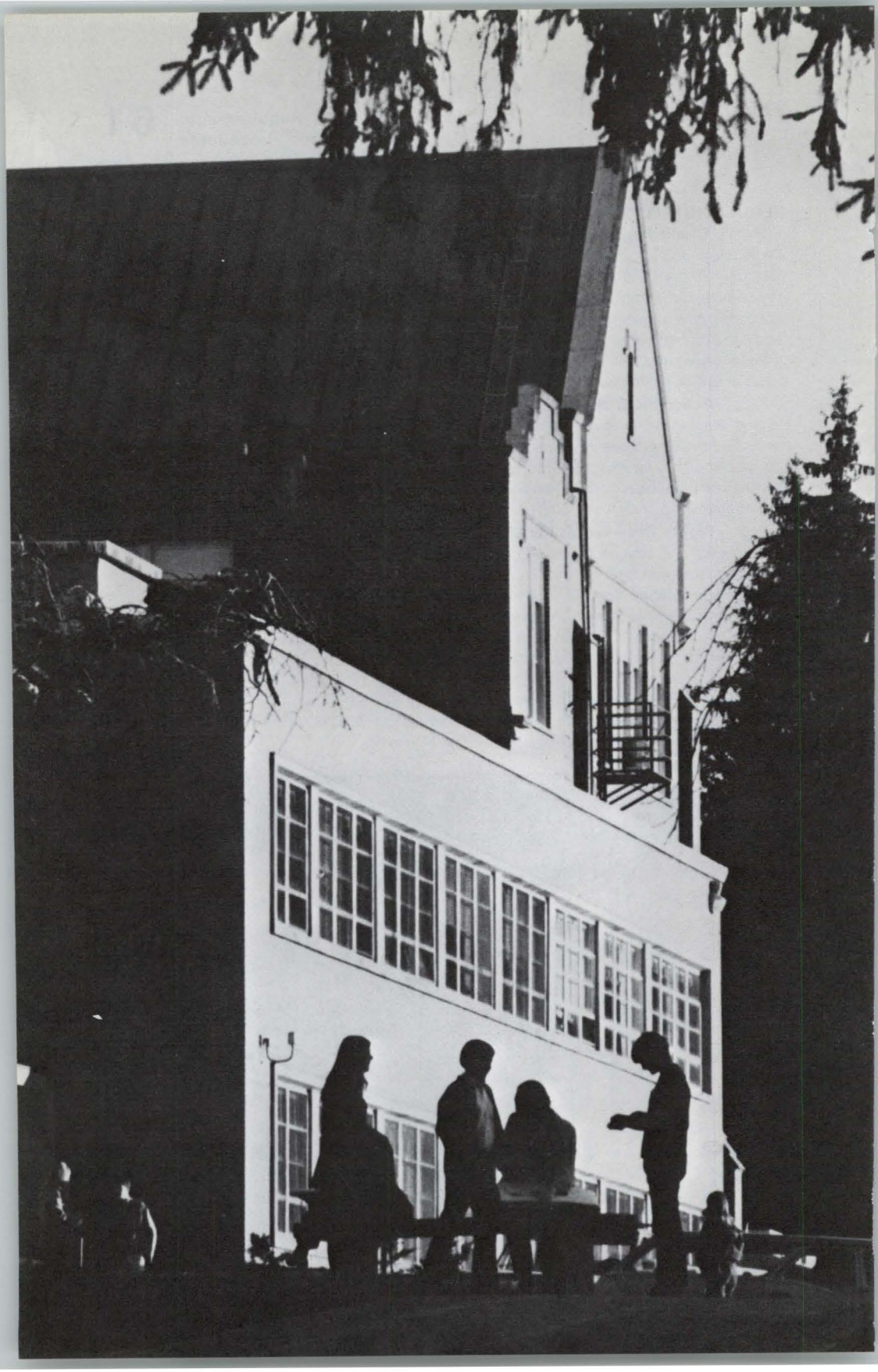
REGULATION "O"—MISCELLANEOUS

1. **Credit Requirements for Full-Time Students.** Undergraduate students are required to carry twelve or more credits to be classified as full-time students. A student in the Graduate School and the College of Law is considered to be engaged in full-time study when registered for twelve credits of course and/or thesis work, or when registered for less than twelve credits but paying full enrollment fees and certified by his major professor and his academic dean as being engaged in the equivalent of twelve credits of study in the pursuit of course work, research, preparation for examinations, and other activities of an academic nature.

2. **Academic Dishonesty.** Dishonesty in academic matters, such as cheating and plagiarism, is inconsistent with the process of education and will not be tolerated. Instructors are responsible for maintaining academic integrity in their courses, and may invoke penalties for academic dishonesty. If the penalties are deemed unfair, appeal may be initiated through the appropriate department chairman or academic dean, or through the student judicial system.

3. **Rights Reserved to the University.** The University and its divisions reserve the right to change fees, rules, and calendar regulating admission and registration, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. Changes shall go into force whenever the proper authorities so determine, and shall apply not only to prospective students but also to those who at that time are matriculated in the University. The University also reserves the right to withdraw or cancel courses at any time, to limit enrollment in courses because of facilities, to require additional conditions for special programs, as well as the right not to release a student's records, or any information based upon the records, when the student has failed to discharge any obligation to the University.





General Studies Program

Francis Seaman, Coordinator (305-C Administration Bldg.).

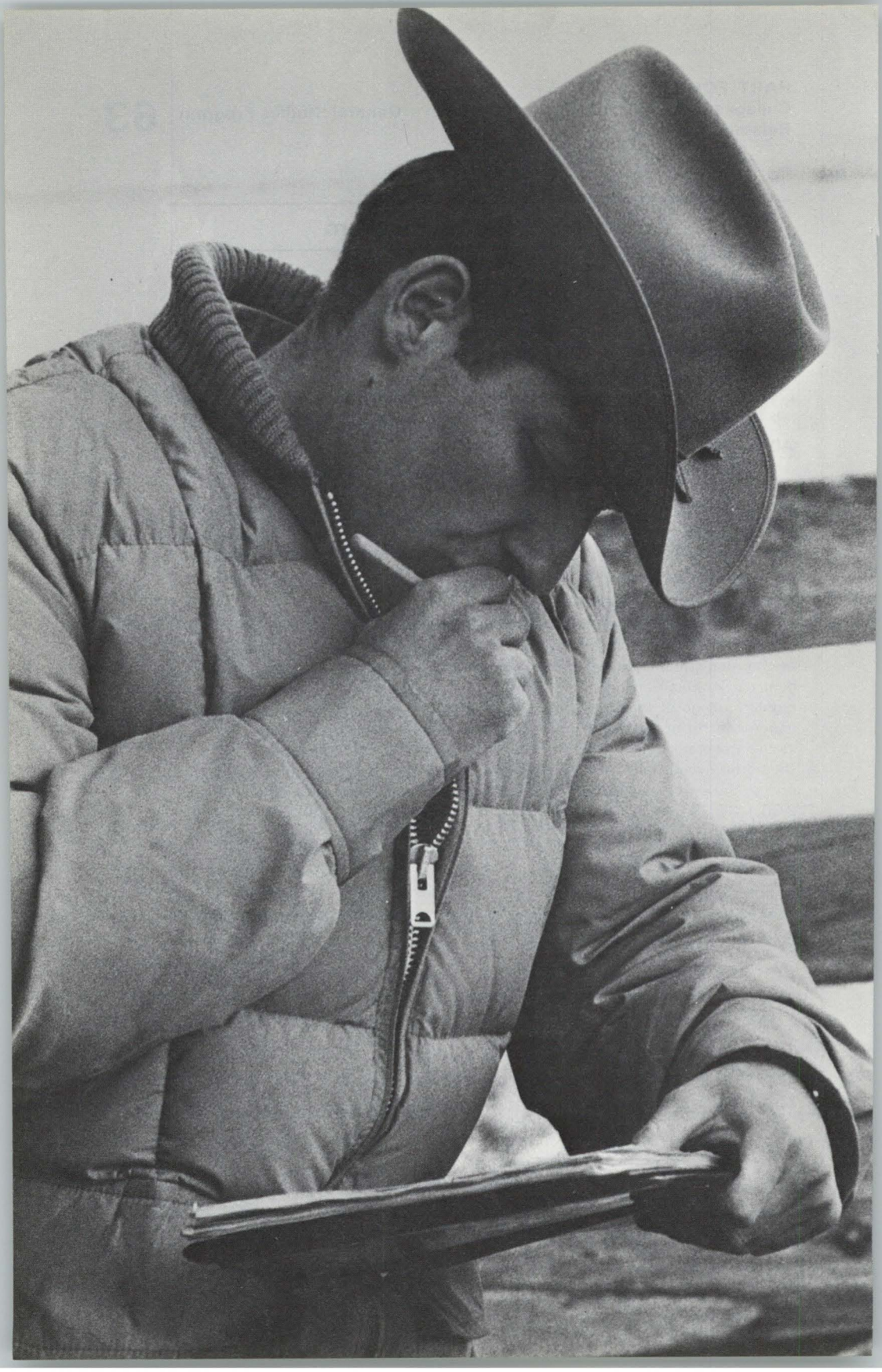
THE GENERAL STUDIES PROGRAM was authorized in the fall of 1969 to allow students at all levels of competency to explore various academic areas before deciding in which college of the University they should enroll for a degree. It is an advisory program, rather than degree granting; however, credits and grade points earned while enrolled in the program may be applied toward a degree for which they are applicable.

ADMISSION TO THE PROGRAM

New students wishing to enroll in general studies may indicate their choice on the application form for admission to the University. Students who are undecided between two majors offered by one 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 general studies by applying to the coordinator.

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 for general studies. However, it should be noted that no student can graduate in general studies. To graduate, a student must transfer to a regular college of the University and fulfill all general University and college requirements for his degree. It is important that students realize that they may enroll in the general studies program for five semesters only. Furthermore, students should be aware that normally they may not transfer from general studies to any of the University's colleges unless they have a grade-point average of at least 2.00 ("C").



College of Agriculture

James E. Kraus, Dean (111 Agricultural Science Bldg.); Don A Marshall, Associate Dean.

THE COLLEGE OF AGRICULTURE is a part of the land grant system. In compliance with enabling legislation of Congress in the Morrill Act, approved July 2, 1862, and the Hatch Act, approved March 2, 1887, the Idaho Territorial Legislature founded the University of Idaho, January 30, 1889, as the land-grant university of the Territory. The Territorial Act was later incorporated into the Constitution of the State of Idaho.

Pursuant to the above acts, the College of Agriculture was established as a division of the University to provide resident instruction in agriculture on campus; to conduct research in all fields of agriculture that promise to assist in the development of the state resources; and to carry the fruits of the research and service to all parts of the state. (See the special sections devoted to the Agricultural Experiment Station and Agricultural and Home Economics Extension in Part 6.)

STANDING AND ADVANTAGES

The Resident 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 through this membership with all colleges of agriculture in the land-grant system. Through annual national and regional meetings and summer workshops, efforts are coordinated to meet the needs of changing agriculture and maintain high professional standards in educating students for the profession of agriculture.

Students in the College of Agriculture are encouraged to obtain 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 the student to choose elective courses that will add to his personal growth, help him understand the environment in which he lives, and develop communications 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 Science Building; Dairy Science Center; Agricultural Education and Field Crops Building; laboratories in the Life Science Building, Henry F. Gauss Mechanical Engineering Laboratory, Engineering Building, Agricultural Engineering Building, Veterinary Science Building and Disease Research Barn; Greenhouses; Entomology Building and H. C. Manis Entomology Research Unit; dairy cattle, sheep, swine, and beef cattle barns, meats laboratory, judging pavilion, poultry brooder and laying houses. A number of poultry, dairy cattle, beef cattle, sheep and swine representing several breeds is maintained for instructional and research purposes.

The College of Agriculture and Agricultural Experiment Station at Moscow operate more than 1100 acres of land. Additional acreages of land, including

1380 acres in other parts of the State, are available and are used for instructional purposes in breeding, production and applying scientific principles to all fields of agriculture.

GRADUATE STUDY

In the College of Agriculture graduate study leading to the master's degree is offered in agricultural biochemistry, agricultural economics, agricultural education, animal industries, bacteriology, entomology, food science, plant sciences, soils, and veterinary science.

Graduate study leading to the degree of Doctor of Philosophy is available in agricultural biochemistry, agricultural economics, bacteriology, entomology, plant sciences and soils. Students must fulfill the requirements of the Graduate School and the department in which they study. Consult the Graduate School catalog for further information.

GENERAL REQUIREMENTS FOR GRADUATION

University Requirements. See general regulation "J" in Part 3 for requirements which all students in the University must meet. Requests for changes or waivers of these requirements must be made by petition to the Administrative Council.

General College Requirements. Candidates for the degree of Bachelor of Science in Agriculture must complete a total of 132 semester credits. These credits must include the specific courses and the general subject-matter credits listed in the major curriculum in which the student takes his major. Requests for changes or waivers of these requirements must be made by petition to the Curriculum Committee of the College of Agriculture.

Four major curricula leading to the B.S.Ag. degree are offered by the College of Agriculture:

AGRIBUSINESS — with majors in agricultural economics, agricultural mechanization, animal industries, food science, and soils.

AGRICULTURAL ECONOMICS

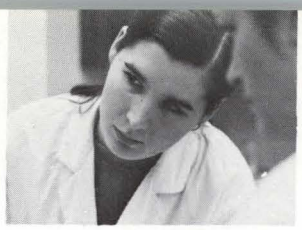
AGRICULTURAL EDUCATION

AGRICULTURAL SCIENCE — with majors in agricultural biochemistry, animal industries (with an option in range livestock management), bacteriology, entomology, food science, plant science, soils, and veterinary science.

The general University and College of Agriculture requirements for graduation are listed below for the major curricula. Additional specific requirements for each departmental major are listed following the appropriate curriculum. These departmental requirements are the responsibility of the department in which the student takes his major and may be changed or waived by the department without petition.

The general subject matter areas listed in the major curricula outline are defined as follows:

A. *HUMANITIES AND SOCIAL SCIENCES* shall consist of courses in anthropology, English, foreign languages, history, philosophy, political science, psychology, sociology and speech.



B. *BIOLOGICAL SCIENCES* shall include Biol 201, Introduction to the Life Sciences, 4 credits; and Biol 202, General Zoology, 4 credits; or Biol 203, General Botany, 4 credits. *Note:* Biol 100, Man and the Environment, 4 credits, and Biol 150, Heredity and Man, 2 credits, *may not* be used to satisfy the biological sciences requirement. Credits in bacteriology may be used to satisfy the requirements in biological sciences or agriculture, but the same courses may not be used to satisfy both.

C. *CHEMISTRY* a minimum of eight credits in chemistry is required in all curricula except agricultural economics in which one additional course in mathematics may be substituted for one course in chemistry. AgBiC 205, General Agricultural Biochemistry, 4 credits, may be used to satisfy part of the chemistry requirement in the agricultural science curriculum.

CURRICULA

The curricula presented below have been developed to guide the student in the preparation of his course of study. A group of core courses is listed for each departmental major. Electives or supporting courses are selected with the approval of the major professor.

AGRIBUSINESS (B.S.Ag.)

This curriculum is designed to prepare students for management responsibilities on farms and in farm related businesses and enterprises. The following requirements are common to all majors:

Course	Credits
AgEcon 101 Ag in its Soc and Econ Environ	3
Math 140-141 College Algebra and Anal Trig	5
Speech	2
Ag 400 Seminar	1
English 101-102 English Composition	6
Advanced Writing	3
Physical education activities	2
Biol 201 Intro to Life Science	4
Biol 202 Gen Zoology *or* Biol 203 Gen Botany	4
Chemistry	8
*Agricultural economics	18
Accounting and business	15
Humanities and social sciences	14
Major field	20
Agricultural electives	12
Unspecified electives	15
	132

*Econ 251 and 252, Principles of Economics, may be used to satisfy part of this requirement.

The majors available under this curriculum and additional specific requirements are as follows:

AGRICULTURAL MECHANIZATION

This major is designed for students entering agricultural management professions which require a knowledge of engineering technology. The major in agricultural mechanization is administered by the Department of Agricultural Engineering. Department requirements to fulfill, in part, the general requirements listed above are:

Course	Credits
Acctg 131 Prin of Accounting	3
AgEcon 208 Farm Management	3
AgEcon 361 Farm Appraisal	3
AgEcon 391 Agr Bus Management	3
Econ 251-252 Principles of Economics	6
Bus 324 Sales Management	3
Bus 365 Business Law	3
Soils 205-206 General Soils	4
AgMech 112 Engr Applications in Ag	3
Ag Mech 305 Agr Mach and Equip	2
AgMech 306 Agr Structures and Environ Sys	2-3
AgMech 309 Gas Engines and Tractors	2-3
AgMech 312 Electric Power Application	3
AgMech 315 Irrig and Drainage	2-3

Note: Engineering courses may be substituted for agricultural mechanization courses upon approval of the major professor.

AGRICULTURAL ECONOMICS

This major is designed to prepare students for a variety of business and management type jobs, such as farming, government work, finance, marketing and others. Emphasis is given to economic training and a specialized option of interest to the students. Departmental requirements to fulfill,

(Continued on next page)

AGRICULTURAL ECONOMICS (Continued)

in part, the general requirements listed above are:

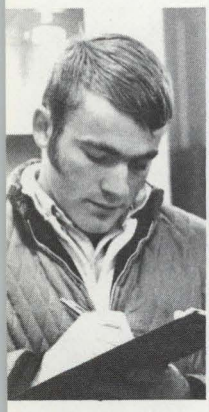
Course	Credits
AgEcon 208 Farm Management	3
AgEcon 219 Marketing Farm Products	3
AgEcon 356 Ag Programs and Policies	3
AgEcon 391 Ag Business Management	3
Acctg 131 Principles of Accounting	3
Ag 321 *or* Bus 231 Statistics	3-4
Econ 251-252 Principles of Economics	6
Bus 365 Business Law	3

The remaining credits required in the major area are to be selected from the following courses in agricultural economics: 332, Econ of World Agric; 353, Agricultural Prices; 361, Farm Appraisal; 451, Land Resource Econ.; 477, Econ of Dev Countries; 481 Agric Market Analysis; 493 Agric Production Econ; 494 Math Anal Appl'd Econ.

ANIMAL INDUSTRIES

This major is designed for those who may desire to enter any of the various businesses associated with the beef cattle, dairy cattle, meats, poultry, sheep or swine industries. Departmental requirements to fulfill, in part, the general requirements listed above are:

Course	Credits
Acctg 131-132 Prin of Accounting	6
Ag 321 *or* Bus 231 Biometry or Bus Statistics	3-4
Econ 251-252 Prin of Economics	6
Anl 205 Animal and Avian Nutr	3
Anl 222 Livestock Brdg and Reprod	3
One of the following products courses: Anl 203 Livestock An Sel & Car Eval; Anl 263 Meats; Anl 433 Poultry Products Tech; or FS 259 Fd Prod Anal for Contr	3-4
Two of the following production courses: Anl 321 Beef Cattle Science; Anl 322 Sheep Science; Anl 323 Dairy Cattle Mgm't, Anl 324 Horse Production, Anl 326 Swine Science; Anl 328 Commer Poul & Egg Prod	6
Anl 450 Proseminar	1



FOOD SCIENCE

This major provides scientific and technological training in the principles involved in the procurement, processing, preservation and distribution of foods and food products. It is designed to prepare the student for the basic scientific areas of food science and the management responsibilities of raw food product procurement, processing, distribution and marketing. Departmental requirements to fulfill, in part, the general requirements listed above are:

Course	Credits
FS 101 Intro to Food Science	3
FS 201 Phys Prin Food Proc	3
FS 204 Chem Prin Food Proc	3
FS 259 Food Prod Anal for Qual Cont	4
FS 294 Food Processing I	4
FS 312 Food Plant Equip & Bldgs	3
FS 313 Food Plant Sanitation & Insp	3
FS 329 Proseminar	1
Ag 321 Biometry *or* Bus 231 Bus Statistics	3
Acctg 131-132 Prin of Accounting	6
Bus 233 Intro to Computers	3
Bus 311 Intro to Mgm't Theory	3
Bus 365 Business Law	3
Econ 251-252 Prin of Economics	6
Bact 402 Food & Appl Micro	4

SOILS

This major is designed to meet the needs of students who are preparing for a career in agricultural business enterprises. Additional courses in agricultural economics and business are required with a corresponding reduction in other courses. Departmental requirements to fulfill, in part, the general requirements listed above are:

Course	Credits
AgEcon 208 Farm Management	3
AgEcon 219 Marketing Farm Products	3
AgEcon 391 Ag Business Management	3
Acctg 131 Principles of Accounting	3
Econ 251-252 Principles of Economics	6
Bus 231 *or* Ag 321 Statistics	3-4
Soils 205-206 General Soils	4
Soils 344 Soil Conservation and Mgm't	3
Soils 435 Soil Physics	3
Soils 446 Soil Fertility	3
Soils 454 Soil Dev and Classification	3

AGRICULTURAL ECONOMICS (B.S.Ag.)

This curriculum is designed primarily for those who plan professional careers in some phase of agricultural economics, such as teaching, research, extension or related areas in business and other organizations. The requirements for this curriculum are:

Course	Credits
AgEcon 101 Ag in its Soc and Econ Environ	3
Math 140-141 Coll Algebra and Anal Trig	5
Speech	2
Ag 400 Seminar	1
Eng 101-102 English Composition	6
Advanced writing	3

Physical education activities	2
Biol 201 Intro to Life Sciences	4
Biol 202 Gen Zool *or* Biol 203 Gen Botany	4
Humanities and social sciences	14
Chemistry	8
Business and economics	21
Major field	20
Agricultural electives	12
Unspecified electives	27
	132

Requirements to fulfill, in part, the general requirements listed above are:

AgEcon 208 Farm Management	3
AgEcon 219 Marketing Farm Products	3
AgEcon 356 Ag Programs and Policies	3
AgEcon 493 Agricultural Production Economics	3
Ag 321 *or* Bus 231 Statistics	3-4
Econ 251-252 Principles of Econ	6
Econ 321 Inter Microecon Anal	3
Econ 372 Inter Macroecon Anal	3

The remaining credits in the major field are to be selected from the following courses in agricultural economics: 332, Econ of World Ag; 353, Ag Prices; 361, Farm Appraisal; 391, Ag Bus Mgm't; 451, Land Resource Econ; 477, Econ of Dev Countries; 481 Ag Market Analysis; 494, Math Anal Appl'd Econ.

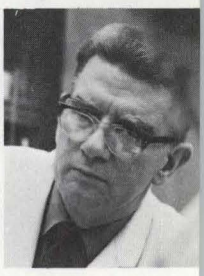
AGRICULTURAL EDUCATION (B.S.Ag.)

This is the course of study approved by the State Board for Vocational Education for the preparation of high school vocational agriculture teachers. Graduates who have completed at least twenty credits in agricultural education, and meet the state certificate requirements for a secondary standard teaching certificate, are eligible to teach vocational agriculture in Idaho. The requirements for this curriculum are:

Course	Credits
AgEcon 101 Ag in its Soc and Econ Environ	3
Math 140-141 College Alg and Anal Trig	5
Speech	2
Ag 400 Seminar	1
Eng 101-102 English Composition	6
Advanced writing	3
Physical education activities	2
Psych 205 *or* 206 Developmental Psych	3
Biol 201 Intro to Life Science	4
Biol 202 Gen Zoology *or* Biol 203 Gen Botany	4
Humanities and soc science (which may include Ed 287)	14
Chemistry	8
Major field	20
Agricultural electives	40
Unspecified electives	17
	132

AGRICULTURAL SCIENCE (B.S.Ag.)

This curriculum is designed to prepare students for professional careers in agriculture, including production, processing, marketing, distribution and utilization of food and fiber as well as in related careers such as extension agents, research workers and other specialized areas. The following general requirements are common to all majors:



Course	Credits
AgEcon 101 Ag in its Soc and Econ Environ	3
Math 140-141 Col Algebra and Anal Trig	5
Speech	2
Ag 400 Seminar	1
English 101-102 English Composition	6
Advanced writing	3
Physical education activities	2
Biol 201 Intro to Life Sciences	4
Biol 202 Gen Zoology *or* Biol 203 Gen Botany	4
Biology electives	7
Chemistry	11
Humanities and social sciences	14
Agriculture electives	12
Major field	20
Unspecified electives	38
	132

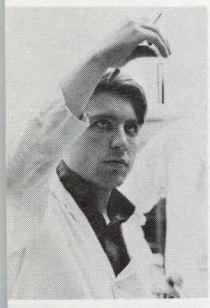
The majors available under this curriculum and additional specific requirements for graduation are as follows:

AGRICULTURAL BIOCHEMISTRY

Students completing this major will be prepared for a professional career in biochemistry. Emphasis is placed on the basic sciences to prepare the students for graduate study or a wide variety of positions in colleges and universities, industry or governmental agencies. Departmental requirements to fulfill in part the general requirements listed above are:

Course	Credits
Bact 250 General Bacteriology	4
Bot 311 Pl Phys *or* Zool 315 Gen Phys	3-4
Chem 112 Inorg Chem & Qual Anal; Chem 253 Quan Anal; Chem 277 Organic Chem; Chem 278 Organic Chem Lab; 372	

(Continued on next page)



AGRICULTURAL BIOCHEMISTRY (Continued)

Organic Chem II; Chem 374 Organic Chem II Lab; Chem 305 Phys Chem; Chem 306 Phys Chem; Chem 307 Phys Chem Lab; Chem 308 Phys Chem Lab 26
Math 180 Anal Geom & Calc I; Math 190 Anal Geom & Calc II; Math 200 Anal Geom & Calc III 11
Phys 220 Engr Physics I-Mechanics; Phys 221 Engr Phys II-Elc & Mag; Phys 222 Engr Phys III-Wave Mot 9

Note: Twenty credits in physical and biological sciences may be substituted for agriculture courses.

ANIMAL INDUSTRIES

This major is designed to prepare the student for a career in any phase of animal industries (livestock, dairy, poultry, meats). Emphasis is placed on providing a sound scientific background with options in the student's major area of interest. This major is also recommended for the student who may decide to pursue graduate study in animal industries. Specific departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Ag 321 Biometry	3
PlSc 314 *or* Biol 351 Gen Genetics	3
Anl 305 Principles of Nutrition	3
Anl 306 Applied Animal Nutrition	4
Anl 422 Animal Breeding	3
Anl 450 Proseminar	1
One of the following products courses: Anl 203 Livestock An Sel & Car Eval; Anl 263 Meats; Anl 433 Poultry Products Tech; or FS 259 Fd Prod Anal for Contr	3-4
One of the following production courses: Anl 321 Beef Cattle Science; Anl 322 Sheep Science; Anl 323 Dairy Cattle Mgm't; Anl 324 Horse Production; Anl 326 Swine Science, Anl 328 Commer Poul & Egg Prod	3
Anl 451 Endo Phys *or* Anl 452 Phys of Reprod and Lact	3-4

Note: Students selecting the range livestock management option are required to complete For 351, Elem of Range Mgm't, and For 452 Range Communities.

BACTERIOLOGY

This major is designed for students who desire professional careers in basic and applied aspects of environmental bacteriology (terrestrial, aquatic, food, dairy, industrial). Microbial ecology is stressed in terms of energy flow in natural systems. Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Ag 321 Biometry	3
Bact 250 Gen. Bacteriology	4
Bact 304 Pathogenic Bact	4
Bact 400 Seminar	2
Bact 499 Directed Study	3
Biol 331 Gen Ecology	3
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chemistry	4-5
Chem 112 Inorg Chem & Qual Anal	5
Chem 253 Quant Anal	5
Chem 277-278 Org Chem I	4
Chem 372, 374 Org Chem II	4
Phys 113-114 Gen Physics	8

The following courses are strongly recommended: Bact 402 Food and Applied Micro; Bact 425 Soil Microbiology; Bact 409 Immunology and Serology; AgBiC 205 Gen Ag Biochem.

Note: Six credits in the biological or physical sciences may be substituted for agriculture courses.

ENTOMOLOGY

This major is designed for students who desire professional careers in the basic and applied fields of entomology (insect taxonomy, ecology, and physiology, and economic entomology). Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Ag 321 Biometry	3
*Bact 250 Gen Bacteriology	4
*PlSc 303 Plant Path	4
Biol 202 Gen Zoology	4
Biol 203 Gen Botany	4
Biol 331 Gen Ecology	3
Biology electives	11
Chem 112 Inorg Chem and Qual Anal	5
Chem 277 Organ Chem *or* Chem 275 Carbon Comp	3
Physics	3
Ent 211 Gen Entomology	4
Ent 342 Insect Ident	4

*Nine credits in forestry may be substituted for agriculture courses.

FOOD SCIENCE

This major provides scientific and technological training in the principles involved in the procurement, processing, preservation and distribution of foods and food products. It is designed to prepare students for the basic scientific areas of food science, for graduate study or for a wide variety of positions in industry and governmental agencies as well as for positions in colleges and universities. Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
FS 101 Intro to Food Science	3
FS 201 Phys Prin Food Proc	3
FS 204 Chem Prin Food Proc	3
FS 259 Food Prod Anal for Qual Cont	4
FS 294 Food Processing I	4
FS 329 Proseminar	1
FS 422 Food Chemistry and Anal	3
Ag 321 Biometry	3
Physics (general)	8
Bact 402 Food & Appl Micro	4
Math 180 Anal Geom & Calc I	4
Chem 253 Quant Anal	5
Organic Chemistry	4

PLANT SCIENCE

This major is designed to prepare students for professional careers in scientific agriculture such as chemical, seed, and food processing company representatives, technical farm managers, extension agents and research workers. Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Biol 203 Gen Botany	4

The following courses are strongly recommended:

PlSc 102 Plant Sci in Agr	3
PlSc 202 Plant Propagation	3
PlSc 303 Plant Pathology	4
PlSc 312 Agriclimatology	3
PlSc 314 Gen Genetics	3
PlSc 401 Crop Physiology	3

SOILS

Students completing this major will be prepared for professional or academic careers in soil science. Emphasis is placed on basic sciences in preparation for a wide variety of jobs in industry or government and for graduate study. Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Chem 112 Inorg Chem & Qual Anal; Chem 253 Quant Anal; Chem 277 Org Chem 1, *or* Chem 275 Carbon Compounds	13
Math 180 Anal Geom & Calc I	4
Biol 203 General Botany	4
Bot 311 Plant Physiology	3
Bact 250 General Bacteriology	4
Geol 101-102 Physical Geology	4
Phys 113-114 General Physics	6-8
Soils 205-206 General Soils	4
Soils 412 Soil Chemistry	4
Soils 425 Soil Microbiology	3
Soils 435 Soil Physics	3
Soils 446 Soil Fertility	3
Soils 454 Soil Dev & Classification	3

VETERINARY SCIENCE

This major is designed to prepare students for admission to colleges of veterinary medicine or for careers in fields related to veterinary medicine. Two options are available.

1. Completion of ninety-nine credits at the University of Idaho; plus the successful completion of the first year of study (at least thirty-three credits in approved courses) at a recognized college of veterinary medicine to satisfy the senior year in residence.

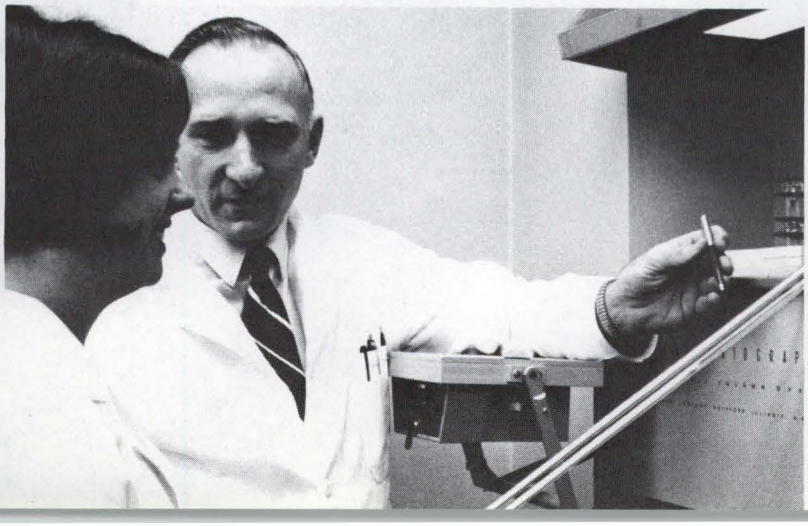
2. Completion of the 132 credits required under the agricultural science curriculum.

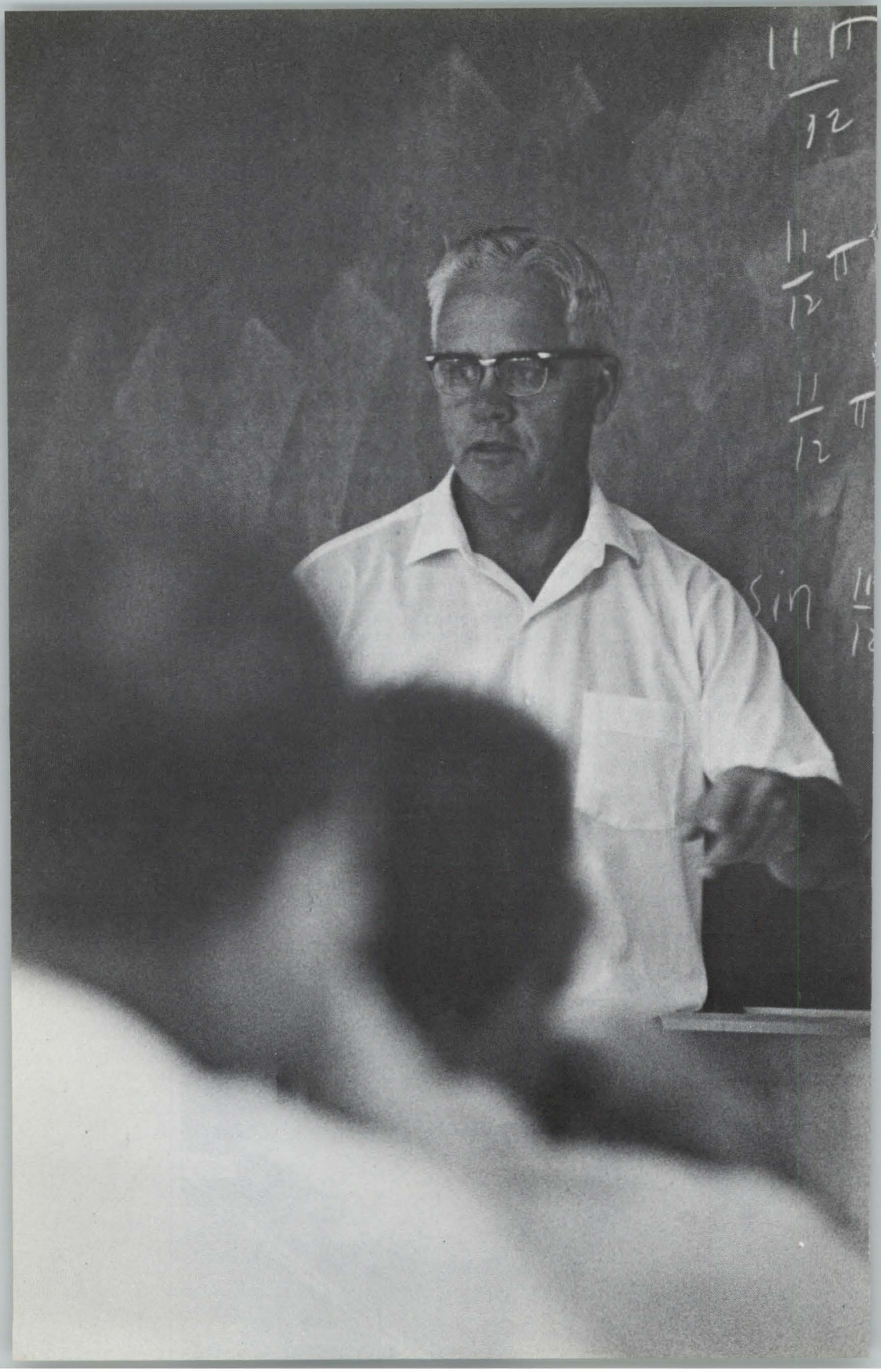
Departmental requirements to satisfy, in part, the general requirements listed above are:

Course	Credits
Chem 112 Inorg Chem and Qual Anal	5
Chem 275 Carbon Compounds, *or* Chem 277 Organic Chem I	3
Chem 278 Organic Chem Lab	1
*Phys 113-114 General Physics	8

*Not required of students graduating under option 2.

Note: Twenty credits in biological and physical science may be substituted for agriculture courses.

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College of Business and Economics

Norman C. Olson, Dean (211-A Admin. Bldg.); Phyllis Veien, Administrative Secretary.

THE COLLEGE WAS ESTABLISHED as a separate professional division of the University in 1925. Long known as the College of Business Administration, the name was changed to the College of Business and Economics in 1969. Its objective is to provide training for young men and women who plan to make business their career. Forces in the modern business world, which the College recognizes through curriculum changes, are increased awareness of human factors, need for long-range planning, rapid technological change, and need for flexibility.

The College of Business and Economics provides a sound background in basic principles and in research possibilities which will help graduates as they advance into positions of responsibility. As a part of a state-supported university, founded to train better citizens, the College also aims to give its students an appreciation of the social importance and responsibilities of businessmen.

In addition to instruction in the fundamental principles of business, the College of Business and Economics also offers specific training in the techniques of business where this is feasible; as, for example, in accounting, accounting research techniques, and secretarial practice. In common with other university schools of business, however, the College avoids extremely specialized instruction in business practices. Since such practices vary greatly among business firms and change rapidly, they can in most cases be learned on the job.

The University has three major objectives; namely, teaching, research, and service. Through the Bureau of Business and Economic Research we are able to contribute to the advancement of knowledge about our State and its business activities. In addition, faculty members and students are given opportunity to engage in basic research. Modern computer facilities and data processing equipment keep the program ahead of changing business methods.

The College also provides faculty and counsel for continuing education in business matters throughout the State. In cooperation with other state agencies, courses in management and in specialized areas are made available.

CURRICULA AND DEGREES OFFERED

Undergraduate. Majors are offered leading to the degree of Bachelor of Science in Business in the fields of accounting, business and applied science, business and law (combined B.S.Bus. and J.D.), economics, finance, general business, management, marketing, and office administration. Detailed statements of the requirements for these majors are included in the departmental curricula at the conclusion of this section.

Graduate. The Graduate School of the University offers work toward the degrees of Master of Science and Master of Business Administration with majors available both in business and in economics, as well as the degree of Doctor of Philosophy with a major in economics. Students must fulfill the requirements of the Graduate School and of the department in which they study. Consult the Graduate School catalog for further information.

STANDING OF THE COLLEGE

Fully accredited by the Northwest Association of Secondary and Higher Schools, the College of Business and Economics keeps apace of developments in business training through various organizations and by constant consultation with Idaho businessmen. The quality of the program is attested to by the outstanding achievements of Idaho graduates in all fields of business throughout the nation.

GENERAL REQUIREMENTS FOR GRADUATION

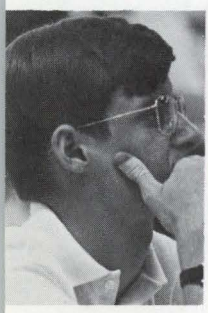
University Requirements. In addition to the all-university requirements for graduation (see general regulation "J" in Part 3), including Eng 101-102, English Composition, and physical education, candidates for the degree of Bachelor of Science in Business must satisfy the following:

General College Requirements

A. *MATHEMATICS.* Math 111, Fundamentals of Mathematics, or 140-141, College Algebra and Analytic Trigonometry.

B. *FOREIGN LANGUAGE/MATHEMATICS-ENGLISH.* The basic requirement is proficiency in one foreign language, equivalent to that gained by completion of four semesters of college courses (through the intermediate level) This requirement may be satisfied by presenting four high school units in one foreign language. A student presenting two high school units may fulfill the requirement by completing a second year of the same language in the University. (Students may substitute Eng 150 and an additional semester of mathematics, Math 112 or 180, for the foreign language requirement.) *Note:* The requirements specified in this item normally will be completed during the freshman and sophomore years. In case of scheduling difficulties, adjustments may be made with the consent of the student's counselor.

C. *NON-BUSINESS COURSES.* In addition to the courses specified above (English, foreign language, mathematics, and physical education), the following non-business courses are required: Eng 313, Business Writing; Sp 131, Fundamentals of Speech; six credits in literature; four credits in natural science (physical or biological science); six credits in social science, psychology, or economic geography; and additional courses, including those required in the major, sufficient to bring the total taken outside the fields of business and economics to fifty-two credits (forty per cent of the total of 128 credits required for the degree). *Note:* Economic principles and economic history may be counted in either the business or non-business groups.



D. *BUSINESS AND ECONOMICS CORE REQUIREMENTS.*

Course	Credits
Accounting, including Principles of Accounting (Acctg 131-132)	9
Business, including Intro to Bus Enterprises (Bus 101), Statistics (Bus 231), Financial Mgm't (Bus 301), Intro to Mgm't Theory (Bus 311), Marketing (Bus 321), and Bus Law (Bus 365)	19
Economics, including Principles of Economics (Econ 251-252), Intermediate Microeconomic Analysis (Econ 321), and Intermediate Macroeconomic Analysis (Econ 372)	15

Plus additional courses in these areas, including courses required in the

major, sufficient to bring the total to 52 credits. (See note at the end of item "C" above.)

E. *MINIMUM GRADE-POINT.* Students registered in the College are required to achieve a minimum overall grade-point average of 1.85 for the first two academic years before being permitted fully to pursue upper-division work. Specifically, this means that a student earning an overall average of less than 1.85 for a minimum of sixty credits may not register for more than one upper-division course (those numbered 300 and above) in any one semester until his cumulative grade-point average is raised to this minimum level.

CURRICULA

Below are stated the requirements in each of the majors. Each student is assigned a counselor who will assist in the planning of a program through the use of a check sheet for each individual; however, the student has the final responsibility for the completion of all requirements.

As noted above, each curriculum requires a total of 128 credits for graduation.

Where business or economics electives are specified, courses numbered 300 or above are required.

Students in advanced ROTC should use the free electives course category to permit scheduling of the twelve credits required in such courses during the junior and senior years.

ACCOUNTING (B.S.Bus.)

This curriculum, in common with many others requiring specialized preparation, offers many opportunities for the college man and woman. The program emphasizes cost accounting, corporation accounting, auditing, public accounting, and taxation.

Required Course Work

Gerneral requirements, plus:

Course	Credits
Acctg 231-232 Interm Accounting	6
Acctg 331-332 Advanced Accounting	6
Acctg 385 Costs: Concepts & Methods	3
Acctg 483 Federal & State Taxes	3
Acctg 486 Costs Anal & Controls	3
Acctg 493 Auditing Theory	3
Bus 233 Intro to Computers	3
Bus 432 Quant Meth in Bus & Econ	3
Bus 466 Business Law	3

BUSINESS AND APPLIED SCIENCE (B.S.Bus.)

Because the University offers strong technical programs in agriculture, engineering, forestry, and mining, the College of Business and Economics is able to offer instruction in combination with them. Most students interested in one of the above fields find it advantageous to take an intensive and complete technical course in the respective college offering such work. On the other hand, there are some students who plan to enter a field of business where complete technical preparation is not essential, but where some technical knowledge is highly desirable. The business and applied science major offers an opportunity to combine a major in business with study in one of the technical fields.

Required Course Work

General requirements, plus: eighteen credits in approved technical electives in one of the following fields: agriculture, engineering, forestry, or mining. (A list of the courses required in each area may be obtained from the dean of the College of Business and Economics.)

BUSINESS AND LAW (Combined B.S.Bus. and J.D.)

For students who wish to prepare both in business and law. Students in this curriculum register in the College of Business and Economics for their first four years, and in the College of Law for the last two. The B.S.(Bus.) degree is conferred upon

(Continued on next page)

BUSINESS AND LAW (Continued)

the completion of the required courses of the first four years, and the J.D. at the end of the full six years.

Required Course Work

General requirements, plus: the completion of ninety-eight credits by the end of the junior year, and the satisfactory completion of the first year of the curriculum in the College of Law (thirty credits).

BUSINESS EDUCATION (B.S.Bus.Ed.)

For this curriculum, see the College of Education section.

ECONOMICS (B.A. or B.S.)

For these curricula, see the College of Letters and Science section.

ECONOMICS (B.S.Bus.)

Designed to prepare students for professional careers as economists in private business, government service, or teaching.

Required Course Work

General requirements, plus: fifteen additional credits in economics courses numbered 300 or above, and additional credits in social sciences (other than economics), geography, psychology or mathematics, with not more than nine credits in any one field.

FINANCE (B.S.Bus.)

Provides an excellent background for the fields of banking, investments, and insurance. The student may elect to emphasize one of these areas of finance.

Required Course Work

General requirements, plus:

Course	Credits
Bus 302 Finan Institu & Credit	3
Bus 401 Investments	3
Bus 403 Insurance	3
Bus 436 Bus & Econ Fluctuations	3
Econ 409 Public Finance	3

GENERAL BUSINESS (B.S.Bus.)

Intended for those students who prefer all-around preparation in business management to specialization in one field.

Required Course Work

General requirements.

MANAGEMENT (B.S.Bus.)

Offered in recognition of the requirements of modern business for the development of more effective managerial skills. The program emphasizes the behavioral and quantitative aspects of the planning, organizing, coordinating, analyzing, and evaluating that is inherent in the administrative process.

Required Course Work

General requirements, plus:

Course	Credits
Bus 411 Organization Theory	3
Bus 413 Human Rel in Business	3
Bus 414 Management Policy	3
Bus 432 Quant Meth in Bus & Econ	3
And three of the following courses:	
Bus 233 Intro to Computers	3
Bus 312 Industrial Management	3
Bus 412 Personnel Management	3
Bus 439 Syst Anal & Simulation	3
Bus 441 Labor Relations	3

MARKETING (B.S.Bus.)

Primarily for students contemplating a career with consumer or industrial goods manufacturers, retail or wholesale distributors, advertising and marketing research organizations, and firms in real estate. Certain modifications of this major may be arranged for students wishing to prepare for advertising.

Required Course Work

General requirements, plus:

Course	Credits
Bus 323 Prin of Advertising	3
Bus 421 Marketing Problems	3
Bus 422 Mktg Research & Anal	3
Bus 423 Retail Merchandizing Fund	3
Recommended electives:	
Bus 233 Intro to Computers	3
Bus 324 Sales Management	3
Bus 424 Retail Merchant Prob	3
Bus 436 Bus & Econ Fluctuations	3

MARKETING: REAL ESTATE (B.S.Bus.)

Required Course Work

General requirements, plus:

Course	Credits
Bus 323 Prin of Advertising	3
Bus 422 Mktg Research & Anal	3
Bus 461 Real Estate	3
Bus 462 Real Property Appraisal	3
AgEcon 361 Farm Appraisal	3
Recommended electives:	
Arch 265 Materials and Methods	3
Arch 376 History of Architecture	2
AgEcon 451 Land Resource Econ	3
Geog 470 Urban Geography	3
PolSc 276 American Local Govt	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3

Soc 310 Rural Sociology	3
Soc 311 Urban Sociology	3

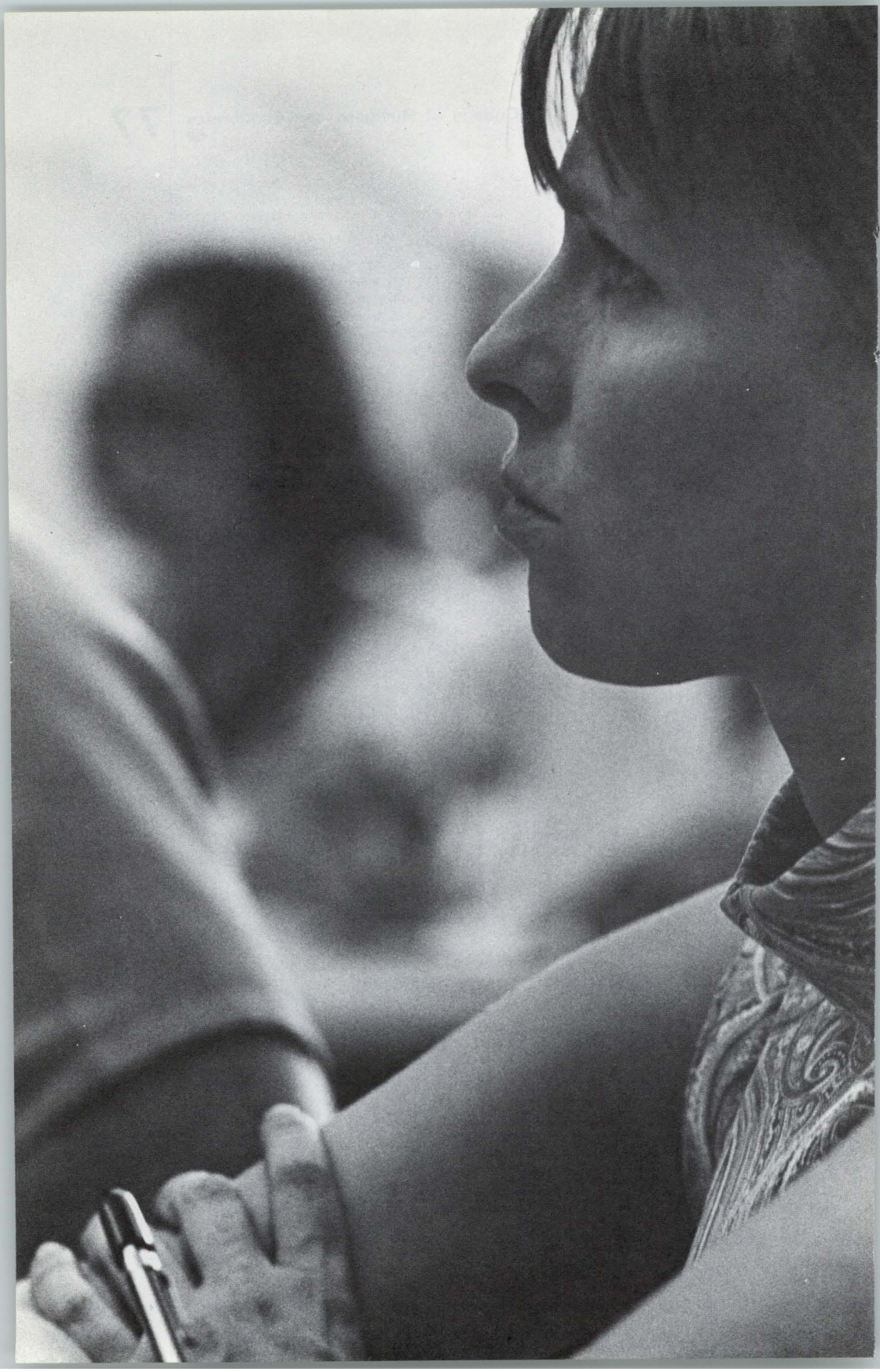
OFFICE ADMINISTRATION (B.S.Bus.)

Designed to equip the student to enter the field of business through secretarial work.

Required Course Work

General requirements (with the exception of the third semester of accounting and Econ 321 and 372), plus:

Course	Credits
OAd 101-102-103 Typewriting I-II-III	6
OAd 115-116 Shorthand I-II	8
OAd 185 Office Machines	2
OAd 271-272 Shorthand III-IV	6
OAd 395-396 Secretarial Procedures	6
Business or economics elective	3



College of Education

Everett V. Samuelson, Dean (301 Education Bldg.); Hervon L. Snider, Associate Dean; Margaret Walker, 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 Department of Education, the Department of Health, Physical Education and Recreation, the Department of Psychology, and the Department of Special Education. Subject fields within these departments include education, business education, industrial education, library science, physical education, psychology, special education, and vocational teacher 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 assuring that persons applying for admission to the program of preparation for educational service are qualified by preparation and personal attributes for this important work. Once admitted, the student undertakes a program which has as its objectives 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 made substantial preparation in the subjects he will teach, or in the area in which he will serve.

Besides preparing personnel for the schools, the College provides educational leadership for the people of the State, to the State's educational 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 as it exists today.

STANDING OF THE COLLEGE

The College is fully accredited by the National Council for Accreditation of Teacher Education, and 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 Secondary and Higher Schools.

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, prior to matriculation in the College of Education, must present a scholastic average of 2.0 (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 the College of Education are the Bachelor of Science in Education and the Bachelor of Science in

Business Education. Undergraduate curricula are available in elementary education, secondary education, business education, industrial education, physical education, recreation, special education, technical education, and vocational teacher education. The specific requirements for these curricula are listed as the concluding portion of this catalog section.

Graduate. Graduate studies in education are offered by the Graduate School of the University and include a special planned fifth-year program in teacher education, as well as work toward advanced degrees and professional certificates in the various departments and fields of the College. Upon the successful completion of the appropriate programs of studies, the following master's and doctoral degrees are conferred: Master of Science, Master of Education, Master of Arts in Teaching, Doctor of Education, and Doctor of Philosophy.

Studies at the master's level are offered in elementary education, secondary education, administration, special education, guidance and counseling, business education, industrial education, physical education, psychology, vocational education, and trade-technical education.

Post-master's degree programs are offered leading to the professional certificate in administration, guidance and counseling, school psychology, special education, vocational education, and education.

Doctoral degrees are offered in elementary education, secondary education, administration, guidance and counseling, special education, and education.

TEACHER CERTIFICATION

Students who complete the four-year teacher education program at the University are eligible to receive the Idaho standard elementary, or the standard secondary school 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 or the advanced secondary school certificate. Students who complete the master's program in guidance and counseling are eligible for the Idaho pupil personnel services certificate. Students may qualify for the Idaho school librarian certificate by completing the requisite courses in library science.

Recommendations for Teacher Certification. The College of Education reserves recommendations for certificates to students who have completed four years of preparation and hold a bachelor's degree.

CONTINUANCE IN TEACHER EDUCATION

College of Education Students. Upon completion of the first semester of the sophomore year, or forty semester credits, all students in the College must make application for continuance in the teacher education program. A standing committee of the College reviews each applicant's total record and presents its recommendations to the dean. The approval of the dean is required for continuance in the program.

Students in Other Divisions. Students enrolled in other divisions of the University who plan to complete the requirements for certification should de-

clare their intention as early as possible and assure themselves that they are following the prescribed procedures for admission to the teacher education program. Admission to the teacher education program does not carry with it permission to enroll in student teaching. Additional procedures and requirements apply as noted elsewhere in this section and as noted in the prerequisites to the specific student teaching courses.

SCHOOL VISITATION AND OBSERVATION

Opportunity is provided for students in teacher education to visit selected classes in the Moscow Public Schools and observe the functioning of regular classroom activity. A teacher-aide program in connection with the foundations class (Ed 287) provides a half-day block per week for experience as a teacher helper or assistant

There is provision also for students in teacher education to visit and observe public schools in operation for one, two or three weeks. This is voluntary experience that should result, for those who participate, in increased understanding of teaching methods and practices as found in our public schools. Students who wish to participate should consult the head of the Department of Education for more specific information.

STUDENT TEACHING

Admission. For admission to the student teaching courses, each student must have satisfied the following requirements: (1) have been admitted to, or continued in, the teacher education program of the College of Education or of his own division of the University; (2) have an overall grade-point average of at least 2.25; (3) have satisfied the other prerequisites stated in the description of the particular student teaching course for which he wishes to enroll; and (4) have applied for admission to student teaching by the deadline specified, i.e., by December 1 of the school year preceding the school year during which he will student teach. Consult the director of student teaching for specific information.

The Program. Student teaching is done in cooperating Idaho public schools so that students may obtain experience under typical school conditions. Normally it is scheduled for nine weeks of full-time teaching in designated centers of the State. Students should plan their schedules for the senior year so that a semester will be free for nine weeks of full-time enrollment in student teaching and nine weeks in accelerated courses.

GENERAL REQUIREMENTS FOR GRADUATION

University Requirements. See general regulation "J" in Part 3 for the all-university requirements for graduation. As a part of these broad requirements, students must complete Eng 101-102, English Composition, and one physical education activity course each semester for two semesters.

General College Requirements. All candidates for the baccalaureate degree in the College of Education must complete a total of 128 semester credits, of which at least 36 must be in upper-division courses (those numbered 300 or above). A minimum grade-point average of at least 2.0 is required in all specified professional courses and in the major secondary school teaching

field. The following uniform course requirements apply to all undergraduate students in the College:

A. *GENERAL STUDIES (42 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 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 (12 credits)* — English composition and literature.

2. *Social Science (9-12 credits)* — Shall include at least one course in American history or American government. Students preparing to teach at the secondary level must complete a minimum of 9 credits in this area; students preparing to teach at the elementary level must complete a minimum of 12.

3. *Science-Mathematics (12-14 credits)* — In order to apply toward this requirement, science courses must include laboratory work (biological, physical or earth science only). Students preparing to teach at the secondary level must complete a minimum of 12 credits in science and/or mathematics. Students preparing to teach at the elementary level are required to include Math 135-136, Number System and its Structure, and 8 additional credits from two or more areas of natural science.

B. *OTHER UNIFORM REQUIREMENTS (13 credits):*

Course	Credits
Education Lectures (Ed 101)*	1
Foundations of Education (Ed 287)	4
Introduction to Psychology (Psych 100)	3
Developmental or Educational Psychology (Psych 205 or 206 or 421)**	3
Fundamentals of Speech (Sp 131)	2

CURRICULA

The curricula presented below have been developed to guide the student in the preparation of his course of study. Each student should also consult the *Teacher Education Guide,* which has been prepared with the cooperation of the academic departments of the University and contains the suggested course content for teaching majors and minors.

Since the College reserves the right to approve or disapprove the content of all proposed teaching majors and minors, students should confer closely with their advisers and with the academic departments concerned in the selection of these courses.

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* Students transferring into the College after achieving junior standing need not take Ed. 101.

** Students preparing to teach at the secondary level normally take Psych 206; those preparing to teach at the elementary level normally take Psych 205.

ELEMENTARY EDUCATION (B.S.Ed.)

General College of Education requirements for students preparing to teach at the elementary level, plus:

1. Core Courses **Credits**

Ed 320 or 322 Prim or Interm Lang Arts Meth . 3
Ed 326 Elem Sch Math Ed 3
Ed 421 Elem Sch Soc St Meth 2
Ed 444 Elem Sch Sc Meth 2
Ed 445 Student Teaching Seminar 0
Ed 430 Elem Sch St Teaching 9

2. Additional Methods

Select 5 credits from the following:
Ed 275 Elem Sch Art Meth 2
Ed 434 Children's Literature 3
MusT 381 Elem Sch Music Meth 2
PE 252 Elem Sch Phys Ed 2
PE 316 Elem Sch Health Materials 2

3. Art and/or Music

Select 3 credits from non-methods courses in art and/or music.

4. Elementary Education Teaching Majors and Minors.

Select option A, B, or C below.

A. *TWO MINORS OPTION:* One 20-credit single-subject or composite teaching minor, and one 15-credit single-subject teaching minor. Single-subject minors are permitted in art, coaching, drama, English, industrial education, journalism, library science, mathematics, military, music, physical education, psychology, special education, a science, a social science, a foreign language.

Composite minors (20 credits minimum) are permitted in the following areas:

(1) *English* — Includes English composition and may include a course in speech.

(2) *Science* — From courses in bacteriology, biology, botany, chemistry, entomology, physical geography, geology, physics, and zoology. At least 8 credits must be in laboratory courses. (A minor may be offered from any one of these areas or from any combination thereof).

(3) *Social Science* — From courses in anthropology, economics, geography (excluding physical geography), history, philosophy, political science, and sociology. A social science minor must include at least 3 credits in American history or American government. (A minor may be offered in any of these areas or any combination thereof.)

B. *SINGLE-SUBJECT MAJOR:* One 30-credit, single-subject teaching major selected from the areas listed under the secondary education curriculum below.

C. *COMPOSITE MAJOR:* One 40-credit, composite major selected from the areas listed under the secondary education curriculum below.

SECONDARY EDUCATION (B.S.Ed.)

General requirements for students preparing to teach at the secondary level plus:

1. Core Courses **Credits**

Ed 314 Gen Sec Sch Meth 2
Ed 315 or 316 or 317 or 318 or 319 or 341 Sp Meth (or another approved sec special meth course) 2
Ed 445 Student Teaching Seminar 0
Ed 431 Sec Sch St Teaching 9

Plus completion of option A, B, C, or D below:

A. Two 30-credit teaching majors.
B. One 40 credit teaching major with one 20-credit teaching minor.
C. One 30-credit teaching major with one 20-credit and one 15-credit teaching minor.
D. One 60-credit teaching major.

2. Teaching Majors for Secondary Education:

ART — Either (a) 30 credits in art, or (b) a total of 40 credits, including at least 20 credits in art, and the remainder in strongly related courses.

BIOLOGICAL SCIENCES — 40 credits from among bacteriology, biology, botany, entomology, and zoology, including at least 24 credits from among biology, botany and zoology.

CHEMISTRY — 30 credits in chemistry.

DRAMA — 30 credits in drama.

DRAMA-SPEECH — 40 credits in drama and speech.

EARTH SCIENCES — 40 credits in geography and geology.

ENGLISH — Either (a) 30 credits in English, including 441, American English, or (b) 40 credits from among English, drama, journalism, and speech (this 40-credit option must include Eng 441 and 21 additional credits in English).

FOREIGN LANGUAGE — 30 credits in a single language commonly taught in secondary schools.

GENERAL SCIENCE — 40 credits from among biological, physical and earth science, including a minimum of 18 credits in one of these fields.

HISTORY — 3 credits in American government, 15 credits in American history and 12 additional credits in history.

MATHEMATICS — 30 credits in mathematics.

(Continued on next page)

SECONDARY EDUCATION (Continued)

PHYSICAL SCIENCE — 40 credits, including at least 18 credits in chemistry or physics, plus electives from chemistry, physics and geology.

PHYSICS — 30 credits in physics.

PSYCHOLOGY — 30 credits in psychology. Since this field is not recommended for secondary school teaching, students electing this area should plan to offer 20-credit teaching minors in *two* usual secondary school teaching fields. Psychology is recommended primarily for students planning to pursue graduate work in psychology or in guidance and counseling.

POLITICAL SCIENCE — 30 credits in political science.

SOCIAL SCIENCE — 40 credits including 9 credits in American history; 9 additional credits in history; and 3 credits in each of the following: American government, economics, geography, and sociology; plus 10 credits chosen from among anthropology, economics, geography, history, philosophy, political science, and sociology.

SPEECH — 30 credits in speech.

ZOOLOGY — 30 credits in zoology.

3. Teaching Minors for Secondary Education

With the exception of the minor in socio-anthropology, all of the courses constituting a minor under the secondary education curriculum must be from the same subject, i. e., all art courses, all history courses, etc. The socio-anthropology minor includes courses in sociology and anthropology. Single-subject minors are permitted in art, biological science, botany, chemistry, coaching, * drama, earth science, English**, a foreign language, geography, health education, history***, industrial education, journalism, library science, mathematics, music****, physical education, physics, political science*****, psychology, socio-anthropology, special education, speech, and zoology.

*The coaching minor is not open to students who are majoring or minoring in physical education.

**Must include Eng 441, American English.

***Must include at least 6 credits in American history and 3 credits in American government.

****Basic courses in the music teaching minor are: MusC 121-122, Elements of Music Theory, and MusH 321-322, Music in Western Civilization.

*****Must include 6 credits in American government, 6 credits in American history, and 3 credits in comparative government.

AGRICULTURAL EDUCATION (B.S.Ag.)

For this curriculum, see the College of Agriculture section.

ART EDUCATION (B.A., B.F.A.)

For these curricula, see the College of Letters and Science section.

BUSINESS EDUCATION (B.S.Bus.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Acctg 131-132 Prin of Accounting	6
Bus 301 Financial Management	3
Bus 365 Business Law	3
BusEd 491-492 Teaching Bus Ed I-II *or* BusEd 493 and 497 Teaching Distr Ed and Coord Techniques	5-6*
Econ 251-252 Prin of Economics	6
Ed 314 Gen Sec Sch Meth	2
Ed 445 Student Teaching Seminar	0
Ed 431 Sec Sch St Teaching	9
Eng 313 Business Writing	3
Geog 112 Economic Geography	3
OAd 103 Typewriting III	0-2**
OAd 116 Shorthand II	0-4**
OAd 185 Office Machines	2

Plus the satisfactory completion of a 15-credit option in office occupations, general business, or distributive education, and the completion of one 20-credit teaching minor selected from those listed under the secondary education curriculum.

*General business option students take BusEd 491 for 2 credits.

**May be waived by examination. Shorthand is not required in the distributive education or general business options.

HOME ECONOMICS EDUCATION (B.S.H.Ec.)

For this curriculum, see the College of Letters and Science section.

INDUSTRIAL EDUCATION (B.S.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Meth	2
Ed 445 Student Teaching Seminar	0
Ed 431 Sec Sch St Teaching	9
IEd 130 Basic Electricity	4
IEd 131 Basic Electronics	4

IEd 140 Basic Woodwork I 3
IEd 250 General Metals 3
IEd 251 Plastics 2
IEd 253-254 Materials & Proc. Lab I-II 2
IEd 310 Maint of Tools & Equip 3
IEd 420 Evaluation in I Ed 3
IEd 451 Sch Shop Planning & Admin 3
IEd 462 I Ed Curriculum 3
IEd 472 I Ed Methods 3
Engr 101 Engineering Graphics 2
AgMech 101 Oxy-Acetylene Welding 1
AgMech 107 Arc Welding 1
AgMech 309 Gas Engines & Tractors 3
Elective shop courses 5-20

Students completing less than 60 credits in industrial education and closely related courses must complete one of the 20-credit teaching minors listed under the secondary education curriculum.

MUSIC EDUCATION (B.Mus.)

For this curriculum, see the School of Music section.

PHYSICAL EDUCATION: MEN (B.S.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Meth	2
Ed 445 Student Teaching Seminar	0
Student Teaching (9 credits in Ed 431, *or* 6 credits in 431 and 3 credits in 435)	9
PE 427 Meth and Mat in Phys Ed	2

Plus one of the following options:

A. 40 credits in approved courses from among health, physical education and recreation; and one 20-credit teaching minor selected from those listed under the secondary education curriculum.

B. 30 credits in approved physical education courses and one 20-credit and one 15-credit academic minor selected from those listed under the secondary education curriculum.

C. 30 credits in approved physical education courses plus an additional teaching field of 30 credits.

PHYSICAL EDUCATION: WOMEN (B.S.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Meth	2
Ed 445 Student Teaching Seminar	0
Student Teaching (9 credits in Ed 431, *or* 6 credits in 431 and 3 credits in 435)	9
Ed 323 Meth & Materials of Health Ed	3
PE 427 Meth and Mat in Phys Ed	2

Plus 40 credits in approved physical education courses, including representation of each of the areas of physical education, health, and recreation, and an approved 20-credit teaching minor selected from those listed under the secondary education curriculum.

PHYSICAL EDUCATION: ELEMENTARY (B.S.Ed.)

General College of Education requirements for students preparing to teach at the elementary level, including Zool 118 (Intro. Human Physiology) and Zool 127 (Intro. Human Anatomy), plus:

Core Physical Education Courses	Credits
PE 105, 107, 108 Phys Ed Activities	2
PE 111 Fundamentals of Movement	2
PE 139 Gymnastics, *or* PE 142 Tumbling, Pyramids & Stunts	2
PE 220 Rhythms for Children	2
PE 252 Elementary School Physical Education	2
PE 264 Recreational Music	1
PE 271 Interp. of Phys Ed, Health & Rec	3
PE 288 First Aid	2
PE 424 Adaptive & Corrective Phys Ed	2
PE 496 Organization and Administration	3

Additional Courses for Women

PE 110 Health Issues	2
PE 115 Team Sports	2
PE 116 *or* 117 Individual Sports Backgrounds	2
PE 322-323 Teaching Sports	4

Additional Courses for Men

PE 106 Individual Sports	1
PE 150 General Hygiene	3
PE 243 Highly Organized Games	2
PE 387 Intramural & Athletic Officiating	3

Physical Education Electives

Select 10 cr from the following:

PE 261 Recreational Arts and Crafts	2
PE 316 Elem School Health Materials	2
PE 321 Theory & Technique of Teaching Dance	2
PE 329 Leadership in Recreation	2
PE 419 Human Kinesiology	3
PE 427 Methods & Materials in Physical Education	2
PE 467 Phys Ed & Rec for Handicapped	3

Core Courses for Elementary School Certification

(Continued on next page)

PHYSICAL EDUCATION: ELEMENTARY (Continued)

Required of Students who Expect to Teach Physical Education in Elementary Schools

	Credits
Ed 320 Primary Language Arts Methods, *or* Ed 322 Intermediate Language Arts Methods	3
Ed 326 Elementary School Mathematics Methods	3
Ed 421 Elementary School Social Studies Methods	2
Ed 444 Elementary School Science Methods	2
Ed 445 Student Teaching Seminar	0
Ed 430 Elementary School Student Teaching	9

PSYCHOLOGY (B.S.)

For this curriculum, see the College of Letters and Science section.

RECREATION (B.S.Ed.)

Recreation majors complete the general college requirements on the same basis as students who are preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Meth	2
PE 427 Meth and Mat in Phys Ed	2
Courses in recreation and closely related areas	40
Supporting field	20

Courses taken to satisfy the above groups must be approved by the head of the Department of Health, Physical Education and Recreation.

Students in this curriculum need not complete the requirements for teacher certification.

SPECIAL EDUCATION (B.S.Ed.)

General requirements, plus:

Course	Credits
Ed 467 Devel Reading Efficiency	3
Ed 445 Student Teaching Seminar	0
PE 467 Phys Ed for Handicapped	3
Psych 301 The Except Indiv, *or* Psych 481 Mental Deficiency	3
SpEd 190 Special Ed Lab	6
SpEd 375 Ed of Except Children	3
SpEd 477-478 Tch Mentally Ret	6
SpEd 480 Student Teaching	9

Students may qualify for elementary or secondary teacher certification by completion of either of the options below.

A ELEMENTARY OPTION

Course	Credits
Ed 320 or 322 Primary or Intermediate Lang Arts Meth	3
Ed 326 Elem Sch Math Ed	3
Ed 421 Elem Sch Soc St Meth	2
Ed 444 Elem Sch Sc Meth	2

Plus 5 credits from:

Ed 275 Elem Sch Art Meth	2
Ed 434 Children's Literature	3
MusT 381 Elem Sch Mus Math	2
PE 252 Elem Sch Phys Ed	2
PE 316 Elem Sch Health Materials	2

And 3 credits from non-methods courses in art and/or music.

Students under this option take the general college requirements specified for those planning to teach at the elementary level.

B. *SECONDARY OPTION:*

Course	Credits
Ed 314 Gen Sec Sch Meth	2

Plus one 20-credit academic teaching minor from among those listed under the secondary education curriculum.

Students under this option take the general college requirements specified for those planning to teach at the secondary level.

TECHNICAL EDUCATION (B.S.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Methods	2
Ed 445 Student Teaching Seminar	0
Ed 431 Sec Sch St Teaching	9
IEd 130 Basic Electricity	4
IEd 131 Basic Electronics	4
IEd 140 Woodworking I	3
IEd 250 General Metals	3
IEd 310 Maint of Tool & Equip	3
IEd 365 Industrial Supervision	2
IEd 451 Sch Shop Planning & Admin	3
IEd 462 I Ed Curriculum	3
IEd 472 I Ed Methods	3
Engr 101 Engineering Graphics	2
Technical area of specilization (electricity-electronics, drafting, wood, or metals)	15-18

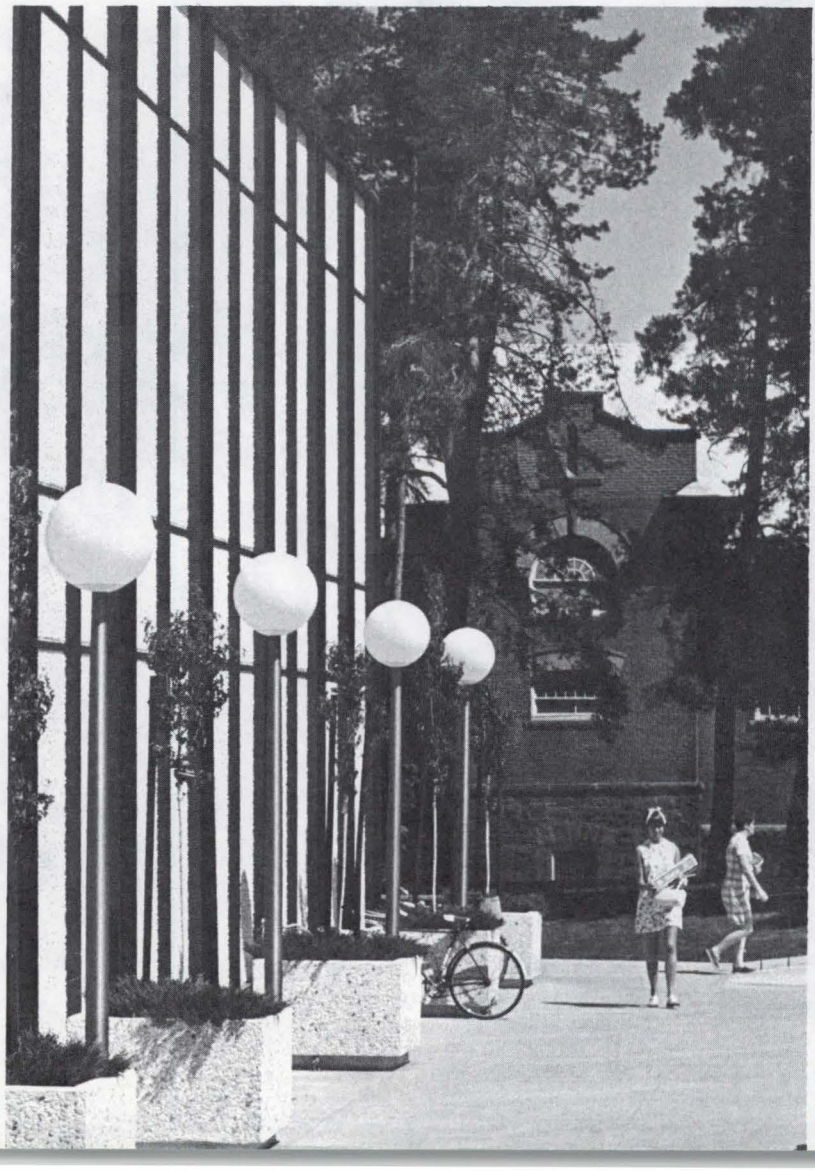
Students completing less than 60 credits in technical education and closely-related courses must complete one of the 20-credit teaching minors under the secondary education curriculum.

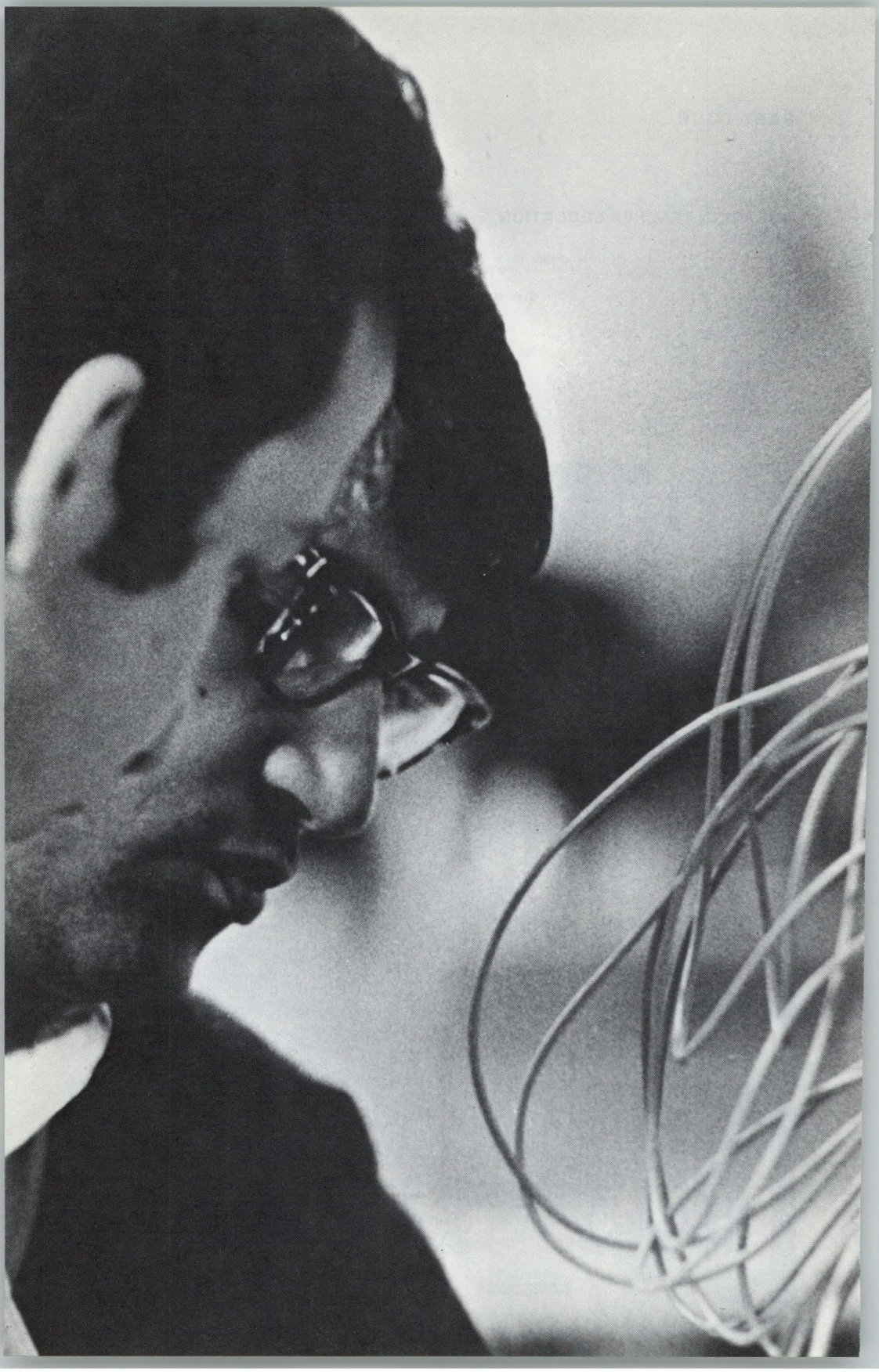
VOCATION TEACHER EDUCATION (B.S.Ed.)

General requirements for students preparing to teach at the secondary level, plus:

Course	Credits
Ed 314 Gen Sec Sch Meth	2
Ed 445 Student Teaching Seminar	0
Ed 431 Sec Sch St Teaching	9
VocEd 270, 370, 470 Technical Competence I, II, III	30
VocEd 322 Voc Guidance	3
VocEd 351 Prin of Voc Ed	2
VocEd 420 Eval in Voc Ed	3
VocEd 450 Industrial Safety	3
VocEd 451 Sch Shop Pl & Admin	3
VocEd 461 Occup and Job Anal	3
VocEd 462 Voc Ed Curriculum	3
VocEd 472 Voc Ed Methods	3
VocEd 497 Coord Tech	3
VocEd 499 Dir St and/or elect	8

Students completing less than 60 credits in vocational teacher education and closely-related courses must complete one of the 20-credit teaching minors under the secretary education curriculum.





College of Engineering

H. Sidwell Smith, Dean (131 Engineering Bldg); George R. Russell, Assistant Dean and Secretary of the College Faculty; Weldon R. Tovey, Assistant Dean.

THE COLLEGE OF ENGINEERING has as its purpose to provide an educational experience which will afford maximum opportunity for qualified students to develop into useful citizens and well-educated professional engineers. To this end, the instructional and inspirational facilities of the entire University are available to students of the College of Engineering.

THE ENGINEERING PROFESSION

The engineering profession is concerned with utilizing scientific principles to create useful and economic works for the benefit of mankind. 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 man's environment are some of the activities in which engineers are engaged. Many engineers hold responsible management positions. Engineers are key members of the interdisciplinary teams which are needed to solve the complex technical, economic, and social problems of the modern 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 training is devoted to humanistic-social studies to help him relate his technical training to the world around him and to enhance his 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. The technology of engineering includes an exceedingly wide range of subject matter which can be explored only to a limited extent in an undergraduate program. A rapidly increasing number of students undertake graduate study for better preparation in a specific field before entering practice.

All states, including Idaho, 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 young men 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 desirable personal attributes which enable one to inspire associates and assistants to work together effectively. Without these qualifications, the chances for a successful career are poor. Aptitude for mathematics and science is important because an engineer's job is the practical application of science.

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 these aptitudes only should consider the desirability of 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 young women are entering the profession. Several are enrolled at the University of Idaho.

PREPARATION AND ADMISSION

To enter a regular college course in engineering the student should have completed in four years of high school three units of English, four units of mathematics, three units of natural science, including one unit of physics and one unit of chemistry, and two units of social science. A student may be admitted with less than the above, but the deficiency must be made up before he can progress very far in his college engineering course. Deficiencies can be made up readily by attending summer session and this is strongly recommended to avoid delay in progress due to lack of prerequisities. A statement of admission requirements is included in Part 2 of this catalog.

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

A junior engineering student must have at least a 2.00 grade-point average before being permitted to register in upper-division courses offered by the College of Engineering.

SCHOLARSHIPS AND AWARDS

A number of scholarships and awards is available to engineering students and prospective students. See Part 2 of this catalog for description and information about applications.

COURSES OF STUDY AND DEGREES

The College of Engineering includes the degree-granting Departments of Agricultural, Chemical, Civil, Electrical, and Mechanical Engineering. Each department offers courses in the major phases of engineering pertinent to its particular field. Careful attention is given to curriculum content and educational philosophy to keep all programs attuned to the rapidly changing concepts and technology of engineering. All curricula are accredited by the Engineers Council for Professional Development.

First degree, four-year programs lead to the Bachelor of Science in all de-

partments: i.e., Bachelor of Science in Agricultural Engineering, B.S.(Ag.E.); Bachelor of Science in Chemical Engineering, B.S.(Ch.E.); Bachelor of Science in Civil Engineering, B.S.(C.E.); Bachelor of Science in Electrical Engineering, B.S.(E.E.); or Bachelor of Science in Mechanical Engineering, B.S.(M.E.).

The Bachelor of Science programs are designed to prepare the student either for immediate entry into the profession as an engineer-in-training or for graduate study. All freshmen take the same program; the sophomore program is the same for all departments with the exception of two courses which are specified by the departments. 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 inter-relationship among all practice fields in the execution of modern complex engineering work.

Courses of study leading to the graduate degree, Master of Science (M.S.), with majors in agricultural engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, and nuclear engineering are offered. The Departments of Agricultural Engineering, Chemical Engineering, Civil Engineering and Electrical Engineering offer work leading to the Doctor of Philosophy (Ph.D.) degree. The requirements for graduate degrees are outlined in the Graduate School catalog.

HONORS PROGRAM

An honors program in engineering is available to qualified students. It provides an opportunity for the exceptionally able undergraduate student to cultivate his talents through additional challenge and stimulation. Honors students have an opportunity to pursue their degree field in greater depth or to pursue related and interdisciplinary studies. The program is flexible to meet the interests of individual students.

Students may enter the honors program as early as the first semester of the freshman year; normally entry will be at the second semester of the freshman year or during the sophomore year. Students must achieve a 3.00 or better grade-point average each term to remain in the program.

Entrance to the program is gained upon application and acceptance by the College of Engineering Honors Committee. Further information may be obtained from the dean.

FACULTY

The faculty is the key to the quality of the engineering program. The faculty of each department and their individual academic backgrounds are noted in other sections of the catalog. With few exceptions the faculty members hold advanced engineering degrees; almost 50% 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 unique blend of academic and practical experience. Many of the faculty have extensive experience in practice and bring this experience into the classroom. This is very valuable in preserving

balance between theoretical and practical aspects of engineering.

FACILITIES

The teaching and research 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 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 are available for the special use of the College of Engineering.

Of special interest is the J. E. Buchanan engineering laboratory. This laboratory, costing $2 ¼ million to construct and equip, was completed in 1968. It houses all of the chemical and civil engineering laboratories and part of the agricultural and electrical engineering laboratories. It also includes the regional materials laboratory of the Idaho Department of Highways.

The laboratories include the most modern equipment for teaching and research. Some of the equipment is of advanced design found in only few institutional laboratories.

Work with the computer is required of all engineering students. The University's IBM 360 40 digital computer is used for classroom and research problems. Various types of analog computers are available in the engineering laboratories.

STANDING AND ADVANTAGES

The University of Idaho College of Engineering is a fully accredited, recognized center for undergraduate and graduate engineering education. Since 1896 when it granted its first degrees, the College has awarded over 3,500 bachelors degrees in engineering. Its graduates are spread throughout the world. The fact that over 250 firms and agencies from throughout the country send interviewers to the campus each year seeking to hire Idaho engineering graduates attests to the reputation of the University of Idaho engineering program.

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

Balanced 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 personally 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 does proceed to graduate work.

REQUIREMENTS FOR GRADUATION

Each of the five degree curricula requires a total of 128 semester credits.

FRESHMAN AND SOPHOMORE COURSES COMMON TO ALL CURRICULA

Course	Credits
Engr 120, 121 Engr Analysis & Design I, II	4
Engr 101 Engineering Graphics	2
Engr 131 Digital Computer Programming	2

Chem 111 Principles of Chemistry 4
Chem 114 General Chemistry 4
Math 180 Anal Geom & Calc I 4
Math 190 Anal Geom & Calc II 4
Eng 101-102 English Composition 6
PE Freshman phys education 2
Phys 221 Electricity and Magnetism 3
Phys 222 Wave Motion 3
ES 211 Intro to Mechanics 4
Math 200 Anal Geom and Calc III 3
Math 310 Ord Differential Equations 3
EE 200 Systems and Circuits 3
Elective from humanistic-social science 6

The curriculum beyond the freshman and sophomore courses common to all curricula for each department is summarized below. Each curriculum contains various electives. These elective courses will be arranged in consultation with the student's adviser in accordance with the student's interest and consistent with current departmental and college policies. The electives are intended to provide flexibility in the student's program. Undesignated electives will usually be taken in a field of study other than the student's major. Courses such as Math 140-141, Phys 111, etc., which are taken to remove deficiencies may not be used to fulfill minimum elective requirements.

AGRICULTURAL ENGINEERING (B.S.Ag.E.)

Common freshman and sophomore courses plus

SOPHOMORE YEAR

Course	Credits
ES 221 Dynamics of Rigid Bodies	2
*Elective..Life Science	4

JUNIOR AND SENIOR YEARS

Course	Credits
AgE 342 Agri Engr Analysis	3
AgE 351 Hydrology	3
AgE 352 Fund of Irrig & Drain	4
ES 320 Fluid Mech	3
ES 321 Thermo and Heat Trans	3
ES 340 Mech of Materials	3
Soils 205 General Soils	3
CE 382 Engr Economy	2
AgE 362 Environ Systems	3
AgE 443 Inst Laboratory	2
AgE 449 Elem of Struct Engr	3
AgE 462 Mat Handl & Proc	3
AgE 471 Energy Conv in Ag Syst	2
AgE 472 Ag Mach Design	2
AgE 491-492 Seminar	0
Ag 321 Biometry	3
**EE 314 Electronics & Cont Sys *or* EE 324 Basic Electrical Mach	3-4
Elective—Humanistic-Social Sci	9
Elective—Technical	6
Elective—Undesignated	5

* Approved course in the biological or agricultural sciences.

** If EE 314 is elected, the extra hour will be subtracted from the undesignated elective in the senior year.

CHEMICAL ENGINEERING (B.S.Ch.E.)

Common freshman and sophomore courses plus

SOPHOMORE YEAR

Course	Credits
Chem 277 Organic Chemistry I	3
Chem 372 Organic Chemistry II	3

JUNIOR AND SENIOR YEARS

Course	Credits
Chem 305-306 Physical Chemistry	6
Chem 307-308 Phys Chem Lab	2
ChE 323 Material & Energy Balances	3
ChE 330 Stagewise Operations	3
ChE 344 Auto Process Control	3
EE 314 Electronics & Control Systems	4
ES 320 Fluid Mechanics	3
ES 321 Thermo & Heat Transfer	3
ChE 423 Reactor Kinetics & Design	3
ChE 430 Transport & Rate Proc I	3

(Continued on next page)

ChE 431 Transport & Rate Proc II	4
ChE 453 Chem Proc Anal & Des I	3
*ChE 454 Chem Proc Anal & Des II	3
ChE 491-492 Seminar	0
Phys 360 Intro to Modern Physics	3
Econ 251 Principles of Econ	3
Elective—Mathematics	3
Elective—Humanistic-Social Sci	10
Elective—Undesignated	3

*Approved technical elective may be substituted for ChE 454.

CIVIL ENGINEERING (B.S.C.E.)

Common freshman and sophomore courses plus

SOPHOMORE YEAR

Course	Credits
ES 221 Dynamics of Rigid Bodies	2
CE 211 Engineering Measurements	4

JUNIOR AND SENIOR YEARS

Course	Credits
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Trans	3
ES 340 Mech of Materials	3
CE 322 Hydraulics	4
CE 342 Theory of Structures	4
CE 357 Mech Prop of Materials	2
CE 372 Transportation Engineering	4
*Phys 360 Intro to Modern Phys *or* Chem 302 Prin of Phys Chem *or* Geol 109 Phys Geol	3-4
CE 382 Engineering Economy	2
CE 431 Sanitary Engineering	4
CE 440 Structural Design	3
CE 460 Soil Mechanics	3
Soc 493 or 494 Seminar in Urban Plan	2
CE 491-492 Seminar	0
**Electives—Technical	14
Electives—Humanistic-Social Sci	7
Electives—Undesignated	4

*Students electing Geol 109 (4 cr) will take three credits of undesignated electives.

**Technical elective group must include at least one mathematics oriented course.

ELECTRICAL ENGINEERING (B.S.E.E.)

Common freshman and sophomore courses plus

SOPHOMORE YEAR

Course	Credits
EE 201 Linear Systems Analysis	4
Math 184 Elements of Linear Algebra	2

JUNIOR AND SENIOR YEARS

Course	Credits
EE 300 Linear Circuit Analysis	3
EE 310 Electronics I	5
EE 320 Energy Conversion I	5
EE 330 Electromagnetic Theory	5
EE 391-392 Seminar	0
EE 410 Electr II *or* EE 420 Energy Conv II	3
EE 440 Digital Systems Engr	3
EE 470 Control Systems	5
EE 480-481 Principles of Design	6
EE 491-492 Seminar	0
Phys 360 Intro to Modern Physics	3
Electives—Humanistic-Social Sci	9
Electives—Technical	6
Electives—Engineering Science	6
Electives—Undesignated	6

MECHANICAL ENGINEERING (B.S.M.E.)

Common freshman and sophomore courses plus

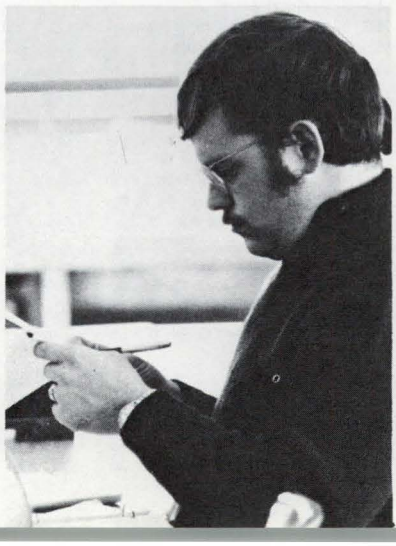
SOPHOMORE YEAR

Course	Credits
ES 221 Dynamics of Rigid Bodies	2
ME 261 Engineering Materials	4

JUNIOR AND SENIOR YEARS

Course	Credits
Econ 251 Principles of Economics	3
ES 320 Fluid Mechanics	3
ES 321 Thermodynamics & Heat Trans	3
ES 340 Mechanics of Materials	3
ME 253 Materials Processing	3
ME 322 Applied Thermodynamics	4
ME 324 Mechanical Design I	3
ME 390 Mech Engr Anal *or* ES 402 Appl Num Met *or* elective in Math	3
EE 314 Electronics & Control Systems	4
ME 425 Mechanical Design II	4
ME 426 Mechanical Systems Design	2
ME 445 Heat Transfer	4
ME 472 Mechanical Vibrations	4
ME 491-492 Seminar	0
Phys 360 Intro to Modern Physics	3
Electives—Humanistic-Social Sci	6
*Electives—Technical	13

*At least nine of the thirteen credits of technical electives must be selected from approved courses in mechanical engineering.



College of Forestry, Wildlife and Range Sciences

John H. Ehrenreich, Dean (201 Forestry Bldg.); Robert H. Seale, Associate Dean.

PROFESSIONAL EDUCATION leading to a degree in forestry was instituted at the University of Idaho in 1909. To the initial curriculum in forest management have been added those in wood utilization (1914), range management (1917), wildlife management (1942), and fishery management (1951). These programs have been administered by a department, 1909-1917; by the School of Forestry, 1917-1953; by the College of Forestry, 1953-1963; and, beginning in 1963, by the College of Forestry, Wildlife and Range Sciences.

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 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 the humanities. This establishes a broad basis of general education and at the same time provides the student with the preparation he needs for his scientific-professional courses dealing with the use of forest and range lands and related resources.

ADVANTAGES OF LOCATION

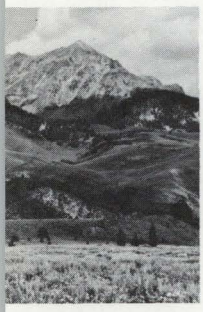
The University of Idaho is ideally located for the training of students in the several professional fields described below. The state of Idaho is comprised largely of forest and range lands and a variety of vegetational types is close at hand for study. Virgin and cut-over forested areas extend from the ponderosa pine type in southern Idaho to the mixed coniferous and famous white pine types of northern Idaho. Range lands used by domestic livestock and big game occupy extensive areas within the State. These grazing lands vary from spring-fall and winter ranges in the sagebrush-grass and bunchgrass 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; all of which provide habitat for game birds, fish and furbearers.

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 extensive recreational areas. These natural study areas and resources are available for directed effort of the student in preparing himself for his chosen profession.

In addition, the preparation of timber products for consumption constitutes the second most important industry in Idaho. Large sawmills, pulp plants, logging camps and numerous woodworking plants are located throughout the area. These operations provide facilities for study of nearly every phase of the wood products industries. Production of range livestock creates a business enterprise of major importance in the State. Students have an opportunity to study this business on nearby ranches.

FACILITIES

The College moved into a new $3,500,000 building in 1971. The Forestry



Building brings together the faculty, the classrooms and laboratories, the scientific equipment and plant and animal collections necessary for the highest quality instruction. Supporting courses for students in this College are offered in modern, well-equipped classrooms and laboratories of the seven other colleges of the University.

A tract of some 7,000 acres of forest land located about twenty-five miles from the campus is used as a demonstration and experimental area. A forest nursery of forty acres is maintained for the production of planting stock for reforestation, erosion control, wildlife food and cover and windbreak plantings as well as for student training purposes. Shattuck Arboretum, with over sixty species of trees, is maintained on campus for studies in dendrology and silviculture. A permanent summer camp is located on the shore of Payette Lake in the mountains of west-central Idaho. Furthermore, the forest and range lands, which comprise ninety percent of the State's area, constitute a vast natural laboratory for students in all aspects of the College's curriculum.

STANDING OF THE COLLEGE

The Society of American Foresters, founded in 1900, is the professional organization of foresters in the United States. In order to promote high professional standards in forestry education, the Society, in cooperation with the various regional accreditation associations, periodically rates the forestry schools of the United States. After careful examination, taking into consideration the adequacy of instruction, personnel, financial support, facilities, success of alumni, and many other factors, each school is given a rating of "accredited" or "not accredited." Forestry education at the University of Idaho has always received accredited status. This accreditation assures the student that high quality education is provided in all divisions of the University and guarantees him an unexcelled professional preparation at both the undergraduate and graduate levels in this College.

ADMISSION REQUIREMENTS

For a statement of admission requirements, see Part 2 of this catalog.

Transfer Students. Students who propose to complete a portion of their undergraduate studies at a junior college, or elsewhere before entering the University of Idaho, should follow as closely as possible one of the programs for the first two years as set forth in the pages immediately following. A student whose program does not closely approximate this one will find it impossible to earn his degree in a total of four years. Transfer to the University before the end of the sophomore year is usually to the student's advantage. Correspondence with the dean of the College should be initiated not later than April 1 of the year in which the student wishes to transfer.

Total time to graduation will also be extended if summer camp, in those curricula which require it, is not completed at the end of the sophomore year. Students planning to elect one of these curricula, who have been unable to transfer earlier, may report directly to summer camp for their initial registration in the University. Students who transfer directly to summer camp must complete a minimum of one additional semester in residence at the University of Idaho 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. The University may exercise its prerogative to refuse surplus applications.

UNDERGRADUATE PROGRAM

The undergraduate curricula are designed to provide both a general and a professional education. During the first two years, all students in the College follow schedules which are essentially alike. The objective in these years is to give the student a good foundation in the biological, physical and social sciences and in speaking and writing skills.

For the third and fourth years, each student chooses a curriculum concerned with the field of resource management in which he is particularly interested. The curricula are: forest resources (in which the student has a further choice among options which emphasize management, business, or science), range resources, wildlife-fishery resources, and wood utilization (with options in forest products or science-engineering).

The schedule of studies for each of the above curricula is so arranged as to provide for a high degree of commonness among them, in both content and orientation, as well as a measure of concentration in the subject matter peculiar to their respective professional requirements. Flexibility and individuality of programs is provided not only by the choice among the curricula but also by the number of elective credits included in each of them. It is intended that, by judicious use of these elective opportunities, the student will augment the breadth of his education. Provision is also made for advanced military training leading to a commission in the Army, Air Force, Navy, or Marine Corps, if desired.

The knowledge required to manage and utilize effectively all of the forest, range, wildlife, and fishery resources is so extensive that no one can completely master it in four years. This is the reason for the separation of the College's overall program into the various curricula. The field of resource management corresponding to each curriculum has attained professional status, that of forestry being the oldest and most mature among them. Others, like range, wildlife, and fishery management, though younger, are growing rapidly and attracting considerable attention.

A discussion of career opportunities in the fields of natural resource management for which the College prepares its graduates is contained in a publication which can be obtained by writing to the dean of the College of Forestry, Wildlife and Range Sciences.

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 non-thesis master's degree, intended primarily for candidates with professional experience, may also be obtained.

Excellent facilities and opportunities are afforded for study and research in the subject-matter areas in which graduate work is offered. Research in the College is organized through the Forest, Wildlife and Range Experiment Station,

which includes on its staff all members of the College faculty. Research is also supported by the Cooperative Wildlife Research Unit and the Cooperative Fishery Unit. Most of the graduate research in the College is carried on as part of the program of the Experiment Station.

Assistantships and fellowships are available to assist highly qualified students in their graduate programs. Funding is obtained from a variety of state, federal, and private agencies.

More complete information on graduate studies may be secured by writing the dean of the Graduate School and requesting the bulletin of that division.

REQUIREMENTS FOR GRADUATION

University Requirements. See regulation "J" in Part 3 for general University requirements for degrees.

College Requirements. A total of 138 semester credits is required for the degree of Bachelor of Science in Forestry. Specific course requirements are set forth below for each curriculum.

The faculty of the College of Forestry, Wildlife and Range Sciences may grant substitutions and waivers of the requirements specified below. Thus, for a student with special aptitudes or interests, a program can be devised which will effect a combination of established curricula, provide a foundation for advanced study or research, or meet other acceptable and well-defined career objectives.

All elective selections are subject to the approval of the faculty adviser and the dean. Of the indicated electives, at least twelve credits are to be chosen from approved social science or humanities courses.

Summer Camp or Summer Employment Requirements. Students who elect the forest management or range management curricula are required to complete the eight-credit course program offered at summer camp. They are expected to complete this requirement before commencing the technical-professional course work of their upper-division programs.

Students who elect the wood utilization or wildlife-fishery curricula are expected to complete at least one summer of experience in employment deemed by the faculty to be appropriate to their respective professional career objectives or they may elect to take the summer camp courses.

FOREST RESOURCES (B.S.For.)

MANAGEMENT OPTION

First and Second Years	Credits
Biol 201 Intro to the Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Bot 241 Systematic Botany	3
Chem 111 Prin of Chemistry	4
CE 218 Elem Surv & Photogrammetry	3
Communications elective	2
Computer elective	2
Econ 251-252 Prin of Economics	6
Eng 101-102 English Composition	6
For 101 Forestry Orientation	1
For 250 Intro to Wildland Management	2
Geog *or* Geol (physical)	4
Math 180 Anal Geom & Calc I	4
Physical education activities	2
Phys 113 *or* 114 General Physics	3
Electives	12

Forestry Summer Camp

For 300 Forest Resource Measurements	4
For 301 Wildland Ecology	4

Third and Fourth Years

Eng 317 Tech & Engr Report Writing	3
For 307 Biometry	3
For 314 Fish & Wildlife Pop Ecol	3
For 320 Dendrology	3
For 321 Silvics	2

For 331 Intro to Wood Technology 3
For 351 Elem of Range Mgt 3
For 424 Silviculture 3
For 434 Forest Engr & Harvesting 3
For 474 Mensuration 3
For 475 Forest Finance 2
For 476 Forest Regulation 3
For 483 Economics of Conservation 3
For 484 Forest Policy & Administration 3
For 494 Models for Resource Decisions 3
Soils 205 General Soils 3
Electives 19

BUSINESS OPTION

First and Second Years **Credit**

Biol 201 Intro to the Life Sciences 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Bot 241 Systematic Botany 3
Chem 111 Prin of Chemistry 4
CE 218 Elem Surv & Photogrammetry 3
Communications elective 2
Computer elective 2
Econ 251-252 Prin of Economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Geog *or* Geol (physical) 4
Math 180 Anal Geom & Calc I 4
Physical education activities 2
Phys 113 *or* 114 General Physics 3
Electives 12

Forestry Summer Camp

For 300 Forest Resource Measurements 4
For 301 Wildland Ecology 4

Third and Fourth Years

Acctg 395 Fund of Accounting 4
Bus 231 *or* For 307 Statistics 3
Bus 311 Intro to Mgt Theory 3
Bus 312 Industrial Management 3
Eng 317 Tech & Engr Report Writing 3
For 321 Silvics 2
For 331 Intro to Wood Technology 3
For 424 Silviculture 3
For 434 Forest Engr & Harvesting 3
For 474 Mensuration 3
For 475 Forest Finance 2
For 476 Forest Regulation 3
For 483 Economics of Conservation 3
For 484 Forest Policy & Administration 3
For 494 Models for Resource Decisions 3
Electives 21

SCIENCE OPTION

First and Second Years **Credits**

Biol 201 Intro to the Life Sciences 4
Biol 202 General Zoology 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Bot 241 Systematic Botany 3
Chem 111 Prin of Chemistry 4
Chem 112 Inorg Chem & Qual Anal 5
Communications elective 2
Computer elective 2
Econ 251-252 Prin of Economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Geog *or* Geol (physical) *or* Org Chem 4
Math 180 Anal Geom & Calc I 4
Physical education activities 2
Phys 113 *or* 114 General Physics 3
Electives 6

Forestry Summer Camp

For 300 Forest Resource Measurements 4
For 301 Wildland Ecology 4

Third and Fourth Years

For 307 Biometry 3
Professional courses 15
Quantitative sciences 7
Natural sciences 17
Electives 23

RANGE RESOURCES (B.S.For.)

First and Second Years **Credits**

Biol 201 Intro to the Life Sciences 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Bot 241 Systematic Botany 3
Chem 111 Prin of Chemistry 4
Chem 275 Carbon Compounds 3
CE 218 Elem Surv & Photogrammetry 3
Communications elective 2
Econ 251-252 Prin of Economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Geog *or* Geol (physical) 4
Math 180 Anal Geom & Calc I 4
Physical education activities 2
Phys 113 *or* 114 General Physics 3
Electives 11

Forestry Summer Camp

For 300 Forestry Resource Measurements ... 4
For 301 Wildland Ecology 4

Third and Fourth Years

Anl 305 Prin of Nutrition 3
Anl 321 *or* 322 Beef *or* Sheep Science 3
AgEc 493 Agric Production Economics 3
Bot 311 Plant Physiology 3
Bot 432 Plant Ecology 3
Eng 317 Tech & Engr Report Writing 3
For 307 Biometry 3
For 314 Fish & Wildlife Pop Ecol 3
For 351 Elem of Range Mgt 3

(Continued on next page)

RANGE RESOURCES (Continued)

For 370 Prin of Forest Mgt 2
For 452 Range Communities 3
For 453 Range Methods & Techniques 3
For 454 Range Improv & Mgt Planning 3
For 494 Models for Resource Decisions 3
Soils 205 General Soils 3
Soils 454 Soil Devel & Classification 3
Electives 18

WILDLIFE-FISHERY RESOURCES (B.S.For.)

First and Second Years **Credits**

Biol 201 Intro to the Life Sciences 4
Biol 202 General Zoology 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Chem 111 Prin of Chemistry 4
Chem 275 Carbon Compounds 3
Econ 251-252 Prin of Economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Geog *or* Geol (Physical) 4
Math 180 Anal Geom & Calc I 4
Physical education activities 2
Phys 113-114 General Physics 6
Sp 131 Fund of Speech 2
Electives 14

Third and Fourth Years

Biol 351 General Genetics 3
Biol 442 Biological Evolution 3
For 307 Biometry 3
For 314 Fish and Wildlife Pop Ecol 3
For 351 Elem of Range Mgt *or* For 370 Prin of For Mgt 2
For 411 Ichthylogy *or* Zool 484 Invert Zool 3
For 413 Fish Ecology 2
For 415 Limnology 3
For 442 Fish & Wildlife Mgt 3
For 448 Wildlife Ecology 2
For 483 Economics of Conservation 3
For 495 Fish & Wildlife Seminar 1
For 497 Land Mgt Seminar 1
Zool 315 General Physiology 4
Zool 482 Ornithology *or* Zool 483 Mammalogy 3
Electives 30

WOOD UTILIZATION (B.S.For.)

FOREST PRODUCTS OPTION

First and Second Years **Credits**

Biol 201 Intro to the Life Sciences 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Bot 241 Systematic Botany 3
Chem 111 Prin of Chemistry 4
Chem 275 Carbon Compounds 3
CE 218 Elem Surv & Photogrammetry 3
Communications elective 2
Computer elective 2
Econ 251-252 Prin of Economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Math 180 Anal Geom & Calc I 4
Physical education activities 2
Phys 113-114 General Physics 6
Electives 14

Third and Fourth Years

Acctg 395 Fund of Accounting 4
Bus 311 Intro to Mgt Theory 3
Bus 312 Industrial Management 3
Eng 317 Tech & Engr Report Writing 3
For 307 Biometry 3
For 321 Silvics 2
For 331 Intro to Wood Technology 3
For 370 Prin of Forest Mgt 2
For 434 Forest Engr & Harvesting 3
For 436 Biol Properties of Wood 3
For 437 Phys Properties of Wood 3
For 438 Chem Properties of Wood 3
For 464 Forest Pathology 2
For 474 Mensuration 3
For 483 Economics of Conservation 3
For 494 Models for Resource Decisions 3
For 496 Forest Products Seminar 1
Electives 22

SCIENCE-ENGINEERING OPTION

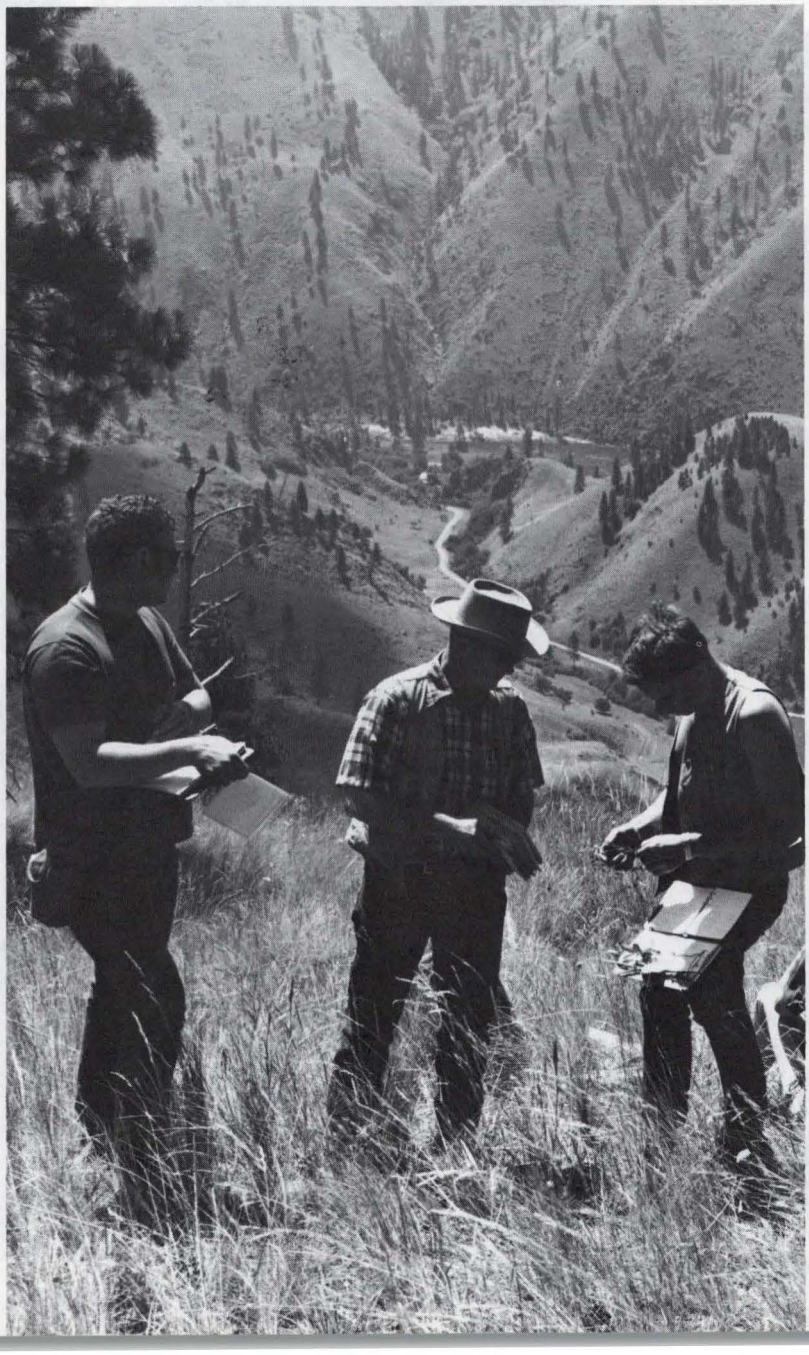
First and Second Years **Credits**

Biol 201 Intro to the Life Sciences 4
Biol 203 General Botany 4
Biol 331 General Ecology 3
Chem 111 Prin of Chemistry 4
Chem 114 General Chemistry 4
Chem 277-8 Organic Chemistry I 4
Communications elective 2
Computer elective 2
Econ 251-252 Prin of economics 6
Eng 101-102 English Composition 6
For 101 Forestry Orientation 1
For 250 Intro to Wildland Management 2
Math 180-190 Anal Geom & Calc I-II 8
Physical education activities 2
Phys 220-221 Engr Physics I-II 6
Electives 11

Third and Fourth Years

Chem 372 Organic Chemistry II 3
ES 210 Mechanics I. Statics 2
ES 340 Mechanics of Materials 3
Eng 317 Tech & Engr Report Writing 3
For 307 Biometry 3
For 321 Silvics 2
For 331 Intro to Wood Technology 3

For 370 Prin of Forest Mgt	2
For 434 Forest Engr & Harvesting	3
For 436 Biol Properties of Wood	3
For 437 Phys Properties of Wood	3
For 438 Chem Properties of Wood	3
For 464 Forest Pathology	2
For 474 Mensuration	3
For 483 Economics of Conservation	3
For 494 Models for Resource Decisions	3
For 496 Forest Products Seminar	1
Electives	24



College of Law

Albert R. Menard, Dean (126 Admin. Bldg.).

THE COLLEGE OF LAW was established as a college of the University of Idaho in 1909. It 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 with the whole range of society. The curriculum is designed to provide instruction in basic principles generally applicable in the United States rather than focus on matters of local importance only. The responsibilities assumed by the professional man are emphasized, as are ethical problems. The study of law, while essential to those who intend to practice, also serves as a valuable asset to the young man or woman who desires to pursue a position of leadership in government or business.

Methods of instruction are adapted to development in each student of his highest potential and vary with the professor and the course. Basically, instruction is accomplished by way of the case system, a study of the actual decisions of appellate courts supplemented by selected readings which provide insight into the nature of judicial and legislative process. Problem and seminar methods are utilized in advanced courses. Stress is placed upon techniques which encourage individual initiative and develop perceptive and communicative powers. Clinical training in the third year provides contact with clients who have legal problems. Law changes rapidly, so mere accumulation of information is subordinated to the more important ends of individual development and training in scientific habits of thought. The atmosphere and situation of the College of Law enable the faculty to concentrate upon attention to the individual student.

ADMISSION TO THE BAR

A degree from the University of Idaho College of Law satisfies the legal educational prerequisite for the taking of any bar examination in the United States. However, pre-legal requirements may vary slightly 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.

PRE-LEGAL WORK

The subject matter of pre-legal education is in general less important than the quality of work done and the caliber of the professors under whom the work is taken. The student preparing to enter law school should avoid easy courses and take those which will develop his thinking powers. Intensive work will enable him to acquire the intellectual discipline and experience necessary for success in law school. The student should aspire to a critical appreciation of values and of political, economic and social institutions; he should stress understanding, not just knowledge in his studies. Words are the tools of the lawyer and strenuous effort

in course selection and in activities outside the classroom should be devoted to development of the ability to communicate orally and in writing.

While study of accounting is not a prerequisite for admission to the College of Law, it is highly recommended that pre-law students gain some understanding of the fundamentals of this area. As a general rule the introductory course on a college level is quite sufficient and any further study of accounting should be undertaken only if the student has rather specifically defined career objectives such as the holding of a CPA certificate as well as a law degree. Another useful skill is the ability to operate a typewriter with reasonable speed and accuracy.

Pre-law advisers are generally available to guide students in selecting courses within the particular college or university which will meet these objectives. The faculty of the College of Law is also available for consultation or assistance in program planning.

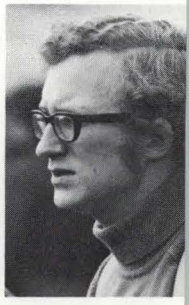
REQUIREMENTS FOR ADMISSION

Applicants for admission must have a bachelors degree from an accredited four year college or university. Exceptions will be made and admission extended only to selected students who demonstrate unusual capacity for legal study on the basis of their college record and LSAT score *and* who are enrolled in "combined degree programs" which will award the student a bachelors 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 the taking of any law school work. Such programs are found in the College of Letters and Science and the College of Business and Economics at the University of Idaho. Interested students should consult the appropriate material for these colleges elsewhere in this bulletin. Combined programs also exist at present at the College of Idaho and Northwest Nazarene College. Certain other institutions may also agree to grant the necessary bachelors degree after one year of law study. Students not at the University of Idaho should consult appropriate individuals at their undergraduate college to determine if a bachelors degree from such institution may be earned in this manner and to be sure that they will meet all needed requirements before entering the College of Law.

The Law School Admission Test is required of all applicants. This test is given by the Educational Testing Service at a large number of places throughout the United States in October, December, February, April and July. There is a fee of $13.00 which the applicant must pay. Arrangements for taking the test must be made by the individual applicant directly with the Educational Testing Service in advance of the dates set for the test. The exact dates and places for the test, application blanks, and a bulletin of information about the test may be obtained by writing directly to Law School Admission Test, Educational Testing Service, Box 944, Princeton, New Jersey 08540, or to the College of Law, University of Idaho.

Registration with the Law School Data Assembly Service of the Educational Testing Service is required of those applicants who have taken all or their last pre-legal work at any institution of higher learning other than the University of Idaho. Instructions concerning registration and an application blank for the purpose are contained in the same bulletin which describes the Law School Ad-

mission Test or may be secured separately from the College of Law or the Educational Testing Service.



PROCEDURE FOR ADMISSION

Applicants from the University of Idaho. Applicants, including combined degree program students in their junior year, who have taken the last year or more of their pre-legal work at the University of Idaho must: (1) secure from the office of the dean of the College of Law a personnel form, complete it and return it to the College of Law; and (2) take the Law School Admission Test and have sent to the College of Law a score report. These actions should be taken and admission applications to the College of Law completed approximately six months before the beginning of the fall semester in which the applicant plans to take any law courses.

It is not necessary for applicants in this category to register with the Law School Data Assembly Service or order transcripts sent to the College of Law, since transcripts will be secured directly from the University Registrar's office. Applicants in this category will be notified by letter when their admission to the College of Law has been approved.

Applicants from Other Colleges and Universities. Applicants who have taken all or their last pre-legal work at any institution of higher learning other than the University of Idaho must: (1) secure from the dean of the College of Law a personnel form, complete it and return it to the College of Law; (2) take the Law School Admission Test and have sent to the College of Law a score report; and (3) register with the Law School Data Assembly Service of the Educational Testing Service, directing that the file and analysis which that agency prepares be forwarded to the College of Law. Transcripts required by the instructions on the registration blank of the Law School Data Assembly Service should be forwarded to that service promptly but need not be sent to the College of Law at this time.

A tentative opinion concerning admissibility will be given to applicants in this category after receipt by the College of Law of the personnel blank, the LSAT score from the Educational Testing Service and the file, with analysis, from the Law School Data Assembly Service. Further instructions on the remaining steps which must be taken to convert this tentative opinion, if favorable, into an admission will be given with the letter transmitting the opinion, and will require the filing of additional information with the University admissions office and the forwarding of official transcripts. If the applicant is tentatively determined to be admissible and then complies with the additional instructions sent to him, he will receive a permit to register from the Admissions Office. Applicants will be saved much inconvenience if all their credentials are received in sufficient time for the settlement of any question through correspondence. Action should be initiated at least six months before the opening of the term in which the individual intends to register.

ADMISSION TO ADVANCED STANDING

Students who have previously studied law in a law school which 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 complete good standing

and eligible to continue in the school in which previously registered and if, in the opinion of the Committee on Admissions, academic performance at that institution warrants such action. Usually the committee requires substantially above a 2.00 grade-point average on all law courses undertaken. The number of credits to be transferred from the previous institution is determined by the dean of the College of Law in each individual case. The last twenty-six semester credits of law must be completed in residence at the University of Idaho.

SPECIAL STUDENTS

In rare instances persons who cannot qualify as candidates for the degree of Juris Doctor may be admitted as special students on petition to the Committee of Admissions of the College of Law. The applicant must show that he is unable to pursue such studies as will qualify him for admission as a regular student, and that he possesses such educational training and practical experience as will enable him to pursue selected law courses satisfactorily. Application for permission to enter as a special student should be made in advance of the regular registration period. It must be distinctly understood that such special students are not candidates for a degree in law and will not be qualified to take bar examinations as a result of studies while a special student.

COMBINED DEGREE PROGRAMS

Joint programs exist with the College of Letters and Science and the College of Business and Economics which permit a student to secure the degree of Bachelor of Arts or Bachelor of Science in Business and the degree of Juris Doctor in a total of six years under certain circumstances. The student registers for his first three years in the College of Letters and Science or the College of Business and Economics and completes at least 98 semester hours work as prescribed by those colleges. During these three years, he can take no law courses. In the spring semester of the third year, he must apply for admission to the College of Law. Only those students whose college grade record and Law School Admission Test score indicate they are unusually well qualified for law study will be accepted with only three years of undergraduate work. If admitted to the College of Law, the fourth year of study consists of the required first year courses of the College of Law curriculum. If all first year law courses are satisfactorily completed the student receives the appropriate bachelors degree from the undergraduate college at the end of his fourth year. After two more years of law study, the student receives the degree of Juris Doctor.

FEES AND EXPENSES

Fees and expenses in the College of Law are the same as those established for other divisions of the University. However, law students must expect that the cost of books for law study will be substantially higher.

HONOR SYSTEM

Students in the College of Law are required to participate in the honor system and to sign the honor code which places responsibility for observation of the rules of the College directly on the individual. Examinations are not supervised. Violations of this code are referred to an Honor Court composed of senior and junior law students.

ACADEMIC REQUIREMENTS

After a student has received final grades on the courses which he has undertaken in his first two semesters of enrollment in the College of Law, he must have attained a cumulative weighted grade point average of 2.00 on all hours of law study without regard to their number, and must maintain this average or better for the remaining period of law study. If his cumulative weighted grade point average on all law courses undertaken, computed after filing of grades for these first two semesters or at the close of any semester thereafter, is less than 2.00, he will be placed on scholastic suspension and will not be eligible to register for further study in the College of Law unless reinstated by the Law faculty upon petition.

GRADING SYSTEM

A. Grades shall be awarded on the basis of A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F; provided, however, that by resolution the Law Faculty may designate any course, or courses, to be graded on a pass-fail basis.

B. Grade-point averages shall be computed by assigning the following numerical point values per semester hour: 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 Inc., 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.

C. The grading system described in subsections A and B above shall be effective, beginning with the freshman class entering the College of Law in the fall of 1971, but only for the purposes of determining (i) eligibility for continuing study in the College of Law, (ii) compliance with requirements for the Juris Doctor degree, and (iii) class rankings within the College of Law. For classes entering prior to that time, it shall be effective only for the purpose of determining class rank within the College of Law; and the grading system for all other purposes shall omit pluses and minuses, with the numerical point values per semester hour being: A — 4.00; B — 3.00; C — 2.00; D — 1.00; F — 0.00.

REQUIREMENTS FOR GRADUATION

The degree of Juris Doctor (J.D.) will be awarded to students who complete six semesters study or its equivalent in an accredited college of law and secure eighty-four semester hours of law credit with a grade-point average of 2.00 (C) on all work undertaken. The last twenty-six semester credits of law must be completed in residence at the University of Idaho unless a waiver is granted by the law faculty upon petition. Students admitted to the College of Law with advanced standing must maintain the same average on all work taken here as that required for graduation. The courses of the first year are required for graduation.

CURRICULUM

The course of study covers three academic years. The prescribed first year is required of all students. Students in the second and third years normally take approximately fourteen to fifteen semester credits each semester from the courses listed. No part of the curriculum may be taken in advance of approval of

admission to an accredited college of law and students not in the University of Idaho College of Law may register for a course offered by the College only with the permission of the dean and the instructor.

REQUIRED FIRST-YEAR LAW COURSES

	Credits
505-506 Procedure I-II	6
507-508 Property I-II	6
509-510 Torts I-II	5
511 Fundamentals of Public Law	2
512 Criminal Law	3
513-514 Contracts I-II	6
515-516 Legal Writing I-II	2
	30

SECOND-YEAR LAW COURSES

14 to 16 hours each semester chosen from the following

Course	Credits
605 Constitutional Law	4
607 Administrative Law	3
608 Labor Law	2
609 Federal Jurisdiction	3
620 Business Associations	4
623 Commercial Paper	2
624 Sales and Products Liability	3
626 Creditor's and Debtor's Rights	3
630 Taxation I	3
640 Family Law and Community Property	3
641 Wills, Estates and Trusts	3
642 Natural Resources	3
643 Problems in Natural Resources	2
650 Evidence	4
652 Remedies and Restitution	3
656 Appellate Court	1-2

THIRD-YEAR LAW COURSES

13 to 15 hours each semester chosen from the following courses not previously taken

Course	Credits
607 Administrative Law	3
608 Labor Law	2
609 Federal Jurisdiction	3
610 Government Regulation of Business	3
611 Municipal Corporations	2
612 Legislation	2
622 Corporate Securities	3
625 Security	2
626 Creditor's and Debtor's Rights	3
627 Business Planning	3
631 Taxation II	2
632 Estate Planning	4
640 Family Law and Community Property	3
642 Natural Resources	3
643 Problems in Natural Resources	2
644 Land Use Planning	2
652 Remedies and Restitution	3
653 Criminal Procedure	3
654 Practice Court I	1
655 Practice Court II	1
660 Conflict of Laws	3
661 Jurisprudence	2
662 Legal Practice	1
681 Legal Aid	2
682 Law Review	1-2
683 Legal Research	1-4

College of Letters and Science

Elmer K. Raunio, Dean (114 Admin. Bldg.); John L. McMullen, Assistant Dean; Earl J. Larrison, Secretary of the College Faculty.

THE COLLEGE OF LETTERS AND SCIENCE is the oldest division of the University, having been established in 1900. The objectives of the College, as defined by the faculty, are to provide a liberal and professional education in the arts and sciences, and to perform service to the University at large, the State, and the Nation.

DEGREES OFFERED

The various subdivisions of the College provide over ninety undergraduate curricula and curricular options leading to the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Home Economics, Bachelor of Science in Pre-Dental Studies, Bachelor of Science in Pre-Medical Studies, Bachelor of Architecture, Bachelor of Fine Arts, Bachelor of Landscape Architecture, Bachelor of Music, Bachelor of Naval Science, and Bachelor of Physics, as well as graduate study leading to master's and doctor's degrees.

DEPARTMENTS OF INSTRUCTION

Included within the College are the Departments of Art/Architecture, Biological Sciences, Chemistry, Drama/Speech, English, Foreign Languages, History, Home Economics, Journalism, Mathematics, Physics, Political Science, Radio-Television, and Sociology/Anthropology. The School of Music also functions as a department of the College. Cooperating departments from other divisions of the University include the Departments of Bacteriology, Economics, Geography, Naval Science, and Psychology, as well as the College of Law.

Art/Architecture. The Department of Art/Architecture offers professional degree programs that deal with the major areas of the visual arts and environmental design. This combination increases the resources available to the student and brings together a community of creative scholars and students with a mutual dedication to the arts. The Art and Architecture Complex consists of three interrelated buildings providing general studio and classroom facilities as well as specialized areas for woodworking, metal-working, painting, sculpture, jewelry, photography, printmaking, ceramics, and other arts. The studio method of learning emphasizes the development of individual creativity and technical competence in the student's chosen field in art, architecture, interior design, or landscape architecture studies.

Biological Sciences. The Department of Biological Sciences offers programs leading to the B.A. or B.S. in biology, botany, and zoology, the M.S. in botany and zoology, the M.Nat.Sc. in biological sciences, the M.A.T.Biol. in biology, and the Ph.D. in botany and zoology. An herbarium with over 80,000 specimens of Idaho and Pacific Northwest plants and the bird and mammal collection containing over 5,000 specimens are valuable teaching and research tools in the department. Study and research in the biological sciences are also enhanced by the presence on the campus of such fields as entomology, wildlife management, range management, fisheries management, plant pathology, bacteriology, and applied areas in agriculture and

forestry. A great diversity of biological materials is available for study since semi-desert areas, large lakes, mountainous regions, and the rolling Palouse grain country are all within one hour's drive of the campus.

Chemistry. The Department of Chemistry is well housed and well equipped for contemporary teachings and research. Undergraduate students benefit from a modern curriculum certified by the American Chemical Society. Graduate students (M.S. and Ph.D. candidates) are offered a wide range of relevant research projects and have access to cooperative training programs with atomic energy installations in this area and with Washington State University just eight miles away. Major emphasis is placed on inorganic, bio-inorganic, bio-organic, organic, nuclear, and physical chemistry. A new program in geochemistry is now under development. The department also is concerned with the training of science teachers.

Drama/Speech. The Department of Drama/Speech offers programs of study leading to the B.A., B.S., B.F.A., M.A., and M.A.T.Dr.-Sp. degrees. The department also offers the student a wealth of practical experience in both drama and speech. Adequate preparation for teaching, professional and community work can be realized within these areas.

English. Supported by philosophy, art, history, foreign languages, and related subjects, the courses in English give students a broad cultural background, acquaint them with the great works of English and American literature, provide them with an essential knowledge of the English language and linguistics, and help them to develop clear, effective writing. Those who take the necessary courses in education may qualify for teaching in high schools; others taking the basic courses leading to a B.A. degree are prepared for many fields of graduate and professional study.

Foreign Languages. The Department of Foreign Languages offers majors in classical studies, French, German, Latin, and Spanish, as well as language study in Greek, Italian, and Russian. In addition, certain courses are offered in English translation (listed together as a separate group at the beginning of the foreign language section in Part 5). This department also cooperates in the Latin American studies program.

History and Philosophy. The Department of History and Philosophy offers both undergraduate and graduate work leading to careers in teaching, librarianship, administration, business, or in government services; also as preparation for entering law school or postgraduate business courses. For history the chief strengths of the library holdings are in American history, in Central and Western Europe since 1760, and in the Renaissance and Reformation.

Home Economics. The Department of Home Economics offers undergraduate and graduate professional education based on the arts and sciences. The home economics education major leads to vocationally-approved teacher certification and/or extension service. Clothing and textiles, food and nutrition, and child development options prepare specialists and/or teachers. Food and nutrition majors may qualify for research or entrance into the American Dietetics Association internships. Child development majors can attend the Merrill-Palmer Institute or Pacific Oaks for a semester. Other options are business, journalism or general home economics. Ample scholarship funds are available for highly qualified students.

Journalism. Major programs in journalism strive to provide the student with a broad, liberal educational background as well as to provide him with proficiency in the skills of an effective communicator. Students have a choice of working for the B.A. or B.S. degrees with options in advertising, news-editorial, or radio-television news. Under the B.S. degree program, a student also may specialize in a minor field.

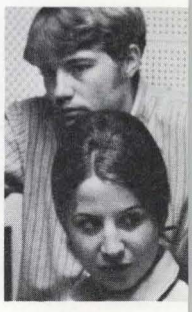
Mathematics. The Department of Mathematics offers programs leading to the B.A., B.S., M.S., M.Nuc.Sc., M.Nat.Sc., M.A.T.Math., and Ph.D. degrees which prepare students for teaching, industrial work, or for positions in government laboratories. Mathematics has become increasingly important to society, creating a large need for trained mathematicians. Students with strong backgrounds or ability, whether they plan to major in mathematics or not, are invited to discuss advanced placement at any level with the department.

Music. See School of Music immediately following the College of Letters and Science section.

Physics. The Department of Physics offers degree programs leading to the B.A., B.S., B.Phys., M.S., M.Nuc.Sc., M.A.T.Phys., and the Ph.D. degrees which prepare students for teaching and research careers. The department is well equipped with modern, sophisticated teaching and research equipment and is located in the new Physical Science Building. Areas of current experimental and theoretical research interest include solid state physics, nuclear physics, quantum optics and laser physics, relativity and cosmology, and environmental physics. Studies in astronomy are carried out in the department and experimental work is done in the physics observatory.

Political Science. The Department of Political Science and Public Affairs Research offers both undergraduate and graduate work leading to careers in teaching, government service, foreign service, and public administration. The Bureau of Public Affairs Research conducts advanced research studies in public affairs and administration, and provides research and consultative services for state and local agencies. The Bureau has a very good and growing collection of material on state and local government which includes a collection of data on Idaho elections of great value in that field.

Radio-Television. The Department of Radio-Television, in addition to its major function of offering B.A. and B.S. programs in radio-television, gives students opportunities for a wealth of practical experience in the operation of its two fully-equipped educational broadcasting stations, KUID-TV and KUID-FM. The department provides services to the University and to the State in the preparation and dissemination of educational broadcasts.



Sociology/Anthropology. The Department of Sociology/Anthropology offers the B.A. and M.A. degrees in anthropology, the B.A., B.S., and M.A. degrees in sociology, and the B.A. and B.S. in social work. Special areas of interest include sociological problems of developing rural populations, American Indian studies, acculturation, and historical archaeology. Special facilities include the anthropology laboratory which houses archaeological and ethnological collections; the departmental library; and adequate research space for informant interviewing, archaeological layout, drafting,

and photography. The historic archaeological metals cleaning and preserving facilities are the most complete and modern in the western states. Continuing basic and applied ethnographic research is conducted on some twelve reservations near the University. Several publication outlets are sponsored by the department.

ADMISSION TO THE COLLEGE

Students who expect to enter the College of Letters and Science should plan their high school electives carefully, both to lay the foundation for their general education which will be continued in the College, 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 which will provide a well-rounded preparation for further study. For a statement of general admission requirements, see Part 2 of this catalog. Graduates of four-year, accredited high schools ordinarily are eligible for admission to the College of Letters and Science.

REGULAR ENROLLMENT IN A PROGRAM OF STUDIES

A student in the College of Letters and Science must enroll in a regular program unless he is attending on a part-time basis (six-credit maximum), is a special student (eleven-credit maximum), or is admitted to a non-degree program. Except for the two-year program in pre-dental studies, the one- and two-year programs in pre-nursing studies, and the pre-college, accelerated program in music, a regular program is one that leads to a degree which 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 more wisely choose a major.

CURRICULA AND PROGRAMS OFFERED

Undergraduate. Majors are offered in anthropology, applied mathematics, architecture, art, bacteriology, biology, botany, chemistry, child development, classical studies, drama, economics, English, food and nutrition, French, geography, German, history, home economics, home economics education, interdisciplinary studies, interior design, journalism, landscape architecture, Latin, Latin American studies, law (combined program), mathematics, music, music education, naval science, philosophy, physics, political science, pre-dental studies, pre-medical studies, pre-nursing studies, pre-physical therapy, psychology, radio-television, sociology, Spanish, speech, and zoology. The various options available under the these major fields, together with detailed statements of requirements, are presented in the departmental curricula at the conclusion of this section.

Graduate. The Graduate School of the University offers work toward advanced degrees in many 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 Letters and Science, graduate study leading to the master's degree is available in the fields of anthropology, architecture, art, biology, botany, chemistry, drama, English, history, home economics, interior design, mathematics, music, philosophy, physics, political science, social

sciences, sociology, and zoology. See Part 1 for a complete list of graduate majors.

Graduate study leading to the degree of Doctor of Philosophy is available in the College in the fields of botany, chemistry, history, mathematics, physics, political science, and zoology.

NON-DEGREE PROGRAM

The College offers a non-degree program in which each student's course of study is worked out to meet his 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, and (3) whose objectives are not provided for by any of the established curricula in the College. Characteristic examples of such students are those who plan to become pharmacists, optometrists, dental technicians, or dental hygienists.

PREPARATORY PROGRAMS IN MEDICINE AND DENTISTRY

The pre-medical and pre-dental programs (presently administered through the Department of Bacteriology) have a much above national average record of placement of graduates in professional schools. Graduates of the programs have had good success in such schools and quite a number have subsequently become members of the faculties of medical and dental schools. Several are members of the staffs of internationally known clinics and institutes, such as the Mayo Clinic.

INTERDISCIPLINARY STUDIES

Students who have broad educational goals which necessitate work in several disciplines or departments may present an interdisciplinary curriculum under the B.A. or B.S. degree. For details, see the program in interdisciplinary studies in the curriculum portion of this college section.

MUSEOLOGY

An unusual opportunity is offered to juniors and above to become acquainted with museums and museum work. Courses in museology serve as museum appreciation courses for the general student regardless of his major field. They are also an introduction to museum work for the student who may elect such a career.

CERTIFICATION FOR TEACHING

Students in the College of Letters and Science who wish to qualify for a teacher's certificate should apply for admission to the teacher education program during their sophomore year. Information and forms are available in the College office. Prospective teachers should assure themselves through consulting with their advisers that they are registering for sufficient credits to meet state certification requirements. These requirements change from time to time and from state to state. It may be necessary for such students to take more than the minimum number of credits required for the baccalaureate degree.

REQUIREMENTS FOR GRADUATION

Each student working toward a baccalaureate degree from the College of Letters and Science must satisfactorily complete the following:

A. A total of 128 semester credits (unless a higher number is specified

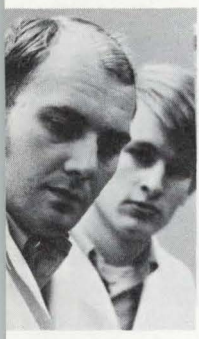
in the student's curriculum), including at least thirty six credits in courses numbered 300 or above.

B. The all-university requirements in English composition and physical education (see general academic regulation "J" in Part 3).

C. The college and departmental requirements for the particular 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.S.H.Ec., B.S.Pre-Dent., B.S.Pre-Med., B.Arch., B.L.Arch., B.F.A., B.Mus., B.N.S., and B.Phys.) are listed in the "Departmental Curricula" at the conclusion of this section, and the college B.A.-B.S. requirements do not apply to these professional degrees.

COLLEGE REQUIREMENTS FOR THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE

A. **Objectives.** The college requirements for the degrees of Bachelor of Arts and Bachelor of Science are designed to insure a broad, liberal education through the attainment of the following specific objectives:



1. Proficiency in written and spoken English.
2. Appreciation of great literature, music, and art.
3. Knowledge of the development of man, his social and economic institutions, and his rights and responsibilities as a 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 the ecology of man.
10. Continuing attitude of intellectual curiosity.

B. **Requirements for the Bachelor of Arts Degree.**

1. *HUMANITIES.* At least four courses (12 credits minimum), including two from each of the following categories:

   a. Literature, philosophy, and courses which treat drama or speech as literature.

   b. Courses which deal with the history or appreciation of art, architecture, drama, music, or speech.

2. *SCIENCE.* At least three courses (9 credits minimum), including one laboratory course, to be taken in two or more of the following areas, at least one course to be in area "a" or area "b":

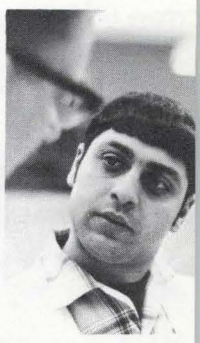
   a. Life sciences.

   b. Physical sciences.

   c. Mathematics.

   d. Approved courses dealing with science.

3. *SOCIAL SCIENCES.* At least three courses (9 credits minimum) to be taken in two or more of the following fields:



a. Anthropology.

b. Economics.

c. Geography (excluding physical geography and cartography).

d. History.

e. Political science.

f. Psychology (excluding Psych 205-206 and the more physiologically-oriented courses).

g. Social science.

h. Sociology.

4. *FOREIGN LANGUAGE* (0 to 16 credits). The basic requirement is proficiency in one 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 options below:

a. Sixteen credits or four high-school units in one foreign language, or

b. Twelve credits in one foreign language, plus one 3-credit course in literature translated from the same language. The twelve credits may be satisfied by three high-school units in one foreign language.

Note: For guidance in choosing the proper course level in a foreign language, see the foreign language course section in Part 5.

C. **Requirements for the Bachelor of Science Degree.**

1. *HUMANITIES.* At least three courses (9 credits minimum), includcluding one course in literature, philosophy, or courses which treat drama or speech as literature, plus one course which deals with the history or appreciation or art, architecture, drama, music, or speech.

2. *SCIENCE.* Same as science requirement for the B.A. degree (see above).

3. *SOCIAL SCIENCES.* Same as the social science requirement for the B.A. degree (see above).

D. **Progress in Satisfying These Requirements.** A student must take a program that results in substantial progress toward the fulfillment of the preceding requirements by the end of the sophomore year. In particular, a student seeking the B.A. degree must take courses in fulfillment of the foreign language requirement as early as possible. If he cannot do this during his first semester, he must immediately take a course that can be used in partial fulfillment of his science-mathematics requirement.

DEPARTMENTAL CURRICULA

A. **Selection of a Major.** Each student should select a major (curriculum) not 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.

B. **Major Requirements.** The major requirements for the baccalaureate degree usually include twenty or more semester credits in courses numbered

300 or above, and generally the same number of credits in related fields. The departmental requirements are stated under the respective curricula (arranged in alphabetical order in this section).

ANTHROPOLOGY (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
Anthr 110 Intro to Phys Anthr and Arch	3
Anthr 120 Intro to Social Anthr	3
Anthr 402 History of Anthr Theory	3
Psych 317 Intro to Statistics for the Behav Sc	3
Soc 110 Intro to Sociology	3
Soc 411 Contemp Sociological Theory	3
Anthropology electives (upper-division)	15
Related fields*	15

*Must include at least three courses selected from among the following: Econ 490, Eng 442, Geog 112, Hist 465-466, Museo 301, Phil 411, PolSc 285-286, Psych 320, Psych 461, Soc 320, Soc 321, Soc 420, or Soc 421.

ARCHITECTURE (B.Arch.)

A five-year professional curriculum divided into two parts: the pre-professional (first two years) and the professional (remaining three years). A cumulative grade-point average of 2.50 in all required courses in art and architecture in the two pre-professional years is required for admission to the professional program. The 2.50 average must be maintained in all such courses in order to remain in good standing in the department.

Required: A total of 160 credits, including the University requirements in English and physical education, and:

Course	Credits
Arch 155-156 Introduction to Architecture	8
Arch 255-256 Architectural Design I	6
Arch 263 Programs & Systems	3
Arch 265-266 Materials & Methods	6
Arch 275-276 Hist of Ancient & Med Arch	4
Arch 355-356 Architectural Design II	8
Arch 357-358 Landscape Arch II	6
Arch 363 Programs & Systems II	2
Arch 365-366 Building Technology I	8
Arch 375-376 Hist of Renaissance & Mod Arch	4
Arch 455-456 Architectural Design III	8
Arch 465-466 Building Technology II	8
Arch 467-468 Intro to City Planning	6
Arch 473-474 Seminar: Research Meth	4
Arch 475-476 Architectural Design IV	10
Arch 485-486 Building Technology III	4
Arch 495-496 Professional Practice	6
Art 111-112 Drawing I	4
Eng 317 Technical & Engr Report Wr	3
*Math 140-141 Coll Alg & Anal Trig	5
Math 180 Analytical Geometry & Calc	4
Phys 113-114 General Physics	6

Plus electives to total 160 credits, from which at least two credits must be from art and twelve must be from at least two of the following fields: anthropology, economics, geography, history, philosophy, political science, psychology, and sociology.

*Prerequisites to Math 180 and/or equivalent high school units to satisfy the requirements of the Department of Mathematics.

ART (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Design I	4
Art 211-212 Drawing II	4
Art 231-232 Painting I	6
Art 301-302 History of Painting	6

Plus twelve credits from the following approved art courses:

Art 223-224 Lettering and Layout	4
Art 233-234 Water Color I	4
Art 241-242 Sculpture I	4
Art 361-362 Ceramics II	4

Plus completion of option A, B, C, or D below:

A. DESIGN OPTION

Art 323-324 Graphic Design I	4
Art 331-332 Painting II	4
Art 333-334 Water Color II	4
Art 351-352 Printmaking	4
Art 423-424 Graphic Design II	6
Art 497 Proseminar	6
Bus 323 Advertising	3

Design option students shall include Art 223-224, Lettering & Layout, in their art elective program.

B. SCULPTURE OPTION

Art 261-262 Ceramics I	4
Art 341-242 Sculpture II	6
Art 351-352 Printmaking	4
Art 497 Proseminar	6
Art 499 Directed Study	4

Sculpture option students shall include Art 241-242, Sculpture I, in their art elective program.

C. PAINTING OPTION

Art 331-332 Painting II	6
Art 335-336 Comp, *or* Art 221-222 Design II	6

Art 431-432 Painting III 6
Art 497 Proseminar 4
Art 499 Directed Study 4

Recommended elective:
Art 351-352 Printmaking 4

D. ART EDUCATION OPTION (B.A. Degree)
Art 391 or 392 Crafts in Art Education 2
Art 497 Proseminar 6

Plus ten credits from the following:
Art 331-332 Painting II 4-8
Art 333-334 Water Color II 4
Art 361 Ceramics II 2

or other approved art electives, plus:
Ed 287 Foundations of Education 4
Ed 314 Gen Sec School Methods 2
Ed 319 Sec School Art Methods 2
Ed 445 Student Teaching Seminar 0
Ed 431 Sec School Student Teaching 9
or the combination of
Ed 431 Sec School Student Teaching ..... (6)
and
Ed 435 Elem School Student Teaching ..... (3)

Psych 205 or 206 Developmental Psych 3
or
Psych 421 Educational Psych ..... (3)

Students electing option D take Psych 100, Intro to Psych, and at least one course in either American history or American government as part of the general college requirements in social science.

ART (B.F.A.)

Required: A total of 128 credits, including the University requirements in English and physical education, and:

Course	Credits
Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Design I	4
Art 211-212 Drawing II	4
Art 231-232 Painting I	6
Art 301-302 Hist of Painting	6

Plus four credits from the following:
Arch 275 History of Ancient Architecture ... 2
Arch 276 History of Medieval Architecture .. 2
Arch 375 History of Renaissance Architecture 2
Arch 376 History of Modern Architecture ... 2

Approved art electives 18
Literature 3
Science 8
Social science 12

Plus completion of art option A, B, or C as listed under the B.A. degree in art, or option D below:

D. ART EDUCATION OPTION (B.F.A. Degree)

Requirements are the same as listed under the art education option for the B.A. degree except that B.F.A. option D students include seven additional credits in approved art electives and, as a part of the twelve-credit B.F.A. requirement in social science, Psych 100 and Psych 205 or 206, or Psych 421, and at least one course in either American history or American government.

BACTERIOLOGY (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Bact 250 Gen Bact	4
Bact 304 Pathogenic Bact	4
Bact 400 Seminar	2
Bact 409 Immunol and Serol	4
Bact 499 Directed Study	3
Biol 201 Intro to Life Sci	4
Biol 202 Gen Zool *or* Biol 203 Gen Bot	4
Math 140, 141 Coll Alg and Anal Trig	5
Phys 113-114 Gen Physics	8
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorg Chem and Qual Anal	5
Chem 253 Quant Anal	5
Chem 277-278 Org Chem I	4
Chem 372, 374 Org Chem II	4
Eng 317 Report Writing	3

Majors in bacteriology must select ten additional upper-division credits. The following courses are strongly recommended: Bact 402, Bact 414, Bact 425, Biol 351-352, Chem 480 or Chem 481-482.

Electives: A wide range of electives may be selected in consultation with the major adviser and head of the Department of Bacteriology.

BACTERIOLOGY: MEDICAL TECHNOLOGY (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Bact 250 Gen Bact	4
Bact 304 Pathogenic Bact	4
Bact 400 Seminar	2
Bact 409 Immunol and Serol	4
Bact 414 Clinical Lab Methods	4
Biol 201 Intro to Life Sci	4
Biol 202 Gen Zool	4
Math 111 Fund Math, *or* Math 140-141 Coll Alg & Anal Trig	4-5
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorg Chem and Qual Anal	5
Chem 253 Quant Anal	5

(Continued on next page)

BACT: MED. TECHNOLOGY (Continued)

Chem 275, 278 Carbon Compounds *or*
Chem 277, 278 Org Chem I 4
Eng 317 Report Writing 3

Plus completion of either of the following options:

OPTION I: Twelve months' hospital training in an approved school of medical technology, under a recognized, qualified clinical pathologist is required to qualify for registration with the American Society of Clinical Pathologists. A maximum of thirty-two semester credits can be obtained, following the junior year, for the satisfactory completion of this work in hospitals affiliated with the University of Idaho. Under this plan the student becomes a candidate for the B.S. degree when the internship is completed. Hospitals now affiliated with the University of Idaho include St. Luke's in Boise and Deaconess and St. Luke's in Spokane, Washington. Students electing option I must consult the head of the Department of Bacteriology before the end of their freshman year.

OPTION II: Those students who wish to receive the B.S. degree in the bacteriology, medical techonology option II, may do so by completing thirty-two credits during the senior year in courses approved by the major adviser and the head of the Department of Bacteriology. In addition, twelve months' hospital training in an approved school of medical technology, under a recognized, qualified clinical pathologist is required to qualify for registration with the American Society of Clinical Pathologists.

BIOLOGY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus the following courses (electives are to be chosen in consultation with the departmental adviser):

Course	Credits
Biol 201 Intro to Life Sci	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	4
Biol 351, 352 General Genetics & Lab	4
Biol 361 Biological Literature	1
Bact 250 General Bacteriology	4
Bot 311 Plant Physiology	3
Bot 425 Dev Plant Anat	4
Chem 111 Prin of Chemistry	4
Chem 112 Inorg Ch and Q Anal	5
Chem 275, 278 Carbon C & Lab	4
Zool 323 Com Embry, *or* Zool 324 Anatomy	4
Math 140, 141 Coll Alg & Anal Trig	5

BOTANY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degrees, plus the following courses (electives are to be chosen in consultation with the departmental adviser):

Course	Credits
Biol 201 Intro to Life Sci	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351, 352 General Genetics & Lab	4
Biol 361 Biological Literature	1
Bot 311 Plant Physiology	3
Bot 425 Dev Plant Anat	4
Chem 111 Prin of Chemistry	4
Chem 112 Inorg Ch & Q Anal	5
Chem 253 Quant Analysis	5
Chem 277, 278 Org Chem & Lab	4
Chem 372, 374 Org Chem & Lab	4
Math 140, 141 Coll Alg & Anal Trig	5
Math 180 Anal Geom & Calc I	5
Phys 113, 114 General Physics	8

CHEMISTRY (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Chem 103 Intro to Chemistry	4-5
or Chem 111 Prin of Chemistry	(4)
Chem 112 Inorg Chem & Qual Anal	5
Chem 253 Quant Analysis	5
Chem 277, 372 Organic Chem	6
Chem 278, 376 Organic Chem Lab	3
Chem 305-306 Physical Chem	6
Chem 307-308 Physical Chem Lab	2
Chem 409 Proseminar	1
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Phys 220-221-222 Engr Phys I-II-III	9
Engr 131 Digital Computer Progr	1-2
or Math 205 Intro to Computer Progr	(3)

This is a sub-minimal 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 OPTION* (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Chem 103 Intro to Chemistry	4-5
or Chem 111 Prin of Chemistry	(4)
Chem 112 Inorganic Chem & Qual Anal	5
Chem 253 Quant Analysis	5
Chem 277, 372 Organic Chem	6
Chem 278, 376 Organic Chem Lab	3

Chem 305-306 Physical Chem 6
Chem 307-308 Physical Chem Lab 2
Chem 454 Instrumental Analysis 4
Chem 463 Inorganic Chem 3
Chem 464 Inorganic Chem Lab 1
Math 180, 190, 200 Anal.Geom & Calc I-II-III 11
Phys 220-221-222 Engr Physics I-II-III 9
Engr 131 Digital Computer Progr 1-2
or Math 205 Intro to Computer Progr .....(3)
FL 121-122 Elementary German 8
or 171-172 Elementary Russian .....(8)

Plus two additional chemistry courses having Chem 306 as a prerequisite, or an alternate upper-division course in mathematics or physics in combination with an approved chemistry course.

*Students who complete this curriculum will be certifiable to the American Chemical Society.

CHEMISTRY: TECHNICAL LITERATURE OPTION (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Chem 103 Intro to Chemistry	4-5
or Chem 111 Prin of Chemistry	(4)
Chem 112 Inorg Chem & Qual Anal	5
Chem 277, 372 Organic Chem	6
Chem 278, 376 Organic Chem Lab	3
Chem 305-306 Physical Chem	6
Chem 307-308 Physical Chem Lab	2
Chem 409 Proseminar	1
Chem 441 Chemistry Literature	1
Chem 463 Inorganic Chem	3
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Phys 220-221-222 Engr Physics I-II-III	9
or Physics 113-114 General Physics	(8)
Eng 317 Tech & Engr Report Wr	3
Engr 131 Digital Computer Progr	1-2
or Math 205 Intro to Computer Progr	(3)
FL 101-102 Elementary French	8
or 171-172 Elementary Russian	(8)
FL 121-122 Elementary German	8
FL 223-224 Scientific German	8
or 271-272 Intermediate Russian	(8)

CHEMISTRY: TECHNOLOGICAL OPTION (B.S.)

General L & S requirements for the B.S. degree* plus:

Course	Credits
Chem 103 Intro to Chemistry	4-5
or Chem 111 Prin of Chemistry	(4)
Chem 112 Inorg Chem & Qual Anal	5
Chem 253 Quant Analysis	5
Chem 277, 372 Organic Chem	6
Chem 278 Organic Chem Lab	1
Chem 305-306 Physical Chem	6
Chem 307-308 Physical Chem Lab	2
Chem 409 Proseminar	1
Chem 441 Chemistry Literature	1
Chem 463 Inorganic Chem	3
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Phys 220-221-222 Engr Physics I-II-III	9
Acctg 131 Prin of Accounting	3
Bus 231 Statistics	4
Bus 321 Marketing	3
Bus 365 Business Law	3
*Econ 251-252 Prin of Economics	6
Eng 317 Tech & Engr Report Wr	3
Engr 131 Digital Computer Progr	2
or Math 205 Intro to Computer Progr	(3)

With the addition of one year of German or Russian, Chem 376, 454, 464, and two additonal upper-division chemistry courses having Chem 306 as a prerequisite, this degree will be certifiable to the American Chemical Society.

*If courses elected to meet the college social science requirement do not include Econ 251-252, then this course must be taken separately.

CLASSICAL STUDIES (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
Art 101 Survey of Art	2
Eng 111 Lit of Western Civ	3
FL 161-162 Elem Latin (or equiv)	8
FL 261-262 Interm Latin (or equiv)	8
FL 341-342 Elem Greek (or equiv)	8
FL 363 Survey of Classical Origins	3
Phil 101 Intro to Philosophy	3
Additional Latin courses numbered above 262	12
Plus five COURSES from the following:	
Anthr 330 World Prehistory	3
Arch 275 History of Ancient Arch	2
Arch 276 History of Medieval Arch	2
Arch 375 History of Renaissance Arch	2
Dr 467 The Theatre	3
Eng 442 Intro to Linguistics	3
FL 305 Survey of French Lit	3
FL 327 Survey of German Lit	3
FL 373 Russian Lit in Trans	3
FL 385 Survey of Spanish Lit	3
Hist 441-442 Greek & Roman History	6
Phil 309 History of Ancient Philosophy	3
Sp 421 Intro to Rhetorical Theory	2
Recommended elective:	
FL 441-442 Interm Greek	8

DRAMA (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Core Courses	Credits
Dr 102 Stage Makeup	1
Dr 105 Basics of Performance	2
Dr 190 Theatre Practice I	4
Dr 263 Technical Production	3
Dr 264 Stage Lighting	3
Dr 271 Play Anal for Production	3
Dr 272 Interm Acting	3
Dr 362 Costume for the Stage	2
*Dr 390 Theatre Practice II (only if 190 not taken)	(4)
Dr 407-408 Styles of Acting	4-6
Dr 420 Production Management	2
Dr 467-468 The Theatre	6
Dr 471-472 Directing	6

And completion of either of the options below:

A. ACTING-DIRECTING OPTION

Dr 106 Basics of Performance	2
Dr 305 Stage Movement	3
Dr 306 Advanced Acting	3
**Courses in related fields	20

B. TECHNICAL THEATRE OPTION

Dr 108 Intro to Media	2
Dr 320 Advanced Stage Lighting	2
Dr 364 Scene Design & Tech Prob	2
**Courses in related fields	20

*A student who does not become a major in drama until his junior year will take Drama 390 for 4 credits in lieu of 4 credits in 190.

**The selection of courses in related fields must be approved by the head of the department.

DRAMA (B.F.A.)

General L & S requirements for the B.S. degree *and* the core and other courses applicable to either of the options listed under the requirements for the B.A. or B.S. in drama (see above), plus the following additional requirements.

Note: Courses listed below which satisfy the foregoing requirements may be counted toward those requirements.

A. ACTING-DIRECTING OPTION

Course	Credits
Eng 111-112 Lit of Western Civ	6
Eng 267 or 268 Survey of Eng Lit	3
Eng 277 or 278 Survey of Am Lit	3
Eng 335 Shakespeare for Non-maj	3
Art 101 Survey of Art	2
Hist 101-102 Hist of Civilization	6
Hist 271 or 272 Hist of England	3
Hist 441 Greek and Roman Hist, *or* Hist 445 Medieval Europe	3
MusH 100 Music Appreciation	3
FL 363 Survey of Class Orig	3
*PE (dance)	2
*PE (fencing)	2
Psych 100 Intro to Psych	3
Psych 205 or 206 Developmental Psych	3
Soc 110 Intro to Sociology *or* 130 Social Problems	3

B. TECHNICAL THEATRE OPTION

Art 101-102 Survey of Art	4
Art 111-112 Drawing I	4
Art 121-122 Design I	4
Art 211-212 Drawing II	4
Art 223-224 Lettering & Layout	4
**Arch 155-156 Intro to Architecture	6
**Arch 275 Hist of Ancient Arch	2
**Arch 276 Hist of Medieval Arch	2
**Arch 375 Hist of Renaissance Arch	2
Hist 101 Hist of Civilization	3
MusH 100 Music Appreciation	3
MusH 128 Intro to Opera	2
**IEd 140 Woodwork I	3
**IEd 170 Machine Woodwork	3
**IEd 315 Ind Design	2
Phil 101 or 103 Intro to Phil	3
Phil 121 Phil of the Arts	3
*PE (dance)	2
*PE (fencing)	2
Soc 110 Intro to Sociology	3
***HEc 123 Textiles	3
***HEc 124 Clothing	3
***HEc 324 Flat Pattern Study	3
***HEc 327 Tailoring	3
***HEc 424 Original Design	3

*Physical Education dancing and fencing are to be taken during the freshman and sophomore years.

**Courses marked with a double asterisk will *not* be taken if the option B student is to take an emphasis in costuming.

***Courses marked with a triple asterisk *will* be taken if the option B student is to take an emphasis in costuming.

ECONOMICS (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Accg 131-132 Principles of Accounting	6
Bus 231 Statistics	4
Econ 251-252 Principles of Economics	6
Econ 321 Interm Microeconomic Anal	3
Econ 372 Interm Macroeconomic Anal	3
Math 111-112 Fund of Math, *or* Math 140-141 Coll Alg & Anal Trig, *or* Math 180 Anal Geom & Calc I	4-8
Upper-division credits in economics	18

*Upper-division credits from anthropology, geography, history, philosophy, political science, or sociology 15

*Credits earned in mathematics beyond the stated mathematics requirements above will be accepted in satisfaction of this fifteen-credit requirement.

ENGLISH (B.A.)

Note: Recommended elective for the prospective major: Eng 111-112, Literature of Western Civilization, or Eng 175, Intro to Literature.

General L & S requirements for the B.A. degree, plus:

Course	Credits
Eng 267-268 Survey of English Literature	6
Eng 435 or 436 Shakespeare	3
*American literature (selected from among Eng 277, 278, 427, 471, 472, 473, 474, or 476, or equiv)	9
*English electives, including one course each from five of the six areas listed below	15
Middle Ages — Eng 433, 434.	
Renaissance and 17th Century — Eng 437, 451,452, 453.	
Restoration and 18th Century — Eng 421, 438, 455, 456.	
Nineteenth Century—Eng 422, 464, 465, 466.	
Literary Criticism — Eng 495 strongly recommended.	
Linguistics — Eng 441, 442, 443, 496.	
Courses in related fields approved by the chairman of the Department of English	20

*Courses taken to satisfy the 33-credit departmental requirement in English toward the B.A. with a major in English must be numbered 267 or above, *excluding* Eng 313 and 317. Where specific courses are listed above with the area requirements, the department may approve equivalencies.

FRENCH (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
FL 101-102 Elem French (or equiv)	8
FL 201-202 Interm French (or equiv)	8
Upper-division courses taught in French	20
A second foreign language (elem & inter, or equiv)	16
Related fields (as approved by chairman)	20

GEOGRAPHY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Geog 103 Physical Geography	4
Geog 112 Economic Geography	3
Geog 251 Intro Cartography	3
Geog 252 Cultural Geography	3
Geog 254 World Regional Geog	2
Geog 495 Proseminar	1
Geol 101-102 Physical Geology & Lab	4

And eighteen upper-division credits in geography, plus twenty credits in related fields chosen with the approval of the head of the Department of Geography. It is normally expected that the main related fields shall be anthropology, economics, history, political science, and sociology.

GERMAN (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
FL 121-122 Elem German (or equiv)	8
FL 221-222 Interm German (or equiv)	8
Upper-division courses taught in German	20
A second foreign language (elem & interm, or equiv)	16
Related fields (as approved by chairman)	20

HISTORY (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
*Lower-division history courses selected from among Hist 101-102 (Hist of Civ), Hist 111-112 (Intro to U.S. Hist), or Hist 271-272 (Hist of England)	12
*Upper-division history courses	20
*Related fields	20

Recommended preparation: at least six credits from introductory courses in any two other social sciences.

*The choice of specific courses in the above groups must be approved by the student's adviser from the Department of History.

HISTORY (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
*Lower-division history courses selected from among Hist 101-102 (Hist of Civ), Hist 111-112 (Intro to U.S. Hist), or Hist 271-272 (Hist of England)	12
*Upper-division history courses	20
*Related fields	20

***Plus twelve credits from any combination of the following:**

Any foreign language (high-school foreign language may be substituted for this requirement at the rate of four credits per year)

(Continued on next page)

FL 313-314 Mod French Lit in Translation
FL 323-324 German Lit in Translation
FL 393-394 Masterpieces of Spanish Lit in Trans
FL 363-364 Survery of Classical Origins
FL 373-374 Russian Lit in Translation
Eng 487-488 Modern European Lit

Recommended preparation: at least six credits from introductory courses in any two other social sciences.

Students expecting to take graduate work in history are strongly urged to take the B.A. rather than the B.S. degree.

*The choice of specific courses in above groups must be approved by the student's adviser from the Department of History.

HOME ECONOMICS (B.S.H.Ec.)

A. GENERAL

Course	Credits
Chem 102 Chemistry and the Citizen	3
or	
Chem 103 Introduction to Chemistry	(4-5)
or	
Chem 111 Principles of Chemistry	(4)
or	
Phys 101 Fundamentals of Physics	(4)
Eng 101-102 English Composition	6
HEc 109 Intro to Home Economics	0
HEc 113 Art	3
HEc 123 Textiles	3
HEc 124 Clothing	3
HEc 229 Clothing Analysis	2
HEc 270 Nutrition	3
HEc 271 Foods	2
HEc 272 Food Management	2
HEc 326 Housing & Home Furnishings	3
HEc 334 Child Development	3
HEc 340 Family Relations	3
HEc 346 Principles of Home Mgm't	2
HEc 347 Home Mgm't House Residence	3
or	
HEc 349 Home Mgm't for Married Students	(3)
HEc 409 Trends and Perspective in Home Ec	1
HEc 448 Consumer Education	3
HEc 470 Problems in Nutrition	3
PE activities	2
Bact 250 General Bacteriology	4
or	
Bact 254 Public Health & Hygiene	(3)
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Zool 118 Intro Human Physiology	3
Social science elective	3
Plus foreign language or humanities	7-9

B. JOURNALISM OPTION

Jour 221 News Writing	2
Jour 222 Reporting	3
Jour 354 News Editing	3
Jour 432 Magazine Article Writing	2
Jour 472 Prin of Public Relations	3
Electives from journalism, photography or radio-TV	7

C. BUSINESS OPTION

Acctg 131-132 Prin of Accounting	6
Bus 321 Marketing	3
Econ 251-252 Principles of Economics	6
Business electives	6

HOME ECONOMICS EDUCATION (B.S.H.Ec.)

Course	Credits
Bact 250 General Bacteriology	4
Chem 103 Intro to Chemistry	4
or	
Chem 111 Principles of Chemistry	(4)
or	
Phys 101 Fund of Physical Science	(4)
Eng 101-102 English Comp	6
HEc 109 Intro to Home Economics	0
HEc 113 Art	3
HEc 123 Textiles	3
HEc 124 Clothing	3
HEc 229 Clothing Analysis	2
HEc 242 Household Equipment	3
HEc 270 Nutrition	3
HEc 271 Foods	2
HEc 272 Food Management	2
HEc 326 Housing & Home Furnishing	3
HEc 334 Child Development	3
HEc 340 Family Relations	3
HEc 346 Principles of Home Mgm't	2
HEc 347 Home Mgm't House Residence	3
or	
HEc 349 Home Mgm't for Married Students	(3)
HEc 409 Trends & Persp in Home Ec	1
HEc 448 Consumer Education	3
HEc 470 Problems in Nutrition	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Sp 131 Fundamentals of Speech	2
Zool 118 Intro to Human Physiology	3
Biol science electives	3
Humanities electives	3
PE activities	2
Social science electives	3

Plus one of the following options:

A. TEACHING OPTION

BusEd 497 Coordination Techniques	3
Ed 287 Foundations of Education	4
Psych 206 Developmental Psychology	3
AgEd 351 Principles of Vocational Ed	2
HEc 352 Methods in Teaching Home Ec	3
HEc 455 Prob in Tchg Homemaking & Adult Ed	3

HEc 457 Student Teaching 9
Vocational work experience 3
Plus approved courses for a second teaching field

B. EXTENSION OPTION

All courses in option A, except BusEd 497 and HEc 457, plus:
AgEd 348 Extension Methods 2
Advanced psych or soc 3

HOME ECONOMICS: FOOD AND NUTRITION (B.S.H.Ec.)

Course	Credits
Anl 305 Principles of Nutrition	3
Bact 250 General Bacteriology	4
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorganic Chem & Qual Anal	5
Eng 101-102 English Comp	6
HEc 109 Intro to Home Economics	0
HEc 270 Nutrition	3
HEc 271 Foods	2
HEc 272 Food Management	2
HEc 346 Principles of Home Mgm't	2
HEc 470 Problems in Nutrition	3
HEc 409 Trends & Perspectives in Home Ec	1
HEc 471 Dietetics	4
HEc 472 Food Chem and Analysis	3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Zool 118 Intro to Human Phys	3
Zool 127 Intro to Human Anatomy	3
PE activities	2
Social science electives	6

Plus one of the following options:

A. DIETETICS AND INSTITUTIONAL MANAGEMENT OPTION

Acctg 131 Principles of Acctg 3
Bus 412 Personnel Management 3
Chem 275, 278 Carbon Compounds & Lab ... 4
Chem 480 Elements of Biochemistry 3
Chem 483 Biochemistry Lab 1
Econ 251 Principles of Economics 3
HEc 113 Art 3
HEc 123 Textiles 3
HEc 334 Child Development 3
HEc 482 Quantity Cookery 3
HEc 483 Institution Administration 4
HEc 485 Institution Food Buying 2
Psych 421 Educational Psychology 3

Recommended but not required:

HEc 124 Clothing 3
HEc 347 *or* 349 Home Management 3

B. FOOD AND NUTRITION RESEARCH OPTION

Bact 402 Food and Applied Microbiology 4
Chem 253 Quantitative Analysis 5
Chem 277, 278 Organic Chem I & Lab 4
Chem 372, 374 Organic Chem II & Lab 4
Math 140, 141 Coll Alg & Anal Trig 5
Math 180 Anal Geo & Cal I 4

At least fifteen credits from the following courses:

Ag 321 Biometry 3
AgBiC 431 Chem & Phys Vitamins 3
Biol 201 Intro to Life Science 4
Chem 481-482, 483 Biochem & Lab 8
Eng 317 Tech and Engineering Report Writing 3
Proficiency in one foreign language equivalent to completion of FL 201-202 Interm French, *or* FL 221-222 Interm German 8
HEc 113 Art 3
HEc 123 Textiles 3
HEc 124 Clothing 3
HEc 334 Child Development 3
HEc 347 Home Mgm't House Residence 3
Math 190, 200 Anal Geom & Calc II-III 7

HOME ECONOMICS: CLOTHING, TEXTILES AND DESIGN (B.S.H.Ec.)

Course	Credits
Bus 323 Prin of Advertising	3
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem, *or* Phys 101 Fund of Phys Sc	4-5
HEc 109 Intro to Home Economics	0
HEc 113 Art	3
HEc 123 Textiles	3
HEc 124 Clothing	3
HEc 229 Clothing Analysis	2
HEc 270 Nutrition	3
HEc 271 Foods	2
HEc 314 Weaving	3
HEc 324 Flat Pattern Study	3
HEc 326 Housing and Home Furnishing	3
HEc 334 Child Development	3
HEc 413 Textile Design	2
HEc 423 Advanced Textiles	3
HEc 448 Consumer Education	2
HEc 340 Family Relations, *or* HEc 346 Prin of Home Mgm't, *or* Soc 320 The Family	2-3
Psych 100 Intro to Psychology	3
Soc 110 Intro to Sociology	3
Zool 118 Intro to Human Physiology	3
Zool 127 Intro to Human Anatomy	3
PE activities	2
Science electives	8
Social science electives	3

Plus one of the following options:

A. CLOTHING OPTION

HEc Tailoring 3
HEc 329 Hist of Costume & Textiles 3

(Continued on next page)

HOME ECONOMICS (Continued)

HEc 424 Original Design 3
HEc 429 Soc-Psych Aspect of Clothing 2

B. INTERIORS OPTION

HEc 426 Hist of Interiors & Furn 3
HEc 428 Family Housing 2

HOME ECONOMICS: CHILD DEVELOPMENT (B.S.H.Ec.)

Course	Credits
Anthr (approved)	3
Bact 250 Gen Bact, *or* Bact 254 Health & Hygiene	2-4
Ed 275 Elem Sch Art Meth, *or* MusT 381 Elem Sch Music Meth	2
Ed 303 Kindergarten Ed	2-3
Ed 434 Children's Lit	3
Eng 101-102 English Comp	6
HEc 109 Intro to Home Ec	0
HEc 113 Art	3
HEc 123 Textiles, *or* HEc 124 Clothing, *or* HEc 229 Clothing Analysis	2-3
HEc 234 Intro Child Development	2
HEc 270 Nutrition	3
HEc 271 Foods	2
HEc 334 Child Development	3
HEc 340 Family Relations	3
HEc 346 Principles of Home Mgm't	2
HEc 347 Home Mgm't House Residence, *or* 349 Home Mgm't for Married Students	3
HEc 409 Trend & Persp in Home Ec	1
HEc 434 Nursery Sch Participation	2-4
HEc 435 Hist and Phil of Child Dev	2
Psych 100 Intro to Psychology	3
Psych 205 Developmental Psychology	3
Psychology (approved courses)	3-6
Sp 131 Fund of Speech	2
Zool 118 Intro to Human Physiology, *or* 127 Intro to Human Anatomy	3
Humanities	9-12
PE activities	2
Science	12
Social sciences	12

*Plus Merrill-Palmer Institute, summer to a year, or Pacific Oaks Preschool Program, summer to a year.

*Students attend Merrill-Palmer or Pacific Oaks at own expense through University of Idaho cooperative plan.

INTERDISCIPLINARY STUDIES (B.A. or B.S.)

A student may present a curriculum not included among the ones listed elsewhere in this section, provided it has been approved by (a) at least one faculty member from each of the participating departments of the University, one of which must be in the College of Letters and Science, (b) the chairman of one of the L & S departments involved, and (c) the L & S Committee on Interdisciplinary Programs. The general requirements for either the B.A. or B.S. degree apply. (A student may apply for admission to this curriculum at any time; however, a program under this major should normally be presented during the sophomore year.)

INTERIOR DESIGN (B.F.A.)

Required: A total of 128 credits, including the University requirements in English and physical education, and:

Course	Credits
Arch 155-156 Intro to Architecture	8
Arch 255-256 Architectural Design I	6
Arch 263 Programs & Systems I	3
Arch 265-266 Materials & Methods	6
Arch 275-276 Hist of Ancient & Med Arch	4
Arch 359-360 Interior Design I	6
Arch 363 Programs & Systems II	2
Arch 369-370 Interiors & Materials	6
Arch 375-376 Hist of Renaissance & Mod Arch	4
Arch 459-460 Interior Design II	6
Arch 469-470 Interios & Materials II	6
Arch 498 Proseminar	3
Art 102 Survey of Art	2
Art 111-112 Drawing I	4
Eng 317 Technical & Engr Report Wr	3
HEc 123 Textiles	3
HEc 314 Weaving	2
HEc 326 Housing & Home Furnishing	3
Math 111-112 Fund of Math (or higher math)	8
Soc 110 Intro to Sociology	3

Plus electives to total 128 credits, of which at least eleven credits must be from art and nine must be from at least two of the following fields: anthropology, economics, geography, history, philosophy, political science, psychology and sociology.

Recommended art electives:

Art 223-224 Lettering & Layout 4
Art 233-234 Water Color I 4
Art 241-242 Sculpture I 4
Art 351-352 Printmaking 4

JOURNALISM (B.A.)

General L & S requirements for the B.A. degree. Plus the completion of one of the following options:

A. NEWS-EDITORIAL OPTION

Required Core Courses	Credits
Comm 120 Mass Comm in a Free Society	2
Jour 221 News Writing	2
Jour 222 Reporting	3
Jour 224 Lettering and Layout	2

Jour 354 News Editing 3
Jour 423 Public Affairs Reporting 3
Jour 455 Hist of Mass Comm 2
Jour 496 Proseminar 2

Plus at least two of the following:

Jour 366 Advertising Copy and Layout 3
Jour 432 Magazine Article Writing 2
Jour 433 Interpreting Contemp Affairs 2
Jour 472 Prin of Public Relations 3
Jour 491 Law of Mass Communications 2
Jour 492 Journalism and Public Opinion 2

Requirements in other departments:

Econ 251-252 Principles of Economics 6
Bus 323 Principles of Advertising, *or*
Jour 370 Advertising Media 2-3
History 6
Literature 6
Political science 6

Plus no fewer than fifteen upper-division credits (courses 300 and above) in anthropology, drama, economics, English, geography, history, philosophy, political science, psychology, or sociology are required. No more than thirty credits in journalism will be accepted toward the 128 required for the bachelor's degree.

B. ADVERTISING OPTION

Required Core Courses **Credits**

Comm 120 Mass Comm in a Free Society 2
Jour 221 News Writing 2
Jour 224 Lettering and Layout 2
Jour 366 Advertising Copy and Layout 3
Jour 370 Advertising Media 2
Jour 496 Proseminar 2
Rad-TV 493 Commercial Broadcasting 3
Bus 231 Statistics 4
Bus 321 Marketing 3
Bus 323 Prin of Advertising 3
Bus 422 Marketing Research and Analysis 3
Econ 251-252 Prin of Economics 6

Plus at least two of the following:

Bus 421 Marketing Problems 3
Jour 362 Retail Advertising 2
Jour 472 Principles of Public Relations 3
Jour 491 Law of Mass Communications 2
Jour 492 Journalism and Public Opinion 2
Rad-TV 287 Station Writing 3

No fewer than twelve upper-division credits (courses 300 and above) in anthropology, art, economics, English, geography, history, philosophy, political science, psychology, or sociology are required.

C. RADIO-TELEVISION NEWS OPTION

Required Core Courses **Credits**

Comm 120 Mass Comm in a Free Society 2
Jour 221 News Writing 2
Jour 222 Reporting 3
Jour 423 Public Affairs Reporting 3
Jour 455 Hist of Mass Communications 2
Jour 496 Proseminar 2
Rad-TV 141 Intro to Radio-TV Broadcasting 3
Rad-TV 285 Announcing I 2
Rad-TV 488 Cinematography for Television 3
Rad-TV 494 Radio-Television News 2

Plus three of the following:

Jour 433 Interpreting Contemporary Affairs 2
Jour 491 Law of Mass Communications 2
Jour 492 Journalism and Public Opinion 2
Photo 281 Intro to Photography 3
Rad-TV 282 Intro to Television Prod 3
Rad-TV 287 Station Writing 3
Rad-TV 493 Commercial Broadcasting 3

Requirements in other departments:

Econ 251-252 Principles of Economics 6
Bus 323 Prin of Adv. *or* Jour 370 Adv Media 2-3
History 6
Literature 6
Political science 6

Plus no fewer than fifteen upper-division credits (courses 300 and above) in anthropology, drama, economics, English, geography, history, political science, psychology, or sociology are required.

JOURNALISM (B.S.)

General L & S requirements for the B.S. degree, plus the course requirements under one of the options for the B.A. degree in journalism (see above), and the completion of at least twenty credits in a specialized subject-matter area (or a logical combination of related courses) which will constitute a minor.* The minor program must be worked out with an adviser in the minor field and approved by the chairman of the Department of Journalism.

*Students electing either the news-editorial option or the radio-television news option (options A and C under the B.A. in journalism) may substitute six upper-division credits in the minor for six credits of the fifteen upper-division credits in anthropology, drama, economics, English, geography, history, philosophy, political science, psychology, or sociology. In the event that the minor is one of these fields, nine of the fifteen credits must be in subjects listed other than the minor.

Students electing the advertising option (option B under the B.A. in journalism) may substitute six upper-division credits in the minor for six of the twelve upper-division credits in anthropology, art, economics, English, geography, history, philosophy, political science, psychology, or sociology. In the event that the minor is one of these fields, six of the twelve credits must be in subjects listed other than the minor.

LANDSCAPE ARCHITECTURE (B.L.Arch.)

Required: a total of 136 credits, including the

(Continued on next page)

LANDSCAPE ARCHITECTURE (Continued)

University requirements in English and physical education, plus:

Course	Credits
Arch 155-156 Intro to Architecture	8
Arch 257-258 Landscape Architecture I	6
Arch 263 Programs & Systems I	3
Arch 275-276 Hist of Ancient & Medieval Arch	4
Arch 285-286 Landscape Constr I-II	6
Arch 292 Plant Mat & Design	2
Arch 357-358 Landscape Architecture II	6
Arch 363 Programs & Systems II	2
Arch 375-376 Hist of Renaissance & Modern Arch	4
Arch 392 Plant Mat & Planting Design	2
Arch 457-458 Landscape Architecture III	6
Arch 467-468 Intro to City Planning	6
Arch 483 Park & Recreation Planning	2
Arch 484 Regional Landscape Planning	2
Art 111-112 Drawing I	4
Biol 201 Intro to Life Sciences	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
For 487 Forest Recreation	3
Geog 252 Cultural Geography	3
Geog 532 Recreational Geography	3
Geol 101-102 Physical Geology	4
Geol 401 Geomorphology	3
Math 111-112 Fundamentals of Math (or higher mathematics)	8
PolSc 276 American Local Government	3
Psych 100 Intro to Psychology	3

Plus electives to total 136 credits, of which at least two credits must be from art and twelve must be from at least two the following fields: anthropology, economics, geography, history, philosophy, political science, psychology, and sociology.

LATIN (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
FL 161-162 Elem Latin (or equiv)	8
FL 261-262 Interm Latin (or equiv)	8
Upper division courses in Latin	20
A second foreign language (elem & interm, or equiv)	16
Related fields (as approved by chairman)	20

LATIN AMERICAN STUDIES (B.A.)

General L & S requirements for the B.A. degree, including Spanish for the foreign language requirement, plus:

Course	Credits
Econ 477 Econ of Devel Countries	3
FL 384 Hispanic Culture & Inst (Latin American)	3
FL 387-388 Survey of Span-Am Lit	6
FL 487-488 Contemp Span-Am Lit	6
Geog 445 Geog of Latin America	3
Hist 435 Colonial Latin America	3
Hist 438 Mex Since Indep, Cent Am & Carib	3
Hist 439 Nat Latin Am: South Am Rep	3
Hist 440 Inter-American Relations	3
PolSc 483 Developing States	3

Recommended electives:

For a more rounded view of Latin America, its past and its present reality, the student is advised to take Hist 101-102 (Hist of Civ) in his freshman year, and to elect six of the following courses:

Anthr 320 Peoples of the World	3
Anthr 330 World Prehistory	3
Eng 111-112 Lit of Western Civ	6
FL 386 Surv of Spanish Lit	3
Geog 254 World Regional Geog	3
Geog 480 Political Geography	3
Hist 465-466 Soc & Cult Hist of Europe	6
Phil 411 Phil of the Social Sciences	3
PolSc 341 World Politics	3
PolSc 426 Recent Political Thought	3
Soc 312 Soc of Organization	3

LAW—COMBINED PROGRAM (B.A.-J.D. or B.S.-J.D.)

The B.A. or B.S. degree will be awarded to candidates who complete ninety-eight credits by the end of the junior year (including all general requirements for the B.A. or B.S., twelve credits in courses numbered 300 or above with the approval of their adviser), and the thirty credits in the first year of the law curriculum. Upon satisfactory completion of the law curriculum (see College of Law in the section immediately preceding the College of Letters and Science), the degree of Juris Doctor will be conferred. Students in this combined program enroll in the College of Letters and Science for their first four years (during the fourth year securing the approval also of the College of Law and supplying that college with a duplicate study list), and in the College of Law for the final two years.

MATHEMATICS (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Phys 220-221-222 Engr Phys I-II-III (this requirement is designed to acquaint the student with an area in which mathematics is applied; upon the approval of the department, substitution of other courses to meet this objective may be allowed)	9
Math 180, 190, 200 Anal Geom &	

Calc I, II, III 11
Math 184 Elements of Linear Algebra 2
Math 186 Theory of Numbers (may be waived by department) 3
Math 461 Higher Algebra 3
Math 471 Adv Calculus 3
Math 462 Higher Algebra, *or* Math 472 Adv Calculus 3

Plus twelve additional credits in mathematics courses numbered above 300, at least six of which are in courses numbered above 401 (Math 300, 320, 331, and 332 may not be applied toward this requirement).

MATHEMATICS: APPLIED MATHEMATICS OPTION (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Math 180, 190, 200 Anal Geom & Calc I, II, III	11
Math 184 Elements of Linear Algebra	2
Math 186 Theory of Numbers (may be waived by department)	3
Math 205 Intro to Computer Porgramming	3
Math 305 Digital Computers	3
Math 471 Adv Calculus	3

Plus one of the following options:

A. STATISTICS OPTION

Math 451-452 Prob Theory and Math Stat 6
bag 321 Biometry 3
Ag 406 Stat Res Methods 3
At least two courses selected from Math 370, 440, 472, 499, Ag 507 6

Plus at least six approved credits in fields where statistics is applied. These credits are not to be in applied statistics courses.

B. COMPUTER-PROGRAMMING OPTION

Math 310 Ord Dif Equations 3
Math 370 Numerical Analysis 3
Math 440 Linear Algebra 3
At least three courses selected from Math 315, 380, 451, 452, 472, 481, 482, Ag 321 9

MUSIC AND MUSIC EDUCATION (B.A. and B.Mus.)

See School of Music immediately following this College of Letters and Science section.

NAVAL SCIENCE (B.N.S.)

Course	Credits
NS 101-102 Ship Systems	6
NS 201-202 Maritime Affairs	2
NS 301-302 Navigation-Operations	6
NS 401 Naval Weapons	3
NS 406 Naval Mgm't & Leadership	3
Math 180, 190 Anal Geom & Calc I, II	8
Phys 113-114 General Physics	7
Math 205 Computer Programming *or* Bus 233 Intro to Computers	3
Hist 456 Recent Times	3
PolSc 438 Conduct of Am For Policy	3

The naval science student must complete at least eighty per cent 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 is registerd for his regular baccalaureate degree.

PHILOSOPHY (B.A. or B.S.)

Note: Students who intend to do graduate work are advised to take the Bachelor of Arts degree.

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Phil 201 Ethics	3
Phil 211 Logic	3
Phil 309 Hist of Ancient Philosophy	3
Phil 310 Hist of Modern Philosophy	3
*Philosophy electives (upper-division)	15
*Related fields (humanities, social sciences, and sciences)	20

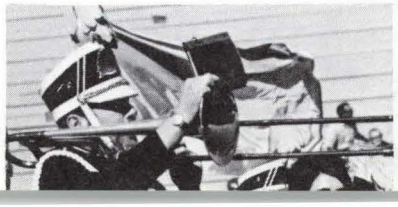
*To be selected with the approval of the chairman of Philosophy.

PHYSICS (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorg Chem and Qual Anal, *or* Chem 114 Gen Chem	4-5
Math 180, 190, 200 Anal Geom and Calc I-II-III	11
Phys 220-221-222 Engineering Physics I-II-III	9
Phys 321-322 Analytical Mechanics	6
Phys 341-342 Electricity and Magnetism	6
Phys 360 Intro to Modern Physics	3
Phys 499 Directed Study	1
*Additional upper-division physics courses (*excluding* Phys 304 and 314)	12
Mathematics (upper-division)	6

*Three upper-division physics courses must include lab (*excluding* Phys 314).



PHYSICS (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorg Chem and Qual Anal, *or* Chem 114 Gen Chem	4-5
Math 180, 190, 200 Anal Geom and Calc I-II-III	11
Phys 220-221,222 Engineering Physics I-II-III	9
Phys 321-322 Analytical Mechanics	6
Phys 341-342 Electricity and Magnetism	6
Phys 360 Intro to Modern Physics	3
Phys 499 Directed Study	1
*Additional upper-division physics courses (*excluding* Phys 304 and 314)	18
Mathematics (upper-division)	6

*Three upper-division physics courses must include lab (*excluding* Phys 314).

PHYSICS (B.Phys.)

Course	Credits
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 112 Inorg Chem & Qual Anal, *or* Chem 114 Gen Chem	4-5
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Phys 220-221-222 Engineering Physics I-II-III	9
Phys 321-322 Analytical Mech	6
Phys 341-342 Electr & Magnetism	6
Phys 351 Elem Quantum Mech	3
Phys 360 Intro to Modern Phys	3
Phys 411 Physical Instr	3
Phys 431 Therm & Kinetic Theory	3
Phys 443 Optics	4
Phys 499 Directed Study	1
Physics courses (upper-division *excluding* Phys 304 and 314)	3
Mathematics (upper-division)	11

Candidates for the degree of Bachelor of Physics must complete Eng 101-102, English Composition; one physical education activity course each semester for two semesters; six credits in social sciences (anthropology, economics, history, philosophy, political science, or sociology); and the equivalent of one year of a modern foreign language (French, German, Italian, or Russian).

Students with superior preparation are reminded that they may challenge any undergraduate course or prerequisite. Contact physics office for details.

POLITICAL SCIENCE (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
PolSc 105 Elem of Political Science	3
Introductory courses in other social sciences	6
PolSc 425 World Political Thought	3
PolSc 426 Recent Political Thought	3
Additional credits in political science in courses numbered 150 or above, including at least fourteen credits in upper-division courses	20
Related fields (upper division)	20

Note: The choice of specific courses in the above groups must be approved by the department chairman.

POLITICAL SCIENCE (B.S.)

General L & S requirements for the B.S. degree, plus:

Course	Credits
PolSc 105 Elem of Political Science	3
Introductory courses in other social sciences	6
Math 111 Fund of Math *or* Math 140 Coll Alg, *or* Math 180 Anal Geom & Calc I	3-4
PolSc 425 World Political Thought	3
PolSc 426 Recent Political Thought	3
Additional credits in political science in courses numbered 150 or above, including at least fourteen credits in upper-division courses and including PolSc 435, Pol Res Meth & Appr	20
Upper-division courses in realted fields (six of these credits — which may include a maximum of three lower-division credits — must be in courses dealing either with research methods in the behavioral sciences, statistics, data processing, or computer programming, e.g., Ag 321, 406 AgEc 494, Bus 231, 432, Econ 432, Phil 411, 412, Psych 317, 418, Soc 410, 411)	20

Note: The choice of specific courses in the above groups must be approved by the department chairman.

PRE-DENTAL STUDIES (Two-Year Program)

Students planning on attempting admission to a college of dentistry after completing the minimum of two years of college pre-dental education should follow the schedule of courses listed below. (Students not having high school chemistry take Chem 103 in place of Chem 111.)

Course	Credits
Biol 201 Intro to Life Sc	4
Biol 202 Gen Zoology	4
Chem 111 Prin of Chemistry	4
Chem 112 Inorg Chem & Q Anal	5
Chem 277, 278 Organic Chem I & Lab	4

Chem 372, 376 Organic Chem II & Lab 5
Eng 101-102 English Composition 6
Math 140, 141 Coll Alg & Anal Trig 5
Phys 113-114 General Physics 8
Social science 6
Physical education activities 2
Foreign language 8
Electives 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 I for pre-dental students reads as follows: *Option I* — Completion of the first year of dental study at an approved college of dentistry.

PRE-MEDICAL STUDIES (B.S.Pre-Med.)

Students not having high school chemistry take Chem 103 in place of Chem 111. Where electives are specified in the first three years, the following are suggested: Math 180, 190, 200 (Analytic Geom & Calc I, II, III), and Phys 220 (Engr Phys).

FIRST THREE YEARS

Course	Credits
Biol 201 Intro to Life Sc	4
Biol 202 General Zoology	4
Chem 111 Prin of Chemistry	4
Chem 112 Inorg Chem & Q Anal	5
Chem 253 Quant Anal	5
Chem 277, 278 Org Chem I & Lab	4
Chem 372, 376 Org Chem II & Lab	5
Eng 101-102 English Composition	6
Math 140, 141 Coll Alg & Anal Trig, *or* Math 111-112 Fund of Math	5-8
Phys 113-114 Gen Phys, *or* Phys 221-222 Engr Phys II-III	6-8
Zool 323 Comp Vert Embry	4
Zool 324 Comp Vert Anat	4
Foreign language	14-16
Social science	6
Physical ed activities	2
Electives to complete 96 credits for first three years	11-18

SENIOR YEAR

Completion of either of the options below:

Option I — Completion of the first year of medical study at an approved college of medicine.

Option II — Completion of sufficient credits to total 128, including at least thirty-six credits in courses numbered 300 or above, and at least twelve of these upper-division credits must be in the social studies and/or humanities. One course in mathematics or statistics beyond Math 111-112 or 140-141. Suggested senior-year electives: Biol 351 or PISc 314; Chem 305-306, and 307-308 or 302, 303; Chem 481-482 or 480; Zool 481 or 488 or 489 or 315; Zool 416.

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 individual will transfer should be investigated by the student to assure inclusion of courses which meet those requirements.

The following programs are suggested for students who plan to transfer to a school of nursing.

ONE-YEAR AND ONE SUMMER PROGRAM

	Credits
Bact 250 Gen Bacteriology	4
Biol 100 Gen Biology	4
Chem 103 Intro to Chem, *or* Chem 111 Prin of Chem	4-5
Chem 114 Gen Chem, *or* Chem 275-276 Carb Comp & Lab	4
Eng 101-102 English Comp	6
HEc 270 Nutrition	3
PE 288 First Aid	2
Psych 100 Intro to Psych	3
Sp 131 Fund of Speech	2
Soc 110 Intro to Soc	3
Humanities	2
Phys ed activities	2
	39-40

TWO-YEAR PROGRAM

	Credits
Bact 250 Gen Bacteriology	4
Biol 100 Gen Biology	4
Chem 103 Intro to Chem *or* Chem 111 Prin of Chem	4-5
Chem 114 Gen Chem, *or* Chem 275-276 Carb Comp & Lab	4
Eng 101-102 English Comp	6
HEc 270 Nutrition	3
*HEc 334 Child Development	3
*HEc 340 Family Relations	2
Psych 100 Intro to Psych	3
Psych 206 Develop Psych	3
Sp 131 Fund of Speech	2
Soc 110 Intro to Soc	3
Zool 118 Intro Human Phys	3
Zool 127 Intro Human Anat	3
Humanities	11
Phys ed activities	4
	62-63

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PRE-NURSING STUDIES (Continued)

(A total of twenty-one credits in humanities and social science is required. At least six credits must be earned in each field.)

*HEc 340 and 334 are highly recommended but are not required. Students who have completed the twenty-one hours of humanities and social sciences should then select 340 and/or 334 as desirable electives.

PRE-PHYSICAL THERAPY (B.S.)

General L & S requirements for the B.S. degree, plus the following courses (electives are to be chosen in consultation with the adviser):

Course	Credits
Biol 201 Intro to Life Sci	4
Biol 202 General Zoology	4
Chem 103 Intro to Chem *or* Chem 111 Prin of Chem	4
Math 140, 141 College Alg & Anal Trig	5
Phys 113, 114 General Physics	8
Psych 100 Intro to Psych	3
Psych 205-206 Devel Psych	6
Psych 301 Excep Indiv	3
Psych 311 Ab Psych, *or* Psych 420 Prin & Prac in Guid	3
Psych 461 Psych of Pers	3
PE 252 Elem Sch Phys Ed	2
PE 419 Hum Kinesiology	3
PE 424 Adap & Corr Phys Ed	2
Zool 118 Intro Human Anat	3
Zool 127 Intro Human Phys	3
Zool 324 Comp Vert Anat	4

PSYCHOLOGY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
*Mathematics (minimum)	4
Biol 201 Intro to Life Sci	4
Biol 202 Gen Zoology	4
Psych 100 Intro to Psych	3
Psych 201-202 Gen Exper Psych	8
Psych 317 Stat for Behav Sc	3
Psych 490 Learning	3
Psych 498 Hist & Systems	3
Psych 305 Compar Psych *or* Psych 341 Phys Psych *or* Psych 455 Psych of Motivation	3
Psych 311 Abnorm Psych, *or* Psych 320 Soc Psych, *or* Psych 461 Psych of Personality	3

*The alternatives for the mathematics requirements will be determined on the basis of high school mathematics 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. It is recommended that credits in upper-division courses in the major be kept reasonable close to the college minimum of twenty.

RADIO-TELEVISION (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Comm 120 Mass Comm in Free Society	2
Jour 491 Law of Mass Comm	2
Rad-TV 141 Broadcasting	3
Rad-TV 253 Rec & Broadcasting Tech	3
Rad-TV 282 Intro to TV Prod	3
Rad-TV 287 Station Writing	2
Rad-TV 322 Ed Uses of Rad-TV	2
Rad-TV 488 Cinematography for TV	3
Rad-TV 491 Announcing II	2
Rad-TV 492 Adv TV Prod	3
Rad-TV 493 Commercial Broadcasting	3
Rad-TV 494 Radio-TV News	3
Additonal courses in communications and/or drama	10
Plus the following courses in other departments:	
Advertising	2-3
Speech	2
Literature	6
Social sciences	6

In addition to the above, candidates for the B.S. degree are required to complete at least twenty credits in a specialized subject-matter area (or a logical combination of related courses) which will constitute a minor. The minor program must be worked out with an adviser in the minor field and approved by the chairman of Radio-Television.

SOCIOLOGY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus:

Course	Credits
Anthr 110 Intro to Phys Anthro & Arch	3
Anthr 120 Intro to Social Anthr	3
Soc 110 Intro to Sociology	3
Soc 130 Social Problems	3
Soc 411 Contemp Sociological Theory	3
Sociology electives (upper-division)	17
Related fields (including one of the following: Hist 433-434, Hist 465, 466, Phil 309, 310, or PolSc 426)	20

Note: The choice of specific courses in the above groups must receive the approval of the head of the Department of Sociology/Anthropology. *Recommended preparation:* at least six credits from

introductory courses in any two other social sciences.

SOCIOLOGY: SOCIAL WORK (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree and the requirements for the major in sociology (see above), plus:

Course	Credits
Bact 254 Public Health & Hygiene	3
Psych 301 The Exceptional Indiv	3
Psych 311 Abnormal Psychology	3
Psych 461 Psych of Personality	3
Soc 240 Intro to Social Welfare	3
Soc 241 Org of Social Services	3
Soc 320 The Family	3
Soc 330 Soc of Youth, *or* Soc 331 Criminology	3
Soc 410 Social Research	3
Soc 440 Meth of Social Work	3
Soc 441 Field Experience	3

SPANISH (B.A.)

General L & S requirements for the B.A. degree, plus:

Course	Credits
FL 181-182 Elem Spanish (or equiv)	8
FL 281-282 Interm Spanish (or equiv)	8
Upper-division courses taught in Spanish	20
A second foreign language (elem & interm, or equiv)	16
Related fields (as approved by chairman)	20

SPEECH (B.A.)

General L & S requirements for the B.A. degree plus the following courses (electives must be approved by the student's adviser):

Course	Credits
Sp 109 Intercoll Forensics, *or* Sp 262 Parliamentary Law & Proc	1-2
Sp 131 Fundamentals of Speech	2
Sp 232 Informative Speech	3
Sp 331 Persuasive Speech	3
Sp 362 Discussion & Conf Meth	2
Sp 370 Speech & Social Control	3
Sp 391 Prop & Public Opinion	2
Sp 421 Intro to Rhet Theory	3
Sp 422 *or* 424 Public Address	3
Sp 480 General Semantics, *or* Sp 488 Theory in Communication	3
Additional courses in speech (to total thirty credits)	4-5
Related fields	20

SPEECH (B.S.)

General L & S requirements for the B.S. degree, plus the following courses (electives must be approved by the student's adviser):

RHETORIC & PUBLIC ADDRESS OPTION

Course	Credits
Sp 109 Intercoll Forensics	1
Sp 111 *or* 112 Great Speakers	2
Sp 131 Fundamentals of Speech	2
Sp 209 Argumentation	3
Sp 232 Informative Speech	3
Sp 262 Parliamentary Law	2
Sp 331 Persuasive Speech	3
Sp 362 Discussion & Conf Meth	2
Sp 391 Prop & Public Opinion	2
Sp 421 Intro to Rhet Theory	3
Sp 422, 424 Public Address	6
Sp 488 Theory in Communication	3
Related fields (including at least 6 cr *each* in history and political science, and 3 cr in philosophy)	28

SPEECH COMMUNICATION OPTION

Emphasis in public relations, business communication, language arts, or general communication.

Course	Credits
Sp 131 Fundamentals of Speech	2
Sp 362 Discussion & Conf Meth	2
Sp 370 Speech & Social Control	3
Sp 391 Prop & Public Opinion	2
Sp 421 Intro to Rhet Theory	3
Sp 480 General Semantics	3
Sp 488 Theory in Communication	3
Additional course in speech	8-14

Plus courses in English, business, communications, philosophy, or behavioral sciences to bring the total to sixty credits.

ZOOLOGY (B.A. or B.S.)

General L & S requirements for either the B.A. or B.S. degree, plus the following courses (electives are to be chosen in consultation with the departmental adviser).

Course	Credits
Biol 201 Intro to Life Sci	4
Biol 202 General Zoology	4
Biol 203 General Botany	4
Biol 331 General Ecology	3
Biol 351, 352 General Genetics & Lab	4
Biol 361 Biological Literature	1
Chem 111 Principles of Chemistry	4
Chem 112 Inorg Chem & Q Anal	5
Chem 253 Quant Anal	5
Chem 277, 278 Org Ch & Lab I	4
Chem 372, 374 Org Ch & Lab II	4
Math 140, 141 Coll Alg & Anal Trig	5
Math 180 Anal Geom & Calc I	5
Phys 113, 114 General Physics	8
Zool 315 General Physiology	4
Zool 323 Comp Vert Emb	4

School of Music of the College of Letters and Science

Floyd H. Peterson, Director (206 Music Bldg.); Norman R. Logan, Secretary of the Music Faculty.

A DEPARTMENT OF MUSIC was established at the University of Idaho in 1893. The School of Music was organized as an administrative unit within the College of Letters and Science in 1969.

The School of Music has three objectives: (1) to prepare musicians for professional careers in teaching, performance, composition, musical scholarship, and related fields; (2) to encourage the best in musical environment for the University and the state of Idaho; and (3) to conduct and disseminate research in the various fields of music.

In the School of Music, students learn through performance, listening, analysis, and creation. Curricular emphasis is on the understanding of musical style and techniques of all musical eras, including the present; and on achieving balance and unity between the aesthetic and the practical.

The School of Music provides professional preparation for music while also operating within the structure of the College of Letters and Science in contributing to broad liberal education. The University of Idaho is accredited by the Northwest Association of Secondary and Higher Schools, and the National Council for the Accreditation of Teacher Education.

The School of Music is a full member of the National Association of Schools of Music and the standards of the school are in accordance with those set by the association.

FACILITIES

The music building houses faculty studio-offices, instrumental and vocal facilities, a record and score library, classrooms, a music education materials center, a record and tape listening center, a recital hall, and student lounges. A second building containing private practice facilities is nearby. In addition, complete recording and radio-television facilities are maintained on the campus. All equipment is maintained by professional staff. The school has two performance pipe organs and provides organ and grand piano practice instruments for students taking private lessons in these areas.

PERFORMANCE OPPORTUNITIES

The University of Idaho performing groups are open to all students. Nonmusic majors comprise as much as half of the membership of some. Many of these groups participate in tours of Idaho and the Northwest. All University of Idaho students may take these courses for credit.

University Symphony Orchestra. The orchestra is comprised of students, faculty members, and residents of the community. The orchestra appears several times yearly performing music from the standard repertoire, and participates in opera productions and in accompanying outstanding faculty, student or guest artists and appears in tours throughout the area.

Concert Choir. The concert choir, popularly known throughout the Northwest as the "Vandaleers," performs often during the year, but is perhaps best known for its traditional Christmas concert. The choir participates in tours of the area.

University Singers. A large choral group open to any interested singer. The "Singers" perform a variety of music and often present concerts of major choral repertoire.

University Wind Ensemble. A select group made up of forty to fifty wind and percussion players. The repertoire of this band is drawn extensively from the newly emerging twentieth century literature. The wind ensemble is well known throughout the Northwest from its many tour appearances.

University Concert Band. A large organization for non-music majors as well as majors. This group performs music from the entire band repertoire.

Vandal Marching Band. The famous "Vandals Band," well known for its precision marching, appears at University of Idaho games in Moscow, and often travels with the football team to away games. Smaller pep bands are formed for appearances at basketball games.

University Jazz Lab Band. An exciting and "swinging" group, the lab band performs regularly, sponsors a festival of high school jazz bands, and undertakes to explore the development of the jazz movement.

University Brass Choir. A group devoted to study and performance of the vast literature for the brass instruments.

Chamber Music. Regular participation is encouraged in such smaller groups as string quartets, woodwind or brass quintets. These groups perform in concert and rehearse under faculty supervision.

Opera Workshop. A rapidly expanding program at Idaho, the opera workshop deals with the problems of musical theater production and presents several programs of "scenes" in addition to a large annual complete production of a standard work.

Collegium Musicum. A group which is devoted to the performance of music not commonly heard in the standard repertoire. The music performed is often taken from the periods before 1700.

Percussion Ensemble. An ensemble which performs music from the rapidly expanding percussion repertoire of the twentieth century.

MINOR IN MUSIC

Students in other fields may, in consultation with the School of Music, arrange a minor in music. Basic courses in the minor are: Elements of Music Theory (MusC 121-122), and Music in Western Civilization (MusH 321-322).

TRANSFER STUDENTS

Because the various curricula in the School of Music are planned in continuity with basic courses taken during the first year, students planning to major in this school at the University of Idaho are strongly advised to enter the University as freshmen. Students transferring from other institutions with preparation differing from the University pattern may be admitted to an appropriate curriculum in music or music education; however, it may be necessary for such students to

take more than the minimum number of credits for a degree.

CONCERTS AND RECITALS

The School of Music plans an annual series of concerts and recitals by faculty artists, outstanding students, student and faculty performing groups, and guest musical attractions. In addition, there is a regular series of daytime concerts in the music building. All concerts are open to the public without charge. Special events such as opera and certain visiting groups charge a small admission fee.

FINANCIAL AIDS

Information about scholarships and financial aids for music students can be obtained from the director of student financial aids.

CURRICULA

The School of Music offers curricula leading to the degrees Bachelor of Music, Bachelor of Arts, Master of Arts, Master of Music, and Master of Arts in Teaching Music.

The Bachelor of Music degree is offered with majors in vocal or instrumental applied music, composition, instrumental music education, vocal music education, or a combination of vocal and instrumental music education. The Bachelor of Music degree is a professional music degree and is the normal precedent for graduate work in music.

The Bachelor of Arts is offered with majors in applied music (performance), music history and literature, and music theory and composition. The B.A. emphasizes a broad liberal education and is not professionally oriented nor is it the normal route to certification as a public school music teacher.

General and specific requirements for the undergraduate curricula are listed below. Recommended four-year curriculum sequences can be obtained from the office of the School of Music. Consult the Graduate Bulletin for requirements for the M.A., M.Mus., or the M.A.T.Mus. degrees.

GENERAL REQUIREMENTS FOR ALL B.A. AND B.MUS. DEGREES

Organized Music. Regular participation is required each academic term in one of the large choral or instrumental groups.

Keyboard Proficiency. Minimum keyboard proficiency for all music majors is met by satisfactory completion of MusC 133, Theory Keyboard Laboratory. Certain curricula may have additional requirements which are included in the School of Music handbook. Students should confer with their adviser for specific requirements appropriate to their curriculum.

Academic Junior Standing (AJS). Each music major must be admitted into AJS by the music faculty before he 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 twelve 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 must have passed the requirements which are required by his 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 which 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 specified number of musical events each semester as a part of their musical development. In order to certify this attendance, registration in MusX 140, Convocation, is required during each semester of residence. It is a graduation requirement that all B.A. and B.Mus. candidates receive a passing grade in MusX 140 in all but one semester of their residence at the University of Idaho.

BASIC REQUIREMENTS FOR THE B.A. DEGREE IN THE SCHOOL OF MUSIC

The following are the basic requirements which all students taking the degree of Bachelor of Arts in the School of Music must meet. The additional requirements for each major (curriculum) are listed separately below.

Course	Credits
Eng 101-102 English Composition	6
Physical education activities	2
Humanities (L & S humanities requirement, plus courses from art, architecture, dance, drama, or literature to total 18 cr)	18
Science (L & S science requirement)	9-12
Social science (L & S social science requirement, plus additional social science courses to total 12 cr)	12
Foreign language (L & S foreign language requirement)	0-16
MusC 133 Theory Keyboard Lab	1
MusX 140 Convocation	0
MusC 141 Musicianship & Music Lit	4
MusC 142, 241, 242 Theory I, II, III	11
MusH 144, 243, 244 History I, II, III	6
MusC 341 20th Century Music Theory & Lit	4

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.)

Basic requirements for the B.A. degree in the School of Music, plus the following:

Course	Credits
MusA 101 and/or 301 (2 cr each semester) Applied Music	16
One of the following courses	2
MusC 323 Tonal Counterpoint	
MusC 324 Modal Counterpoint	
MusC 325 Composition	
MusC 327 Instrumentation	
MusC 328 Choral Arranging	
MusH Special period course	
Electives to total 128 cr for the degree	----

MUSIC: HISTORY AND LITERATURE (B.A.)

Basic requirements for the B.A. degree in the School of Music, plus the following:

Course	Credits
MusA 101 and/or 301 (1 cr each semester) Applied Music	8
MusC 323 or 324 Tonal or Modal Counterpoint	2
MusC 327 Instrumentation	2
MusH Special period course	4
Music history electives	2
Electives to total 128 cr for the degree	--

MUSIC: THEORY (B.A.)

Basic requirements for the B.A. degree in the School of Music, plus the following:

Course	Credits
MusA 101 and/or 301 (1 cr each semester) Applied Music	8
MusC 323 and 324 Tonal and Modal Counterpoint	4
MusC 325 Composition	2
MusC 327 Instrumentation	2
MusC 427 Orchestration	2
Electives to total 128 cr for the degree	--

BASIC REQUIREMENTS FOR B.MUS. DEGREE

The following are the basic requirements which all students taking the degree of Bachelor of Music must meet. The additional requirements for each major curriculum are listed separately below.

Course	Credits
Eng 101-102 English Composition	6
Physical education activities	2
Organized music — elect from 103, 104, 105, 106, 303, 304, 305, or 306 (registration is required each academic session in residence)	8
MusA 101 Applied Music (major area)	12
MusC 133 Theory Keyboard Lab	1
MusX 140 Convocation (each academic session in residence)	0
MusC 141 Musicianship and Music Lit	4
MusC 142, 241, 242 Theory I, II, III	11
MusH 144, 243, 244 History I, II, III	6
MusC 341 20th Century Music Theory & Lit	4
MusC 323 Tonal Counterpoint	2
MusA 387 Conducting	2

MUSIC: APPLIED INSTRUMENTAL (B.Mus.)

Basic requirements for the B.Mus. degree, plus the following:

Course	Credits
MusA 101 Applied Music (secondary field)	4
MusA 265 and/or 365 Chamber Ensemble (instr)	4
MusA 301 Applied Music (instr)	12
MusC 324 Modal Counterpoint	2
MusC 326 Composition	2
MusC 327 Instrumentation	2
MusA 388 Conducting	2
MusH Special period course	2
MusC 427 Orchestration	2
Courses acceptable toward the L & S general requirements for the B.A., not counting courses in music, English composition, or physical education	26
*Additional music courses	4
Electives to total 128 cr for the degree	--

*Keyboard majors must take MusH 431 and MusT 433; other instrumentalists should elect music literature or pedagogy courses appropriate to their major field.

MUSIC: APPLIED VOCAL (B.Mus.)

Basic requirements for the B.Mus. degree plus the following:

Course	Credits
MusA 101 Applied Music (secondary field)	4
MusA 301 Applied Music (voice)	12
MusC 324 Modal Counterpoint	2
MusC 326 Composition	2
MusC 328 Choral Arranging	2
MusA 388 Conducting	2
MusH Special period course	2
MusH 435 Solo Vocal Literature	2
MusT 437 Vocal Pedagogy	2
Musical ensembles (1-3 cr in MusA 280/480, and 1-3 cr in MusA 265/365, vocal or collegium)	4
Foreign language (two years of one foreign language, or one year each of two foreign languages)	16
Courses acceptable toward the L & S general requirements for the B.A., not counting courses in music, English composition or physical education	10
Electives to total 128 cr for the degree	--

MUSIC: COMPOSITION (B.Mus.)

Basic requirements* for the B.Mus. degree, plus the following:

Course	Credits
MusA 101 Applied Music (secondary fields)	4
MusT 251 Stringed Instr Tech	1
MusT 252 Reed Instr Tech	1
MusT 253 Brass Instr Tech	1
MusT 254 Flute and Perc Tech	1
MusA 301 Applied Music (major field)	2
MusC 324 Modal Counterpoint	2
MusC 326 Composition	2
MusC 327 Instrumentation	2
MusA 388 Conducting	2
MusC 420-421 Adv Tonal & Modal Counterpoint	4
MusC 423-424 Adv Composition	4
MusC 427 Orchestration	2
Courses acceptable toward the L & S general requirements for the B.A., not counting courses in music, English composition, or physical education	26
Electives to total 128 cr for the degree	--

*Composition majors may substitute four credits in music electives for four of the basic eight credits required in organized music courses.

MUSIC EDUCATION: INSTRUMENTAL (B.Mus.)

Basic requirements for the B.Mus. degree, plus the following:

Course	Credits
MusA 101/301 Applied Music (7-9 cr in secondary field and 2-4 cr at the upper division level in major instrument)	11
MusT 251 String Instr Tech	1
MusT 252 Reed Instr Tech	1
MusT 253 Brass Instr Tech	1
MusT 254 Flute and Perc Tech	1
MusC 327 Instrumentation	2
MusT 381 Elem Sch Mus Meth I	2
MusT 383 Music in the Sec Sch	3
MusT 386 Instr Mus in the Sec Sch	2
MusH Special period course	2
Psych 100 Intro to Psychology	3
Psych 205, 206, or 421 Develop or Ed Psych	3
Ed 287 Foundations of Ed	4
Ed 314 Gen Secondary Sch Meth	2
Ed 432 Music Student Teaching	9
Additional English (including Lit)	6
Social Science (including Am Hist or Govt)	6
Science and/or math (biol, physical, or earth sc only)	8
Electives to total 128 cr for the degree	--

MUSIC EDUCATION: VOCAL (B.Mus.)

Basic requirements for the B.Mus. degree, plus the following:

Course	Credits
MusA 101/301 Applied Music (7-9 cr in secondary field and 2-4 cr at the upper-division level in piano, organ, or voice)	11
MusA 280 and/or 480 Opera Workshop	1
MusC 328 Choral Arranging	2
MusT 381-382 Elem Sch Mus Meth I, II	3
MusT 383 Music in the Sec Sch	3
MusT 385 Choral Music Education	2
MusH Special period course	2
Psych 100 Intro to Psychology	3
Psych 205, 206, or 421 Develop or Ed Psych	3
Ed 287 Foundations of Ed	4
Ed 314 Gen Secondary Sch Methods	2
Ed 432 Music Student Teaching	9
Ed 445 Student Teaching Seminar	0
Additional English (including Lit)	6
Social science (including Am Hist or Govt)	6
Science and/or math (biol., physical or earth sc only)	8
Electives to total 128 cr for the degree	--

MUSIC EDUCATION: VOCAL-INSTRUMENTAL (B.Mus.)

Basic requirements for the B.Mus. degree, plus the following:

Course	Credits
MusA 101/301 Applied Music (7-9 cr in secondary field and 2-4 cr at the upper-division level in the major field, at least one cr must be in private voice or voice class)	11
MusT 251 String Instr Tech	1
MusT 252 Reed Instr Tech	1
MusT 253 Brass Instr Tech	1
MusT 254 Flute and Perc Tech	1
MusC 327 Instrumentation and/or MusC 328 Choral Arr	2
MusT 381-382 Elem Sch Mus Meth I-II	3
MusT 383 Mus in the Secondary School	3
MusT 385 Choral Mus in the Sec Sch	2
MusT 386 Instr Mus in the Sec Sch	2
MusH Special period course	2
Psych 100 Intro to Psychology	3
Psych 205, 206, or 421 Develop or Ed Psych	3
Ed 287 Foundations of Ed	4
Ed 314 Gen Sec Sch Meth	2
Ed 432 Music Student Teaching	9
Ed 445 Student Teaching Seminar	0
Additional English (including Lit)	6
Social science (including Am Hist or Govt)	6
Science and/or math (biol, physical, or earth sc only)	8
Total: 130 cr for the degree	

SECONDARY APPLIED MUSIC DISTRIBUTION FOR THE MUSIC EDUCATION CURRICULA

A. **Music Education: Vocal** **Credits**

If the major instrument is:

1. Voice 14-16
   - 4-7 cr in keyboard instruments*
   - 0-5 cr in elective applied music
2. Piano, organ, or harpsichord .. 14-16
   - 4-8 cr in voice**
   - 0-5 cr in elective applied music

B. **Music Education: Instrumental**

If the major instrument is:

1. Violin, viola, cello, or string bass 14-16
   - 2 cr in a woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a secondary string instrument
   - 1-3 cr in elective applied music*
2. Flute, oboe, clarinet, saxophone,*** or bassoon . 14-16
   - 2 cr in a secondary woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a string instrument
   - 1-3 cr in elective applied music*
3. French horn, trumpet, trombone, euphonium,**** or tuba ... 14-16
   - 2 cr in a woodwind instrument
   - 2 cr in a secondary brass instrument
   - 2 cr in a string instrument
   - 1-3 cr in elective applied music*
4. Piano, organ, or harpsichord .. 14-16
   - 2 cr in a woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a string instrument
   - 1-3 cr in elective applied music*

C. **Music Education: Vocal-Instrumental**

If the major instrument is:

1. Violin, viola, cello, or string bass 14-15
   - 3 cr in voice**
   - 2 cr in a woodwind instrument
   - 2 cr in a brass instrument
   - 1 cr in a secondary string instrument
   - 0-1 cr in elective applied music*
2. Flute, oboe, clarinet, saxophone,*** or bassoon 14-15
   - 3 cr in voice**
   - 1 cr in a secondary woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a string instrument
   - 0-1 cr in elective applied music
3. French horn, trumpet, trombone, euphonium,**** or tuba ... 14-15
   - 3 cr in voice**
   - 2 cr in a woodwind instrument
   - 1 cr in a secondary brass instrument
   - 2 cr in a string instrument
   - 0-1 cr in elective applied music**
4. Voice 14-15
   - 2 cr in a woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a string instrument
   - 1-3 cr in elective applied music*
5. Piano, organ or harpsichord ... 14-15
   - 3 cr in voice**
   - 2 cr in a woodwind instrument
   - 2 cr in a brass instrument
   - 2 cr in a string instrument

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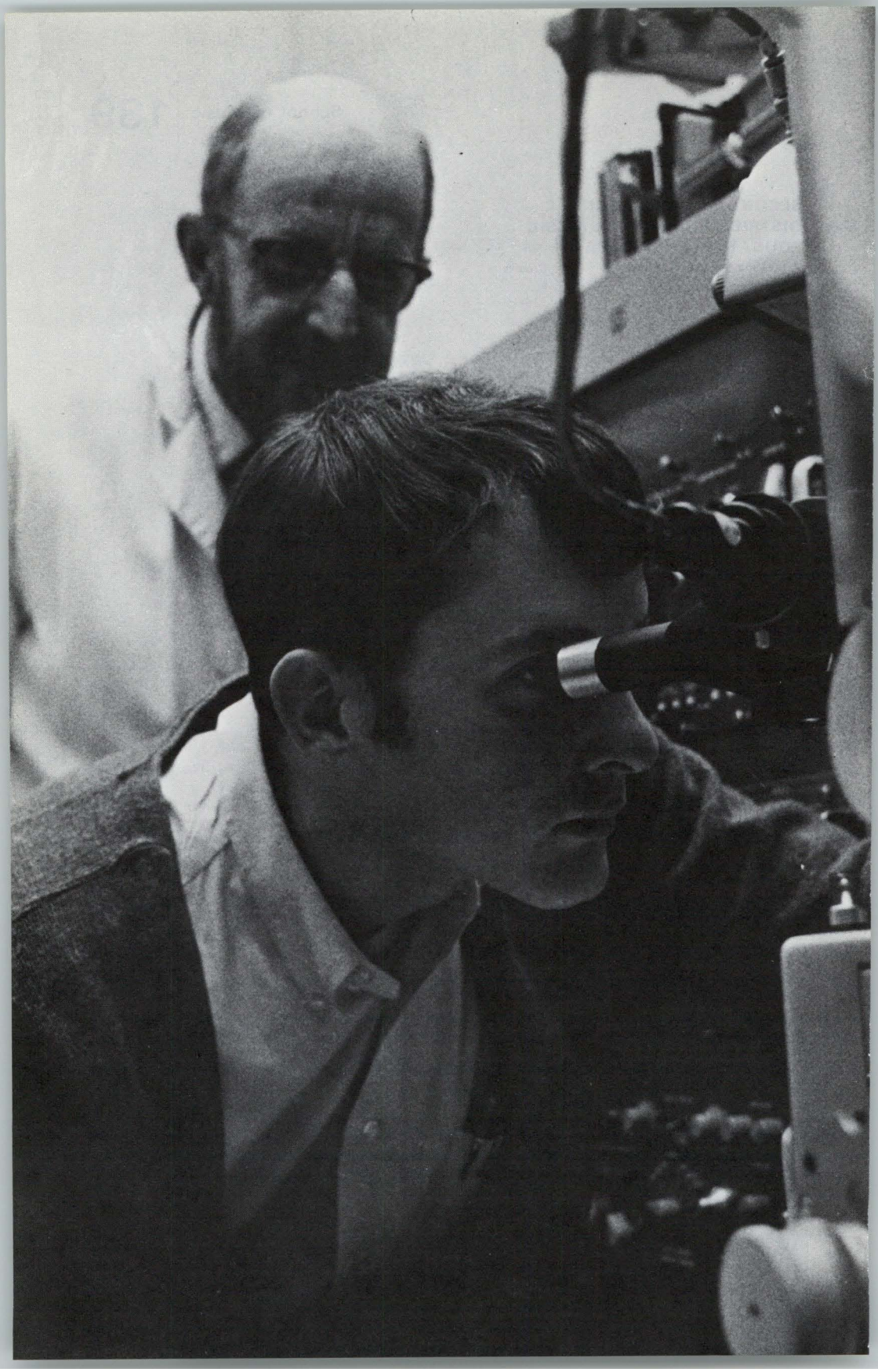
*May include MusA 101, Piano, or 145-146, Piano Class, as required for piano proficiency.

**May include one semester of MusA 147-148, Voice Class.

***Saxophone majors may take up to 8 cr in another woodwind as part of the major instrument requirement. In this event, another woodwind instrument must be selected for secondary work.

****Euphonium majors may take up to 8 cr in trombone as part of the major instrument requirement. In this event, another brass instrument must be selected for secondary work.



College of Mines

R. R. Reid, Dean (206 Mines Bldg.); Joseph Newton, Assistant Dean; Donald F. Clifton, Secretary of the College Faculty.

THE UNIVERSITY OF IDAHO, situated in one of the foremost mining regions of the world, appropriately maintains courses in mineral industries technology and in the earth sciences. To enable this work to be carried on effectively, a College of Mines was created in 1917 as an administrative unit of the University, and its scope was indicated as follows: "Within this College will be included the work in mining proper, in metallurgy, and geology; and it shall include the exploitation of the non-metallic minerals (except road-making materials) as well as that of the precious and useful metals."

Accordingly, the College of Mines offers curricula leading to the baccalaureate degree in mining engineering, metallurgical engineering, geological engineering, geology, and geography. The Graduate School of the University offers advanced work leading to the degree of Master of Science in these areas and also in hydrology. The degree of Master of Arts in Teaching Geography and Master of Arts in Teaching Earth Science are also offered. Doctoral study leading to the degree of Doctor of Philosophy is offered in geology, and in mining engineering-metallurgy. Consult the Graduate School catalog for the special requirements for the professional degrees of Engineer of Mines, Metallurgical Engineer, and Geological Engineer.

ADVANTAGES OF LOCATION

The campus of the University of Idaho at Moscow is ideally located in relation to the mineral industry of the Northwest. Large commercial deposits of many metallic and nonmetallic minerals are found in nearby areas which serve as "laboratories" for our students; more than forty different mineral commodities are produced from Idaho mines and quarries. The great lead-zinc-silver deposit of the Coeur d'Alene district is one of the seven or eight "billion dollar" districts in the world — districts which have produced metal valued in excess of one billion dollars. Two other of these billion-dollar giants — Butte, Montana, and Bingham, Utah — are in nearby states.

The famous Sullivan lead-zinc deposit in British Columbia is just north of the Idaho boundary, and there are important uranium and gold deposits in northeastern Washington. East-central Idaho has the largest deposit of cobalt in the United States. Columbium, tantalum, yttrium, zirconium, hafnium, uranium, thorium, titanium, and rare earths have been produced from placer sands. In recent years Idaho has been a large producer of antimony and tungsten. Lemhi County has large reserves of thorium ores.

Two nonmetallic mineral resources in Idaho warrant special mention. The phosphate deposits of southern Idaho are the largest in the world, and they are being exploited on a large scale. In Latah County, within about fifteen miles of Moscow, there are extensive clay beds, which are now being mined. These clays have been produced for their "conventional" uses — paper filler and coating filters, and ceramics.

In addition to phosphate and clay, there are many other important nonmetallic deposits in Idaho and its neighboring states and provinces — magnesite in northeastern Washington; coal in Montana, Utah and Wyoming; and petroleum in Alberta, Montana, and Wyoming.

Idaho is generously endowed with water although there are many problems related to development and distribution. The major dams in the Columbia River system are within easy reach of the University for study in hydrology and geological engineering. The Snake River Plain of south Idaho offers a natural laboratory for the study of surface and ground-water problems. In addition, many small basins in Idaho are available for the study of water resources problems.

Geology. Idaho presents excellent opportunities for general investigations and research. Portions of four physiographic provinces, with their particular structural features, are included within the State. The sedimentary rock section in Idaho ranges from Precambrian to Recent. Fossil plants or animals representing all geologic periods can be found within the State and in contiguous regions. The crystalline rocks are usually varied and include metamorphic rocks; the great Idaho batholith; major dikes and sills; middle Tertiary and more recent lava flows that cover thousands of square miles; and recently active volcanoes. There are few areas in the world where the relationship of ore deposition to structure and igneous activity can be studied to better advantage.

Geography. The University provides the only geography degree program in Idaho. Its scope covers the entire area of man-land-resource relations, spatial interaction and distribution, training students for work in industry, government employment, teaching and research. There are excellent regional opportunities for field research in land use, and economic development, applied climatology, transportation, and rural-urban studies. Other major aspects of geography available include quantitative analysis of diverse geographic problems facilitated by computer technology. There is strong emphasis on various aspects of cartography and photo interpretation. The geography program is closely integrated with a number of other departments, and the curriculum is designed for maximum flexibility. This permits the design of special programs to fit individual student needs and interests.

Mining. Students have opportunities to observe all types of mining operations and see the machinery and equipment employed in the mining industry — in some of the smaller mines, as well as in the large mines of the Coeur d'Alene and Butte districts. Not only are these visited on field trips, but many students find summer employment in the mines. Research activities in mining companies, local governmental organizations and the University provide for detailed study in a wide variety of interests.

Metallurgy. There are many large metallurgical plants within relatively short distances of Moscow; concentrating mills, lead smelter, and zinc plant at Kellogg, Idaho; copper smelter and zinc plant at Anaconda, Montana; lead smelter and zinc plant at Trail, B.C.; and an aluminum smelter and rolling mill in Spokane, Washington. These, too, often provide the students with opportunities for summer work.

EQUIPMENT AND FACILITIES

The College of Mines equipment is conveniently described under the four headings of mining engineering; metallurgy; geology and geological engineering; and geography. In addition to the facilities here mentioned, the student has the use of well-equipped laboratories of the Departments of Mechanical, Electrical, Civil Engineering, Chemistry, and Physics, and enjoys many cultural benefits related to the University environment.

Building. The College of Mines is housed in the Mines Building completed in 1961. Half of the money for this modern three-story structure was contributed by companies and individuals in the mining industry; the other half was appropriated by the Idaho Legislature on a matching basis.

Mining Engineering. Facilities and equipment include a rock mechanics and geophysical laboratory equipped with polariscope, strain recorder, electrical resistivity and magnetic units, 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, and slide collections illustrating mining methods and practices. 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.

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 minerology, such as identification of alloy phases and minerals, texture studies, and phase diagram determinations. Other equipment includes melting furnances, forging hammer and rolling mill for specimen preparation; heat treating and thermal analysis furnaces; physical and mechanical test instruments; 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 section, polished sections, topographic and geologic maps.

Equipment used in advanced courses includes: rock sawing and polishing facilities, binocular microscopes, reflection and polarizing microscopes,

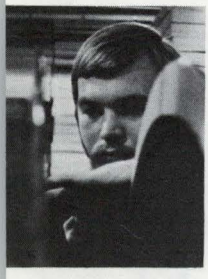
photomicrographic apparatus; X-ray diffraction and fluorescence equipment, and an atomic absorption spectrophotometer. The electron microprobe of the Idaho Bureau of Mines and Geology is available to advanced students. Also available are several computers, resistivity survey equipment, hammer seismograph, soil drilling and sampling kits, and water-level recorders.

Research laboratories are equipped for work in applied geochemistry, photogeologic analysis and design, engineering geology and soil testing. Facilities for research in hydrology are also available in other divisions of the University.

Geography. The library maintains a special collection of some 50,000 maps, and the department has extensive holdings of maps and air photos. The geography staff and students maintain a multi-instrument complex of eight meteorological stations. A computer and calculator are also available for class use. Extensive modern cartographic equipment, drafting room, and darkroom are housed in the department, and students are taught how to interpret photographs, compile maps, model building, air brush work, and darkroom techniques.

Field Trips. Appropriate field trips are arranged and conducted under instructional supervision. The availability of areas of unusual geologic interest, mines, and metallurgical plants provides convenient opportunity for studies in the field to supplement class and laboratory work.

Idaho Mining Research Bureau. In addition to the usual departmental research, the Idaho Mining Research Bureau has been established as a department of the College of Mines to conduct applied research. Industry problems requiring special capabilities and interdisciplinary study not usually available in most industrial organizations are referred to this department for investigation. The staff provides the dual functions of applied research and of specialized teaching in both undergraduate and graduate courses in the College. Facilities such as detailed ventilation and environmental laboratories are provided for special research projects and these later become available for graduate student research and teaching. Funds and projects are derived from government and private sources wishing to promote work on specific problems.



Other Organizations. The Idaho Bureau of Mines and Geology has its headquarters and research facilities on the University of Idaho campus, and works in close conjunction with the College of Mines. Bureau projects often provide employment for students enrolled in the College. There are field and research branches of both the U.S. Geological Survey and the U.S. Bureau of Mines in nearby Spokane, Washington. There are chapters of American Institute of Mining and Metallurgy Engineers and American Society of Metals in Spokane, and students in the College of Mines are encouraged to become student members of these societies through the student chapter on campus.

The Idaho Bureau of Mines has installed an ARL electron microprobe which is an extremely valuable instrument in many areas of research. The microprobe is available for use by the University and other state educational institutions and for industrial and governmental contract research projects.

Museum. The Idaho College of Mines has a unique art collection — the Peschel collection which was given on a permanent loan basis to the College by the heirs of William M. Peschel who lived for many years at Lewiston, Idaho. This contains a number of prints and water colors illustrating the parade uniforms worn by mining officials and workers in Germany about the seventeenth century. In addition to the illustrations, the collection contains a number of the ceremonial axes and canes which were carried by these officials.

GENERAL INFORMATION

Scholarships, Grants-in-Aid, and Loan Funds. Students having a high academic standing at high school or while in college should refer to the "Financial Aids" section in Part 2 of this catalog. The Idaho Mining Association scholarships and the Idaho Mining Memorial Scholarships are open exclusively to freshmen entering the College of Mines. Fifty out-of-state tuition scholarships are available for entering freshmen and transfer undergraduate students. The Hecla-Bunker Hill, A. E. Larson (Sunshine Mining Co.) and ASARCO (American Smelting and Refining Co.) scholarships are available to College of Mines students. The College of Mines also administers the J. R. Simplot grant-in-aid program to needy students. The Staley scholarship is also available to mining engineering students. Two special loan funds (the Laney fund and the J. J. Day fund) are restricted to College of Mines students. For graduate students there are several institutional assistantships and research fellowships and the A. H. Featherstone graduate scholarship.

Inquiries should be directed to Chairman, Scholarship and Awards Committee, College of Mines.

GENERAL REQUIREMENTS AND UNDERGRADUATE CURRICULA

University Requirements. See general regulation "J" in Part 3 for the all-University requirements for graduation. As a part of these broad requirements, students must complete Eng 101-102, English Composition, and one physical education activity course each semester for two semesters.

Electives. A list of acceptable electives may be consulted in the office of each head of department and major professor in the College. Electives must be approved by the head of department or the major professor involved.

Curricula. Each of the following programs of study requires 128 credits and includes the departmental and general requirements as set forth above.

GEOGRAPHY (B.S.Geog.)

Course	Credits
Anthr 110 Intro Phys Anthr & Arch *or* Anthr 120 Intro to Social Anthr	3
Econ 251-252 Prin of Econ	6
Eng 101-102 English Composition	6
Eng 317 Tech & Engr Report Wr	3
Geog 103 Phys Geography	4
Geog 112 Econ Geography	3
Geog 251 Intro Cartography	3
Geog 252 Cultural Geog	3
Geog 254 World Regional Geog	2
Geog 401 Atmospheric Environments	3
Geog 424 Interm Econ Geog	3
Geog 437 Dec Making in Resource Mgt	3
Geog 470 Urban Geography	3
Geog 480 Pol Geography	3
Geog 495 Proseminar	1
Geol 101 Physical Geology	3
Geol 101 Phys Geology Lab	1
Geol 401 Geomorphology	3

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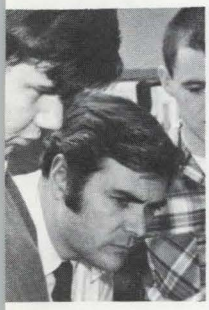


GEOGRAPHY (B.S.Geog.) (Continued)

Math 111-112 Fund of Math *or* Math 140-141 Coll Alg & Anal Trig 5-8
Physical education activities 2
Phys 101 Elem Phys *or* Phys 113 Gen Phys 3-4
Psych 317 Intro to Stat *or* Ag 321 Biometry *or* Bus 231 Statistics *or* one year of college-level study of a foreign language 3-8

Plus eight credits in biology, botany, chemistry, or zoology; six credits in geography electives; and thirty-one to thirty-four credits in approved electives.

GEOGRAPHY (B.A., B.S.)

See these curricula in the College of Letters and Science section.

GEOLOGY (B.S.Geol.)

Course	Credits
Ag 321 Biometry	3
Biol 100 Man and the Environ *or* Biol 201 Intro to the Life Sc	4
Chem 111 Prin of Chemistry	4
Chem 112 Inorg Chem & Qual Anal	5
Eng 101-102 English Composition	6
Geog 251 Intro Cartography	3
Geol 101 Physical Geology	3
Geol 102 Phys Geology Lab	1
Geol 106 Historical Geology	3
Geol 107 Hist Geology Lab	1
Geol 111 Ancient Life	4
Geol 202 Mineralogy & Petrology	4
Geol 401 Geomorphology	3
Geol 413 Sedimentology	2
Geol 414 Stratigraphy	2
Geol 421 Structural Geology	3
Geol 431 Field Geol & Report Wr	6
Geol 497 Proseminar	1
Math 140 College Algebra	3
Math 141 Anal Trigonometry	2
Math 180 Anal Geom & Calculus I	4
*Phys 113-114 Gen Phys *or* Phys 220, 221, 222 Engr Phys	8-9
Physical education activities	2

Plus nine credits in upper-division geology; a course in computer programming; the equivalent of one year of college-level study of a foreign language; twelve credits in humanities and/or social science electives; and approved electives to complete the total of 128 credits required for the degree.

*With the permission of major professor, eight to nine credits of upper-division courses in biological sciences may be substituted for physics.

GEOLOGICAL ENGINEERING (B.S.Geol.E.)

Course	Credits
Chem 111 Prin of Chem	4
Chem 112 Inorg Chem & Qual Anal *or* Chem 114 Gen Chem	4-5
CE 112 Engr Measurements	2
Econ 251-252 Prin of Econ	6
EE 200 Systems and Circuits	3
Eng 101-102 English Composition	6
ES 211 Intro to Mechanics	4
ES 221 Dynamics of Rigid Bodies	2
ES 320 Fluid Mechanics	3
ES 321 Thermodyn. & Heat Transfer	3
ES 340 Mechanics of Materials	3
Geol 101 Physical Geology	3
Geol 102 Phys Geology Lab	1
Geol 106 Historical Geology	3
Geol 107 Hist Geology Lab	1
Geol 202 Mineralogy & Petrology	4
Geol 413 Sedimentology	2
Geol 421 Structural Geology	3
Geol 431 Field Geol and Report Wr	6
Geol 441 Engineering Geology	3
Geol 497 Proseminar	1
Math 140 College Alg	3
Math 141 Anal Trig	2
Math 180-190-200 Anal Geom & Calc I-II-III	11
Math 310 Ordinary Diff Equation	3
Phys 211-212 Engr Physics	6
Plus the following general requirements:	
Electives	5-8
Humanities and social sciences	12
Physical education activities	2

RECOMMENDED ELECTIVES

Mineral Exploration

Recommended electives for students wishing to specialize in mineral exploration:

Geol 458 Mineral Deposits	4
Geol 460 Expl Geol *or* Geol 485 Geochem Expl	3
Min 401 Rock Mechanics	3

Construction

Recommended electives for students wishing to specialize in construction:

CE 460 Soil Mechanics	3
Geol 445 Geol Engineering Design	3
Min 401 Rock Mechanics	3

Hydrogeology

Recommended electives for students wishing to specialize in hydrogeology:

AgE 351 Hydrology	2
CE 460 Soil Mechanics	3
Geol 445 Geological Engr Design	3
Geol 447 Ground Water	2

METALLURGICAL ENGINEERING (B.S.Met.E.)

Course	Credits
ChE 323 Mat & Energy Balances	2
Chem 111 Prin of Chem	4
Chem 112 Inorg Chem & Qual Anal *or* Chem 114 Gen Chem	4-5
Chem 305-306 Physical Chem	6
EE 200 Systems and Circuits	3
EE 314 Electr & Control Systems	4
Engr 120-121 Engr Anal & Design	4
ES 211 Intro to Mechanics	4
ES 320 Fluid Mechanics	3
ES 321 Thermo & Heat Transfer	3
ES 340 Mechanics of Materials	3
Eng 101-102 English Composition	6
Eng 317 Tech & Engr Report Wr *or* Eng 313 Bus Wr	3
Geol 101 Physical Geology	3
Geol 102 Physical Geol Lab	1
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Math 310 Ordinary Diff Equations	3
Met 102 Materials & Their Manufacture	1
Met 201 Elements of Material Science	2
Met 203 Metallography	1
Met 305 Elem of Crystallography	2
Met 308 Intro Metallurgy Thermo	2
Met 403 Intro Extractive Metallurgy	3
Met 410 Metallurgical Lab	2
Met 412 Mechanical Metallurgy	2
Met 413 Physical Metallurgy	3
Met 414 Materials Engineering	2
Min 101 Elements of Mining	2
Physical education activities	2
Phys 221-222 Engr Physics	6

Plus twenty-four to twenty-five credits of electives of which a minimum of sixteen credits of approved humanistic and social studies will be included, plus one course additional in upper-division mathematics or equivalent.

MINING ENGINEERING (B.S.Min.E.)

Course	Credits
Chem 111, 114 Prin of Chem and Gen Chem	8
CE 112 Elem Surveying	2
EE 200 Systems and Circuits	3
EE 314 Elec & Control Sys *or* EE 324 Elec Mach	3-4
Engr 120-121 Engr Anal & Design	4
ES 211 Intro to Mechanics	4
ES 320 Fluid Mechanics	3
ES 321 Thermo & Heat Transfer	3
ES 340 Mechanics of Materials	3
Eng 101-102 English Composition	6
Eng 317 Tech Report Wr *or* Eng 313 Bus Wr	3
Geol 101 Physical Geology	3
Geol 102 Phys Geology Lab	1
Geol 202 Mineralogy & Petrology	4
Geol 421 Structural Geology	3
Math 180, 190, 200 Anal Geom & Calc I-II-III	11
Math 310 Ord Diff Eq *or* another approved upper-division math course or substitute	3
Met 201 Material Science	2
Min 101, 202 Elements of Mining I-II	4
Min 352 Mine Management	3
Min 391 Mining Principles	3
Min 401 Rock Mechanics	3
Min 470 Mine Services	3
Physical education activities	2
Phys 221-222 Engr Physics	6

Plus nine technical electives from the department, one course of which may be outside the department from the following: Geol 458, 485, 441, Bus 412, Ag 321, CE 468, ES 402, ME 473, Math 320. Plus twenty-one credits of electives of which sixteen must be approved humanities and social studies. Plus one mathematics course of two or more credits beyond algebra and trigonometry or equivalent (i.e. Ag 321, ES 402, Math 320). Approved field experience, appropriate summer employment or an applied course in mine surveying and geologic mapping is required before graduation.

LOVE TOYS
PET
SEX

Graduate School

Ronald W. Stark, Dean (115 Life Science Bldg.), Edgar H. Grahn, Associate Dean. Bruce Higgins, Assistant Coordinator of Research.

THE GRADUATE SCHOOL was formally organized in 1925 but the University of Idaho has offered advanced degrees for over seventy years with the first master's degree awarded in 1897. The Graduate School embraces seven colleges and nearly fifty departments and subject areas. This coverage of all regular disciplines and professional fields provides in one location a wide variety of academic work. Enrollments are large enough to provide the critical mass of students and faculty necessary for graduate programs and yet sufficiently small to permit close faculty-student relationships. Interdepartmental cooperation is an important factor on the Idaho campus which is also the research center for the State.

Degree programs are offered in seventy-eight areas for the master's degree and in thirty for the doctoral degree. Specific degree offerings are given in the Graduate School catalog which also provides detailed information about the Graduate School, appointments, financial aids, library, research facilities and procedures. Further information is provided in the "Information Bulletin for Theses and Dissertations." Forms to assist students in recording their progress are supplied by the office of the graduate dean on request.

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. The University of Idaho and Washington State University, to utilize unique areas of knowledge of each institution, have for some time operated a cooperative course program available only to graduate students. Courses available on either campus are identified in Part 5 and offerings are provided by the current time schedule.

National Reactor Testing Station. The University of Idaho conducts an off-campus graduate program at the NRTS at Idaho Falls, Idaho, in cooperation with the Idaho operations office of the Atomic Energy Commission. The program is administered through a resident director of the University. It is possible for students qualifying for this program to earn a master's degree in the physical sciences, mathematics, engineering, or business. It is also possible for a student holding a master's degree to complete residence course requirements and examinations on-campus for the Ph.D. degree and to complete the research work for this degree at the NRTS site.

AWU Program. The University is a member of Associated Western Universities, which is a cooperative venture of certain institutions to make use of special facilities located in the area. Financial support is available for students and faculty to spend periods of time, up to one year, at a number of the laboratories of the Atomic Energy Commission to pursue research projects.

UNDERGRADUATE ENROLLMENT IN GRADUATE STUDIES (PARTIAL ENROLLMENT)

A senior in residence who is within twelve credits of completing the requirements for the baccalaureate degree, and who meets the requirements for admission to the Graduate School, as set by the University and the department concerned, may apply for admission to partial enrollment in the Graduate School. A course registration plan designating undergraduate and graduate courses is submitted with the application for admission on a form provided.

Admission in advance of registration permits certain courses to be designated for graduate credit. Capable students can thus begin graduate work at an earlier date than would otherwise be possible. Qualified seniors will normally be in their last semester when applying for partial enrollment. In some cases, a maximum of two semesters of partial enrollment may be desirable in order to permit study of courses in sequence.

SENIORS IN 500's COURSES

A senior with at least a 3.00 average may enroll in one course a semester at the 500's level with permission of the instructor and the dean of the Graduate School (dean's signature on the undergraduate registration card is required). Credits so earned while a senior are for undergraduate purposes and may not be offered later for an advanced degree. No undergraduate student may enroll in the cooperative courses offered with Washington State University.

MASTER'S DEGREES

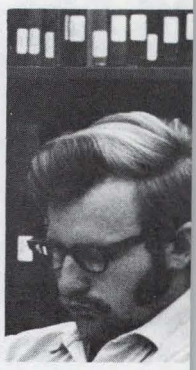
A minimum of thirty credits is required for a master's degree but some additional work may be stipulated in individual cases because of particular objectives or the need for additional background. Of the minimum of thirty credits required for a master's degree at least eighteen credits must be in courses at the 500's level (exceptions are made for certain degrees). Remaining courses may be at the 400's level; 300's level courses may be offered only in supporting fields, not in the major (certain degrees permit exceptions). Courses numbered in the 100's and 200's may not be used to fulfill the requirements for a master's degree. Research and thesis credits may not be applied toward a non-thesis degree.

At least fifteen credits of the minimum credits required for a master's degree must be completed on the Moscow campus. The remaining fifteen credits may be completed at the Boise Cooperative Graduate Center or by a combination of Boise Cooperative Graduate Center credits and up to a combined total of eight credits earned in another graduate school, University of Idaho extension courses administered by the State Division of Continuing Education, or by *in-absentia* registration (no more than three of the eight credits may be taken *in-absentia*).

All credits submitted to meet the requirements for a master's degree must have been earned within six consecutive years prior to the commencement at which the degree is awarded.

A foreign language is not a general requirement for a master's degree and it is considered that any needed proficiency has been developed much earlier in the student's academic career. However, some departments may require completion of a language examination or course work as a degree requirement. If so, it is listed as a deficiency on the study program.

DOCTORAL DEGREES



The Graduate School awards the degree of Doctor of Philosophy in recognition of high achievement in scholarly and research activity. The degree of Doctor of Education is given for high scholarly attainment and in recognition of the completion of academic preparation for professional practice. Candidates for either degree meet the same requirements for residence, candidacy, and final examinations, but the degrees differ in requirements for professional experience and intermediate examinations. Both degrees require the completion of a dissertation, although the nature of this work differs for each.

FIFTH-YEAR PROGRAM OF TEACHER EDUCATION

This year of study provides an opportunity for strengthening teaching competence and for specialized study. The student is admitted to the Graduate School of the University in a category designated as "fifth year." All courses taken in this category will be recorded on the graduate transcript as "fifth year."

A person admitted to the fifth year of teacher education must have a baccalaureate degree from an accredited college or university and must have met minimum standard certification requirements of the state of Idaho. The fifth year of teacher education is to be completed following a period of at least one year of initial teaching experience. The teacher may complete the period of study during an academic year or through summer sessions.

PROFESSIONAL DEGREES IN ENGINEERING AND MINING

As a form of recognition for recipients of bachelor's degrees from the University of Idaho, professional degrees are offered in several fields. The degrees may be granted to graduates of the College of Engineering or the College of Mines after five years of appropriate professional experience, one year of which is in responsible charge, upon submission of an acceptable thesis. Preliminary inquiry should be directed to the department concerned giving a detailed statement of professional activity since graduating, a list of references, and the proposed thesis subject. The department will review and recommend a course of action. Upon invitation to proceed with degree requirements the student prepares the thesis which is usually based on a professional project. This degree carries the same diploma and thesis binding fees and the same deadlines as for master's degrees. Preliminary negotiations and authorization should be completed in the summer or early fall to afford ample time for the preparation and review of the required thesis for award of the degree in May. A listing of professional degrees is given in Part 1.

PROFESSIONAL CERTIFICATES IN EDUCATION

Two-year graduate programs are available leading to professional certificates in education. These programs are intended to meet the needs of students who desire to follow an organized program of graduate work beyond the master's degree, but who may not wish to pursue a doctoral program. Programs encompass the preparation specified by the appropriate professional organization. General Graduate School procedures are followed.

Summer Sessions and Continuing Education

Paul Kaus, Director of Summer Sessions and Coordinator of Continuing Education (103 Adult Education Bldg.).

THIS OFFICE OF THE UNIVERSITY is responsible for directing summer sessions, coordinating for the University the programs administered by the Division of Continuing Education of the state Office of Higher Education, and operating a restricted number of continuing and adult education programs.

SUMMER SESSIONS

The summer program consists of a basic eight-week session and, effective summer, 1972, a three-week pre-session. Both undergraduate and graduate courses are offered, many of them accelerated into one-, two-, or three-week concentrated sessions, thus allowing students to complete a course in less than the full eight weeks. A variety of special features including the summer music festival, summer theater, classic films, as well as programs for high school students in the areas of journalism, music, computer programming, etc., are also available.

Academic regulations included in this catalog are applicable during the summer session and are also described in detail in the summer bulletin. Individuals interested in enrolling are invited to write to the Office of Summer Sessions and Continuing Education for a copy of the bulletin which is published each February.

COORDINATION OF OFFICE OF HIGHER EDUCATION PROGRAMS

The Division of Continuing Education of the Office of Higher Education is a state-wide agency responsible for field service administration of most off-campus adult and continuing education programs throughout the state of Idaho. The division has headquarters at Boise with regional directors located at Moscow, Boise, and Pocatello. Programs administered by the division include not only University of Idaho programs but also programs offered via other public higher education institutions in Idaho. Included are extension and correspondence study programs, adult education centers, and the Boise Cooperative Graduate Center. Academically, the latter program is supervised at the University of Idaho by the Graduate School while the others are supervised by the University's Office of Summer Sessions and Continuing Education.

Extension Courses. Persons interested in enrolling in extension courses should contact the regional director of the state-wide division at Moscow, Boise, or Pocatello. Schedules of course offerings are developed near the beginning of each semester and summer term by each regional office. Most of the courses meet in the evenings in local communities.

The purpose of the extension course program is to enable adults throughout the State to strengthen their professional qualifications and continue their general education. Most higher education institutions restrict the amount of extension credit that is applicable toward degrees. Since the acceptability of this type credit varies among institutions, and within institutions for specific degree programs,

individuals intending to apply extension credit toward a degree should check with the institution or department. The University of Idaho general restrictions on the acceptability of extension credit are printed elsewhere in this catalog. (See general regulation "J-5" in Part 3.)

In programs where it is proposed that the University of Idaho grant college credits, both the instructor and the course must be approved by the University of Idaho prior to the offering. Before the University can accept credit registrations, the student must provide application and registration information and meet the requirements for admission to the University of Idaho. The entrance requirements for credit extension courses are generally the same as for on-campus study (see admissions section in Part 2 of this catalog). In some courses, non-high school graduates over twenty-one years of age may be allowed to enroll on a non-credit basis.

Students are not permitted to carry extension work while enrolled in residence at the University of Idaho. This rule may be waived by written approval of the student's academic dean. Many other institutions of higher education have similar regulations and individuals are advised to check with their resident institution before enrolling.

Correspondence Study. The University of Idaho grants credit for approved correspondence study programs administered by the Division of Continuing Education of the Office of Higher Education. Each course represents an amount of work equivalent to that done by students in similar courses on the campus. Students who expect to apply the credit toward a degree must satisfy all entrance requirements. The amount of correspondence credit applicable toward a degree is limited (see general requirements for degrees). There are also restrictions on the acceptability of correspondence study work for satisfying the requirements for a teaching credential in Idaho.

A correspondence study bulletin describing the specific courses available and the procedures for enrolling and completing the course is available. Copies may be obtained from any regional director of the Division of Continuing Education of the Office of Higher Education or by writing the Office of Summer Sessions and Continuing Education, University of Idaho, Moscow, Id. 83843. Both college and high school courses are offered, as well as some non-credit courses.

Most institutions of higher education, including the University of Idaho, do not allow students enrolled in residence to carry correspondence courses during their period of resident registration. At the University of Idaho, this rule may be waived by written permission of the student's academic dean.

Coeur d'Alene Adult Education Center. Subject to annual approval, the University of Idaho grants resident credit for a summer program offered at the Coeur d'Alene Adult Education Center. The selection of courses, administration of funds, and arrangements for facilities are handled by the statewide division.

The Center offers resident credit. Each instructor and course must receive prior approval of the University of Idaho. Students enrolling for credit must meet full requirements for admission to the University of Idaho and must provide applications and transcripts.

A candidate for a baccalaureate degree may complete all of the degree requirements, including sixteen of the thirty-two semester credits of residence work required in his senior year, through study at the Coeur d'Alene Adult Education Center. The last sixteen credits must be completed on the Moscow campus either by attendance of one semester or two summers. If the work is done in two summers, the candidate may enroll in other programs in the interim but such work cannot be used to fulfill the "last sixteen requirements."

UNIVERSITY CONTINUING AND ADULT EDUCATION PROGRAMS

A restricted number of continuing and adult education programs continue to be administered directly by the University of Idaho's Office of Summer Sessions and Continuing Education, rather than through the state-wide division. For information on these programs, write directly to the University of Idaho.

Civil Defense University Extension Program. The University of Idaho, under contract with the U.S. Office of Civil Defense, cooperates with the State of Idaho Department of Disaster Relief and Civil Defense in providing non-credit professional improvement courses in civil defense throughout the State. Several different courses of 32-hours duration each are offered as well as conferences and simulated exercises. The programs are designed primarily for city, county, and state officials to acquaint them with emergency planning and operations under emergency conditions, whether the emergency be nuclear war, natural disaster, or man-made disaster.

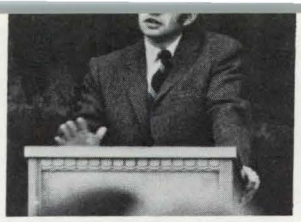
The program is coordinated from the campus with a resident instructor in southern Idaho. The annual schedule of courses is available from the Office of Summer Sessions and Continuing Education, University of Idaho, or from local civil defense directors.

NRTS Education Program. The undergraduate portion of the educational program at the National Reactor Testing Station at Idaho Falls is supervised by the Office of Summer Sessions and Continuing Education. The program offers resident credit with enrollment generally limited to contractor employees of the Atomic Energy Commission. Courses are offered each semester but no summer program is scheduled.

The program offers resident credit and applicants must meet requirements for admission to the University of Idaho. If appropriate courses are available, students may complete all of the work required for an undergraduate degree at the NRTS Education Center with the exception of the last sixteen credits. The last sixteen semester credits must be earned on the Moscow campus. It should be noted since the courses offered at NRTS are generally restricted to those related to the employment of individuals, it is likely that students will find it necessary to complete a number of general education requirements through programs other than those available in the program.

The graduate portion of the program is administered by the Graduate School. Further information may be obtained by writing to the resident director, NRTS Education Program, P. O. Box 1845, Idaho Falls, Id. 83401.

NRTS Certificate Program. Students enrolled in the NRTS Education Program (see above) who complete the specified course requirements with a grade-point average of 2.00 or better, and who pass an examination in the



field of concentration, may be awarded the "Certificate of General Proficiency in (name of field)." Students who maintain an average grade point of 2.75 or better are exempted from the final examination. The program of studies leading to each certificate includes from twenty-four to thirty-three semester credits of course work which has been approved by the faculty of the appropriate subject matter department at the University and by the University Curriculum Committee.

This certificate program should not be confused with a degree program. Rather, the program represents a limited amount of specialization in a restricted and specified series of courses. The significance of the certificate is dependent on its acceptance and support by the contractor employer at the NRTS site and other individuals.

Credits earned while enrolled in a certificate objective may also be applied toward a degree if a candidate is otherwise eligible under regular University requirements.

Real Estate Certificate Program. The real estate certificate program is offered cooperatively with the College of Business and Economics, the Idaho Real Estate Commission, and the Idaho Association of Realtors. This non-credit program offers units leading to fundamentals or advanced certificates. The program is designed for licensed salesmen and brokers or those seeking such licensing, but permission may be granted to others to enroll.

Courses are offered in various Idaho communities where it is determined that there are sufficient students, a qualified instructor, and adequate facilities. Most courses meet in the evenings although some are scheduled in concentrated short courses. The program is developed near the beginning of each semester by personnel of the Idaho Real Estate Commission, Statehouse, Boise, Id. 83702. Individuals interested in enrolling may write to the Commission for a copy of the schedule.

Permanent records of the program are maintained in both the Idaho Real Estate Commission Office at Boise and in the Office of Continuing Education on the University of Idaho campus.

Instructional Conferences. The Office of Continuing Education, in cooperation with academic departments, each year sponsors a large number of short-term, non-credit programs. Many of these programs depend on user fees for financial support, but public funding may be possible for specific types of programs. This type of instructional program offers very concentrated continuing education in a specific subject field and is often concluded within a three or four day period. Such instructional conferences may be arranged for occupational or professional groups as well as those desiring to broaden their knowledge in a general interest field. Subject-matter expertise is provided by members of the faculty or by visiting specialists.

Individual instructional conferences are arranged as the need arises. Announcements of specific programs are made available by direct mailing to those most likely to be interested and by newspaper and other news announcements. Individuals interested in proposing specific instructional programs are invited to contact the Office of Continuing Education on the University of Idaho campus.

Reserve Officers' Training Corps

Vice President Robert W. Coonrod, Coordinator (105 Admin. Bldg.); Col. Paul M. Fletcher, Head, Department of Military Science (103 Memorial Gymnasium); Lt. Col. John A. Magee, Head, Department of Aerospace Studies (106-B Adult Ed. Bldg.); Capt. Jack R. Voorhees, Head, Department of Naval Science (1 Navy Bldg.).

RESERVE OFFICERS' TRAINING is offered at the University of Idaho by the Department of Aerospace Studies (Air Force ROTC), the Department of Military Science (Army ROTC) and the Department of Naval Science (Naval ROTC).

The purpose of ROTC is to prepare selected students to serve as commissioned officers in the Air Force, Army, Navy, and Marine Corps. This important program constitutes the largest single source of trained officers for both the reserves and regular forces. Successful completion of requirements for both a baccalaureate degree and ROTC study programs leads to a commission in the Armed Forces.

GENERAL PROGRAM INFORMATION

The three ROTC departments at the University of Idaho offer, on a selective basis, four-year ROTC programs, and the Army and Air Force offer two-year programs. Under the provisions of present laws, the three services offer scholarships to selected students each year in a nation-wide screening and testing program. The financial assistance that is provided in conjunction with these ROTC scholarships includes tuition, books, and all standard fees listed in the catalog, except room and board. In addition, students receive subsistence pay of fifty dollars per month. Both the Army and Air Force offer three-, two-, and one-year scholarships with similar financial benefits. Non-scholarship students receive fifty dollars per month during their final two years of ROTC instruction only. Uniforms and textbooks for all ROTC courses are provided at no cost.

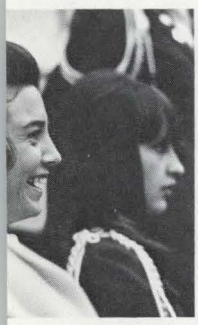
Students who qualify, and who plan to enter flight training as military pilots after being commissioned, may apply for participation in the flight instruction program offered locally by each ROTC department. Successful completion of this program meets most requirements for a private pilot's license.

Information concerning the specific courses in aerospace studies, military science, and naval science may be found in Part 5. Each program is further explained below. Further inquiries are welcomed and should be addressed to the respective ROTC office.

AIR FORCE ROTC

The Air Force ROTC program provides specialized education to students who desire to become Air Force officers.

Both a four-year program and a two-year program are offered. The four-year program consists of both the general military course (two years) and the professional officer course (two years). The two-year program consists of only the professional officer course. The two-year program is designed for undergraduate or graduate students who desire to take Air Force ROTC during their last two years of college. Students who are interested in the two-year program should apply to the Department of Aerospace Studies no later than January 31 of the



year in which they plan to enter the program. Students not presently enrolled at the University but who plan to enroll for their last two years are also eligible.

General Military Course. The general military course consists of four semesters of general military education and corps training. Students explore the causes of present world conflicts as they affect the security of the United States, the composition and role of defensive forces, and participate in corps training.

Professional Officer Course. The professional officer course consists of four semesters of professional officer education, which entails a study of the growth and development of aerospace power, astronautics and space operations, professionalism, leadership, and management.

In addition to the on-campus studies, all students in the four-year program must complete a four-week period of off-campus, pre-commissioning training during the summer at an Air Force base. This field training unit is normally taken between the second and third semesters of the professional officer course. Students applying for the two-year program must participate in a six-week field training course during the summer prior to entering the two-year program. Participants in field training courses are paid half the basic pay of a second lieutenant. Travel to and from the base is paid, and food, lodging, medical care, and uniforms are furnished at no cost.

ARMY ROTC

The Army ROTC program consists of the basic and advanced courses, and can be completed in two, three, or four years. The basic course, normally taken during the freshman and sophomore years, introduces the student to basic military subjects. The advanced course is devoted to a two-year study of the more complex phases of military leadership training. It is open to students who have completed the basic course or basic summer camp and who have demonstrated a positive potential for becoming commissioned officers. A six-week summer training camp is held between the first and second year of the advanced course (normally at the end of the junior year), for which students receive approximately $275. The four-year program can be compressed with approval of the head of the Department of Military Science.

Basic Summer Camp. A student with at least two years of successful college work may apply for a six-week basic ROTC camp in lieu of taking the basic ROTC course. Applicants are accepted during the first half of the second semester of each school year.

NAVAL ROTC

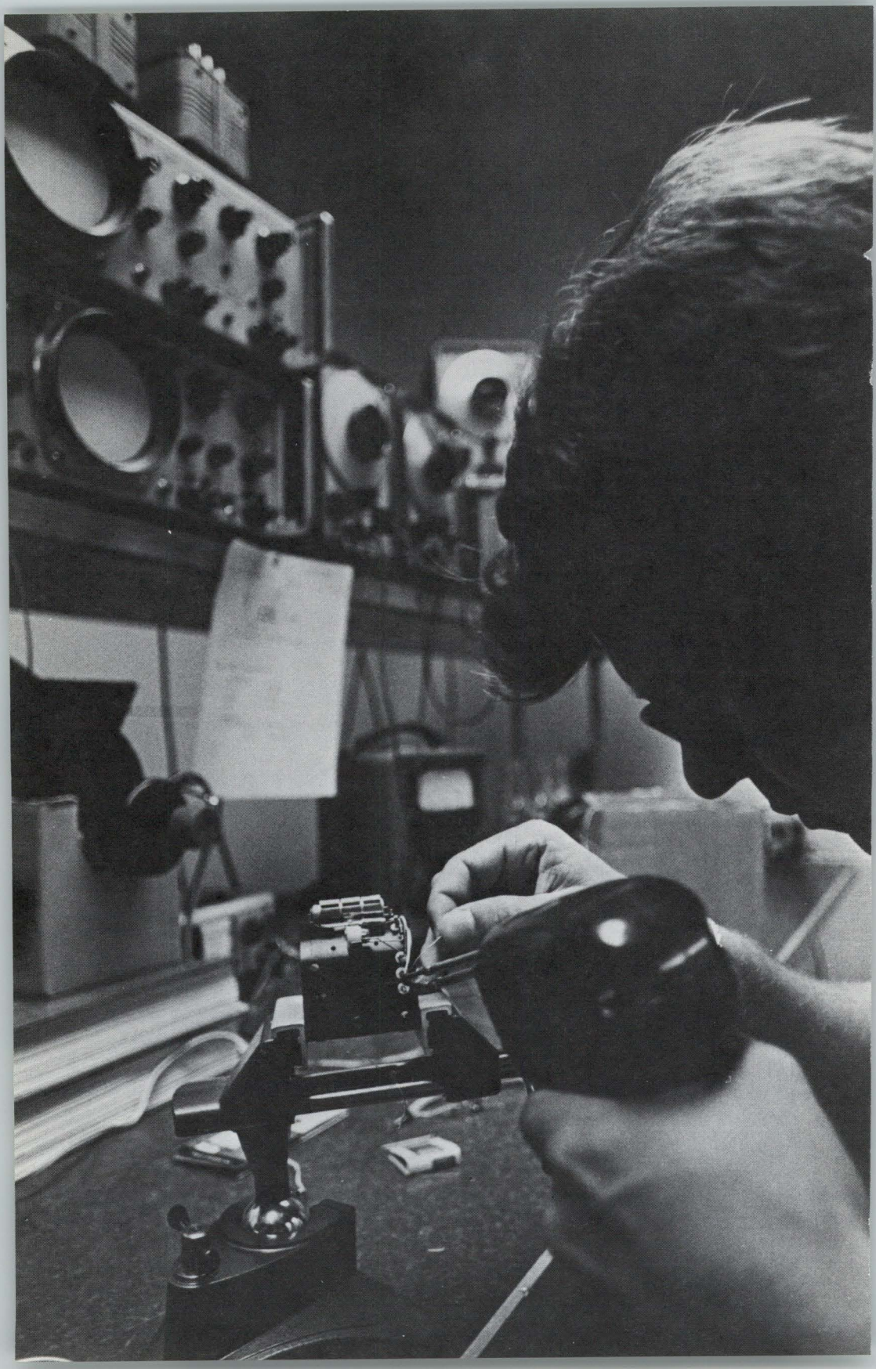
The Naval ROTC program consists of two programs, both of four years in length. They are the Navy Marine scholarship program for scholarship students, and the Navy Marine college program for non-scholarship students. The courses of study for both programs are the same and require about twenty hours of courses taught by naval officers. Successful completion of either program makes possible duty assignments in aviation, submarines, or surface ships. A limited number of duty assignments is made to the Navy's Supply Corps and Civil Engineering Corps, and to the U.S. Marine Corps.

Navy Marine Scholarship Program. Application for this program is nor-

mally made during the fall of the student's senior year of high school or freshman year of college. Initial selections are based upon scores made on college entrance examinations such as the SAT or CEEB examinations. A student in this program participates in three summer training cruises of six to eight weeks duration. Payment during these training cruises is received at one-half the rate of commissioned officer's pay. Students normally receive between $300 and $400. The first and third cruises are afloat cruises aboard ships of the Pacific or Atlantic fleets and may include cruises to foreign shores. The second cruise is an aviation and amphibious warfare training cruise. Completion of this program results in a regular commission in the Navy or Marine Corps.

Navy Marine College Program. This program is for the non-scholarship student and for the student who desires to compete for a Navy scholarship after entering college. Application for this program is made directly to the head of the Department of Naval Science. This program requires one summer training cruise of six to eight weeks duration during the summer following the junior year. The cruise is an afloat cruise of the same type and with the same rate of pay as described for the scholarship program. Completion of this program results in a reserve commission in the Navy or Marine Corps.

Marine Corps Option. The Navy ROTC also represents the U.S. Marine Corps, and students of either program desiring a Marine Corps commission and having the necessary qualifications may apply for the Marine Corps option beginning with their freshman year in college. Students in this option receive classes on Marine Corps subjects during their junior and senior years and participate in one cruise conducted at the Marine Corps schools at Quantico, Virginia.



Numbering System and Key to Abbreviations and Symbols

SUBJECT FIELDS IN THIS SECTION are listed in alphabetical order. Courses within certain subject fields are presented in subgroups. For example, in the foreign language course section all French courses are together; all German courses are together, etc.

BASIC NUMBERING PLAN

Courses numbered 010 through 099 are high-school-level courses carrying no credit; those numbered 100 through 299 are lower-division courses primarily for undergraduates; 300 through 499 are upper-division courses primarily for advanced undergraduates, fifth-year students, and graduates; courses numbered 500 and above are intended for and are restricted to graduate students (see general regulation "B-8" in Part 3 for the exception to this rule).

RESERVED COURSE NUMBERS

In the 100-499 series, the following numbers are generally reserved for the following courses which are authorized in all subject areas and are offered on a credit-arranged basis: 200 Seminar, 299 Directed Study, 400 Seminar, and 499 Directed Study. Because of special circumstances, some subject areas have different numbers for these seminar and directed-study courses, and not all subject areas list these authorized courses in the catalog at this time.

Reserved numbers for courses offered on a credit-arranged basis at the graduate level are: 500 Master's Research and Thesis, 501 Seminar, 502 Directed Study, 600 Doctoral Research and Dissertation, 601 Seminar, 602 Directed Study, and 603 Independent Study. Course 500 is authorized in all fields offering the master's degree; 501 and 502 are authorized for fields offering graduate study; 600, 601, 602, and 603 are authorized in all fields granting the doctorate. Because of special circumstances, not all subject fields have listed all of these authorized courses in this catalog issue.

LETTER DESIGNATIONS WITH COURSE NUMBERS

Certain course numbers also include letters preceding the arabic numbers, e.g., R101, X100, etc., *C* — offered by correspondence only; *ID* — cooperative course with Washington State University offered at the University of Idaho and available to WSU graduate students (certain foreign language courses are also available to WSU undergraduate students); *N* — offered in the National Science Foundation program only; *R* — offered only in the educational program of the National Reactor Testing Station at Idaho Falls; *WS* — cooperative course with Washington State University offered at WSU and available to University of Idaho graduate students (certain foreign language courses are also available to Idaho undergraduate students); *X* — offered by extension only.

COURSES IN WHICH SUBTITLES ARE AUTHORIZED

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. Consult the registrar for procedures for recording specific areas of concentration on a student's transcript when the special emphasis of a seminar, directed-study, independent-study, workshop, or similar course was not determined until after the initial registration.

CREDIT DESIGNATIONS FOR COURSES

Immediately following each course title, the number of credits authorized for each course 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 first semester; two credits second semester.

(1-3 cr, max 3) — one to three credits during any academic term, and the course may be repeated until the maximum of three credits has been earned.

(3 cr, max 12) — three credits during any academic term, 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 over-all 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 term, and the course may be repeated without restriction as to maximum.

Students may register for a particular course for fewer credits than the number indicated for the course in the *Time Schedule* (they may also register for zero credit under the conditions set forth in general regulation "B-4"); likewise, departments may list courses in the *Time Schedule* for fewer credits than the number authorized by this catalog.

TERM COURSES ARE NORMALLY OFFERED

As a guide to the student as to when courses normally will be offered, the abbreviation of the term is shown immediately after the number of credits in the title line. *F* — fall semester only; *S* — spring semester only; *F-S* — offered in regular sequence during the academic year; *F or S* — offered either semester; *F & S* — offered each semester; *SS* — offered in summer sessions only. Departments of instruction are not bound by these designations; however, every effort is made to keep them current.

OLD COURSE NUMBERS

Course numbers which have been changed in this catalog have the old number shown in parentheses immediately after the term designation and just ahead of the course description.

COURSE NUMBERS WITH PREREQUISITES

In the description of courses, prerequisite courses in the *same* subject field do not carry the subject abbreviation with the course number. Prerequisite

courses in a *different* subject field do carry the subject abbreviation with the course number.

NUMBER OF CLASS SESSIONS PER CREDIT

Normally a three-credit course has three class sessions per week throughout the semester; a two-credit course normally has two. When the number of class sessions per week for a particular course deviates from this one-for-one formula, the course description carries that information. For example, a three-credit course might have the following in the description: "two lec and one 3-hr lab per wk."

OTHER ABBREVIATIONS USED IN COURSE DESCRIPTIONS

Acctg — accounting
Ag — agriculture
AgBiC — agricultural biochemistry
AgEc — agricultural economics
AgEd — agricultural education
AgE — agricultural engineering
AgMech — agricultural mechanization
Alt/yrs — offered alternate years (the academic year to be offered is usually shown)
Anl — animal industries
Anthr — anthropology
Arch — architecture
AS — aerospace studies
Bact — bacteriology
Biol — biology
Bot — botany
Bus — business
BusEd — business education
ChE — chemical engineering
Chem — chemistry
CE — civil engineering
Comm — communications
Coreq — corequisite
Cr — credit
Dem — demonstration
Disc — discussions
Div — division
Econ — economics
Ed — education
EE — electrical engineering
Engr — general engineering
Equiv — equivalent
ES — engineering sciences
Eng — English
Ent — entomology
FS — food science
FL — foreign languages
For — forestry
Genet — genetics
Geog — geography
Geol — geology
Grad — graduate
Hist — history
HEc — home economics
Hr — hour
Hydro — hydrology
IEd — industrial education
InfSc — information science
Inter — interdisciplinary studies
Jour — journalism
Jr — junior
Lab — laboratory
Lec — lecture
LibSc — library science
Math — mathematics
Max — maximum
ME — mechanical engineering
Met — metallurgy
Min — mining engineering
MinMt — mining engineering-metallurgy
MS — military science
Museo — museology
MusA — Music (appl. perf. studies)
MusC — Music (theory & comp.)
MusH — Music (hist. & lit.)
MusT — Music (teaching)
MusX — Music (miscellaneous)
MusZ — Music (summer camp)
NE — nuclear engineering
NS — naval science
OAd — office administration
Phil — philosophy

Photo — photography
PE — physical education
Perm — permission of instructor
Perm of dept — permission of the department or subject-field administrative officer
Phys — physics
PlSc — plant sciences
PolSc — political science
Prereq — prerequisite
Psych — psychology
Rad-TV — radio-television
Rec — recitation
RelSt — religious studies
SocSc — social science
Soc — sociology
Soils — soils
Soph — sophomore
Sp — speech
SpEd — special education
VS — veterinary science
VocEd — vocational teacher education
Wk — week
Yr — year
Zool — zoology

Accounting (Acctg)

Robert W. Clark, Department Chairman (209-A, Admin. Bldg.). Professor Clark; Associate Professors Reynolds, Stewart; Assistant Professor Jones; Lecturer Utzman.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

131-132 Principles of Accounting (3 cr) F & S. Accounting for individual proprietorships, partnerships, corporations. Two lec and one 2-hr lab per wk. May be taken by correspondence.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

231-232 Intermediate Accounting (3 cr) F & S. Content, construction, and interpretation of financial statements; corporation accounting. May be taken by correspondence. *Prereq:* 132.

281 Financial and Administrative Accounting (3 cr) F & S. For non-majors, not open for credit to majors. Structure of accounting theory, using information in financial statements, accounting for management control and in making decisions. *Prereq:* 132.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

331-332 Advanced Accounting (3 cr) F-S. Acctg 331: partnerships, fiduciary, estate, trust, government, and institutional accounting. Acctg 332: installment sales, agency, branch, consolidation, mergers, and holding company accounting; foreign currencies and price-level changes. *Prereq:* 232.

385 Costs: Concepts and Methods (3 cr) F. Methods of specific order, process and standard costing, overhead allocation, joint product costing. *Prereq:* 132.

395 Fundamentals of Accounting (4 cr) F. Primarily for students in the M.B.A. program. Financial statements, limitation of data, partnership and corporate accounting, financial and cost analysis and interpretation. *Prereq:* perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

483-484 Federal and State Taxes (3 cr) F-S. Acctg 483: income tax laws; tax liability; returns. Acctg 484: estate, inheritance, gift tax laws; social security, unemployment, excise and use taxes; special problems. *Prereq:* 132.

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

R490 Advanced Accounting Problems (3 cr) F & S. Problems in professional examinations given by the American Institute of Certified Public Accountants; problem analysis and development of working papers. *Prereq:* perm.

491 Accounting Theory (3 cr) S. History; major areas of controversy in principles and theories.

493 Auditing Theory (3 cr) F. Nature, impor-

tance, basis of the audit report; standards and procedures.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm. of dept.

501 (s) **Seminar** (cr arr) F & S (505). *Prereq:* perm.

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

586 **Costs: Relevance, Measurement and Applications** (3 cr) F. Development of cost control. *Prereq:* perm.

Aerospace Studies (AS)

John A. Magee, Department Head (106-B, Adult Education Bldg.). Professor Magee; Assistant Professor Davis, Winchester.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 **Nature of Military Power in the United States** (1 cr) F. Defense establishment; the USAF. 2 hrs per wk; one 1-day field trip.

102 **Strategic Offensive and Defensive Forces** (1 cr) S. Forces composition; use and effect of nuclear weapons; mission, weapons systems and command/control of SAC; composition and role of defensive forces. 2 hrs per wk; one 1-day field trip.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

201 **General Purpose and Aerospace Support Forces** (1 cr) F. Unified commands; role of TAC in limited war and counter-insurgency actions; contributions of USAF commands whose primary role is aerospace support. 2 hrs per wk; one 1-day field trip.

202 **Trends of World Military Power** (1 cr) S. Conflict between democracy and communism; alliance and alignments; contemporary military thought. 2 hrs per wk; one 1-day field trip.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301 **Growth and Development of Aerospace Power** (3 cr) F. Nature of war; airpower development in the U.S.; mission and organization of the Department of Defense; USAF concepts, doctrine, employment. 3 lec per wk; plus 2 hrs per wk for first 7½ wks; one 2-day field trip.

302 **Astronautics and Space Operations** (3 cr) S. Aerospace power; programs, vehicles, systems, problems in space exploration. 3 lec per wk; plus 2 hrs per wk for last 7½ wks; one 1-day field trip.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 **Air Force Leadership** (3 cr) F. Military professionalism; responsibilities; theory of leadership; discipline; human relations; military justice. 3 lec per wk; plus 2 hrs per wk for first 7½ wks; one 2-day field trip.

402 **Air Force Management** (3 cr) S. Personnel policies; channels of communication; principles and functions of management; command-staff organization. 3 lec per wk; plus 2 hrs per wk for last 7½ wks.

465 **Air Force Flight Instruction Program** (0 cr) F & S. Open to cadets who qualify to become Air Force pilots. Ground school, plus 36½ hrs of flying time (20 dual; 16½ solo). Cadets receive private pilot's license upon meeting FAA requirements. *Prereq:* 301-302.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Agriculture (Ag)

Don A Marshall, Coordinator (111 Ag. Science Bldg.). Professors Everson, Marshall.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

203 **Environmental Pollution** (3 cr) S. Also offered as Inter 203. How man pollutes his environment; introduction to the complete spectrum of environmental disturbance to provide basis for more specialized study; emphasis on preventive needs; includes guest lectures by invited experts.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

321 **Biometry** (3 cr) F & S. Also offered as For 307 and InfSc 321. Statistical analysis of biological data; probability distributions, regression, correlation, enumeration data, linear models, analysis of variance, elementary design and interpretation of results. Two lec and one 2-hr lab per wk. *Prereq:* Math 111 or 140 or perm. (EVERSON)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

406 **Statistical Research Methods** (3 cr) S. Also offered as InfSc 406. Biometrical principles used to analyze and interpret research problems; variance, correlation, multiple regression, covariance, principles of experimental design. *Prereq:* 321 or perm. (EVERSON)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

501 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

502 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

507 **Experimental Design** (3 cr) F. Also offered as InfSc 507. 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:* 406 or equiv. (EVERSON)

510 **Professional Problems** (1-4 cr, max 4) F & S. Primarily for students in the M.Ag. program. Professional paper required. *Prereq:* perm.

Agricultural Biochemistry (AgBiC)

Alvin C. Wiese, Head, Department of Agricultural Biochemistry and Soils (112 Ag. Science Bldg.). Professors Le Tourneau, Wiese; Associate Professor Muneta.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

205 **General Agricultural Biochemistry** (4 cr) F. Chemistry as applied to agriculture; composition, metabolism, and growth of plants and animals. Three lec and one 3-hr lab per wk. *Prereq:* Chem 112 or 114. (LeTOURNEAU)

401 **Undergraduate Research** (1-2 cr, max 4) F & S (400). Individual study. *Prereq:* sr standing and perm.

422 **Food Chemistry and Analysis** (3 cr) S. Alt/yrs 1972-73. Also offered as FS 422 and HEc 472. Two lec and one 3-hr lab per wk. (Lab A is for home economics and food and nutrition majors — problems in cookery; lab B is for food science and other majors.) *Prereq:* Chem 253, 275 or equiv. (MUNETA)

431 **Chemistry and Physiology of Vitamins** (3 cr) F. Alt/yrs 1971-72. Includes their relation to human and animal nutrition. *Prereq:* course in biochemistry.

461 **Plant Biochemistry** (3 cr) F. Alt/yrs 1971-72. Composition and metabolism of higher plants. *Prereq:* course in biochemistry. (LeTOURNEAU)

462 **Plant Biochemistry Laboratory** (1 cr) F. Methods and techniques for analyzing plant materials. One 3-hr lab per wk. *Prereq or coreq:* 461, Chem 253, or equiv.

490 **Proseminar** (1 cr, max 2) F & S. *Prereq:* jr standing and perm.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (590). *Prereq:* perm.

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

505 **Advanced Laboratory Techniques** (4 cr) F. Also offered as Soils 505. Chromatography, spectrophotometry, manometric and other special techniques. Two lec and two 3-hr labs per wk. *Prereq:* Chem 253 and perm.

531 **Enzymes and Intermediary Metabolism** (3 cr) F. Alt/yrs 1972-73. Chemistry of enzymes and intermediary metabolism

of carbohydrates, lipids and proteins. *Prereq:* Chem 481 or equiv. (WIESE, LeTOURNEAU)

532 Enzymology Laboratory (1 cr) F. Alt/yrs 1972-73. One 3-hr lab per wk. *Prereq or coreq:* 531.

581 Carbohydrate and Lipid Chemistry (3 cr) F. Alt/yrs 1972-73. See Chem 581 for description.

582 Amino Acids and Protein Chemistry (3 cr) S. Alt/yrs 1971-72. See Chem 582 for description.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Agricultural Economics (AgEc)

Richard W. Schermerhorn, Department Head (109 Ag. Science Bldg.). Professors Folz, Lindeborg, Marousek, Schermerhorn; Associate Professors Long, Michalson, Withers; Assistant Professors Araji, Godfrey, Hamilton; Extension Economists Early, Sargent; Affiliate Professor Summers.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Agriculture and Its Social and Economic Environment (3 cr) F. History of agriculture and man; agricultural industry and its relation to the social and economic problems of the U.S. and the world; factors affecting production and marketing of agricultural products. (FOLZ)

208 Principles of Farm and Ranch Management (3 cr) S. Decision making for the farm operator who seeks maximum profits; application of economic principles and farm records to such decisions; methods of comparing alternative farming combinations and practices. May be taken by correspondence. (MICHALSON)

219 Marketing Farm Products (3 cr) F. Marketing functions, agencies and services; demand, supply, cost and price theories. May be taken by correspondence. (MAROUSEK)

332 Economics of World Agriculture (3 cr) S. The agricultural economy and its problems of the various countries of the world; food production, consumption and distribution problems. (WITHERS)

353 Agricultural Prices (3 cr) S. Factors affecting farm commodity prices; production cycles, price variability, price analysis. *Prereq:* Econ 252. (WITHERS)

356 Agricultural Programs and Policies (3 cr) S. Development of national and state economic policies and programs applied to agriculture; current price, income and credit policies; evaluation of success or failure in accomplishing objectives. (FOLZ)

361 Farm and Natural Resource Appraisal (3 cr) S. Methods; factors affecting the value of land and related resources; valuations for loans, sale, assessment, condemnation and other purposes; procedures used by government and commercial agencies. Two 1-day field trips. (MICHALSON)

391 Agricultural Business Management (3 cr) F. Economic theory of the firm; application to management of agricultural processing and service firms; accounting, statistics and efficiency studies for problem solving. *Prereq:* 6 cr in economics or agricultural economics. (ARAJI)

451 Land Resource Economics (3 cr) F. Land utilization, characteristics and classification; agricultural, forest and mineral lands; factors affecting land use; ownership and tenure, taxation, values, credit and government policies. May be taken by correspondence. (WITHERS)

477 Economics of Developing Countries (3 cr) F. See Econ 477 for description. (FOLZ)

481 Agricultural Market Analysis (3 cr) S. Markets and market structures; types of competition and market power with implications for producers of farm products. *Prereq:* 219 or perm. (MAROUSEK)

493 Agricultural Production Economics (3 cr) F. Economic theory related to agricultural production at the enterprise, firm and industry levels. (LINDEBORG)

494 Mathematical Analysis Applied to Economics (3 cr) F or S. Quantitative meth-

ods in relating mathematical analysis to economic theory; statistical techniques applied to economic activities. *Prereq:* perm. (HAMILTON)

500 **Master's Research and Thesis** (cr arr) F & S.

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

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

507 **Research Methodology** (3 cr) F. Also offered as Econ 507. Theoretical background of the scientific method applied to economic research; organization, procedures, reporting, and evaluation of research. *Prereq:* perm. (MAROUSEK)

508 **Problems in Production Economics Research** (3 cr) S. Objectives and techniques; application of probability models and their evaluation employing a number of econometric techniques. *Prereq:* 493 or perm. (LINDEBORG)

509 **Dynamics of Agricultural Business Management** (3 cr) F. Economic analysis and operations research methods; procurement, processing and marketing integrated within competitive and noncompetitive economic models; major areas of risks and uncertainties. *Prereq:* perm. (ARAJI)

521 **Advanced Microeconomic Theory** (3 cr) F. See Econ 521 for description.

522 **Advanced Aggregate Economics** (3 cr) S. See Econ 522 for description.

523 **Advanced Monetary Theory** (3 cr) S. See Econ 523 for description.

524 **Theory of Economic Development** (3 cr) S. Also offered as Econ 524. Macro-dynamic theory as it relates to economic growth; theories of economic development; conditions for economic development; process of economic development and its significance to new areas and to underdeveloped regions. (FOLZ)

525 **Introduction to Econometrics** (3 cr) F. Also offered as Econ 525. Mathematical formulation of theoretical economic models which serve as the basis for empirical investigations of economic behavior. *Prereq:* perm. (HAMILTON)

600 **Doctoral Research and Dissertation** (cr arr) F & S. For students concentrating in agricultural economics under the joint doctoral program in economics.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Agricultural Education (AgEd)

Dwight L. Kindschy, Department Head (201-A, Ag. Educ. Bldg.). Professor Kindschy; Associate Professors Cvancara, Haynes; Assistant Professor Shane.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

348 **Extension Methods** (2 cr) S. Methods used in the field by county agents, college faculty members, extension specialists, and teachers of vocational agriculture. May be taken by correspondence. (SHANE)

351 **Principles of Vocational Education** (2 cr) F. Also offered as VocEd 351. History, meaning, aims, administration, and place in the schools. May be taken by correspondence. (CVANCARA)

352 **Beginning Methods** (2 cr) S. Problems, methods, and materials. (KINDSCHY)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

453 **Advanced Methods and Curricula** (3 cr) F. Continuation of 352. *Prereq:* sr standing.

454 **Methods of Teaching Farm Shop** (2 cr) S. Application of efficient organization and management practice in teaching farm mechanics. (CVANCARA)

457 **Adult Agricultural Education Methods** (2 cr) F. Methods in organizing and conducting young farmer and adult farmer classes. (CVANCARA)

458 **Supervision of the FFA** (2 cr) S. Includes community work and other problems not covered in 453. (CVANCARA)

460 **Practice Teaching** (1-9 cr, max 9) F & S. Students may complete four weeks of practice teaching prior to registration in the fall and be allowed to register for this course as a part of their academic program for the semester without penalty or payment of the late registration fee. *Prereq:* 352 and perm of dept.

470 **Proseminar** (1 cr, max 2) F & S.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S. (550). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S. (580). *Prereq:* perm.

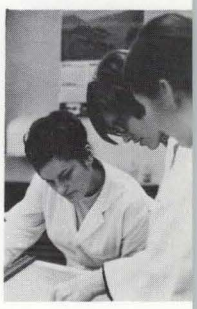
503 (s) **Workshop** (cr arr) X & SS. (558). *Prereq:* perm.

557 **Problems in Teaching Vocational Agriculture** (1-3 cr, max 9) F & S. Methods and new developments; may include attendance at summer conference. Consult the summer bulletin for special emphasis. *Prereq:* perm.

561 **Adult Programs in Agriculture** (1-6 cr, max 6) F or S. Philosophy, development, and status of adult education; current subject matter and organization in relation to progressive adult programs in Idaho and the Northwest.

562 **Advanced Methods in Farm Mechanics** (1-6 cr, max 6) F or S. Objectives, teaching methods, and current trends in farm mechanics programs in high schools and adult classes.

583 **Program Planning in Vocational Agriculture** (1-6 cr, max 6) F or S. Emphasis on preparation of off-farm agricultural occupations.



Agricultural Engineering (AgE)

D. W. Fitzsimmons, Acting Department Chairman (326 Buchanan Engineering Lab.). Professors Bloomsburg, Corey, Fitzsimmons, Martin; Associate Professors Dixon, Moden, Williams, Works; Assistant Professors Busch, Molnau.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

241 **Introduction to Agricultural Engineering** (1 cr) F. Survey of the field; applications of engineering principles to agricultural problems. One 2-hr lab per wk.

342 **Agricultural Engineering Analysis** (3 cr) S (242). Methods of analyzing and solving engineering problems; original approaches; dimensional analysis, similitude, approximation and numerical methods; use of analog and digital computers in solving selected problems. Two lec and one 2-hr lab per wk. *Prereq:* Engr 131, Math 190.

351 **Hydrology** (2-3 cr) F. Basic meteorologic and weather analysis; principles of evaporation, infiltration, and groundwater flow; analysis of precipitation and runoff; snowmelt relationships. Two lec, or two lec and one 2-hr lab per wk.

352 **Fundamentals of Irrigation and Drainage** (3-4 cr) S. Irrigation consumptive use, methods, distribution, pumping, structures; surface and subsurface drainage; water rights and water resource developments. Three lec, or three lec and one 3-hr lab per wk.

362 **Environmental Systems** (3 cr) S. Chemical, mechanical, electrical and thermal characteristics of biological materials and systems in relationship to the analysis and synthesis of environmental control systems; environmental systems for animal production, crop storage and plant growth. *Prereq:* Phys 221; *coreq:* ES 321.

443 **Agricultural Engineering Instrumentation Laboratory** (2 cr) F. Equipment and techniques; lab techniques and data analysis. One lec and one 3-hr lab per wk. *Prereq:* sr standing.

449 **Elements of Structural Engineering** (3 cr) F. Design of steel and timber members and connections, reinforced concrete beams, slabs, columns, walls, footings; introduction to pre-stressed concrete. *Prereq:* ES 340.

454 **Drainage Theory** (2 cr) S. Fluid mechanics of saturated flow through soils; introduction to unsaturated flow; procedures for and construction of sub-surface drains; reclamation of saline and alkali soils. *Prereq:* ES 320.

458 Open Channel Hydraulics (3 cr) F or S. Hydraulics of uniform and varied flow in open channels with fixed and movable beds.

462 Materials Handling and Processing (3 cr) S. Engineering elements of agricultural materials handling and processing; heat transfer; drying, cooling and conditioning of materials; design of systems for handling. Two lec and one 3-hr lab per wk.

471 Energy Conversion in Agricultural Systems (2-3 cr) F. Principles and applications in agricultural systems; performance characteristics of energy sources, their limitations, instrumentation requirements and economic considerations; the internal combustion engine and power transmission. Two lec, or two lec and one 3-hr lab per wk. *Prereq:* ES 321.

472 Agricultural Machine Design (2-3 cr) S. Machines and basic agricultural operations; force and functional analysis; machine and system efficiency; economic considerations. Two lec or two lec and one 3-hr lab per wk. *Prereq:* ES 340.

474 Fluid Power and Control Systems (2 cr) S. Engineering design, analysis and testing of basic fluid power and control systems; fluid power sources, fluid motors, basic circuit components and their symbols, and circuit design; agricultural machinery applications. One lec and one 3-hr lab per wk.

491-492 Seminar (0 cr) F-S. Professional aspects of the field. Graded on the basis of P or F. *Prereq:* sr standing.

499 (s) **Directed Study** (cr arr) F & S (480). *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (540). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (580). *Prereq:* perm.

541 Measurement and Control Techniques (3 cr) F or S. Methods and instruments used in research; electronic instrumentation; design of control systems and electronic measurement of physical quantities encountered in agricultural research.

551 Advanced Hydrology (3 cr) F or S. Hydrologic processes as they relate to water control; methods of evaluating distribution factors: precipitation, runoff, evaporation, transpiration and infiltration.

555 Natural Channel Flow (2-3 cr) F or S. Hydraulics of non-uniform flow in irregular channels; unsteady flow; flow routing and density currents.

ID558 Fluid Mechanics of Porous Materials (3 cr) F of S. Statics and dynamics of multi-flow systems in porous materials; properties of porous materials; steady and unsteady flow.

562 Environmental Systems Design (3 cr) F or S. Analysis and design of structures and environmental systems for livestock production; crop processing and storage.

589 Water Resources Seminar (1 cr) F or S. See Inter 589 for description.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Agricultural Mechanization (AgMech)

D. W. Fitzsimmons, Acting Chairman, Department of Agricultural Engineering (326 Buchanan Engineering Lab.). Professors Fitzsimmons, Martin; Associate Professors Dixon, Haynes, Williams; Assistant Professor Busch.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Oxy-Acetylene Welding (1 cr) F & S (AgE 101). Principles of operation, use and care of oxy-acetylene welding and cutting equipment. One 3-hr lab per wk. *Prereq:* perm.

107 Arc Welding (1 cr) F & S (AgE 107). Principles of operation, use and care of arc welding equipment. One 3-hr lab per wk. *Prereq:* perm.

112 Engineering Applications in Agriculture (3 cr) S (AgE 112). Engineering principles and their applications in agriculture; farm machinery and tractors, build-

ings, materials handling, processing, irrigation, and drainage.

115 Graphical Representations (1 cr) F. Lettering, drafting procedures, orthographic projection, pictorial drawings, sketching, mechanical and agricultural drawings, graphical representations, drawing reproduction methods. One 3-hr lab per wk.

302-303 Agricultural Education Shop I-II (3 cr) F,S (AgE 302-303). Primarily for agricultural education students. AgMech 302: care and use of farm shop tools and equipment. AgMech 303: selection and operation of farm power units and machinery; service and repair of engines, electric motors and machinery. One lec and two 3-hr labs per wk. *Prereq:* perm.

305 Agricultural Machinery and Equipment (2-3 cr) F (AgE 305). Application, operation characteristics, adjustments, servicing, and care of farm equipment; materials of construction, heat treatment, power transmission, and hydraulic systems. Two lec, or two lec and one 2-hr lab per wk.

306 Agricultural Structures and Environmental Systems (2-3 cr) S (AgE 306). Requirements and planning of farm buildings; materials of construction, loads on buildings, design of beams and columns; analysis of insulation and ventilation for environmental control. Two lec, or two lec and one 3-hr lab per wk.

309 Gas Engines and Tractors (2-3 cr) F (AgE 309). Construction and operation of internal combustion engines; application to small farm type engines and tractors, carburation, valve timing, ignition, cooling, lubrication and fuels; servicing and repair of stationary engines and farm tractors. Two lec, or two lec and one 2-hr lab per wk.

312 Electric Power Application (2-3 cr) S (AgE 312). For heat, light and power, circuits and wiring; selection of motors and controls; use of electricity for lighting, refrigeration and ventilation. Two lec, or two lec and one 2-hr lab per wk.

315 Irrigation and Drainage (2-3 cr) F (AgE 315). Irrigation, water resources, current irrigation developments, water rights, conveyance and measurement, pumps and pumping, soil-water-plant relationships, irrigation methods, surface and sub-surface drainage. Two lec, or two lec and one 3-hr lab per wk.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

AIR FORCE ROTC — *See Aerospace Studies*

Animal Industries (Anl)

Auttis M. Mullins, Department Head (215 Ag. Science Bldg.). Professors Bell, Christian, Petersen, Ross; Associate Professors Hemstrom, Hodgson, Sauter; Assistant Professors Bull, Jacobs, Sasser; Instructors Gibson, Gregory, Slyter, Woodruff; Research Professors Dahmen, Frederiksen, Steele, Thacker; Extension Specialists Cleveland, Fiez, Gilbert, Meyer, Miller, Wells.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

109 Principles of Animal Science (4 cr) F. Scope and potential of the livestock industry; types and breeds of livestock and poultry, inheritance, physiology, nutrition, management and classification, and grading of their products. Three lec and one 2-hr lab per wk.

152 Livestock Management Practices (1 cr) S. Methods of identification, registration, preparation for exhibition and marketing, and other livestock management practices. One 3-hr lab per wk.

203 Live Animal Selection and Carcass Evaluation (3 cr) F. Evaluation and selection of breeding and marketing animals; visual and objective appraisal. Three 1-day and four ½-day field trips or equiv time. One lec and two 3-hr labs per wk. (HODGSON, JACOBS)

205 Animal and Avian Nutrition (3 cr) F. Nutrients, their metabolism, requirements, and application in ration formulation for animals and birds. Not open for credit to majors in animal industry agricultural science.

222 Livestock Breeding and Reproduction (3 cr) S. Application of principles of genetics and reproductive physiology in livestock improvement, fertility, systems

of mating and selection techniques. May not be used for major credit by animal industries agricultural science majors. (CHRISTIAN)

263 **Meat Industry** (3 cr) F. Survey course of the livestock and meat industry; involves slaughtering, processing and merchandising of meat and meat products. One 1-day field trip. Two lec and one 3-hr lab per wk. (JACOBS, GREGORY)

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

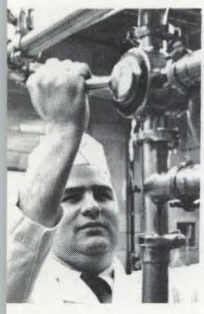
304 **Advanced Live Animal Selection and Carcass Evaluation** (3 cr) S. Live animal and carcass evaluation of beef, sheep and swine. Students participate in live animal-meat evaluation contests. Four 1-day and four ½-day field trips in addition to contests or equiv time. One lec and two 3-hr labs per wk. (JACOBS, HODGSON)

305 **Principles of Nutrition** (3 cr) F & S. Proteins, carbohydrates, fats, minerals and vitamins; physiology of digestion, absorption and metabolism of nutrients and the relationships of enzymes and hormones in these phenomena; lab feeding experiments. *Prereq:* AgBiC 205 or equiv. (BULL)

306 **Applied Animal Nutrition** (4 cr) S. Application of the principles of nutrition to feeding domestic animals and poultry; evaluating feedstuffs, comparisons of feeds and animal requirements. Three lec and one 2-hr lab per wk; one 1-day field trip. (PETERSEN, ROSS)

308 **Incubation and Hatchery Management** (2 cr) S. Alt/yrs 1971-72. Avian embryonic development; physiology, nutrition and morphology factors influencing hatchability, incubation methods and hatchery management. One 1-day field trip. (PETERSEN)

321 **Beef Cattle Science** (3 cr) F. Breeding, feeding, management and marketing of commercial and purebred cattle. (HODGSON)



322 **Sheep Science** (3 cr) S. Alt/yrs 1972-73. Breeding, feeding, management and marketing of commercial and purebred sheep and wool studies. Two lec and one 2-hr lab per wk. (BELL)

323 **Dairy Cattle Management** (3 cr) F. Alt/yrs 1972-73. Operation of modern large dairy farms. Two lec and one 2-hr lab per wk. (ROSS)

324 **Horse Production** (3 cr) S. Alt/yrs 1971-72. Physiology, anatomy and function of the horse as related to nutrition, breeding and conformation; practical horse management. One ½-day field trip. Two lec and one 2-hr lab per wk. *Prereq:* jr standing. (HEMSTROM)

326 **Swine Science** (3 cr) S. Alt/yrs 1971-72. Breeding, feeding and management of swine; application of the sciences of nutrition, physiology and genetics to the development of efficient swine enterprises. (GIBSON)

328 **Commerical Poultry and Egg Production** (3 cr) S. Alt/yrs 1972-73. Modern housing, equipment, labor saving and efficiency factors in flock management, production costs and returns. One 1-day field trip. Two lec and one 2-hr lab per wk. (PETERSEN)

331 **Meat Selection** (2 cr) F (351). Alt/yrs 1972-73. Also offered as FS 331. Factors affecting the quality and palatability of meat; also selection, storage, preparation and serving of meat and meat products. Primarily for home economics and food science students. One lec and one 2-hr lab per wk. (JACOBS)

334 **Meat Technology** (3 cr) S. Alt/yrs 1972-73. Also offered as FS 334. Fabricating and pricing of wholesale and retail cuts of meat; technology of fresh and processed meat; sausage making and quality control. Two lec and one 3-hr lab per wk. *Prereq:* 263 or 331. (JACOBS)

410 **Production and Processing Practices** (1 cr, max 2) F & S. Livestock, dairy and poultry production and processing practices and facilities. One 7-day field trip or equiv time.

421 **Population Genetics** (3 cr) F. Also offered 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 or equiv. (CHRISTIAN)

422 **Animal Breeding** (3 cr) S. Also offered as Genet 422. Application of genetic principles 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 or equiv. (CHRISTIAN)

433 **Poultry Products Technology** (3 cr) F. Alt/yrs 1972-73. Processing, grading, packing and storage of eggs and poultry; factors influencing quality and product utilization. One 1-day field trip.

Two lec and one 2-hr lab per wk. (PETERSEN)

450 **Proseminar** (1 cr, max 2) F & S. Special topics in animal industries.

451 **Endocrine Physiology** (3 cr) F. Also offered as Zool 417. Structure and physiology of glands of internal secretion and their hormonal effects on processes of growth, development, metabolism and production of vertebrates, minor emphasis on invertebrates. (SASSER)

452 **Physiology of Reproduction and Lactation** (4 cr) S. Physiology of reproduction of animals and the structure, growth, development and physiology of the mammary gland. Three lec and one 2-hr lab per wk. (SASSER)

454 **Artificial Insemination** (1 cr) S. Techniques and procedures of semen collection, processing, evaluation and insemination. One 3-hr lab per wk. *Prereq:* 452 or Zool 412 (may be concurrent). (WOODRUFF)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (550). *Prereq:* perm.

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

511 **Animal Nutrition** (3 cr) F. Biochemical and physiological aspects of nutrition of higher animals and man; function and metabolism of nutrients. *Prereq:* perm. (BULL)

512 **Energy Metabolism** (3 cr) S. Energy utilization dealing with techniques of calorimetry, biochemistry of intermediary energy transfers, the effects of environmental factors of energy exchanges and estimation of the energy value of feeds for animals. *Prereq:* perm. (BULL)

513 **Microbiology and Physiology of Ruminant Nutrition** (3 cr) F. Physiology and microbial aspects of ruminant digestion and their influence on the metabolism of extra-ruminal tissues; interpretation of nutritive requirements in terms of rumen microbial activities and evaluation of research techniques. *Prereq:* perm. (BULL)

514 **Physiology of Non-Ruminant Nutrition** (3 cr) S. Physiology of digestion, absorption and metabolism of nutrients in monogastric animals and birds; development of nutritive requirements and nutritive interrelationships. *Prereq:* perm. (PETERSEN)

522 **Statistical Genetics** (3 cr) S. Also offered as Genet 522. Statistical techniques used in population genetics research, methods of estimating heritability, genetic correlations and phenotypic correlation; construction of selection indexes, mating systems, genetic homeostatis. *Prereq:* perm. (CHRISTIAN)

551 **Advanced Endocrine Physiology** (3 cr) F. Biochemical and physiological properties of hormones and lab techniques involved in experimental endocrinology. Two lec and one 2-hr lab per wk. *Prereq:* 451, Chem 482. (SASSER)

552 **Experimental Reproductive Physiology** (3 cr) S. Lab techniques used in physiology of reproduction research, comparative and differential fertility, effect of endocrine deficiencies and excesses on fertility and sterility, experimental control of reproduction in farm animals. *Prereq:* 451, Zool 412. (CHRISTIAN)

572 **Meat Science** (3 cr) S. Biochemical, histological, microbiological and physiological properties of meat and their application to live animal and meat research. One lec and two 3-hr labs per wk. (JACOBS)

ANIMAL PHYSIOLOGY—*See Physiology*

Anthropology (Anthr)

Roderick Sprague, Head, Department of Sociology/Anthropology (4 Faculty Office Bldg.). Associate Professor Sprague; Assistant Professors Lane, Rice.

PREREQUISITE FOR UPPER-DIVISION COURSES: Ordinarily three credits in lower-division courses in anthropology are required for registration in upper-division courses in this field; exceptions by permission.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

109 Archaeology for the Amateur (3 cr) SS. Introduction to archaeological field methods, elementary analysis, and interpretation of local finds. Six 1-day field trips.

110 Introduction to Physical Anthropology and Archaeology (3 cr) F or S. Theories, methods, findings as they relate to human paleontology, prehistory, and racial types.

120 Introduction to Social Anthropology (3 cr) F or S. Theories, methods, findings as they relate to human culture, social organization, and language.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

225 Aboriginal North American Indian (3 cr) F or S. Origins, physical types, languages, cultures of native populations of the Americas. May be taken by correspondence.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

320 Peoples of the World (3 cr) F or S. Simpler societies of Eurasia, Africa, Americas, Australia, and Islands of the Pacific.

321 Culture and Personality (3 cr) F or S. Theories, methods, findings of the interrelationship between the individual and his culture.

322 Racial and Ethnic Relations (3 cr) F or S. Also offered as Soc 322. Racial, ethnic, and minority groups; their special problems in the U.S.

325 Indians of Idaho (3 cr) F or S. Aboriginal American Indian societies of northwestern North America; emphasis on Idaho. Three 1-day field trips.

330 World Prehistory (3 cr) F or S. Prehistoric cultures of Old and New Worlds; techniques of excavation; methods of archaeological analysis.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 Anthropological Field Methods (1-8 cr, max 8) F & S. Supervised field training in archaeology and/or social anthropology.

402 History of Anthropological Theory (3 cr) F or S. Schools of anthropological method and theory in a developmental sequence.

421 Belief Systems of Simpler Societies (3 cr) F or S. Theories, methods, findings of comparative anthropological study; emphasis on religion.

ID425 Contemporary North American Indian (3 cr) F or S. Acculturation and current state of American Indian societies; emphasis on U.S. and Canada. Three 1-day field trips.

427 Peoples of Africa (3 cr) F or S. Native societies; contemporary problems arising from European penetration; emergence of native states.

435 North American Prehistory (3 cr) F or S. Theories, methods, findings of prehistoric North American archaeology.

WS480 General Linguistics (3 cr) F or S. WSU 450. Anthropological uses of linguistic data, language structure.

WS481 Field Methods in Linguistics (3 cr) S. WSU 453. *Prereq:* 480.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S. Subjects normally offered are: methods of anthropological research, anthropological theory, and human ecology. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S. Subjects normally offered are: anthropological theory, applied anthropology, and ethnohistory. *Prereq:* perm.

503 Anthropological Field Methods (1-8 cr, max 8) F & S (501). Individual field work in approved areas. *Prereq:* perm.

ID521 Seminar in Acculturation (2-4 cr, max 4) F or S (ID503c-504c). *Prereq:* perm.

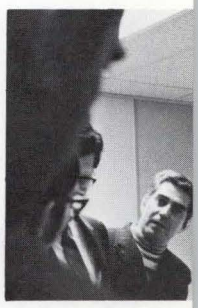
ID531 Historical Archaeology (3 cr) F or S. Excavation and analysis of historical archaeological sites, including acculturational implications. Three 1-day field trips. *Prereq:* perm.

WS571 Interpretation of Paleoenvironments (3 cr) F. WSU 546. Pleistocene paleoclimatic changes as inferred from sediments, land forms, fossil soil of archaeological importance. Two lec and one 3-hr lab per wk. *Prereq:* perm.

WS572 Physical Stratigraphy of Archaeological Sites (3 cr) S. WSU 547. Recognition, description, sampling, analysis

of sediments typically found with human cultural materials. Two lec and one 3-hr lab per wk. *Prereq*: perm.

ID573 Paleoecology (3 cr) F or S. See Geol ID548 for description.



Architecture (Arch)

Paul L. Blanton, Acting Head, Department of Art and Architecture (102 Art and Arch. North). Professors Bartell, Sloan; Associate Professors Ashland (*Landscape Architecture*), Blanton, Dotts, Snyder (*Landscape Architecture*); Assistant Professors Berg, Bevans, McCroskey, Smith.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

155-156 Introduction to Architecture (2 or 4 cr) F,S. *Lecture*: overview of environmental design professions, visual awareness, design theory. *Lab*: fundamentals of programs and systems, graphics, two and three dimensional studies in space, form and color. Majors register for 4 cr (two lec and two 3-hr labs per wk). General students register for 2 cr (two 1-hr lec per wk).

200 (s) **Seminar** (cr arr) F & S. *Prereq*: perm of dept.

255-256 Architectural Design I (3 cr) F-S. Fundamental form space and system concepts in architecture and interior design. Three 3-hr labs per wk.

257-258 Landscape Architecture I (3 cr) F-S. Arch 257: visual analysis and portrayal of landscape character; a study series; physical landscape analysis incorporates plant study and planting design; grading and earthwork introduced; terminal project combines these elements in an actual site study. Arch 258: fundamental landscape planning continues as applied to larger scale recreation and housing arrangement; soils, vegetation and other ecological design determinants. One lec and two 3-hr labs per wk; one 1-day field trip second semester. *Prereq*: 257 for 258.

263 Programs and Systems I (3 cr) F. Introduction to computer languages; problem programming employing applicable computer techniques; systems involving geometry and space.

265-266 Materials and Methods (3 cr) F-S. Materials, elements, and techniques of building; force systems, their resolutions and applications to the building frame.

275 History of Ancient Architecture (2 cr) F. Prehistoric, Egyptian, Western Asian, Aegean, Greek, and Roman periods.

276 History of Medieval Architecture (2 cr) S. Early Christian, Byzantine, Islamic, Romanesque, and Gothic periods.

285-286 Landscape Construction I-II (3 cr) F-S. Drainage and grading; soils and terrain in relation to earthwork as design determinants; irrigation layout and design of landscape structures. Three 3-hr labs per wk; one 1-day field trip each semester.

292 Plant Materials and Planting Design I (2 cr) F. Selection and use of plant materials in relation to soils, topography, climate. Field study. One lec and one 3-hr lab per wk; one 1-day field trip.

299 (s) **Directed Study** (cr arr) F & S. *Prereq*: perm of dept.

355-356 Architectural Design II (4 cr) F-S. Situation response, program formulation, synthesis in architecture. Four 3-hr labs per wk; one 7-day field trip during yr.

357-358 Landscape Architecture II (3 cr) F-S. Development of a spatial notation system and visual analysis of the landscape; plant study and planting design, grading problems, terminal project combines these elements in an actual site study. One lec and two 3-hr labs per wk; one 7-day field trip during yr. *Prereq*: 258 for 357; 357 for 358.

359-360 Interior Design I (3 cr) F-S. Situation response program formulation synthesis in interior design. Three 3-hr labs per wk; one 7-day field trip during yr.

363 Programs and Systems II (2 cr) F or S. Goals and identification of architectural form determinants; analytic methods for the synthesis of architectural elements using applicable computer techniques.

365-366 Building Technology I (4 cr) F-S. Basic behavior of elastic materials under various load conditions; design of elementary framing members, connections and assembly (wood). Environmental control; water supply, drainage, heating and air conditioning systems.

369-370 Interiors and Materials (3 cr) F-S. Use and application of textiles and furniture; drawings and models; furniture design.

375 History of Renaissance Architecture (2 cr) F. Renaissance and Baroque periods in Europe from 1400 to 1800.

376 History of Modern Architecture (2 cr) S. 19th and 20th centuries; emphasis on Europe and the U.S.

392 Plant Materials and Planting Design (2 cr) F. Continuation of 292. One lec and one 3-hr lab per wk; one 1-day field trip.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

455-456 Architectural Design III (4 cr) F-S. The building, the community and the environment in architecture. Four 3-hr labs per wk; one 7-day field trip during yr.

457-458 Landscape Architecture III (3 cr) F-S. Fundamentals, analysis and design applied to large-scale recreation and suburban development; soils, vegetation, other ecological criteria as design determinants. One lec and two 3-hr labs per wk; one 7-day field trip during yr. *Prereq:* 457 for 458.

459-460 Interior Design II (3 cr) F-S. Advanced problems in interior design. Three 3-hr labs per wk; one 7-day field trip during yr.

463 Programs and Systems III (2 cr) F or S. Analytic research problems; development of design systems and activity analysis using applicable computer techniques.

465-466 Building Technology II (4 cr) F-S. Design of steel and reinforced concrete buildings; theory and analysis of complex framing systems; environmental control; electrical systems; lighting and acoustics.

467-468 Introduction to City Planning (3 cr) F-S. History and theory of city planning and the problems associated with urban growth; analysis of 20th-century planning in the U.S. and Europe; group housing and urban development patterns.

469-470 Interiors and Materials II (2 cr) F-S. Use and application of ceramics, metals and plastics; problems of acoustics; drawings and models.

473-474 Seminar in Research Methods (2 cr) F-S. Problems relating to advanced information gathering, evaluation and program formulation; applicable computer techniques.

475-476 Architectural Design IV (5 cr) F-S. Case studies through analysis of significant aspects of building and project types. Five 3-hr labs per wk.

483 Park and Recreation Planning (2 cr) F. Recreation facilities of community role; recreation concepts; design in relation to community socio-economic structure, land use and recreation potential. One lec and one 3-hr lab per wk.

484 Regional Landscape Planning (2 cr) S. Land use, analysis and planning; use in relation to regional scale; problems in special area studies. One lec and one 3-hr lab per wk.

485-486 Building Technology III (2 cr) F-S. Seismic analysis in basic and complex buildings; special problems (building type); environmental control, communications, sound control systems.

493-494 Seminar in Urban Studies (2 cr) F-S. See Inter 493-494 for description.

495-496 Professional Practice I-II (3 cr) F-S. The architect's duties and responsibilities in practice (the construction documents and contracts), project supervision, office administration and comprehensive services; specification writing, unit costs, and building estimation.

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

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

503 Professional Problems (3 cr, max 6) F & S (590). Jury evaluation of project required.

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

ARMY ROTC—*See Military Science*

Art (Art)

Paul L. Blanton, Acting Head, Department of Art and Architecture (102 Art and Arch. North). Professors Dunn, Roberts *(Chairman Art)*, Westerlund; Assistant Professors Curtis, Wray; Instructor Moreland.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102 Survey of Art (2 cr) F-S. To promote an understanding and appreciation of the various arts; viewpoints of artist and layman.

111-112 Drawing I (2 cr) F-S. Freehand drawing; emphasis on expressive use of materials. Two 2-hr labs per wk and assigned work.

121-122 Design I (2 cr) F-S. Elements of design explored through various media in two and three-dimensional problems. Two 2-hr labs per wk and assigned work.

150 (s) **Workshop** (cr arr) SS. Normally offered in the following areas: painting, water color, sculpture, drawing, ceramics, design, print making, and jewelry. Consult the summer bulletin for length and special emphasis of each workshop when offered. *Prereq:* perm.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

211-212 Drawing II (2 cr) F-S. Advanced drawing from life and nature. Two 3-hr labs per wk. *Prereq:* 111-112.

221-222 Design II (2 cr) F-S. Advanced design explored through various media in two and three dimensional problems. Two 2-hr labs per wk and assigned work.

223-224 Lettering and Layout (2 cr) F-S. Art 223: calligraphy and basic letter forms as they relate to type. Art 224 is also offered as Journ 224; layout techniques and typography. One lec and one 3-hr lab per wk.

231-232 Painting I (2-4 cr, max 8) F-S. Fundamentals of painting and color. One 3-hr lab per wk per cr.

233-234 Water Color I (2 cr) F-S. Introduction to techniques of water color painting by individual instruction and group criticism. One lec and one 3-hr lab per wk. *Prereq:* 111-112.

241-242 Sculpture I (2 cr) F-S. Experiments in three dimensional design employing sculptural tools, techniques, and materials. Two 3-hr labs per wk.

261-262 Ceramics I (2 cr) F-S. Hand-built pottery; use of wheel; glazing and firing. Two 3-hr labs per wk.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301-302 History of Painting (3 cr) F-S. Technical study of the great occidental painters of history.

311-312 Drawing III (2 cr) F-S. Advanced drawing from life in various media. Three hrs per wk per cr.

323-324 Graphic Design I (2 cr) F-S. Problems in illustration and advertising design. Two 3-hr labs per wk; one 2-day field trip one semester.

331-332 Painting II (2-4 cr, max 8) F-S. Painting in oil from the model, nature, and abstract form. One 3-hr lab per wk per cr. *Prereq:* 111-112 or 231-232.

333-334 Water Color II (2 cr) F-S. Techniques of water color painting; sketching from still life and nature. One lec and one 3-hr lab per wk. *Prereq:* 111-112.

335-336 Composition (3 cr) F-S. Pictorial composition through student problems. *Prereq:* 111-112 and 211-212 or 331-332.

341-342 Sculpture II (2-4 cr, max 8) F-S. Individual investigation of sculptural concepts and advanced techniques. One 3-hr lab per wk per cr.

351-352 Printmaking (2 cr) F-S. Art of printmaking; relief, planographic and intaglio. Two 3-hr labs per wk. *Prereq:* 111-112.

361-362 Ceramics II (2 cr) F-S. Continuation of basic techniques; individual experiments with form and glazes. Two 3-hr labs per wk.

371-372 Jewelry (2 cr) F-S. Design of semi-precious materials; jewelry and silversmithing techniques; cutting and use of semi-precious stones. *Prereq:* 121-122.

391-392 Crafts in Art Education (2 cr) F-S. Design of leathers and other craft materials.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

423-424 Graphic Design II (2 cr) F-S. Advanced problems in illustration and advertising design; lectures on production and studio practice. One lec and two 3-hr labs per wk; one 2-day field trip one semester.

431-432 Painting III (2-4 cr, max 8) F-S. Advanced painting; portrait, life, and creative composition. One 3-hr lab per wk per cr.

433-434 Water Color III (2 cr) F-S.

441 Sculpture III (2-4 cr, max 8) F & S.

450 (s) **Workshop** (cr arr) SS. Normally offered in the following areas: painting, water color, sculpture, drawing, ceramics, design, print making, jewelry, art education, elementary school art, junior-high school art, and senior-high school art. Primarily for experienced artists and teachers. Consult the summer bulletin for length and special emphasis of each workshop when offered. *Prereq:* upper-div standing and perm.

463 Thesis (2-4 cr, max 8) F & S.

497 (s) **Proseminar** (1-3 cr, max 12) F & S. Normally offered in art and art education. *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (515). *Prereq:* perm.

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

503 Professional Problems (3-5 cr, max 10) F & S.

504 Studio Problems (3-5 cr, max 10) F & S (501).

Bacteriology (Bact)

Campbell M. Gilmour, Department Head (14 Life Sc. Bldg.). Professors Anderson, Gilmour; Associate Professors Beck, Teresa; Assistant Professor Lingg.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

250 General Bacteriology (4 cr) F & S. Primarily for students in the sciences. Two lec and two 2-hr labs per wk. *Prereq:* Chem 103 or 111. (LINGG)

254 Public Health and Hygiene (3 cr) S. Applied hygiene and sanitation from the standpoint of bacteriological and related sciences; prevention of communicable diseases; environment in relation to health and disease. May be taken by correspondence. (GILMOUR)

304 Pathogenic Bacteria (4 cr) S. Disease-producing organisms; cultural, biochemical and morphological characteristics which serve as a means of identification. Two lec and two 3-hr labs per wk. *Prereq:* 250. (TERESA)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

402 Food and Applied Microbiology (4 cr) S. Microbiological processes of importance to the food and fermentation industries; spoilage, spoilage control and sanitation; food poisoning and food-borne infections. Two lec and two 3-hr labs per wk; one field trip. *Prereq:* 250. (ANDERSON)

409 Immunology and Serology (4 cr) F. Theory of immunity; animal experiments in the production of immune sera, use of vaccines, preparation and testing of vaccines, sera, toxins and anti-toxins. Two lec and two 3-hr labs per wk. *Prereq:* 250, 304. (TERESA)

414 Clinical Laboratory Methods (4 cr) S. Methods of analysis used in clinical laboratories; lab procedures in hematology, clinical chemistry and serological diagnosis of disease. Two lec and two 3-hr labs per wk. *Prereq:* 250, 304, 409. (BECK)

421 Clinical Diagnosis: Internship (1-32 cr, max 32) F & S. Lab methods used in hospital and public health labs; work to be pursued in approved and designated hospital or public health labs containing suitable equipment and staff. Twelve mos training. *Prereq:* 414.

425 Soil Microbiology (3 cr) F. Also offered as Soils 425. Activities of microscopic

forms of plant and animal life within the soil, relationship between microbial activities, soil fertility and crop production. One lec and two 3-hr labs per wk. *Prereq:* 205. (ANDERSON)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (550). *Prereq:* perm.

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

503 **Physiology of Bacteria** (2-4 cr) F Alt/yrs 1972-73. Cellular physiology as it applies to bacteria; cell structure and composition, metabolism, growth and variation. Two lec or two lec with labs per wk. *Prereq:* 250 or perm. (BECK)

505 **Microbial Fermentations** (2-4 cr) F Alt/yrs 1971-72. Industrial and non-industrial fermentations; biochemical mechanisms and methods of fermentation analysis. Two lec or two lec with labs per wk. *Prereq:* 250, Chem 372, or perm. (BECK)

507 **Bacterial Taxonomy** (2 cr) F. Taxonomic groups of bacteria; philosophies of classification. *Prereq:* perm. (ANDERSON)

509 **Virology** (2-4 cr) F. Emphasis on pathogenesis and host-virus relationship. *Prereq:* perm. (LINGG, GILMOUR)

510 (s) **Selected Topics** (1-3 cr, max 6) F & S. Areas normally offered are: aquatic, food, immunology, medical, microbial ecology, physiology, and soils.

512 **Microbial Genetics** (2-4 cr) S. Also offered as Genet 512. Genetics of microorganisms; reporduction, variation and heredity. *Prereq:* elem course in genetics is recommended. (LINGG)

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Biology (Biol)

Doyle E. Anderegg, Head, Department of Biological Sciences (112 Life Sc. Bldg.). Professor Anderegg; Associate Professor Johnson.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

100 **Man and the Environment** (4 cr) F & S. Fundamental concepts of cellular biology, genetics, evolution ecosystem ecology, environmental problems, and philosophy regarding man's place in nature. Not open to majors or for minor credit. Three lec and one 2-hr lab per wk. (JOHNSON)

150 **Heredity and Man** (2 cr) F. Also offered as Genet 106. Inheritance with emphasis on man. Not open for credit to majors or minors, or to students who have previous credit in genetics. (FORBES)

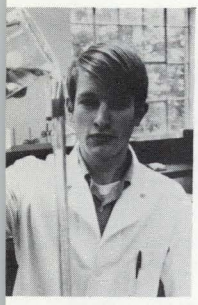
201 **Introduction to the Life Sciences** (4 cr) F & S. Biological principles important in understanding animals, plants and microorganisms, cytology, ecology, evolution, genetics, growth, molecular biology, physiology. Three lec and two 2-hr labs per wk. *Prereq:* one yr high school biology and one yr high school chemistry with grades of C or better, or 100, or Chem 103 or 111. (ANDEREGG)

202 **General Zoology** (4 cr) F & S. Anatomy, embryology, histology, and physiology of vertebrate and invertebrate animals; the animal kingdom. Three lec and two 2-hr labs per wk. *Prereq:* 201. (WALLACE)

203 **General Botany** (4 cr) S. Vegetative and reproductive processes and structures of flowering plants in relation to environment, heredity, economics, and distribution; representative individuals from other divisions of the plant kingdom in relation to flowering plants. Three lec and two 2-hr labs per wk. *Prereq:* 201. (NASKALI)

207 **Introduction to Oceanography** (3 cr) S. History, methods and materials; geological, physical-chemical and biological characteristics of the oceans; biological aspects emphasized. *Prereq:* course in biological science. (WALLACE)

331 **General Ecology** (3 cr) S. Ecological principles of plants and animals; struc-



ture and function of the ecosystem; major ecosystems of the world. Two lec and one 1-hr demonstration per wk. *Prereq:* 202-203 or one yr of biology. (RABE)

351 General Genetics (3 cr) S. Also offered as Genet 314 and PISc 314. Genetic mechanisms in animals, plants and microorganisms; forms important in biological research. May be taken by correspondence. *Prereq:* 201. (FORBES)

352 General Genetics Laboratory (1 cr) S. Also offered as Genet 315. One 3-hr lab per wk. *Prereq or coreq:* 351 or Genet 314 or PISc 314. (FORBES)

361 Biological Literature (1 cr) F & S. Botanical and zoological literature. *Prereq:* major in one of the life sciences or twenty cr in any combination of biology, botany or zoology. (TYLUTKI)

405 Biological Laboratory Procedures (2 cr) S. Lab organization, preparations and demonstrations using readily available, inexpensive materials.

N433 Bioecology (3 cr) SS. Consideration of the ecology of plants and animals in the field. Field labs and at least one weekend field trip.

442 Biological Evolution (3 cr) F. Evolution of organisms; character variability, adaptation, natural selection, population systems, ecologic control, speciation, evolutionary rates; development of mammals, including man. *Prereq:* 202-203 or perm. May be taken by correspondence. (JOHNSON)

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

445 Taxometrics (3 cr) F. Quantitative approach to classification; analysis of numerical and computer taxonomics, phenetic and phylogenetic systems, codification of biological entities; applications of information theory to taxonomy; a numerical taxonomic problem worked out on a computer. *Prereq:* Ag 321 or perm. (TYLUTKI)

451 Cytology (3 cr) S. Structure and function of the nucleus and cytoplasm in animal and plant cells. Two lec and one 3-hr lab per wk. *Prereq:* 351. (McMULLEN)

462 Biological Field and Museum Techniques (3 cr) S. Plants and animals in research and exhibit museums; organization and administration of collecting expeditions, types of specimens and field data obtainable, methods of analysis, storage of specimens, exhibit techniques, dissemination of research results. Two lec and one 3-hr lab per wk; one 4-day field trip. *Prereq:* perm. (LARRISON)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

504 Colloquium (1 cr, max 2) F & S.

555 Physiological and Molecular Genetics (2-3 cr) F or S. Also offered as Genet 537. *Prereq:* 351. (FORBES)

Botany (Bot)

Doyle E. Anderegg, Head, Department of Biological Sciences (112 Life Sc. Bldg.). Professors Baker (*Chairman*), Roberts; Associate Professors Aller, McMullen, Tulutki; Assistant Professor Naskali.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

241 Systematic Botany (3 cr) F & S. Classification and identification of flowering plants; local flora. Three 2-hr labs per wk. *Prereq:* Biol 203 or perm. (BAKER)

311 Plant Physiology (3 cr) F. Water exchange, foods, translocation, growth and nutrition, metabolism. Two lec and one rec-demonstration per wk. *Prereq:* Biol 203 and organic chemistry. (ROBERTS)

325 Morphology of Lower Plants (4 cr) F. Structures, life histories, classification and phylogeny of fungi and algae. Two lec and two 3-hr labs per wk. *Prereq:* Biol 203. (McMULLEN)

326 Morphology of Bryophytes and Vascular Plants (4 cr) S. Structure, life history, classification and phylogeny of liverworts, mosses, ferns, clubmosses, horsetails, conifers, flowering plants. Two lec and two 3-hr labs per wk. *Prereq:* Biol 203.

364 Botanical Microtechnique (3 cr) F.

Methods of treating plant tissues for microscopic examination or histochemical tests. Two 3-hr labs per wk. *Prereq:* Biol 203 or perm. (NASKALI)

411 Plant Physiology (4 cr) S. Reproductive and developmental physiology; floral induction, fruit physiology, abscission, cell differentiation, role of plant growth substances in physiological processes. Two lec and two 3-hr labs per wk. *Prereq:* Biol 203 and organic chemistry. (ROBERTS)

413 Mineral Nutiriton (3 cr) S (511). Alt/yrs 1971-72. Also offered as Soils 448. Physiology of mineral elements in higher plants; essentiality, metabolic function, deficiency symptoms and theories of ion uptake and translocation. Two lec and one 2-hr disc per wk. *Prereq:* 311 or 411 and organic chemistry.

425 Developmental Plant Anatomy (4 cr) F. Origin and development of tissues and organs of vascular plants in relation to heredity, environment, physiology. Eight hrs per wk. *Prereq:* Biol 203. (NASKALI)

432 Plant Ecology (3 cr) F. Structure, composition, dynamics and classification of plant communities; role of environmental factors; methods of sampling, phytogeography of North America. Two lec and one 3-hr per wk; three 1-day field trips. *Prereq:* Biol 203, 331; Bot 241 recommended. (ALLER)

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

WS437 Field Ecology (2 cr) S. WSU 463. Structure, environmental relations; dynamism of local desert, grass land and forest communities. Field trips. *Prereq:* 435.

441 Agrostology (3 cr) F. Classification, distribution, structure of grasses. One lec and two 3-hr labs per wk. *Prereq:* Biol 203 or perm. (BAKER)

N443 Field Botany (3 cr) SS. Field observations, collection, preservation and identification of local plants; consideration of habitat. Two lec and three 3-hr labs per wk.

ID472 Biology of Fungi (4 cr) S. Life activity of fungi; examination of structure, life histories, classification. Two lec and two 3-hr labs per wk. *Prereq:* Biol 203 or perm. (TYLUTKI)

474 Phycology (4 cr) F. Morphology and ecology of fresh water and marine algae; principles of classification; collection, identification, making of permanent microscopic preparations. *Prereq:* Biol 203. (McMULLEN)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

504 Colloquium (1 cr, max 2) F & S.

512 Plant Growth Substances (3 cr) S. Alt/yrs 1972-73. Physiology of some auxin regulated growth phenomena; current theories of auxin action in higher plants. Two lec and one 2-hr disc per wk. *Prereq:* 311 or 411 and organic chemistry. (ROBERTS)

532 Autecology of Plants (3 cr) S. Alt/yrs 1972-73. Factors of the environment, plant reactions, ecological adaptations. Two lec and one 2-hr lab-disc per wk. *Prereq:* 432. (ALLER)

535 Plant Geography (3 cr) S. Alt/yrs 1971-72. Spatial relations of plants and plant communities as determined by intrinsic factors such as genetics and evolution, and extrinsic factors such as physiography, geology, climate, climatic change; mechanics of distribution; discontinuity patterns. *Prereq:* 432 or perm. (ALLER)

539 Physiological Ecology (2 cr) F or S. Alt/yrs 1971-72. Physiological mechanisms which influence plant distribution: natural inhibitors, toxins, symbiosis, soil nutrients, radiation; micro- and macro-organismal interrelationships. *Prereq:* 432.

558 Genetics of Fungi (3 cr) S. Alt/yrs 1972-73. Also offered as Genet 511. Genetic systems and sexuality of fungi. *Prereq:* 472, Biol 351, or perm. (TYLUTKI)

WS575 Basidiomycetes (3 cr) F or S. WSU PP 522. Taxonomy, physiology, reproduction of rusts, smuts, higher basidiomycetes. *Prereq:* 241, Biol 203, or PISc 303.

WS576 Ascomycetes and Fungi Imperfecti (2 cr) F or S. WSU PP 523. Taxonomy, phylogeny, physiology, reproduction of ascomycetes, fungi imperfecti. *Prereq:* 241, Biol 203, or PISc 303.

WS577 Myxomycetes and Phycomycetes (2 cr) F or S. WSU PP 524. Taxonomy, phylogeny, physiology, reproduction of

myxomycetes and phycomycetes. *Prereq:* 241, Biol 203, or PISc 303.

WS590 Advanced Topics in Botany (2 cr) S. WSU 590. Recent research in plant science; includes library research and preparation of a term paper. *Prereq:* major in botany or equiv.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Business (Bus)

Russell L. Chrysler, Department Chairman (213 Admin. Bldg.). Professors Carter, Chrysler, Dobler; Associate Professors Del Mar, Golis, Moore, Seelye, Sheldon; Assistant Professors Hallaq, Hulbert, Lillis, Merk, Wischmeyer.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Introduction to Business Enterprises (3 cr) F (RI02). Introduction to business and economics.

R135 Principles of Cost Estimating (3 cr) F. Techniques and skills; cost elements, data sources, and their application.

R136 Government Contract Pricing (3 cr) S. Methodology of pricing. *Prereq:* R135 or perm.

R137 Fundamentals of Purchasing (3 cr) F or S. Basic principles and methods of procurement, including contract types, finance, law, organization, and management.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

231 Statistics (4 cr) F & S. Also offered as InfSc 231. As applied to study and interpretation of economic phenomena. Three lec and one 2-hr lab per wk. *Prereq:* Math 111 or 140-141.

233 Introduction to Computers (3 cr) F & S. Also offered as InfSc 233. Elements of programming; computer operation.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301 Financial Management (3 cr) F & S. Policies and practices. *Prereq:* Acctg 132, Econ 252.

302 Financial Institutions and Credit (3 cr) S. Emphasis on financial intermediaries, investment banking, government financial institutions. *Prereq:* Acctg 132, Econ 252.

311 Introduction to Management Theory (3 cr) F & S. Organization structures; philosophy and values in business organizations; organization as a social issue.

312 Industrial Management (3 cr) F. Location, buildings, equipment, layout, materials, production control, personnel policies. One 1-day field trip. *Prereq:* 231.

313 Office Management (2 cr) S. Application of generally-accepted principles to administrative services.

321 Marketing (3 cr) F & S. Marketing processes, marketing institutions, and middlemen. *Prereq:* Econ 252.

323 Principles of Advertising (3 cr) F. Function; social and economic aspects; motivation, copy, illustration, layout, media; campaign planning. *Prereq:* jr standing. May be taken by correspondence.

324 Sales Management (3 cr) S. Selecting, training, compensating, stimulating, supervising, and directing the selling efforts of an outside sales force; organization and methods.

R325 Advanced Purchasing (3 cr) F & S. Function of purchasing; solicitation, selection of the type of contracts, administration, changes, and problems in the procurement process.

333 Electronic Computers in Business and Economics (3 cr) S. Also offered as InfSc 333. Impact of computers on decision making; FORTRAN IV, COBOL, PL/1; information science; information systems and data processing. *Prereq:* 233.

334 Statistics for Business Decisions (3 cr) S. Also offered as InfSc 334. Decision making under conditions of uncertainty; utility and probability theory. *Prereq:* 231.

R360 Government Contract Law and Administration (3 cr) F or S. Principles of law which affect a government agency's action; emphasis on AEC. *Prereq:* perm.

R361 Contract Changes and Terminations (3 cr) F or S. Theory and techniques associated with changes in scopes of work called for in prime and subcontracts.

365 Business Law (3 cr) F & S. Legal framework of business enterprise; importance and role of law; private property and contract as basic concepts in a free enterprise system. May be taken by correspondence.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 Investments (3 cr) F or S. Problems; types of securities. One 1-day field trip. *Prereq:* 301. May be taken by correspondence.

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

404 Life Insurance (3 cr) S. Companies, contracts, uses, premium computations, economic aspects. *Prereq:* 403 or perm.

411 Organization Theory (3 cr) F & S. Management; theories and research in human behavior and their managerial applications. *Prereq:* 311.

412 Personnel Management (3 cr) F. Organization; policies and procedures. *Prereq:* 311 or perm.

413 Human Relations in Business (3 cr) F & S. Case study method used to apply behavioral science theories and principles for the development of human collaboration. *Prereq:* 311 or perm.

414 Management Policy (3 cr) S. Emphasis on policy decision making under conditions of uncertainty. *Prereq:* 311 or perm.

421 Marketing Problems (3 cr) S. Channels of distribution; distribution policies; sales promotion; price determination; price policies. *Prereq:* 321.

422 Marketing Research and Analysis (3 cr) S. Purposes, methods, and techniques; market potential analysis; product analysis and adoption. *Prereq:* 231, 321.

423 Retail Merchandising Fundamentals (3 cr) F. Location, capital, and physical requirements; store organization, personnel; merchandise; pricing; buying and receiving; sales promotion; customer services; retail expense management. *Prereq:* 321.

424 Retail Merchandising Problems (3 cr) S. Site selection; physical plant; personnel; purchase planning; pricing; buying; and receiving merchandise; advertising; customer services. One field trip. *Prereq:* 423.

425 Intermediate Marketing Management (3 cr) F. Demand analysis theory; structure of distribution and location theory; organizational buying behavior; decision making by marketing management.

432 Quantitative Methods in Business and Economics (3 cr) F or S. Also offered as Econ 432 and InfSc 432. Quantitative methods employed in solving business and economic problems. *Prereq:* 231, Econ 252, or perm.

R434 Management of Major Procurements (3 cr) F or S. Problems associated with the procuring of major items and systems, such as special contracts, negotiation techniques, organization, quality assurance, expediting, inspection, and disputes. *Prereq:* perm.

436 Business and Economic Fluctuations (3 cr) S. Also offered as Econ 436. Application of recent theoretical, statistical, and institutional developments to business forecasting. *Prereq:* 231, Econ 372.

438 Advanced Statistics (3 cr) S. Also offered as InfSc 438. Correlation analysis, time correlation and business forecasting, analysis of variance, statistical analysis of business cycles. *Prereq:* 231.

439 Systems Analysis and Simulation (3 cr) S. Also offered as InfSc 439. Analysis of the various types of systems within a business firm; creation and testing of systems utilizing the technique of computer simulation. *Prereq:* 233.

R440 (s) **Special Topics in Computer Applications.** (3 cr, max 12) F & S. Normally offered in graphic devices and applications, conversational languages and terminals, assembly language, and computer storage devices. *Prereq:* perm.

441 Labor Relations (3 cr) F or S. See Econ 441 for description.

442 Government Regulation of Business (3 cr) F or S. Also offered as Econ 442.

Relations between government and business; types of government control. *Prereq:* Econ 252 or perm.

444 International Commercial Policy (3 cr) S. Also offered as Econ 444. Principles of international trade; tariff, foreign exchange, market development, dumping, foreign policies, trade agreements, merchandising. *Prereq:* Econ 251.

450 The Computer and Information Science (3 cr) F or S. Also offered as InfSc 450. Computer components, capabilities, functions, software, and languages; systems analysis; role in the business organization. *Prereq:* perm.

461 Real Estate (3 cr) F. Listing, selling, leasing, financing, brokerage; fundamentals of valuation and of listing property management. May be taken by correspondence.

462 Real Property Appraisal (3 cr) S. Theories and principles in estimating value of natural resources and any attached improvements. *Prereq:* Econ 252 or perm.

X463 Real Estate Fundamentals (0 cr) X. Practical basic study of real estate activity; legal, social, economic, financial operational phases of real estate in Idaho.

X464 Real Estate Law (0 cr) X. Practical applied study of Idaho real estate law, to help avoid legal difficulties arising from real estate transactions.

466 Business Law (3 cr) F. Trade regulations, negotiable instruments, sales, chattel mortgages, conditional sales, suretyship, insurance. *Prereq:* 365 or perm. May be taken by correspondence.

467 Business Law (3 cr) F. Agency, partnerships, corporations, real property. *Prereq:* 365 or 466.

493-494 Seminar in Urban Studies (2 cr) F & S. See Inter 493-494 for description.

495 Honors (3 cr) F & S. Directed program of individual study to provide selected students an opportunity for more advanced work than normally available to undergraduates. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (511). Normally offered in real estate, investments, insurance, government regulation of business, industrial management, industrial relations, and current business problems. *Prereq:* perm.

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

503 Financial Policy (3 cr) F (501). Social and economic implications of the financial process. *Prereq:* perm.

513 Administrative Organization (3 cr) F. Organizational theory; includes research and theories in other fields, such as behavioral sciences and economics as related to business organization theory. *Prereq:* perm.

521 Advanced Marketing (3 cr) S. Production development, pricing, demand creation, physical distribution, channel selection. *Prereq:* perm.

525 Operations Management (3 cr) F. Decision making in production and operations management; design and control of the production system. One 1-day field trip. *Prereq:* 231.

532 Dynamics of Business Decisions (3 cr) S. Also offered as InfSc 532. Statistical decision theory and operations research techniques. *Prereq:* 231 or perm.

533 Automation Systems (1 cr) F. Also offered as InfSc 533. Types of computers for accumulation and control of accounting data; programming and multiple use of data; audit of machine systems.

R571-R572 Techniques of Management Science (3 cr) F or S. Recent techniques, including PERT-CPM techniques, statistical decision procedures, inventory models, queing models, waiting time models, theory of games and linear programming, allocation models, replacement models, competitive models and time and motion studies. *Prereq:* perm.

580 Seminar in Administration and Contemporary Issues (3 cr) F or S. See Inter 580 for description.

R597-R598 Statistical Methods in Business Applications (3 cr) F-S. Development and application of mathematical statistics to business procedures. *Prereq:* perm.

Business Education (BusEd)

Robert M. Kessel, Chairman (230 Admin. Bldg.). Professors Ertel (*Distributive Education*), Kessel (*Business Education*).

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

491-492 Teaching Business Education I-II (2-3 cr; 3 cr) S. Methods and materials. BusEd 491: office occupations; BusEd 492: basic business subjects. *Prereq:* perm.

493 Teaching Distributive Education (3 cr) F. Methods and materials. *Prereq:* perm.

496 Directed Work Experience (2 cr) F & S. 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 Techniques (3 cr) S. Also offered as VocEd 497. Problems of the coordinator in the cooperative part-time program; guidance and selection; placing students in work stations; assisting job adjustment; developing the training program.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

503 (s) **Workshop** (cr arr) SS (507). Normally offered in office occupations, economic education, and distributive education. Consult the summer school bulletin for the length and special emphasis on each workshop when offered.

520 Office Occupations Subjects (3 cr) F or S. Methods and materials; standards of achievement; review of literature and research. *Prereq:* perm.

521 Basic Business Subjects (3 cr) F or S. Methods and materials; standards of achievement; review of literature and research. *Prereq:* perm.

522 Issues in Business Education (3 cr) F or S. Philosophies, objectives, trends, organization patterns of business education in secondary schools. *Prereq:* perm.

523 Adult Distributive Education (3 cr) F or S. Establishing and developing adult programs in distributive education. *Prereq:* perm.

524 Issues in Distributive Education (3 cr) F or S. Philosophies, objectives, trends, organization patterns of distributive education in secondary schools. *Prereq:* perm.

Chemical Engineering (ChE)

Robert R. Furgason, Department Chairman (308 Buchanan Engr. Lab). Professors Edwards, Furgason, Hoffman, Jackson; Associate Professor Scheldorf; Assistant Professors Blair, Thomson; Research Engineer McConnachie.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

323 Material and Energy Balances (3 cr) F & S. Material and energy balance calculations with examples from selected chemical processes and unit operations.

330 Stage-wise Operations (3 cr) S. Stage-wise process operations including distillation extraction, absorption and ion exchange. Coordinated lec-lab periods. *Prereq:* 323, ES 321.

344 Automatic Process Control (3 cr) S. Process dynamics and control, including application of industrial instruments to processing systems. Two lec and one 3-hr lab per wk. *Prereq:* EE 200.

371 Process Engineering (2-3 cr) F or S. For non-majors. Applications of chemical engineering principles to industrial

processing; unit operations of interest to such industries as wood utilization, food processing, dairying and fermentation. Not open for credit to majors. *Prereq:* perm.

393 Chemical Engineering Projects (1-3 cr, max 9) F & S. Problems of a research or exploratory nature. *Prereq:* perm of dept.

423 Reactor Kinetics and Design (3 cr) F. Kinetics and design of chemical reactors; chemical equilibrium reaction rates catalysis and reactor types. *Prereq:* 323, Chem 305.

430-431 Transport and Rate Processes I-II (3-4 cr) F & S. Transport phenomena involving mass, heat and momentum transfer, with applications; design of processing equipment from rate considerations including chemical reactors and such unit operations as drying, crystallization, filtration, sedimentation and fluidization. Coordinated lec-lab periods. *Prereq or coreq for 430:* ES 320; *prereq or coreq for 430-431:* Math 310.

443 Instrumentation Laboratory (1 cr) F or S. Analytical techniques and instrumentation equipment. One 3-hr lab per wk. *Prereq:* perm.

453-454 Chemical Process Analysis and Design (3 cr) F-S. Estimation of equipment and total investment costs, annual costs and profits and the indicies of attractiveness; optimization, design of equipment and entire processes including economic considerations; selection of alternate equipment and processing schemes; design in the presence of uncertainty; case studies on selected processes. One 1-wk field trip. *Prereq:* Econ 251, sr standing.

490 Introduction to Chemical Engineering Principles (3 cr) F or S. For chemists, mechanical engineers and other non-chemical engineers. Material and energy balances and unit operations in use at NRTS. *Prereq:* perm.

491-492 Seminar (0 cr) F-S. Professional aspects of the field; recent developments and topics. Graded on the basis of P or F. *Prereq:* sr standing.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (505). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (507). *Prereq:* perm.

515 Transport Phenomena (3-4 cr) F or S. Also offered as ME 515. Unified treatment of momentum, heat and mass transfer in three dimensions; unsteady state; pertinent vector equations; methods of solution. *Prereq:* perm.

525 Advanced Heat Transfer (2-3 cr) F or S. Applications of fundamentals of heat conduction, radiation and convection; relationships to fluid dynamics and mass transfer; economics and design applications. *Prereq:* perm.

527 Chemical Engineering Thermodynamics (2-3 cr) F or S. Equilibrium in physical and chemical systems; theoretical and generalized prediction of thermodynamic properties of pure materials and solutions, including deviations from ideality. *Prereq:* perm.

529 Chemical Engineering Kinetics (2-3 cr) F or S. Analysis of industrial chemical reactions; theories of reaction rates and catalysis; catalytic reactor design. *Prereq:* perm.

534 Chemical Engineering Processes (2-3 cr) F or S. Industrial processes, including electrochemistry and high pressure technology; petroleum refinery engineering, and pulp and paper technology. *Prereq:* perm.

537 Advanced Fluid Mechanics (2-3 cr) F or S. Fluid systems encountered in industry; non-Newtonian behavior of particle and plastic systems; two-phase situations including fluidization; film flow. *Prereq:* perm.

541 Chemical Engineering Analysis I (2-3 cr) F or S. Also offered as ME 541. Mathematical analysis of chemical engineering operations and processes; mathematical modeling and computer applications. *Prereq:* perm.

542 Chemical Engineering Analysis II (2-3 cr) S. Numerical and analytical methods applied to solution of chemical engineering problems; primary emphasis is on numerical techniques to solve partial differential equations including matrix manipulations and iterative techniques; application of approximate variational methods and integral transforms are also discussed. *Prereq:* perm.

544 Advanced Process Control (2-3 cr) F or S. Theory of process dynamics and systems engineering. Two lec and one 3-hr lab per wk. *Prereq:* perm.

545-546 Diffusional Operations I-II (2-3 cr) F-S. Diffusion and mass transfer in the

operation of absorption, extraction, distillation and drying; design calculations. *Prereq:* perm.

571 **Advanced Plant Design** (2-3 cr) F or S. Design of process plants for optimum cost and economic return; scale-up of pilot plants; comprehensive problems in chemical engineering design. *Prereq:* perm.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Chemistry (Chem)

Malcolm M. Renfrew, Department Head (118 Physical Science Bldg.). Professors Cooley, Grahn, Gustafson, Raunio, Renfrew, Shreeve, Tyagarajan; Associate Professors Garrard, Grieb, Porter; Visiting Associate Professor Nelson; Assistant Professors Barrus, Brown, Spangler, Wai. Willett.

RELATED FIELDS: For courses in agricultural chemistry and soil chemistry, see agricultural biochemistry.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 **Concepts of Chemistry** (4 cr) F & S. Non-mathematical descriptive treatment relating key developments of chemistry to modern living. Demonstrations; three lec and one 2-hr lab per wk.

102 **Chemistry and the Citizen** (3 cr) F & S. Impact of chemistry on society; what is new in chemical technology and its effect on the public; transfer of chemical know-how to under-developed nations; guidelines for the non-scientist in evaluating chemical science and industry.

103 **Introduction to Chemistry** (4-5 cr) F & S. Principles and applications. Students having high school chemistry may earn only four cr. Not open to students who have taken 111. Three lec, two rec, and one 3-hr lab per wk.

111 **Principles of Chemistry** (4 cr) F & S. Principles and applications. Not open to students who have taken 103. Three lec, one rec, and one 3-hr lab per wk. *Prereq:* high school chemistry.

112 **Inorganic Chemistry and Qualitative Analysis** (5 cr) F & S. Elementary theoretical chemistry and its application to analytical practice. Lab work consists of the qualitative separation of cations and anions by semi-micro methods. Max eight cr in 112 and 114 combined. Three lec and two 3-hr labs per wk. *Prereq:* 103 or 111.

114 **General Chemistry** (4 cr) F & S. Continuation of 103 or 111 for students who do not plan to take further professional chemistry courses. Some work in inorganic, organic, and biochemistry, electrochemistry, nuclear chemistry, and in qualitative inorganic analysis. Max eight cr in 112 and 114 combined. Three lec, one rec, and one 3-hr lab per wk. *Prereq:* 103 and 111.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

253 **Quantitative Analysis** (5 cr) F & S. Theory and practice of gravimetric and volumetric analysis with introduction to modern analytical chemistry. Three lec and two 3-hr labs per wk. *Prereq:* 112.

275 **Carbon Compounds** (3 cr) F & S. Aspects of organic chemistry important to students in the life sciences. Duplicate credit will not be allowed in first-year courses in organic chemistry. *Prereq:* 103 or 111.

277 **Organic Chemistry I** (3 cr) F & S. Principles and theories of organic chemistry and the properties, preparations, and reactions of organic compounds. Duplicate credit will not be allowed in first-year courses in organic chemistry. *Prereq:* 112 or 114.

278 **Organic Chemistry I: Laboratory** (1 cr) F or S. Lab to accompany 275 or 277. One 3-hr lab per wk. *Prereq or coreq:* 275 or 277.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

302 **Principles of Physical Chemistry** (3 cr) F or S. Emphasis on topics important in biological and agricultural sciences.

Prereq: 112 or 114, Math 180, Phys 113 or perm.

303 Principles of Physical Chemistry Laboratory (1 cr) F or S. Lab to accompany 302. One 3-hr lab per wk. *Prereq or coreq:* 302.

N304 Principles of Theoretical Chemistry (3 cr) SS (N511). Various topics in physical chemistry such as gas laws, equilibrium, electrochemistry, and kinetics.

305-306 Physical Chemistry (3 cr) F-S. Kinetic theory, thermodynamics, and the constitution of matter. *Prereq:* 112 or 114, Math 200; *prereq or coreq:* Phys 222.

307-308 Physical Chemistry Laboratory (1 cr) F-S. Lab to accompany 305-306. One 3-hr lab per wk. *Prereq or coreq:* 305-306.

N363 Inorganic Chemistry (3 cr) SS. Elements and their compounds; relationship between atomic structure and chemical properties; introduction to modern theories.

372 Organic Chemistry II (3 cr) F & S. Continuation of 277. *Prereq:* 277.

374 Organic Chemistry II: Laboratory (1 cr) F & S. Lab to accompany 372. One 3-hr lab per wk. *Prereq or coreq:* 372.

376 Organic Chemistry II: Laboratory (2 cr) F & S. Primarily for majors. Lab to accompany 372, including qualitative analysis and modern instrumental techniques. Two 3-hr labs per wk. *Prereq or coreq:* 372.

N377 Organic Chemistry (3 cr) SS. Introductory organic chemistry with emphasis on topics which will aid in answering the questions of high school students.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

N408 Chemistry for High School Teachers (2 cr) SS (N508). Acid base theory (Lowry-Bronsted and Lewis approaches), pH, buffer theory, oxidation and reduction, electrochemistry and introductory rate theory, and introductory kinetics.

409 Proseminar (1 cr) F. Current publications in chemistry and chemical engineering with reports on typical scientific papers. *Prereq:* 372 and sr standing.

N411 Experimental Chemistry I (3 cr) SS. Based largely on the CHEM Study Curriculum. The CHEM Study Curriculum texts and films are utilized. N411 should be followed by N412 the following summer. Two 4-hr sessions per wk.

N412 Experimental Chemistry II (3 cr) SS. The CHEM Study Curriculum, utilizing the CHEM Study Curriculum texts and films. Two 4-hr sessions per wk.

R413 Radiochemistry for Engineers (2 cr) F or S. Primarily for engineers. Properties of nuclear particles, nuclear reactions, techniques of producing reactions, interaction of radiation with matter, and radiochemical techniques. *Prereq:* perm.

416 Methods in Radiochemistry (3 cr) F or S. Basic theory and practice in use of radionuclides; practical lab experience. Two lec and one 3-hr lab per wk. *Prereq:* 306 or perm. Enrollment is limited by facilities.

418 Environmental Chemistry (3 cr) F or S. Case histories in which new chemical processes or products have had recognizable impact upon ecological systems either directly or through primary modification of the physical environment; responsibilities of industry, governmental laboratories, and universities for corrective action; chemical counter measures for damage to environment. *Prereq:* jr standing and perm.

435 Principles of Chemical Instrumentation (3 cr) F or S. One lec and two 3-hr labs per wk. *Prereq:* 253, Phys 222, or perm.

441 Chemical Literature (1 cr) F or S. Survey of important chemical reference works and periodicals with experience in the use of these sources. *Prereq:* perm.

454 Instrumental Analysis (4 cr) F or S. For students in chemistry and allied fields. Techniques in operating new and specialized instruments for qualitative and quantitative analysis and analytical methods of an advanced nature. Two lec and two 3-hr labs per wk. *Prereq:* 253, 305; *prereq or coreq:* 306.

N459 Analytical Principles (3 cr) SS. Basic principles involved in analytical procedures and typical methods of analysis.

N461 Structure of Matter (3 cr) SS (N509). Also offered as Phys N461. Nuclear structure, chemical periodicity, electronic structure of atoms, crystal structure, atomic and molecular orbital theory, structure of metals, intermolecular forces, and transition metal complexes.

463 Inorganic Chemistry (3 cr) F or S. Principles, complex ions and coordination compounds, theory of acids and bases, non-aqueous solvents, familiar ele-

ments and their relationship to the periodic table. *Prereq:* 305; *prereq or coreq:* 306 or perm.

464 Inorganic Chemistry Laboratory (1 cr) F or S. Lab to accompany 463. One 3-hr lab per wk. *Coreq:* 463.

473 Intermediate Organic Chemistry (3 cr) F or S. Theories and mechanisms of organic chemistry. *Prereq:* 372; *prereq or coreq:* 306.

475 Qualitative Organic Analysis (3 cr) F or S. Homologous reactions and the separation and identification of various types of organic compounds. One lec and two 3-hr labs per wk. *Prereq:* 372 or perm.

480 Elements of Biochemistry (3 cr) F or S. Survey. Max six cr in any combination of 480, 481, and 482. *Prereq:* 112 or 114, 275 or 277.

481-482 Biochemistry (3 cr) F or S. Modern biochemistry. Max six cr in any combination of 480, 481, and 482. *Prereq:* 372 and 302 or 306, or perm.

483 Biochemistry Laboratory (1-2 cr, max 2) F & S. Chem 483 may accompany 480 or 481. One 3-hr lab per wk. *Prereq:* 278; *coreq:* 480, 481, or 482.

N485 Biochemistry (3 cr) SS (N580). Chemistry of living things and substances of which they are made; applications to nutrition and to chemistry of basic life processes. *Prereq:* organic chemistry.

N490 (s) **Professional Problems** (1-6 cr, max 6) SS (N586). Individual study in any field of chemistry. *Prereq:* perm.

491 (s) **Research** (1-6 cr, max 6) F & S. *Prereq:* perm of dept.

493 Molecular Structure and Quantum Chemistry (3 cr) F or S. Applications of quantum theory to chemical bonding, molecular spectroscopy, and molecular structure. *Prereq:* 306 or perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

WS503 Advanced Topics in Inorganic Chemistry (3 cr, max arr) F or S. WSU 503. Recent significant developments. *Prereq:* 561.

505 Chemical Thermodynamics (3 cr) F or S (501). Partial molar quantities and systems of variable composition; applications to solutions of non-electrolytes and electrolytes; introduction to statistical thermodynamics. *Prereq:* 306. Students unable to demonstrate proficiency in elementary thermodynamics and calculus will be required to review 305.

506 Chemical Kinetics (3 cr) F or S (502). Theory and application of chemical kinetics to systems reacting in the gaseous phase and in liquid solution. *Prereq:* 306.

ID507 Topics in Physical Chemistry (1-9 cr, max 9) F or S. Colloid chemistry, polarography, nuclear magnetic and electron paramagnetic resonance; kinetics of irreversible processes; other topics not covered extensively in regularly scheduled courses. *Prereq:* perm.

513 Nuclear Chemistry (3 cr) F or S. Introduction to artificial and natural radioactivity, tracer methods, and atomic energy. *Prereq:* 306 or Phys 360.

R516 Methods in Radiochemistry (3 cr) F or S. Radiochemical techniques and applications of tracers to chemistry, fundamentals of radioactive decay, statistical relationships, interaction of radiation with matter, production of radioactive samples, chemistry of the radioactive elements. *Prereq:* perm.

517 Chemistry of High Polymers (3 cr) F or S. Relationship of structure and properties of polymeric materials, the applications of thermodynamic principles to polymers and their solutions, and the kinetics of polymerization. *Prereq:* 306.

N527 History of Chemistry (3 cr) SS. Development of the theories and laws of chemistry.

WS537 Advanced Topics in Physical Chemistry (2 cr, max arr) F or S. WSU 537. Selected subjects; irreversible thermodynamics; chemical bonding; NMR; ligand field theory; x-ray diffraction; neutron diffraction.

WS544 Advanced Topics in Organic Chemistry (3 cr, max arr) F or S. Alt/yrs 1971-72. WSU 544. Current research. *Prereq:* 575.

553 Modern Analytical Methods (3 cr) F or S. Absorption and emission spectroscopy; polarography; potentiometry; nuclear magnetic resonance; chromatography. *Prereq:* 306, 454, or perm.

555 Advanced Analytical Chemistry (3 cr)

F or S. Fundamental principles of classical analytical chemistry; homogeneous and heterogeneous equilibria, complex ions; analytical separations, non-aqueous equilibria. *Prereq:* 306 or perm.

556 Chemical Spectroscopy (3 cr) F or S. Interpretation of spectra.

R557 Topics in Analytical Chemistry (1-6 cr, max 6) F or S. Techniques and methods not usually covered in 555; potentiometry, polarography, coulometry, and spectroscopic methods. *Prereq:* perm.

561 Advanced Inorganic Chemistry (3 cr) F or S. Theoretical approach to the underlying principles of inorganic chemistry with an integration of theory and descriptive chemistry. *Prereq:* 306, 463, or perm.

563 Advanced Inorganic Chemistry Laboratory (2 cr, max 4) F or S. Inorganic preparations utilizing aqueous, non-aqueous, and high vacuum techniques. *Prereq or coreq:* 561.

ID565 Topics in Inorganic Chemistry (1-9 cr, max 9) F or S. Coordination compounds; halogens; less familiar elements; clathrate, interstitial, non-stoichiometric compounds; chemical bonding; inorganic reaction mechanisms. *Prereq:* perm.

WS568 Advanced Topics in Biochemistry (2 cr, max arr) F or S. WSU 568. Current research. *Prereq:* 482.

ID571 Topics in Organic Chemistry (1-9 cr, max 9) F or S. Selected topics from the current literature. *Prereq:* perm.

573 Synthetic Organic Chemistry (3 cr) F or S. Use of organic reactions in syntheses.

575 Mechanisms of Organic Reactions (3 cr) F or S. Nucleophilic substitution, reactions of carboxylic acids and esters, cabanions, electrophilic and nucleophilic aromatic substitutions, elimination reactions, addition reactions. *Prereq:* 306, 473.

579 Physical Organic Chemistry (3 cr) F or S. (576). Physical chemical methods applied to organic chemistry.

581 Carbohydrate and Lipid Chemistry (3 cr) F or S. Also offered as AgBiC 581. Chemistry of carbohydrates, lipids, and related compounds. *Prereq:* 482.

582 Amino Acid and Protein Chemistry (3 cr) F or S. Also offered as AgBiC 582. Chemistry of amino acids, proteins, and nucleo-proteins. *Prereq:* 482.

ID583 Advanced Topics in Biochemistry (1-9 cr, max 9) F or S. Recent research in enzymes, hormones, complex lipids, vitamins, nucleic acids, antibiotics, viruses, biochemical genetics. *Prereq:* perm.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Civil Engineering (CE)

Robert L. Schuster, Department Chairman (104 Buchanan Engr. Lab. Bldg.). Professors Hall, Janssen, Lottman, Russell, Schuster, Smith, Wallace, Warnick; Associate Professors Haber, Hathaway, Junk, Peebles, Sack, Watts; Assistant Professor Brockway.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

112 Elementary Surveying (2 cr) S. Primarily for non-engineering students. Theory of measurements and manipulation of surveying instruments; application of surveying methods to construction, topographic and land surveys. One lec and one 3-hr lab per wk. *Prereq:* Math 140, 141 and Engr 101 or Arch 155 or Geog 251.

211 Engineering Measurements (4 cr) F. Primarily for engineering students. Theory and practice; types and distribution of errors; manipulation of instruments, route and land surveying, construction surveys, introduction to photogrammetry and urban planning. Three lec and one 3-hr lab per wk. *Prereq:* Math 140, 141, Engr 101 or equiv.

218 Elementary Surveying and Photogrammetry (3 cr) F or S. Primarily for non-engineering students. Theory of measurements; public land surveying and manipulation of surveying instruments,

principles of photogrammetry and photo-interpretation. Two lec and one 3-hr lab per wk. *Prereq:* Math 140, 141.

317 Land Surveying (2 cr) F or S. History and development; related laws; preparation and filing of property descriptions and plats; subdivision planning; methods for property surveys. *Prereq:* 211.

319 Photogrammetry and Photo-Interpretation (3 cr) F or S. Geometry of single and stereoscopic pairs of aerial photographs; stereo-plotters; photo-interpretation; applications to problems of engineering importance. Two lec and one 3-hr lab per wk. *Prereq:* 211.

322 Hydraulics (4 cr) S. Quantitative hydrology and application of principles of fluid mechanics to problems in hydraulic engineering. Three lec and one 3-hr lab per wk. *Prereq:* ES 320.

342 Theory of Structures (4 cr) F & S. Analysis of stresses and strains in statically determinate and indeterminate beam, truss and rigid frame structures; effects of moving loads; matrix displacement method; seismic loads. Three lec and one 3-hr lab per wk. *Prereq:* ES 340.

357 Mechanical Properties of Materials (2 cr) F & S. Characteristics and measurement of stress-strain strength properties of structural materials. One lec and one 3-hr lab per wk. *Prereq:* ES 340.

372 Transportation Engineering (4 cr) F. Introduction to planning, design, construction, operation, maintenance and administration of transportation systems with emphasis on highways and airports. Three lec and one 3-hr lab. *Prereq:* jr standing.

382 Engineering Economy (2 cr) F & S. Economic analysis and comparison of engineering alternatives by annual-cost, present-worth, capitalized cost and rate-of-return methods; income tax considerations. *Prereq:* jr standing.

422 Hydraulic Design (3 cr) F or S. Hydraulic problems in planning and design of gravity and pressure systems; introduction to unsteady flow. Two lec and one 3-hr lab per wk; one field trip. *Prereq:* perm.

431 Sanitary Engineering (4 cr) F. Application of basic engineering sciences to treatment of domestic and industrial water supplies and treatment and disposal of domestic sewage and industrial wastes. Three lec and one 3-hr lab per wk. *Prereq:* ES 320.

432 Sanitary Engineering Techniques (3 cr) S. Physical, chemical and biological techniques for analysis of sanitary engineering problems; development of design criteria for common operations and processes. Two lec and one 3-hr lab per wk. *Prereq:* perm.

440 Structural Design (3 cr) F. Continuation of ES 340 and CE 342 with introduction to design concepts. Two lec and one 3-hr lab per wk. *Prereq:* 342.

441 Reinforced Concrete Design (3 cr) F. Emphasis on ultimate strength method in accordance with latest ACI building code. Two lec and one 3-hr lab per wk. *Prereq or coreq:* 440.

444 Steel and Timber Design (3 cr) S. Members and joints; use of latest AISC and NLMA specifications; one-third on timber structures. Two lec and one 3-hr lab per wk. *Prereq:* 440.

445 Structural Analysis and Plastic Design (3 cr) F or S. Secondary stresses; nonprismatic frame members; composite structures; one-half on plastic theory and design using latest AISC recommendations. Two lec and one 3-hr lab per wk. *Prereq or coreq:* 444.

460 Soil Mechanics (3 cr) F (360). Physical and mechanical properties of soils; behavior of soil structures under load; application to engineering problems. *Prereq:* ES 320 and ES 340.

468 Engineering Properties of Soils (2 cr) S. Measurement of physical properties of soils. One lec and one 3-hr lab per wk. *Prereq:* 460.

473 Highway Planning (2 cr) F or S. Origin-destination surveys and analysis; traffic generation, distribution and assignment; transportation and land use planning; organization and implementation. *Prereq:* 372.

474 Highway Design and Operations (3 cr) F or S. Fundamentals of geometric design and traffic engineering for urban and rural highways. *Prereq:* 372.

475 Pavement Design (3 cr) F or S (575). Flexible and rigid pavements for highways and airports. *Prereq:* 372 or perm.

476 Airport Engineering (2 cr) F or S. Planning and design of air transportation facilities including terminal areas, runways, and navigational aids. *Prereq:* 372.

477 Highway Capacity (2 cr) F or S. Analysis of rural and urban highway and intersection capacity for design and operations. *Prereq:* 372.

482 Project Management Techniques (3 cr) F or S. Application of critical path and other optimization methods to project management and systems analysis. *Prereq:* sr standing.

484 Contracts and Specifications (2 cr) S. Development of law, courts, ethics; laws of contracts, agency, sales, property, patents; specifications; preparation of contract documents. *Prereq:* sr standing.

491-492 Seminar (0 cr) F-S. Technical topics, employment practice and interviewing procedures, field trips, one 3-5 day field trip may be required. To be taken during last two semesters in residence. One meeting per wk. Graded on the basis of P or F.

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

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

501 (s) **Seminar** (cr arr) F & S. Conferences and reports on current developments.

502 (s) **Directed Study** (cr arr) F & S (599). *Prereq:* perm.

521 Hydraulic Design (3 cr) F or S. Dams, spillways and outlet works; design of major structure. Two lec and one 3-hr lab per wk. *Prereq:* perm.

523 Water Resources Systems (3 cr) F or S. Concepts in water development; coordination of development of other natural resources; systems approach and optimization techniques. *Prereq:* perm.

524 Water Resources Planning (3 cr) F or S. Utilization of water resources in a river system; provision for domestic water supply, power, flood control, navigation, irrigation, and recreational use; design and feasibility problems, guest lecturers. *Prereq:* perm.

531 Unit Operations of Sanitary Engineering (3 cr) F. Analysis and design of physical and chemical operations of water and waste treatment; flow models, sedimentation, flocculation, filtration, and water conditioning. *Prereq:* perm.

532 Unit Processes of Sanitary Engineering (3 cr) S. Analysis and design of chemical and biological processes of water and waste treatment, stream pollution analysis, gas transfer, biological oxidations, aerobic and anaerobic processes and combustion processes. *Prereq:* perm.

534 Sanitary Engineering Analysis (2 cr) S. Theoretical and lab methods for development of design criteria for sanitary engineering systems. One lec and one 3-hr lab per wk. *Prereq:* perm.

WS537 Environmental Health (2 cr) F or S. WSU 543. Vector control, refuse disposal, rural sanitation, water, and sewage systems, flood control and environmental health organization. *Prereq:* 431 or elem bact.

WS538 Industrial Hygiene and Air Sanitation (3 cr) F. WSU 544. Industrial poisons, occupational hazards and diseases, fatigue, ventilation, illumination; causes and control of atmospheric pollution. Two lec and one 3-hr lab per wk. *Prereq:* 431.

WS539 Environmental Health Engineering Science (4 cr) F or S. WSU 584. Role of microorganisms including bacteria, algae, fungi, and protozoa in water and waste treatment processes. Three lec and one 3-hr lab per wk. *Prereq:* perm.

541-542 Design of Structures I-II (3 cr) F or S. CE 541: arches, prestressed concrete, and thin shell design. CE 542: plate girders, floor systems with concentrated loads, and composite construction. *Prereq:* 441, 444 or perm.

543 Structural Dynamics (3 cr) F or S. Analysis and design of reinforced concrete and steel structures for seismic, blast and mechanical disturbances. *Prereq:* 441, 444, Math 310.

544 Buckling in Structures (3 cr) F or S. Analysis of elastic and inelastic stability of columns, trusses, rigid frames, plates and shells; lateral stability of beams. *Prereq:* 444, Math 310.

548 Elasticity (3 cr) F. Also offered as ME 548. Mathematical analysis of strain and stress including vectors, tensors, and coordinate transformations; equations of elasticity; stress problems involving extension, torsion, and flexture; theories of failure. *Prereq:* perm.

ID556 Physical Properties of Concretes (3 cr) S. Structure theories of aggregate and binder mixtures. Application to portland cement and asphalt concretes. Two lec and one 3-hr lab per wk. *Prereq:* 357 or perm.

557 Strength Properties of Non-Elastic Materials (3 cr) F. Effects of load duration time, temperature, stress and strain on design moduli and fracture properties of structural materials. Quantitative methods and app;ications. *Prereq:* 357 or perm.

ID561; 562 Advanced Soil Mechanics I-II (3 cr) F or S. CE ID561: effective stresses and lateral earth pressures, interrelationships of applied stresses, pore pressure, permeability, strain, and shear strength of soils; application to retaining walls, trenches and tunnels. CE 562: consolidation and seepage; theory, design and construction of shallow and deep foundations and earth embankments; slope stability analysis and control. *Prereq:* 460.

571 Transportation Engineering (2-3 cr) F or S. Demand, economic applications of various modes of transportation, economic impact on land areas of transportation development, national transportation policy, and metropolitan and regional transportation studies. *Prereq:* 372 or perm.

572 Traffic Engineering (2-3 cr) F or S. Urban street systems, traffic signals, signing, striping and illumination, mathematical statistics of traffic, freeway operations, warrants, accident analysis, traffic research and administration. *Prereq:* 372 or perm.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

CLASSICS—*See Foreign Languages*

Communications (Comm)

Bert C. Cross, Chairman, Department of Journalism (104 Journ. Bldg.). Associate Professor Cross.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

120 Mass Communications in a Free Society (2 cr) F & S. Role of the media of mass communication; their performance and significance in a free society.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

COMPUTER SCIENCE—*See Information Science*

DAIRY SCIENCE—*See Animal Industries*

DISTRIBUTIVE EDUCATION—*See Business Education*

Drama (Dr)

Edmund M. Chavez, Head, Department of Drama/Speech (U-Hut 104). Associate Professor Chavez; Assistant Professors Schattschneider, Sears.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Introduction to the Theatre (2 cr) F & S. For non-majors. Theatre history, recent trends in staging techniques and architecture; elements of production design; analysis of selected plays.

102 Stage Makeup (1 cr) F. Principles and practices; practical lab experience. Limited to twenty students. *Prereq:* perm.

105-106 Basics of Performance (2 cr) F-S. Work on improvisation; presentation of play scenes. Dr 105: acting techniques in relaxation, observation, imagination, sense memory. Dr 106: emphasis on

stage speech: breathing, projection, resonance, pitch, and articulation, international phonetic alphabet.

108 Introduction to Media (2 cr) F. Introduction to drawing, design, graphics, painting, and other media designed specifically for the drama student; preparation for design and technical classes, promotional graphics, and related areas; to be taken by drama majors and by other students concurrently enrolled in other drama courses.

125 Summer Theatre I (2-4 cr, max 4) SS. Theatre production, including public presentation of several plays. Max ten cr in 125 and 395 combined. *Prereq:* perm of dept.

130 Drama-Television Production I (1-2 cr, max 2) F & S. Rehearsal performance of a drama-television production; aspects of production; taping for presentation. *Prereq:* perm of dept.

190 Theatre Practice I (1 cr, max 4) F & S. Practical experience in all aspects of theatre practice. Open to non-majors.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

263 Technical Production (3 cr) F. Drafting methods, set construction, props, sound, painting, and use of tools.

264 Stage Lighting (3 cr) S. Equipment, methods of distributing light, color theory, basic electricity, reflection and absorption, and special effects.

265 Children's Theatre (3 cr) F. Selection, preparation and presentation of theatre for children; story telling, recreational and special occasion programs.

266 Creative Dramatics (2 cr) S. Selection, preparation and presentation of creative dramatics; practical application through working with children on the elementary-school level.

271 Play Analysis (3 cr) S. Critical introduction to drama; tragic and comic genres; analysis of contemporary theatre systems; emphasis on modern movements in theatre.

272 Intermediate Acting (3 cr) F. Interpretation of roles, methods in characterization, and techniques for developing a character.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

305 Stage Movement (3 cr) F. Alt/yrs. Rhythm, pantomime, and selected characterization methods as basics for stage movement in interpreting classic and modern drama.

306 Advanced Acting (3 cr) S. Intense textual and characterization study of a specified play; theory and practice in the major stage dialects.

320 Advanced Stage Lighting (2 cr) F. Poetic and realistic functions of stage lighting; design of lighting for several plays. *Prereq:* 264.

330 Drama-Television Production II (1 cr, max 4) F & S. Continuation of 130. *Prereq:* perm of dept.

362 Costume for the Stage (2 cr) F. Costume design and construction for theatrical productions; development of period costumes and production problems.

364 Scene Design and Technical Problems (3 cr) S. Methods and techniques of stage design, including perspective, rendering and styles of design; technical problems of specific productions.

390 Theatre Practice II (1 cr, max 4) F & S. Continuation of 190; set construction, costumes, lights and properties. Open to non-majors.

395 Summer Theatre II (2 cr, max 8) SS. Continuation of 125. Max ten cr in 125 and 395 combined. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

407-408 Styles of Acting (3 cr) F-S. Alt/yrs. Dr 407: cultural backgrounds, manners and customs in classic acting styles from the Greeks through Shakespeare. Dr 408: Restoration theatre through 20th-century styles.

420 Production Management (2 cr) S. Publicity and promotion, business management, box office organization, house management, bids, contracts and budget problems in theatre organization.

467-468 The Theatre (3 cr) F-S. Survey of European and American theatres, dramatists and actors.

471-472 Directing (3 cr) F-S. Organization and techniques involved in directing. Dr 471: preparation of a play from casting to performance. Dr 472: emphasis on staging and interpreting the play; work in composition, picturization, movement, rhythm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

505 Summer Theatre III (2-8 cr, max 8) SS. Theatre production, including public presentation of several plays, emphasis on the responsibilities of the graduate student, including assisting the director, serving as crewhead, and acting. *Prereq:* 20 cr in drama and perm of dept.

510 Costume Design and Rendering Techniques (2 cr) S. Emphasis on developing rendering techniques applicable to costume design. *Prereq:* 362.

515 Advanced Stage Costuming (2 cr) F & S. Design responsibility for a major production. *Prereq:* perm of dept.

520 Advanced Directing (3 cr) F or S. Genres of tragedy, comedy, drama, and melodrama; directorial problems in staging arena and musical productions.

522 Directing the Period Play (3 cr) S. Interpreting and staging the period play in major dramatic periods; social and cultural view of each period.

524 The Modern Theatre (3 cr) F. History of movements, personalities and representative plays from the Duke of Saxe-Meiningen to the theatre of cruelty.

530 Scene Design II (3 cr) F. Survey of historical periods and architectural styles and their practical application to design problems. *Prereq:* 263, 364.

535 Advanced Scene Design (3 cr) F & S. Design responsibility for a major production. *Prereq:* perm of dept.

560 Seminar in Dramatic Criticism (3 cr) F. Analysis of past and present day criticism of the drama; writing of dramatic practical work in such criticism.

Economics (Econ)

Max E. Fletcher, Department Chairman (339 Admin. Bldg.). Professors Fletcher, Nybroten; Associate Professor Lynch; Assistant Professors Cooper, DiNoto, Ghazanfar, Renshaw, Reynolds.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

170 Contemporary Economics (3 cr) F. Economic issues and the economic principles involved. One-semester survey course for the non-major. Less technical than 251-252.

251-252 Principles of Economics (3 cr) F & S. Econ 251: organization and operation of the American economy; supply and demand; money and banking; employment and aggregate output; public finance; economic growth. Econ 252: principles governing production, price relationships, and income distribution. *Prereq:* 251 for 252. May be taken by correspondence.

272 Foundations of Economic Analysis (3 cr) F. Concepts underlying micro and macroeconomic analysis. Not open to students who have taken Econ 251-252 or equiv. *Prereq:* Math 180 or perm.

321 Intermediate Microeconomic Analysis (3 cr) F & S. Theory of the individual firm, industry, market, price determination and allocation of productive resources. Honors section covering additional selected topics offered fall semester. *Prereq:* 252 or perm.

372 Intermediate Macroeconomic Analysis (3 cr) F & S. Theory of the economy as a whole; national income accounting as a tool of analysis; national output and income, employment, price levels, and growth. Honors section covering additional selected topics offered spring semester. *Prereq:* 252 or perm for regular sections; 321 for honors section.

385 Welfare and Environmental Economics (3 cr) S. Welfare economics, "public goods," and the application of economic theory to environmental problems, including pollution. *Prereq:* 321 or 272 or perm.

R395 Fundamentals of Economics (4 cr) F or S. (395). Primarily for students in the Master of Business Administration program. Concepts underlying micro- and macroeconomic analysis. *Prereq:* perm.

400 (s) **Seminar** (cr arr) F & S (495). *Prereq:* perm of dept.

403 Money and Banking (3 cr) F & S. Theory, includes some emphasis on banking practices. *Prereq:* 252. May be taken by correspondence.

409 Public Finance (3 cr) F. Government expenditures and taxation; structure and

economic effects of the American tax system; federal taxes; analysis of the tools of fiscal policy and public debts. *Prereq:* 252.

410 State and Local Government Finance (3 cr) S. Criteria for and determinants of expenditures; equity, adequacy and economic impact of taxes; economics of metropolitanism and intergovernmental relations. *Prereq:* 252.

430 Regional Economics (3 cr) S. Methods of economic analysis appropriate to regional problems; application to the Pacific Northwest. *Prereq:* 252 or 272.

432 Quantitative Methods in Business and Economics (3 cr) S. See Bus 432 for description.

433 Introduction to Econometrics (3 cr) F. Use of quantitative techniques to analyze and test economic theories. *Prereq:* 432 and Bus 231 or equiv statistics.

435 American Economic Development (3 cr) F. Patterns and causes of change in the American economy from colonial times to the present. *Prereq:* 170 or 251 or perm.

436 Business and Economic Fluctuations (3 cr) S. See Bus 436 for description.

441 Labor Economics (3 cr) F or S. Application of economic theory to the labor market; labor market institutions; theory of collective bargaining; current problems. *Prereq:* 252.

442 Government Regulation of Business (3 cr) F or S. See Bus 442 for description.

474 International Economics (3 cr) F. History and theory of international trade and finance; commercial policies of nations; current world economic problems. *Prereq:* 321.

477 Economics of Developing Countries (3 cr) F. Problems, characteristics of underdevelopment; role of innovation and investment; threat of population growth; barriers to growth; international programs for development; macroeconomic theories explaining the development process. *Prereq:* 252 or perm.

490 Comparative Economic Systems (3 cr) S. Origin, development, attributes of major contemporary economic systems. *Prereq:* 252 or perm.

493-494 Seminar in Urban Studies (2 cr) F & S. See Inter 493-494 for description.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (513). *Prereq:* perm.

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

505 History of Economic Thought (3 cr) S. Economic doctrines; value and distribution; 19th-century dissenters.

507 Research Methodology (3 cr) F. See AgEc 507 for description.

521 Advanced Microeconomic Theory (3 cr) F. Also offered as AgEc 521. Analysis of the economics of enterprise.

522 Advanced Aggregate Economics (3 cr) S. Also offered as AgEc 522. Current economic theory in national income, employment, price stability and economic growth in developed economies.

523 Advanced Monetary Theory (3 cr) S. Also offered as AgEc 523. Emphasis on the value of money.

524 Theory of Economic Development (3 cr) S. See AgEc 524 for description.

525 Introduction to Econometrics (3 cr) F. See AgEc 525 for description.

526 Business Conditions Analysis (3 cr) S. Social accounting and macroeconomic theory pertaining to economic forecasting and analysis.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Education (Ed)

Thomas O. Bell, Department Head (404-B Education Bldg.). Professors Archambault, Biggam, Farley, E. Kelly, Kirkland, Maib, Samuelson, Shreve, Snider, Vent; Associate Professors Armstrong, Foster, Kaus, Marten, Miller, L. Smith, Woolums, Wriggle; Assistant Professors Amos, Couch, Glenn, J. Kelly, R. Smith, Sprecker; Instructors Freer, Krukar, Madsen.

RELATED AREAS: For other offerings in the field of education, see the following course sections: agricultural education, art, business education, home economics, industrial education, library science, music, physical education, psychology (guidance and counseling), special education, and vocational teacher education.

PREREQUISITE TO UPPER-DIVISION COURSES — For registration in upper-division courses in education (those numbered 300 or above), a cumulative grade-point average of 2.00 is required, unless a higher average is stated as a prerequisite in the course description.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Education Lectures (1 cr) F & S. Orientation to the profession and fields of education.

200 (s) **Seminar** (cr arr) *Prereq:* perm of dept.

X273 International Education Scene (1-9 cr, max 9) X. Study-tour to observe selected educational systems and procedures in foreign countries. One cr per wk.

275 Elementary School Art Methods (2 cr) F & S. Materials and techniques; correlation of art with other subjects and activities.

287 Foundations of Education (4 cr) F & S. History; place of the school in the social milieu; principles under which schools are operated; contemporary educational philosophy. Three lec and one 3-hr lab per wk.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

C302 The Child and Society (3 cr) C. Child in the social milieu; family, social group, community, school; social pressures and conditioning upon the child and the educative process.

303 Kindergarten Education (2-3 cr) F & S. History, theory, equipment and practices, helping the child become oriented to school routine.

314 General Secondary School Methods (2 cr) F & S. Problems and methods of teaching common to all subjects. *Prereq:* 6 cr in ed.

315 Secondary School English Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

316 Secondary School Social Studies Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

317 Secondary School Science Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

318 Secondary School Mathematics Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

319 Secondary School Art Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

320 Primary Language Arts Methods (3 cr) F. Reading readiness; introducing the child to reading; extension of reading skills. Not open for credit to students who have taken 322 or 338. *Prereq:* 6 cr in ed.

322 Intermediate Language Arts Methods (3 cr) S. Reading skills, vocabulary development, study habits, relatedness of the areas of language arts. Not open for credit to students who have taken 320 or 338. *Prereq:* 6 cr in ed.

323 Health Education Methods (3 cr) F & S. Special methods and materials for junior and senior high school levels.

326 Elementary School Mathematics Education (3 cr) F & S. Curriculum; availability and use of instructional materials and devices. May be taken by correspondence.

C337 Secondary Social Studies Methods (3 cr) C. Curricula in history, geography, American problems, sociology and economics; materials and devices.

C&X338 Methods and Materials in Language Arts (3 cr) C & X. The language arts program; reading, spelling, communication, handwriting; readiness, retardation, enrichment and selection of materials. Not open for credit to students who have taken 320 or 322.

341 Secondary School Foreign Language Methods (2 cr) F & S. Special methods, problems and materials. *Prereq:* 6 cr in ed.

381 Elementary School Music Methods (2 cr) F & S. See MusT 381 for description.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 (s) **Workshop** (cr arr) SS. Consult the summer bulletin and time schedule for the complete title and description of each workshop when offered, as well as the credit permitted in each. *Prereq:* perm.

406 **Elementary School Team Teaching** (3 cr) F & S. Philosophy, organization, trends in building construction for team teaching; curriculum materials; role of teacher, pupils and auxiliary personnel.

411 **The Junior High School** (3 cr) F & S. Principles, organization, administration, and methods of instruction. May be taken by correspondence.

421 **Elementary School Social Studies Methods** (2 cr) F & S. Curriculum instructional materials and devices. One ½-day and one 1-day field trip. *Prereq:* 6 cr in ed.

428 **Audio-Visual Aids** (3 cr) F & S. Principles and methods of audio-visual education; administration of the audio-visual program in schools. Class limited to twenty-five. *Prereq:* 8 cr in ed.

429 **Elementary School Curriculum** (3 cr) F. Overview, goals; curricula and techniques; place of skills and abilities; content areas; appreciative and creative programs. May be taken by correspondence. *Prereq:* 6 cr in ed.

430 **Elementary School Student Teaching** (3-9 cr, max 9) F & S. Offered each nine wks. Supervised student teaching in Idaho elementary schools. Graded on the basis of P or F. *Prereq:* 287, 320 or 322, 326, 445, Psych 205 or 421, cumulative GPA of 2.25, and perm of dept. (Submit application to director of student teaching by December 1 of school year prior to enrolling.)

431 **Secondary School Student Teaching** (3-9 cr, max 9) F & S. Offered each nine wks. Supervised student teaching in Idaho secondary schools. Graded on the basis of P or F. *Prereq:* 287, 314, 445, Psych 206 or 421, cumulative GPA of 2.25, and perm of dept. (Submit application to director of student teaching by December 1 of school year prior to enrolling.)

432 **Music Student Teaching** (3-9 cr, max 9) F & S. Supervised student teaching in grades 1-12; two-thirds of the experience is in secondary schools. Graded on the basis of P or F. *Prereq:* 287, 314, 445, Psych 206 or 421, cumulative GPA of 2.25, and perm of depts of music and education. (Submit application via coordinator of music education by December 1 of school year prior to enrolling.)

434 **Children's Literature** (3 cr) F & S. For each grade level; story plays, dramatizations; effective reading and telling children's stories and their place in the elementary school. May be taken by correspondence.

435 **Elementary School Student Teaching — Special** (3 cr) F & S. Primarily for secondary education students in art and physical education who wish to qualify for Idaho endorsement to teach these subjects at the elementary level. Graded on the basis of P of F. *Prereq:* 3 cr in special methods in the subject area.

436 **Elementary School Reading** (3-6 cr, max 6) SS. Teaching reading at the primary and intermediate levels. Not open for credit to students who have taken 528. Class limited to twenty-five.

438 **Elementary School Mathematics Laboratory** (3 cr) F & S. Construction and solution to problems based on experiments that may be easily performed in elementary schools.

439 **Comparative Education** (3 cr) F & S. Educational systems in relation to the cultural backgrounds which gave rise to them.

440 **Driver Education I** (2 cr) S. Teaching methods, presented in cooperation with the American Automobile Association; successful completion of AAA requirements is required. Class limited to twenty. *Prereq:* valid driver's license.

443 **Teaching of Geography** (3 cr) SS. Trends, methods, audio-visual materials, planning the program, specialized skills, and forces contributing to change in geographic education.

444 **Elementary School Science Methods** (2 cr) F & S. Instructional materials and devices. One ½-day and one 1-day field trip. *Prereq:* 6 cr in ed.

445 **Student Teaching Seminar** (0 cr) F & S. Offered each nine wks. Orientation to student teaching. Graded on the basis of P or F.

448 **Production and Use of Media in Education** (3 cr) F & S. Production, utilization and organization of media in the student's field of interest. *Prereq:* experience in teaching.

449 **Driver Education II** (2 cr) F & S. Principles and practice of driver and traffic safety education for teachers, supervisors and administrators. *Prereq:* valid driver's license.

460 The Logic of Teaching (3 cr) F & S. Analysis of the logical operations which are employed in the teaching act.

467 Developing Reading Efficiency (3 cr) F & S. Detection and correction of factors which interfere with the development of efficient reading.

X473 International Education Scene (1-9 cr, max 9) X. See X273 for description.

498 Instructional Television Institute (6 cr) SS (499). Preparation, utilization and evaluation of telecourses. Previous experience not required.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

503 (s) **Workshop** (cr arr) SS. Consult the summer bulletin and time schedule for the complete title and description of each workshop when offered, as well as the credit permitted in each. *Prereq:* perm.

504 School Administration (3 cr) F. Principles and problems of organization and administration of city, county and state systems. Two field trips.

505 School Finance (3 cr) S. Problems of financing schools; applications to Idaho problems. *Prereq:* 504.

506 Elementary School Administration (3 cr) F & S. Patterns of organization of grades 1-6; problems and techniques. *Prereq:* 10 cr in ed.

507 Supervision of Instruction (3 cr) F & S. To prepare supervisors of instruction so they can aid teachers in the improvement of instruction.

508 Secondary School Administration (3 cr) F & S. Problems of organization, administration and supervision of the secondary school; problems of small high schools.

509 Educational Television (2 cr) SS. Experience in educational innovations.

510 Philosophy of Education (3 cr) F. Analysis of educational objectives, concepts and theories.

511 Secondary School Curriculum (3 cr) F. Principles underlying curriculum construction in secondary schools.

512 Curriculum Construction (3 cr) S. Preparation of course of study outlines in the major subject matter areas. *Prereq:* 511 or perm.

513 History of Educational Thought (3 cr) F & S. Writings which have influenced educational theory and practice.

514 Development of Elementary Education (3 cr) F & S. Nature of education; ideas, journals and bibliographies for each of the main areas of the elementary curriculum.

515 Logic of New Media (3 cr) F & S. Technological development in education; advanced forms of media as they influence learning, teaching, and curriculum content and organization.

516 Teaching Reading (3 cr) F & S. Trends in the teaching of reading.

517 Advanced Elementary School Mathematics Education (4 cr) F & S. Recently developed methods and materials in elementary school mathematics. *Prereq:* qualified for an elementary standard certificate.

520 Elementary School Science and Social Studies (3 cr) F. & S. Methods and techniques; foundations of the unit as a means of instruction. *Prereq:* qualified for a standard elem certificate.

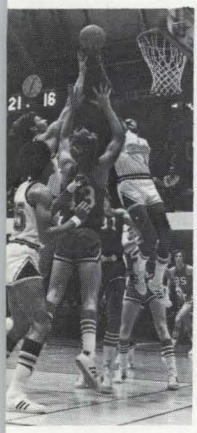
521 Elementary School Language Arts (3 cr) F & S. Research in the language arts and implications of data related to modern techniques of teaching. *Prereq:* qualified for a standard elem certificate.

523 Creative Arts and Creative Teaching (3 cr) F & S. Creativity in children; art, music, socio-drama-creative writing. *Prereq:* qualified for a standard elem certificate.

X528 Reading Instruction and Improvement (3 cr) X. Techniques of teaching reading in the lower and intermediate grades; problems of remedial reading through 12th grade; materials, procedures, testing and curriculum. Not open for credit to students who have taken 436.

530 Education Law (3 cr) S. Statutory and case materials; principles applicable to all states.

531 Elementary School Mathematics Education Research (3 cr) F & S. Classic and contemporary research; experimental studies; rationale for position of specialist; objectives; coordination of services. *Prereq:* perm.



534 **Elementary School Mathematics Practicum** (9 cr) F & S. The student serves as a full-time teacher of mathematics in a public school for nine wks; teaches four classes each day and serves as consultant to other teachers. *Prereq:* min of 1 yr teaching in elementary school and perm.

538 **Student Teacher Superivison** (3 cr) F & S. Nature and scope of student teaching; role of cooperating agencies; role of participants; techniques; planning, evaluation.

551 **Children's Literature and the Curriculum** (3 cr) F & S. How all phases of literature fit into and become a part of the curriculum; developing various areas of the curriculum based on literature; evaluation of literature, authors, and illustrators.

560 **Research and Writing** (3 cr) F & S. Techniques of research in education.

572 **Measurement and Evaluation** (3 cr) S. Improvement of testing, examination and evaluation in schools; practice in making, giving, scoring, and interpreting tests; use of results in counseling.

580 **Seminar in Administration and Contemporary Issues** (3 cr) F or S. See Inter 580 for description.

585 (s) **Internship** (3-9 cr, max 9) F & S (539, 550, 585). Normally offered in public school teaching, college teaching, and school administration. Consult the time schedule for the areas currently offered and the credits permitted in each. Max nine cr in a master's program. The public school teaching internship is limited to M.A.T. candidates; the college teaching internship may be taken for a max of three cr by doctoral students and consists of supervised teaching of undergraduate college courses. Graded on the basis of P or F. *Prereq:* perm of dept.

587-588 **Modern Techniques of Science Instruction in Physics** (2 cr) F,S. See Phys 507-508 for description.

590 **History of Education** (3 cr) F & S. Development and influence of educational ideals and practices.

591 **Administration of Personnel** (3 cr) F & S. Selection, placement, and evaluation of teachers; salaries and salary schedules; tenure; leave of absence; teacher organizations and related matters.

592 **Administration of Public Relations** (3 cr) F & S. Interpreting the schools to the public; two-way flow of ideas between the school and community.

593 **School Facilities Planning and Maintenance** (3 cr) F & S. Planning new school facilities and maintaining them; legal provisions involving financing, preliminary surveys of need, relationships with architects, contractors. Two field trips.

594 **Theory in School Administration** (3 cr) F & S. Theories from psychological, sociological and cultural points of view; their application to school administration.

595 **Higher Education** (3 cr) F & S. College and university education in the U.S.; history, objectives, organization, finance, instructional methods, faculty, student problems.

596 **Collective Negotiations for Teachers** (3 cr) F or S. Collective negotiations in public education; recognition of bargaining agent; appropriate unit; administrative personnel and unit determination; representation and recognition procedures; scope and process of negotiations; bargaining power and impasse procedures; the collective agreement; impact of collective negotiations.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Electrical Engineering (EE)

Donald E. Rathbone, Department Chairman (208 Buchanan Engineering Lab.). Professors Mann, Parish, Rathbone; Associate Professors Baily, Gray, Hagen, Hespelt, Rigas, Thomas; Assistant Professor Maki, Olson, Stefanakos, Stevens; Instructor Fronek.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 **Systems and Circuits** (3 cr) F & S. Introductory course for engineering students includes signal flow, power and

energy; transient and steady state behavior of circuit elements; network theorems; integrated treatment of ac and dc circuits. *Prereq:* Math 180.

201 Linear Systems Analysis (4 cr) F & S. Analysis of transients in electical and mechanical systems and circuits. Laplace transform theory and applications. Three lec and one 3-hr analog computation lab per wk (lab may be taken separately). *Prereq:* 200 or perm; *coreq:* Math 310.

300 Linear Circuit Analysis (3 cr) F & S. Sinusoidal voltages and currents; coupled circuits and transformers; resonance; two terminal networks; frequency response; instrumentation; Fourier series. Two lec and one 3-hr lab per wk. *Prereq:* 200.

305 Transmission Lines (3 cr) F or S. Transmission of signals and power in distributed parameter circuits; characteristic impedances; attenuation; phase shift; reflections and Smith charts. *Prereq:* 300.

310 Electronics I (5 cr) F & S. Qualitative survey of electronic circuits and devices; external electrical characteristics of circuits and devices; amplifiers; oscillators; rectifiers; switching circuits. Four lec and one 3-hr lab per wk. *Prereq:* 201, 300.

314 Electronics and Control Systems (4 cr) F & S. For non-majors. Electronic devices and systems; linear control systems. Three lec and one 3-hr lab per wk. *Prereq:* 200.

320 Energy Conversion I (5 cr) F & S. Three phase circuits; theory and applications of electrical machinery and transformers. Four lec and one 3-hr lab per wk. *Prereq:* 201, 300.

324 Electrical Machinery (3 cr) F or S (323-324). For non-majors. Magnetic circuits and electromechanical energy converting systems; theory and characteristics of common ac and dc machinery. Two lec and one 3-hr lab per wk. *Prereq:* 200.

330 Electromagnetic Theory (5 cr) F & S. Vector calculus; electrostatics; electrodynamics; electromagnetic waves in isotropic media; Maxwell's equations; boundary value problems and special topics. Four lec and one 3-hr lab per wk. *Prereq:* Math 310.

391-392 Junior Seminar (0 cr) F-S. Curriculum options, elective courses, preparation for graduate study, and current technical topics. Field trip may be required. Graded on the basis of P or F.

401 Advanced Circuit Theory (3 cr) F or S. Network theory; behavior and analysis of passive and active electrical networks; use of linear graph theory and digital computers in network analysis; network synthesis. *Prereq:* perm.

410 Electronics II (3 cr) F & S (311). Physical electronics and circuit models of devices. *Prereq:* 310; *coreq:* ES 310.

411 Pulse and Digital Circuits (3 cr) F. Electronic switching, timing and pulse shaping techniques using capacitor energy storage. Realization of logic functions with diodes, transistors and FETs. *Prereq:* 310.

412 Pulse and Digital Networks (3 cr) S. Design of pulse and digital circuits in special purpose electronic networks; use of integrated circuit modules in the realization of sequential networks. Two lec and one project-type lab per wk. *Prereq:* 411.

420 Energy Conversion II (3 cr) S (321). Plasma-MHD concepts; fission, nuclear reactor theory; fusion; fuel and solar cells. *Prereq:* 300; *coreq:* 330.

421 Power System Analysis (3 cr) F or S. Broadly based course aimed at problem recognition and basic analysis for the modern interconnected power system; energy supplies, voltage control, fault control, reliability, economics, and stability; per unit calculations; introduction to symmetrical components. *Prereq:* 320.

422 Computer Methods in Power Systems (3 cr) F or S. Use of analog and digital computers in the solution of load flow, short circuit and stability problems. *Prereq:* 421 or perm.

435 Antennas and Microwave Devices (3 cr) F or S. Antennas, antenna systems, waveguides and waveguide devices, klystrons, magnetrons, and traveling wave tubes. Two lec and one 3-hr lab per wk. *Prereq:* 330 or perm.

440 Digital Systems Engineering (3 cr) F & S. Also offered as InfSc 440. Basic concepts of Boolean algebra; logic components; combinational and sequential systems analysis; number and coding systems; principles and operations of subsystems of a digital system. *Prereq:* jr standing.

450 Random Processes and Systems (3 cr) F or S. Random variables; auto and cross correlation functions; spectral analysis; shot and thermal noise; optimum linear systems filtering. *Prereq:* 300, Math 310.

452 Communication Systems (3 cr) F or S. Linear (amplitude) modulation, eponential (frequency, phase) modulation, pulse modulation techniques, noise; introduction to information theory. *Prereq:* 300, 310.

465 Control Engineering (3 cr) F or S. For non-majors. Analysis and design of continuous systems; transient response; frequency response; root locus; stability. *Prereq:* 200, plus familiarity with basic Laplace transforms.

470 Control Systems (5 cr) F & S. Analysis and design of continuous and discrete systems; frequency-response; root-locus; computer techniques; stability criteria; modern systems theory. Four lec and one 3-hr lab per wk. *Prereq: 201.*

476 Classical Techniques in Control (3 cr) F or S. Linear systems compensation techniques, multiple input-multiple output systems, parameter variations; nonlinear control systems, phase-space concepts, describing functions. *Prereq:* 470.

478 Aerospace Systems Engineering (3 cr) F or S. Vehicle equations of motion; dynamic performance and stability; mission performance problems; attitude stabilization and control. *Prereq:* 470.

480-481 Principles of Design (3 cr) F-S. Includes computer-aided techniques, economics, marketing, reliability, and patents; projects require original design, working model and report. *Prereq:* sr standing.

486 Solid-State Electronics I (3 cr) F or S. Theory of electron states in solids; statistics of charge carriers. Semiconductor device physics; device fabrication by impurity diffusion and ion implantation; integrated circuit design and fabrication techniques; thin film circuits. *Prereq:* 410 and perm.

491-492 Senior Seminar (0 cr) F-S. Technical topics, employment practice and interviewing. One lec per wk; one 3-6 day field trip may be required. Graded on the basis of P or F.

493 Thesis (3 cr, max 6) F & S. Original investigation or dissertation upon some subject in electrical engineering. *Prereq:* sr standing and perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (590). *Prereq:* perm.

ID502 (s) **Directed Study** (cr arr) F & S (ID-595). *Prereq:* perm.

ID503 Network Synthesis (3-4 cr) F or S (ID502). Synthesis of active and passive electrical networks; passive one-port and two-port networks; practical limitations on performance and realizations; introduction to multiport synthesis. *Prereq:* 401 or perm.

505 Nonlinear Network Analysis (3 cr) F or S. Transient and steady-state analysis via approximation methods; describing functions, harmonic balance techniques; perturbation methods; numerical analysis methods using digital computers. *Prereq:* 300, 470, and ability to use digital computation facilities.

ID507 Computer-Aided Network Design (3 cr) F or S. Use of digital computers in design of electrical networks; digital computer as analysis tool in design process; constrained and unconstrained optimization in network design. *Prereq:* ability to use digital computation facilities.

ID512 Active Network Synthesis (3 cr) F or S. Active devices and their operating characteristics; classical network synthesis; two-port theory, amplifiers, filters, negative impedance converters, realization of complex poles, synthesis of active filters and oscillators. *Prereq:* 310.

520 Avanced Electric Machinery (3 cr) F or S. Synchronous machines and transformers; machine transient and subtransient reactances, excitation and voltage regulation, power curves; transformer connections, impedance, harmonics, impulse characteristics. *Prereq:* 320.

521 Power System Stability (3 cr) F or S. Steady-state and transient stability; power flow equations, transient stability swing curves, relaying and protection. *Prereq:* 421.

523 Symmetrical Components (3 cr) F or S. Concepts of symmetrical components applied to design and analysis of power systems; sequence impedances of devices and lines, circuit equivalents for unbalanced faults, system voltage and current calculation, management during faults. *Prereq:* 421.

524 Transients in Power Systems (3 cr) F or S. Electric voltage transients in power system circuits, overvoltages during faults, recovery voltage characteristics,

arc restrikes, switching surges, ferroresonance, nonlinear phenomena. *Prereq:* 421.

530-531 Electromagnetic Field Theory I-II (3 cr) F or S. EE 530: solution of static field problems, Laplace and Poisson equations for various charge configurations. EE 531: time-varing fields, radiation, propagation in anisotropic and layered media, vector and scaler potentials, retarded potentials, general relativity theory. *Prereq:* 330 for 530, 530 for 531. Equivalent to Phys 541-542.

533 Antenna Theory (3 cr) F or S. Linear, loop and special antennas; synthesis and arrays; microwave reflectors and lenses. *Prereq:* 531 or perm.

535 Microwave Circuits (3 cr) F or S. Waveguide systems and components, oscillators and detectors; masers, parametric amplifiers and other related methods. *Prereq:* 531 or perm.

537 Plasma Dynamics (3 cr) F or S. Conduction in gases, statistical methods in describing motion of charged particles in electromagnetic fields, application to microwave propagation, fusion, and magnetohydrodynamics. *Prereq:* 531 or perm.

540 Computation Structures and Machine Organization (3 cr) F or S. Also offered as InfSc 540. Design of digital computing systems, subsystems and their realization; time shared, parallel computer system design, modular organization of hardware, memory organization, and models of programs structure. *Prereq:* 440.

541 Theoretical Foundations in Computers (3 cr) F or S. Also offered as InfSc 541. Finite-state automata; computability according to Turing; properties and capabilities of synchronous and asynchronous, completely and incompletely specified machines; non-writing, push-down store and probabilistic automata. *Prereq:* 440.

543 Computer Programming Systems and Information Structures (3 cr) F or S. Also offered as InfSc 543. Programming systems; machine language programming; assemblers; arrays; list structures; searching; string processing languages; subroutines; input-output programming, and computer arithmetic. *Prereq:* perm.

546 System Simulation (3 cr) F or S. Also offered as InfSc 546. Digital and hybrid simulation; logical problem divisions; digital simulation of continuous systems; queueing theory; theory of models, and design of simulation programs. *Prereq:* perm.

WS548 Hybrid Simulation Techniques (3 cr) F or S. WSU EE 513. Complex systems with the aid of Hybrid computer. *Prereq:* EE 201, 440.

ID550 Communication Theory I (3 cr) F or S. Discrete view of communications; optimum receiver principles; channel constraints; binary communication techniques; fading and scattering media; diversity techniques; optimum reception of continuous wave-form modulated signals; phase-locked loops. *Prereq:* 450.

ID551 Communication Theory II (3 cr) F or S. Hypothesis testing; optimum detection of signal in noise; sequential detection; maximum likelihood estimation; spatial processing; data reduction techniques. *Prereq:* 450.

554-555 Information Theory I-II (3 cr) F or S. Also offered as InfSc 554-555. EE 554: information 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:* 450.

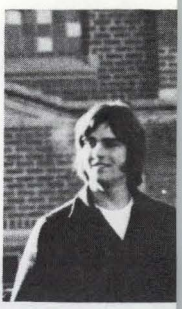
565 Markov Processes and Queueing Theory (3 cr) F or S. Also offered as InfSc 565. Discrete and continuous-time decision processes; application of queueing theory. Poisson and exponential distributions; Markov chains and optimal Markovian decision rules. *Prereq:* 450.

572 Modern Control Theory (3 cr) F or S. Modern control concepts; controlability, observability and stability; relation between modern control theory and classical control theory. *Prereq:* 470.

574 Optimal Control Theory I (3 cr) F or S. Classical theory of min-max, calculus of variations; Lagrange problem; Stochastic processes; Wiener-Hopf and Kalman-Bucy filtering; linear programming. *Prereq:* 572.

575 Optimal Control Theory II (3 cr) F or S. Search techniques and nonlinear programming; dynamic programming; maximum principle. *Prereq:* 572.

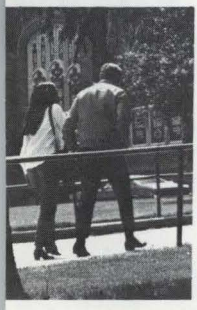
WS581-WS582 Wave Propagation I-II (3 cr) F or S. WSU 528-529. EE 581: theory of radio wave propagation in a magnetoionic medium; application to communication problems involving earth's ionosphere. EE 582: phenomena occurring within the solar-terrestrial environment; effects on radio wave propagation.



WS583 Artificial Intelligence and Heuristic Programming (3 cr) F or S. 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) F or S. WSU CptS 510.

WS585 Advanced Topics in Information Processing (3 cr, max 6) F or S. WSU CptS 520.



586 Solid-State Electronics II (3 cr) F or S. Solid-state electronic devices; transistors, tunnel diodes, and other junction devices; metal-semiconductor (Schottky barrier) devices; field effect transistors; thin-film devices; optoelectronic devices; semiconductor lasers; Gunn oscillators and other bulk-effect devices. *Prereq:* 410, 486 or perm; *suggested coreq:* Phys 551.

588 Equilibrium Tensor Properties of Solids (3 cr) F or S. Introduction to tensor analysis; crystal symmetry and symmetry transformations; dielectric, magnetic and elastic properties; interaction effects, piezoelectricity. Maxwell's equations in tensor form; optical properties; piezo-optical effects. *Prereq:* perm.

589 Transport Phenomena in Solids (3 cr) F or S. Electrical and thermal conductivities, diffusivity, thermoelectric, electro-diffusive and thermodiffusive conductivities; thermodynamics of irreversible processes, Marcoffian systems, Onsager's theorem and reciprocal relations; Hall, Nerst, Ettinghausen and Leduc-Righi effects; piezoresistance and piezogalvanomagnetic effects. *Prereq:* perm.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

ELEMENTARY EDUCATION—*See Education*

Engineering (General) (Engr)

Roland O. Byers, Chairman (324 Engineering Bldg.). Professor Byers; Associate Professors Tovey, Turner; Assistant Professor Nelson; Instructor Shaw.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Engineering Graphics (2 cr) F & S. Visualization of points, lines, planes, solids in space; sketching, orthographic projection, pictorial representation, charts and graphs, lettering, some drafting techniques and methods. May be taken by correspondence.

102 Engineering Graphics (2 cr) F & S. Descriptive geometry; technique of solving problems involving points, lines, planes, surfaces in space; application to graphical problems in engineering and other fields. May be taken by correspondence. *Prereq:* 101 or Geog 251.

111 Engineering Computations (1 cr) F & S. Principles and use of slide rule. *Prereq:* Math 140, 141 (or with 141).

120-121 Engineering Analysis and Design I-II (2 cr) F-S. Basic concepts of engineering for beginning engineering students. Engineering method of problem solving and the design process. Engr 120 is graded on the basis of P or F. Open to non-engineering students by permission.

131 Digital Computer Programming (1-2 cr) F & S. Also offered as InfSc 131. Principles and logic, flow charts, one and two dimensional arrays, function and subroutine subprograms, application to problem solving. May be taken by correspondence.

R314 Advanced Engineering Graphics (2 cr) F & S. Industrial drafting practices; curve plotting, creative problems, sketching; production illustrations; graphical mathematics; nomography, graphical integration and differentiation. *Prereq:* 101.

394 Engineering in a Technological Society (3 cr) F or S. Basic treatment of the engineering approach to decision making in society including the evaluation of alternatives based upon economic, social and human values. Not open to engineering majors.

X&R411 Engineering Fundamentals (3 cr) X & R. Review of basic engineering

and science material covered in undergraduate engineering curricula; selected areas of mathematics, chemistry, physics, mechanics, thermodynamics, electricity and electronics, and engineering economics. (May not be used toward an engineering degree.) *Prereq:* engineering degree or perm.

490 Technology and Human Values (2-3 cr) F or S. See Inter 490 for description.

Engineering Science (ES)

George L. Bloomsburg, Chairman (224 Engineering Bldg.). Professor Bloomsburg; Associate Professors Haber, Scheldorf, Sun; Assistant Professor Doyle.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

C210 Mechanics I—Statics (2 cr) C. Composition and resolution of forces; Newton's laws as they pertain to equilibrium; vector analysis; free body diagrams; centroids and moments of inertia; applications include trusses, frames and friction. *Prereq or coreq:* Math 190; *prereq:* Phys 220.

211 Introduction to Mechanics (4 cr) F & S. 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 per wk. *Prereq:* Math 190.

C220 Mechanics II—Dynamics (2 cr) C. Kinetics; acceleration analysis; systems of particles; work and energy, momentum, impulse, power in systems with linear and angular motion. *Prereq or coreq:* Math 200; *prereq:* ES 210.

221 Dynamics of Rigid Bodies (2 cr) F & S. Kinematics, kinetics, work energy and momentum methods for rigid bodies. *Prereq:* 211 and with Math 310.

310 Engineering Materials Science (3 cr) F & S. Structure of materials; mechanical, electrical, chemical, and thermal properties of materials. *Prereq:* Chem 114, Phys 221.

320 Fluid Mechanics (3 cr) F & S. 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. May be taken by correspondence. *Prereq:* 211, Math 200.

321 Thermodynamics and Heat Transfer (3 cr) F & S. First and second laws of thermodynamics; thermodynamic processes; thermodynamic properties of fluids; flow processes; conversion of heat into work; refrigeration; conduction, radiation. *Prereq:* 211, Math 200.

340 Mechanics of Materials (3 cr) F & S. Elasticity, strength, and modes of failure of engineering materials; theory of stresses and strains for ties, shafts, beams, columns. May be taken by correspondence. *Prereq:* 211, Math 200.

401 Engineering Statistics (3 cr) F or S. Also offered as InfSc 401. Concepts and applications of probability and statistics; discrete and continuous distributions and their applications to confidence interval estimates, design of experiments, quality control, linear regression in engineering problems. *Prereq:* Math 200.

402 Applied Numerical Methods (3 cr) F & S (CE 401). Also offered as InfSc 402. Approximate and numerical methods for solution of boundary value, initial value, and eigen value systems, with practical applications, errors, improvement of accuracy, numerical and matrix techniques for computation by digital computer. *Prereq:* Math 310.

420 Fluid Mechanics II (3 cr) F (CE 421, ME 423). Analysis of fluids in motion; basic laws for systems and control volumes; Navier Stokes equations; boundary layer theory; compressible flow. *Prereq:* 320.

490 Systems Analysis of Environmental Problems I (3 cr) F or S. Modeling and simulation of environmental systems. Systems analysis and optimization techniques especially applied to environmental problems. *Prereq:* Math 310.

505 Engineering Statistics (1-3 cr) F or S (501). Also offered as InfSc 505. Theory of probability, statistics and stochastic processes applied to selected areas of engineering. *Prereq:* 401 or perm.

540 Continuum Mechanics (3 cr) F or S. Stress and deformation of continua using ensor analysis; relationship be-

tween stress, strain and strain rate in fluids and solids; applications. *Prereq:* perm.

590 Systems Analysis of Environmental Problems II (3 cr) F or S. Systems analysis of environmental problems and processes including linear, dynamic, and geometric programming, systems modeling, stochastic systems, and other optimization techniques. *Prereq:* perm.

English (Eng)

Leo F. Storm, Department Chairman (200 Faculty Office Bldg.). Professors Boone, Kirtley, Storm, Tung; Associate Professors Heningham, Malek, Meldrum; Assistant Professors Barber, Davis, Dozier, Foriyes, Hannaford, Knight, Leyden, McFarland, Murphy, Sipahigil, Stratton, Tanner, Wallins; Instructors Bie, Eden, Elwood, Gilbertson, McKie, O'Callaghan, Otness, Pugmire, Riley, Slette.

PREREQUISITES: Except for 101, students may enroll for a second-semester course without having had the first-semester course, unless it is a stated prerequisite to the second-semester course. Eng 101-102 are prerequisites to all upper-division courses. A transfer student who lacks 101 or 102, or both may take either or both for credit even though he has already taken a literature course for which 101-102 are prerequisite here.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102 English Composition (3 cr) F & S. Eng 101: rhetoric and expository writing. (101 may be taken by correspondence) Eng 102: the research paper and analysis of literary materials. These courses do not count toward the major in English or a teaching major or minor in English, and they may not be taken under the pass-fail option.

111-112 Literature of Western Civilization (3 cr) F & S. Masterpieces reflecting the development of Western thought and culture. Eng 111: Classical Greece to the Renaissance. Eng 112: 17th century to the present. May be taken with 101-102.

150 Expository Prose Analysis (3 cr) F or S. Concentrates on persistent problems of diction, syntax, and clear expression in student prose exposition. *Prereq:* 101-102.

175 Introduction to Literature (3 cr) F & S. Basic course in literary genres (novel, drama, poetry) to provide the general student or the beginning English major with the terminology and standard techniques of literary explication. May be taken with 101-102.

267-268 Survey of English Literature (3 cr) F-S. Eng 267: Beouwulf to Samuel Johnson. Eng 268: Robert Burns to contemporary writers. May be taken by correspondence. *Prereq:* 101.

277-278 Survey of American Literature (3 cr) F-S. Eng 277: colonial beginnings to Melville. Eng 278: Whitman to contemporary writers. *Prereq:* 101-102.

291-292 Creative Writing (3 cr) F-S. Techniques of writing; narrative prose and poetry. *Prereq:* perm.

313 Business Writing (3 cr) F & S. Correspondence and reports; form, content, and style. *Prereq:* ability to type is desirable.

317 Technical and Engineering Report Writing (3 cr) F & S. Principles of clear writing related to technical style; problems in the technical article, formal engineering reports, and business letters.

321 The Novel for Non-Majors (3 cr) F or S. Major novels from the 18th century to the present; special emphasis upon the variety and kinds of novels written.

325 Contemporary Literature for Non-Majors (3 cr) F or S. Current poetry and prose; emphasis on American authors.

327 Black Literature (3 cr) F or S. Major works of American Black writers; emphasis on the 20th century.

330 American Indian Literature (3 cr) F or S. Recent poetry and prose written by and about the American Indians.

335 Shakespeare for Non-Majors (3 cr) F. Primarily for students not majoring in

English literature. Introduction to Shakespeare's major plays.

350 Backgrounds of Literature (3 cr) F or S. Survey of those areas of tradition which underlie the art-literature of the Western World: the Bible, the mythology of classical antiquity and of Northern Europe, and the medieval romance.

395 Interpreting Literature (3 cr) F or S. Introduction to major principles and methods of literary analysis; practice in applying critical methods to selected poems, fiction, and drama.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

421 Development of the English Novel (3 cr) F. Major writers from the beginnings to Scott.

422 The Nineteenth-Century English Novel (3 cr) S. Dickens to Hardy.

425 Irish Literary Renaissance (3 cr) F or S. Literature of Ireland after 1880, especially Yeats, Joyce, and Synge.

426 Modern Poetry (3 cr) F or S.

427 American Fiction in the Twentieth Century (3 cr) F or S.

428 British Fiction in the Twentieth Century (3 cr) F or S.

433 Chaucer (3 cr) F. Introduction to Chaucer's poetical works except *Troilus and Criseyde*.

434 Middle English Literature (3 cr) S. Alt/yrs. Middle English language and literature to 1500, exclusive of the works of Chaucer and of medieval drama.

435 Shakespeare: Comedies and Histories (3 cr) F.

436 Shakespeare: Tragedies and Romances (3 cr) S.

437 English Drama to 1642 (3 cr) F. Alt/yrs. Liturgical beginnings through the Age of Elizabeth, excluding Shakespeare, and concluding with the close of the theatres by the English Civil War; emphasis upon Marlowe, Jonson, and Webster.

438 English Drama, 1660-1800 (3 cr) S. Alt/yrs. Heroic play and tragedy; sentimental drama; comedy of manners.

439 Modern English and American Drama (3 cr) F or S. Plays of the chief 20th-century English and American dramatists.

441 American English (3 cr) F & S. Phonemes, morphology, snytax, and dialects of American English.

442 Introduction to Linguistics (3 cr) F. Descriptive and historical study of language; linguistic analysis and structure; language classification and families; language in social and cultural setting.

443 Descriptive Linguistics (3 cr) S. Phonomic and morphemic analysis and linguistic field work. *Prereq:* 442.

445 Literature for Young People (3 cr) F or S. Primarily for students working for teacher or library certification. Reading and appraisal of literature appropriate to the needs, interests, and abilities of young people.

451 The Poetry of Spencer and His Age (3 cr) F. Alt/yrs.

452 Milton (3 cr) F or S. Major prose and poetry of Milton.

453 Seventeenth-Century Literature in Prose (3 cr) F or S. Evolution of 17th-century prose from Bacon to Dryden, including Browne, Overbury, Burton, Donne, Andrews, and Milton.

454 Seventeenth-Century Poetry (3 cr) F or S. Jacobean and Caroline poetry (including the metaphysicals, but excluding Milton), 1600-1660.

455 The Age of Dryden and Pope (3 cr) F. Neoclassical temper and the literature of the middle class: Dryden, Pope, and prose writers.

456 The Age of Johnson (3 cr) S. Rational spirit and growth of sensibility as found in Swift, Johnson, and Blake.

464 The Romantic Period—Blake, Wordsworth and Coleridge (3 cr) F or S. Poetry and prose of the first generation romantics.

465 The Romantic Period— Shelley, Keats, Byron (3 cr) F or S. Poetry and prose of the second generation romantics.

466 The Victorian Period (3 cr) S. Great writers of the era; their interpretation of the life and ideals of their time, their relation to one another, and their influence on their own and succeeding times.

471 Poe, Hawthorne, and Melville (3 cr) F or S. Major works and genres of three authors to delineate their ethos and artistry in relation to the American Renaissance. *Prereq:* 277.

472 Emerson, Thoreau, and Whitman (3 cr) F or S. Major works and genres of three authors to delineate their ethos and ar-

tistry in relation to the American Renaissance. *Prereq:* 277.

473 Literature of the American West (3 cr) F. Writings that reflect the growth of the western United States from frontier days to the present.

474 Growth of American Realism, 1865-1914 (3 cr) S. *Prereq:* 278.

476 American Folklore (3 cr) S. Forms, including ballads and folksongs, known in the U.S.; their collection and study with special attention to their appearance in American literature. May be taken by correspondence.

487-488 Modern European Literature (3 cr) F & S. Readings in translation of the chief European writers; emphasis on the 19th and 20th centuries and including drama.

491-492 Advanced Creative Writing (3 cr) F-S. Continuation of 291-292. *Prereq:* 291 or 292, and perm.

495 Literary Criticism (3 cr) F or S. History of literary criticism from Plato to the present; critical practice representing various schools and techniques; practice in applying critical methods to selected poems, fiction and drama.

496 History of the English Language (3 cr) F or S. Evolution of the English language from Proto-Germanic to American English.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

502 (s) **Directed Study** (cr arr) F & S. Directed study and research in English and American literature and in linguistics. Consult the time schedule for specific areas currently offered. *Prereq:* perm and perm of dept.

503 Problems and Methods of Literary Study (3 cr) F (501).

507 Old English (3 cr) F or S. *Prereq:* 441, 442, 496, or perm.

508 Middle English (3 cr) F or S. *Prereq:* 441, 442, 496, or perm.

509 Early and Late Modern English (3 cr) F or S. *Prereq:* 441, 442, 496, or perm.

525 (s) **Renaissance Proseminar** (3 cr, max 9) F or S. Studies in 16th and 17th century poetry, prose, and drama. Consult the time schedule for specific courses currently offered.

526 (s) **American Proseminar** (3 cr, max 12) F or S. Studies in American literature. Consult the time schedule for specific courses currently offered.

527 (s) **Proseminar** (3 cr, max 12) F or S. Studies in English literature by historical periods, except the Renaissance. Consult the time schedule for specific courses currently offered.

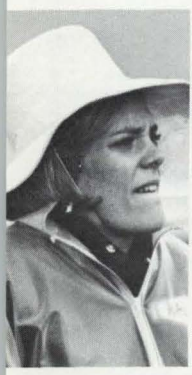
528 (s) **Proseminar** (3 cr, max 12) F or S. Studies in literary genre and mode: poetry, drama, folklore, satire, criticism, and Western American. Consult the time schedule for specific courses currently offered.

535 (s) **Renaissance Seminar** (3 cr, max 12) F or S. Studies in major Elizabethan writers: Spenser, Shakespeare, Donne, or Milton. Consult the time schedule for specific courses currently offered.

536 (s) **American Seminar** (3 cr, max 12) F or S. Studies of major American writers: Melville, Thoreau, James, Twain, Faulkner, O'Neill, Lewis. Consult the time schedule for specific courses currently offered.

537 (s) **Seminar** (3 cr, max 12) F or S. Studies of major British writers: the Beowulf poet, Chaucer, Dryden, Pope, Swift, Johnson, Wordsworth, Coleridge, Keats, Browning, Arnold, Dickens, Yeats, Lawrence, T. S. Eliot, Conrad. Consult the time schedule for specific courses currently offered.

548 Applied Linguistics (3 cr) F or S (447). Recent research in linguistics and its application to the teaching of composition, reading, literature, oral English, and language. *Prereq:* 6 crs in the following: 441, 442, 496. Credit in this course cannot be used for the 30-credit requirements for the M.A. degree with a major in English.



Entomology (Ent)

Arthur R. Gittins, Department Head (101 Ent. Bldg.). Professors Barr, Bishop, Gittins, Schenk, Stark; Associate Professors Brusven, Smith; Assistant Professor O'Keeffe; Assistant Research Professors Carpenter, Scott, Waters.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

X121 Applied Entomology (3 cr) X. Identification, life history and control of insect pests in the Pacific Northwest; for students interested in the biology and control of pest insects.

211 General Entomology (4 cr) F. Structure, development, classification, habits and ecology of insects. Two lec and two 2-hr labs per wk. (GITTINS)

314 Entomology for Biology Teachers (3 cr) S. Use of insects in illustrating biological principles; techniques and methodology in rearing, preparation and studying insects. Two lec and one demonstration-discussion per wk. *Prereq:* perm. (GITTINS)

322 Economic Entomology (3 cr) S. Importance of insects associated with agriculture; identification, biology and control. Two lec and one 2-hr lab per wk. (BISHOP)

342 Insect Identification (4 cr) S. Survey of the major families; collecting and preservation techniques. Two lec and two 2-hr labs per wk; two 1-day field trips. *Prereq:* 211. (BARR)

ID372 Aquatic Entomology (3 cr) S. Alt/yrs 1972-73. Identification and biology of insects associated with aquatic and subaquatic environments. One lec and two 2-hr labs per wk; two 1-day field trips. *Prereq:* perm. (BRUSVEN)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

438 Pesticides in the Environment (2 cr) S. Also offered as PISc 438. The role of herbicides, fungicides, bactericides, nematocides, insecticides, and rodenticides in pollution, with methods of detection, control and prevention. Two lec per wk. (SMITH, HELTON)

442 Immature Insects (3 cr) S. Alt/yrs 1972-73. Structure, behavior and identification of immature insects. One lec and two 2-hr labs per wk. *Prereq:* 211. (BRUSVEN)

WS447 Plant Resistance to Insects (2 cr) S. Alt/yrs 1972-73. Mechanisms of plant resistance; factors affecting expression or permanence of resistance; analysis of insect-plant associations. *Prereq:* general entomology and organic chemistry or plant physiology.

WS448 Medical Entomology (3 cr) F. Insects and related arthropods in relation to human health; means of control. *Prereq:* adv standing in entomology. (HARWOOD)

467 Forest Entomology (3 cr) F. Also offered as For 467. Influence of insects on forestry practices and on the forest ecosystem; identification, ecology, survey, and control of major forest insect pests. Two lec and one 2-hr lab per wk. (SCHENK)

484 Insect Anatomy and Physiology (4 cr) F. Alt/yrs 1971-72. Organ systems of insects and their functions. Three lec and one 3-hr lab per wk. *Prereq:* 211. (O'KEEFFE)

ID498 Insect Morphogenesis (3 cr) S. Alt/yrs 1971-72. Ontogenetic development, embryogenesis, metamorphosis, morphology and phylogeny of insects. *Prereq:* adv standing in entomology. (GITTINS)

499 (s) **Directed Study** (cr arr) F & S. (400) *Prereq:* perm.

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

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

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

ID513 Entomological Research Methods (3 cr) F. Procedures and techniques of studying insects; measuring physical environmental factors. (SMITH)

517 Entomological Literature (2 cr) F. Assembly and use of entomological literature. (BARR)

521 Principles of Insect Control (3 cr) F. Alt/yrs 1972-73. Principles, theory and methodology of regulating populations of detrimental insects. (BISHOP)

538 Pesticide Toxicology (3 cr) S. Also offered as PISc 538. Modes of action of pesticide chemicals, effects on living organisms. *Prereq:* perm. (SMITH, HELTON)

541 Insect Ecology (3 cr) F (461). Alt/yrs 1972-73. Factors affecting the distribution, abundance and behavior of insects; population dynamics. *Prereq:* 211 and course in general ecology, or perm. (BRUSVEN)

544 Systematic Entomology (3 cr) F. History and principles of insect classification; taxonomic procedure and rules of nomenclature. (BARR)

WS551 Insect Biochemistry (3 cr) S. Alt/yrs 1972-73. An examination of the current

knowledge of insect chemistry. *Prereq:* course in biochemistry. (BENSON)

561 Insect Behavior (2 cr) S. Alt/yrs 1972-73. Biology and behavior of insects. O'KEEFFE)

569 Advanced Forest Entomology (3 cr) F. Alt/yrs 1971-72. Also offered as For 569. Biological and economic evaluation and applied control of forest insect populations; population phenomena. Two lec and one 2-hr lab per wk. Two 1-day field trips to University forest. *Prereq:* 467 or perm. (SCHENK)

582 Insect Physiology (4 cr) S. Alt/yrs 1971-72. Interrelations of structure and metabolic functions of insect organ systems. Two lec and two 3-hr labs per wk. *Prereq:* 484 and course in organic chemistry. (O'KEEFFE)

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Food Science (FS)

John E. Montoure, Department Head (103 Food Science Bldg.). Associate Professors Barnhart, Montoure, Muneta; Associate Research Professor Sauter; Instructor and Research Associate Huber.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Introduction to Food Science (3 cr) S. Food science and its relation to agriculture; opportunities in the various fields of the food industry; trends in procurement, management, processing, distributing, and utilization of food. (BARNHART)

201 Physical Principles of Food Processing (3 cr) F. Alt/yrs 1971-72. Processing by heat, freezing, dehydration, radiation, and other methods. (BARNHART)

204 Chemical Principles of Food Processing (3 cr) S. Alt/yrs 1972-73. Texture, color, flavor and nutritive quality during food harvesting, processing and distribution. (MUNETA)

259 Food Product Analysis for Quality Control (4 cr) F. Methods of food examination basic to detection of adulteration, food grading, and quality control; procedures for analysis of food products. Two lec and two 2-hr labs per wk. (MONTOURE)

294 Food Processing I (4 cr) S. Science, engineering and bacteriological influences involved in purchasing, processing and distribution of market milk and other perishable foods. Two lec and one 4-hr lab per wk. *Prereq:* 259 or perm. (BARNHART)

312 Food Plant Equipment and Building (3 cr) S. Alt/yrs 1972-73. Principles of construction, operation and maintenance of food processing equipment; process control; steam, water, electrical, refrigeration, and air production and control; building construction, design, materials and methods. Two lec and one 2-hr lab per wk. (BARNHART)

313 Food Plant Sanitation and Inspection (3 cr) F. Alt/yrs 1971-72. Hard surface detergency, detergent classification and formulation; water conditioning and treatment; waste disposal; inspection as established by federal and state agencies. Two lec and one 3-hr lab per wk. *Prereq:* 294 or perm. (BARNHART)

329 Proseminar (1 cr) F. Food science problems and review of literature. (MONTOURE)

331 Meat Selection (2 cr) F (351). See Anl 331 for description.

334 Meat Technology (3 cr) S. See Anl 334 for description.

410 Undergraduate Research (1-2 cr, max 4) F & S (400).

416 Food Plant Mangement (3 cr) S. Alt/yrs 1972-73. Organization, operation and management of processing plants; local, state and federal regulations pertaining to processing, sale and distribution of food products. *Prereq:* perm. (BARNHART)

422 Food Chemistry and Analysis (3 cr) S. See AgBiC 422 for description.

438 Fruit and Vegetable Processing (4 cr) S. Processing of fruits, vegetables, pickles, jellies, and jams; unit operations and processes of canning, freezing,

and dehydration. Three lec and one 3-hr lab per wk. *Prereq:* perm. (HUBER)

441 Food Processing II (4 cr) F. Alt/yrs 1971-72. Theory and practice of processing food products into ice cream and other frozen desserts; chemical and physical changes during preparation, freezing, refrigerated storage and freeze drying; cultured food products and cottage cheese. Two lec and one 4-hr lab per wk. *Prereq:* 294 or perm. (BARNHART)

442 Food Processing III (4 cr) S. Alt/yrs 1971-72. Techniques involved in production of manufactured food products through coagulation and precipitation phenomena as well as controlled fermentation; concentration by dehydration; cheese varieties and butter production. Two lec and one 4-hr lab per wk. *Prereq:* 294 or perm. (MONTOURE)

476 Advanced Food Products Analysis (2 cr) S. Alt/yrs 1971-72. Modern sophisticated instruments and lab techniques used in research and in technical control of dairy and food products. Two 2-hr labs per wk. *Prereq:* 259 or perm. (MONTOURE)

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

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

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

511-512 Advanced Food Science (2 cr) F-S (501-502). Application of microbiological, physical and physio-chemical principles to the processing of food products; problems of bacterial destruction and growth, viscosity, foam formation, freezing, crystallization, and protein and fat stability. *Prereq:* 12 cr in chem, 7 cr in bacteriology or perm. (MONTOURE)

522 Pesticide Residues and Chemical Additives in Food (3 cr) S. Sources and nature. (MONTOURE)

Foreign Languages (FL)

John H. Sullivan, Acting Department Chairman (314 Admin. Bldg.). Professors Iiams *(German)*, Reed *(German)*; Associate Professors Aaron *(Spanish)*, Rowe *(Classics)*, Sita *(Spanish and Italian)*, Sullivan *(German)*; Assistant Professors Fiske *(French)*, Gonzalez *(Spanish)*, Jensen *(Spanish)*, Koubourlis *(Russian)*, Stevenson *(French)*; Instructors Bessette *(Classics)*, Cohee *(French)*, Norton *(Spanish)*, Reece *(German)*, Rose *(French)*, Vogt *(German)*, Wu *(French)*.

PLACEMENT: Students who plan to continue a language begun elsewhere must take a placement examination during registration week. Consult the chairman of the Department of Foreign Languages for specific information. (Full credit in semester hours and grade points is earned in courses students complete successfully regardless of courses taken in high school.)

PREREQUISITE: Prerequisite for upper-division language courses, except those in Greek, is the appropriate intermediate course or equivalent.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

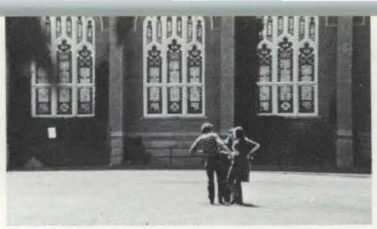
COURSES OFFERED IN ENGLISH

(No prerequisite or foreign language experience required.)

100 English as a Second Language (3 cr, max 6) F & S. Limited to students whose native language is other than English. Normally scheduled on the basis of three lec per wk; however, additional lec, lab, and/or tutorial sessions may be scheduled and required. *Prereq:* perm of dept.

243-244 English Word Origins (2 cr) F-S. Fundamental Latin and Greek words used in the humanities and natural sciences; emphasis on terminology of fields in which students are especially interested; knowledge of Greek or Latin is not required.

313-314 Modern French Literature in Translation (3 cr) F-S. Major modern French authors in English translation; knowledge of French not required; does not count toward a major or minor in French.



323-324 German Literature in Translation (3 cr) F-S. Knowledge of German is not required; does not count toward a major or minor in German.

363-364 Survey of Classical Origins (3 cr) F-S. FL 363: Greece. FL 364: Rome. Literature, history, philosophy, archaeology, and art of Greece and Rome; discussions and writing.

373-374 Russian Literature in Translation (3 cr) F-S. Main currents of Russian literature; knowledge of Russian is not required.

393-394 Masterpieces of Spanish Literature in Translation (3 cr) F-S. Masterpieces of Spanish literature in English translation; knowledge of Spanish not required; does not count toward a major or minor in Spanish.

GENERAL COURSES FOR FOREIGN LANGUAGES

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

498 (s) **Proseminar** (1-3 cr, max 12) F & S. May be graded on the basis of P or F when this grading system is uniform for all students in the class. *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

FRENCH

FL 101, 102, 201, and 202 may be taken concurrently (successively) during a single term if the student is a resident of the French Language House.

101-102 Elementary French (4 cr) F & S. Pronunciation, vocabulary, reading, spoken French, functional grammar.

104 Elementary French Reviewed (4 cr) S. Review of subject matter covered in 101 102; not open for credit to students who have taken 101 or equiv in college. *Prereq:* 2 yrs of French in high school.

105-106 French for Graduate Students (0 cr) F S. Preparation for the doctoral reading examination. Two 1-hr lec per wk. Graded on the basis of P or F.

201-202 Intermediate French (4 cr) F & S. Reading, grammar review, speaking and writing. *Prereq:* 102.

301-302 Advanced French Grammar and Composition (3 cr) F-S. Recommended for prospective teachers of French.

303-304 French Culture and Institutions (3 cr) F-S.

305-306 Survey of French Literature (3 cr) F-S. Middle Ages to the present.

401-402 Nineteenth-Century French Literature (3 cr) F-S.

403-404 Seventeenth-Century French Literature (3 cr) F-S.

405-406 Eighteenth-Century French Literature (3 cr) F-S.

407-408 Contemporary French Literature (3 cr) F-S.

409-410 French Phonetics (1 cr) F-S. 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) F-S.

413-414 French for Teachers (2 cr) F-S. Language and culture; pronunciation and diction.

GERMAN

121-122 Elementary German (4 cr) F-S. Pronunciation, vocabulary, reading, spoken German, functional grammar.

125-126 German for Graduate Students (0 cr) F-S. Preparation for the doctoral reading examination. Two 1-hr rec per wk. Graded on the basis of P or F.

221-222 Intermediate German (4 cr) F-S. Reading, grammar review, speaking and writing. *Prereq:* 122.

223-224 Intermediate German: Scientific (4 cr) F-S. Readings adapted to the needs of students in scientific curricula. *Prereq:* 122.

321-322 Advanced German Grammar and Composition (3 cr) F-S. Recommended for prospective teachers of German.

325-326 German Culture and Institutions (3 cr) F-S.

327-328 Survey of German Literature (3 cr) F-S. To the close of the 19th century.

421-422 Nineteenth-Century German Literature (3 cr) F-S.

423-424 Modern German Literature (3 cr) F-S.

425-426 Eighteenth-Century German Literature (3 cr) F-S.

427-428 Classical Period in German Literature (3 cr) F-S.

429-430 German Phonetics (1 cr) F-S. 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) F-S.

433-434 German for Teachers (2 cr) F-S. Language and culture; pronunciation and diction.

GREEK

341-342 Elementary Greek (4 cr) F-S (141-142). Pronunciation, vocabulary, reading, functional grammar.

441-442 Intermediate Greek (4 cr) F-S (241-242). Reading, grammar review, writing. *Prereq:* 342.

ITALIAN

151-152 Elementary Italian (4 cr) F-S. Pronunciation, vocabulary, reading, spoken Italian, functional grammar.

251-252 Intermediate Italian (4 cr) F-S. Reading, grammar review, speaking and writing. *Prereq:* 152.

LATIN

161-162 Elementary Latin (4 cr) F-S. Pronunciation, vocabulary, reading, spoken Latin, functional grammar.

261-262 Intermediate Latin (4 cr) F-S. Reading, grammar review, speaking, and writing. *Prereq:* 162.

361-362 Advanced Latin Grammar and Composition (3 cr) F-S. Recommended for prospective teachers of Latin.

365-366 Survey of Latin Literature (3 cr) F-S. To the close of the third century.

461-462 Latin Literature of the Augustan Age (3 cr) F-S.

463-464 Latin Literature of the Republic (3 cr) F-S.

465-466 Latin Literature of the Silver Age (3 cr) F-S.

467-468 Latin for Teachers (2 cr) F-S.

RUSSIAN

171-172 Elementary Russian (4 cr) F-S. Pronunciation, vocabulary, reading, spoken Russian, functional grammar.

271-272 Intermediate Russian (4 cr) F-S. Reading, grammar review, speaking, and writing. *Prereq:* 171.

371-372 Advanced Russian Grammar and Composition (3 cr) F-S. Recommended for prospective teachers of Russian.

SPANISH

181-182 Elementary Spanish (4 cr) F & S. Pronunciation, vocabulary, reading, spoken Spanish, functional grammar.

184 Elementary Spanish Reviewed (4 cr) S. Review of subject matter covered in 181-182; not open for credit to students who have taken 181 or equiv in college. *Prereq:* 2 yrs of Spanish in high school.

281-282 Intermediate Spanish (4 cr) F-S. Reading, grammar review, speaking, and writing. *Prereq:* 182.

381-382 Advanced Spanish Grammar and Composition (3 cr) F-S. Recommended for prospective teachers of Spanish.

383-384 Hispanic Culture and Institutions (3 cr) F-S. Includes topics in Spanish-American civilization.

385-386 Survey of Spanish Literature (3 cr) F-S.

387-388 Survey of Spanish-American Literature (3 cr) F-S.

481-482 Nineteenth-Century Spanish Literature (3 cr) F-S.

483-484 Golden Age in Spanish Literature (3 cr) F-S. Sixteenth and seventeenth centuries.

485-486 Contemporary Spanish Literature (3 cr) F-S.

487-488 Contemporary Spanish-American Literature (3 cr) F-S.

489-490 Spanish Phonetics (1 cr) F-S. 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) F-S.

493-494 Spanish for Teachers (2 cr) F-S. Language and culture; pronunciation and diction.

Forestry (For)

John H. Ehrenreich, Dean (202-C, Forestry Bldg.). Professors Chapman, Deters, Ehrenreich, Erickson, Howe, Hungerford, Loewenstein, MacPhee, Partridge, Schenk, Seale, Sharp, Stark, Tisdale, Wang, Wohletz; Associate Professors Belt, Bjornn, Hironaka, Hornocker, Johnson, Knight, Pitkin; Assistant Professors Aulerich, Bizeau, Falter, Godfrey, Hofstrand, Sowles; Instructors Gordon, Jones; Extension Forester Burlison.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Forestry Orientation (1 cr) F. Introduction to forestry and related wildland management professions; orientation to the University and College.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

203 Wildland Resources Conservation (3 cr) F or S. Basic concepts of forest and rangeland ecology; major resources of wildlands, their use and the principles of management which lead to their conservation; man's role in the natural environment and problems of pollution. (JOHNSON)

216 Tree Identification (2 cr) S. Identification, distribution, and economic use of important trees of western U.S.; emphasis on trees of Idaho. One lec and one 2-hr lab per wk. Open to non-forestry students only. (JOHNSON)

250 Introduction to Wildland Management (2 cr) S. Methods of inquiry into and logical exposition of topics in forestry and related wildland disciplines.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

300 Forest Resource Measurements (1-4 cr, max 4) Summer Camp. Map and aerial photo measurement and interpretation; land surveying; log, tree, and stand measurement; wildland surveys for resource inventories and mapping. Four weeks of all-day classes. (AULERICH)

301 Wildland Ecology (4 cr) Summer Camp. Ecological principles, methods, and concepts as applied to forest, range, wildlife and fishery management; ecological basis for integrated management of wildland. Four weeks of all-day classes. *Prereq:* systematic botany and general ecology. (JOHNSON)

303 Forest Resources Conservation (2 cr) SS(post session). Ecosystem approach to resource management on forest and range lands; observations of management practices integrating timber, range forage, wildlife, fish, water and recreation resources, stressing principles which lead to their conservation. Two weeks of all-day classes at McCall, Idaho. *Prereq:* course in a biological science. (JOHNSON)

305 Farm Forestry (2 cr) F. The farm woodlot; growing wood products; seasoning, preservation, use and marketing of farm forest products; windbreak and shelterbelt planting; forestry in the economics of agriculture. *Prereq:* jr standing in agriculture.

307 Biometry (3 cr) F. See Ag 321 for description.

314 Fish and Wildlife Population Ecology (3 cr) S. Characteristics of fish and wildlife populations and their environment. *Prereq:* general ecology or perm. (BJORNN)

320 Dendrology (3 cr) S. Identification, classification, distribution and associations of the important tree species of the U.S.; important regional shrubs. Two lec and two 2-hr labs per wk; two 1-day field trips. *Prereq:* 301 and systematic botany. (JOHNSON)

321 Silvics (2 cr) F. Ecological basis for the management of vegetation, especially forests. *Prereq:* 301 and general chemistry. (LOEWENSTEIN)

327 Elementary Forest Tree Improvement (1 cr) F or S. Also offered as Genet 307. Basic genetic principles and practices of forest tree improvement. Two ½-day field trips. *Prereq:* general botany. (WANG)

331 Introduction to Wood Technology (3 cr) F. Plant anatomy pertinent to woody plants; identification of woods by gross and minute characteristics; physical and chemical properties of commercial woods; relation of wood properties to wood processing and wood in use. Two lec and two 2-hr labs per wk; two days of field trips. *Prereq:* general botany. (HOWE, HOFSTRAND)

351 Elements of Range Management (3 cr) F. Development of the range industry; grazing regions; production and utilization of range forage; range improvement and reseeding; range survey and

management plans; relation of range management to other phases of wildland management. *Prereq:* general botany. (TISDALE)

367 Fire Control (2 cr) F. Objectives and policy; effects of fire on the ecosystem; fire behavior; use of fire as a wildland management tool. One 2-day field trip. (JOHNSON)

370 Principles of Forest Management (2 cr) S. Forest regions and industries; silvicultural principles and practices employed in timber production and utilization; interrelations between wood production and other uses of forest land.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

WS406 Radiation Ecology (2 cr) S. Alt/yrs 1972-73. WSU BioSc 440. Fate and effect of radio nuclides in the natural environment. (SCHULTZ)

408 Forest Soils (2 cr) S. Also offered as Soils 408. Properties of wildland soils; forest humus; soil-site relationships; improvement of unproductive forest soils; soils and reforestation; management of nursery soils. *Prereq:* general soils. (LOEWENSTEIN)

411 Ichthyology (3 cr) F. See Zool 481 for description.

412 Aquatic Pollution Ecology (3 cr) S. Physical, chemical, and biological interrelationships of altered lakes and streams. Two lec and one lab-disc per wk. *Prereq:* limnology or perm. (FALTER)

ID413 Fish Ecology (2 cr) F (ID512). Racial discrimination, migration, and spawning activities of salmonids; environmental stress with reference to physiology, competition, predation and pollution. Two lec per wk; three days of field trips. *Prereq:* ecology or perm. (MacPHEE)

ID414 Fish Ecology Laboratory (1 cr) F (ID512). One 2-hr lab per wk. *Prereq:* general zoology and perm. (MacPHEE)

415 Limnology (3 cr) F (416). Also offered as Zool 436. Interrelationships of the physical, chemical, and biological features of lakes and streams. Two lec and one 2-hr lab per wk; three days of field trips. *Prereq:* general chemistry and general zoology. (MacPHEE)

417 Fish Culture (2 cr) F. Alt/yrs 1972-73. Propagation, nutrition, diseases, bioenergetics and growth of fresh-water fishes with emphasis on the economics of various fish culture practices. Five days of field trips. (MacPHEE)

418 Fishery Management Techniques (2 cr) S. Methods and techniques employed in fishery management. *Prereq:* 307 and ecology. (BJORNN)

422 Forest Planting (2 cr) S. Methods of seed collection; extraction and storage; germination; nursery practice; field planting. One lec and one 3-hr lab per wk; one 2-day field trip. *Prereq:* 321. (PITKIN)

424 Silviculture (3 cr) S. Silvicultural cutting systems, cultural operations, and the silvicultural characteristics of important commercial species. Two lec and one 3-hr lab per wk; one or two 1-day field trips. *Prereq:* 321.

425 Regional Silviculture (2 cr) F. Forest regions of the U.S. and the practical methods for successful handling of the important forest types in each region. *Prereq:* 424.

434 Forest Engineering and Harvesting (3 cr) S. Management system concept including reconnaissance, engineering concepts of route design and logging, silvicultural and milling considerations, yarding systems and costs; development of a logging plan for an operating area. Five days of field trips. (HOWE, AULERICH)

436 Biological Properties of Wood (3 cr) S. Wood quality and its relation to growing conditions in the forest; theory and practice of air and kiln drying methods for wood; protection of wood by chemical impregnation. Two lec and one lab per wk; one 5-day field trip. *Prereq:* general botany. (HOWE, HOFSTRAND)

437 Physical Properties of Wood (3 cr) F. Technology and physical properties of woods, including wood moisture relations; mechanical properties; application of strength data and design principles to the use of wood in construction. Two lec and one lab per wk. *Prereq:* 331. (HOFSTRAND)

438 Chemical Properties of Wood (3 cr) S. Chemistry of wood; chemical and technological processes for the conversion of wood into commodities; properties and uses; industrial trends; adhesives and their use; wood finishing. Two lec and one lab per wk. *Prereq:* organic chemistry. (HOWE)

442 Fish and Wildlife Management (3 cr) S. Measurement, analysis and manipulation of fish and wildlife populations and their habitats; emphasis on outside reading, case histories and objective decision-making procedures. Two lec

and one lab per wk; two 1-day field trips. *Prereq:* 314. (KNIGHT)

448 Wildlife Ecology (2 cr) S (547). Environmental relations of wildlife species and individuals in altered and in natural habitats. *Prereq:* 314. (HUNGERFORD)

449 Wildlife Ecology Laboratory (1 cr) S (547). One 3-hr lab per wk; three days of field trips. *Prereq or coreq:* 448. (HUNGERFORD)

452 Range Communities (3 cr) S. Vegetational composition, physical characteristics, grazing reactions, and management of plant communities in the major range regions. Two 3-hr lec-labs per wk; two days of field trips. *Prereq:* general botany; systematic botany (may be concurrent). (SHARP)

453 Range Methods and Techniques (3 cr) F. Techniques and methods of measuring and describing: (1) range vegetation and (2) consumption and use of vegetation by animals. Two lec and one lab per wk; two days of field trips. *Prereq:* 307, 351. (SHARP)

454 Range Improvement and Management Planning (3 cr) S. Objectives, methods and benefits of range improvement practices and their impact on management; fundamentals of management planning for the utilization of rangeland resources; problem definition and analysis, determination of objectives, action planning, and follow-up measures. Two lec and one lab-disc per wk; one 1-wk field trip. *Prereq:* 351, 453. (TISDALE)

462 Watershed Management (3 cr) F. The hydrologic cycle as it is influenced by climate, vegetation and land use; forest and range management practices placed in the context of water resource management at local and regional levels; management practices which influence quality, quantity, and regimen of yield from non-agricultural lands. Lab occasionally substituted for lec. Two days of field trips. *Prereq:* general soils, sr standing in the College or perm. (BELT)

464 Forest Pathology (2 cr) S. Pathology, symptomatology, causes of diseases and decays; environmental influences on disease; disease as part of the forest environment; control and protection as related to silviculture, management and utilization. One lec and one lab per wk; one 1-day field trip. *Prereq:* 301, 474. (PARTRIDGE)

465 Biometeorology (2 cr) F (565). Alt/yrs 1971-72. Interactions of the atmosphere and plant-soil-water complex; physical laws governing energy and mass balances of selected plant communities and their biological implications; mountain-valley wind systems, radiation balance, evapotranspiration and diffusion processes; related instrumentation. One 2-day field trip; occasional labs. *Prereq:* one year physics (calculus desirable), or perm. (BELT)

467 Forest Entomology (3 cr) F. See Ent 467 for description.

474 Mensuration (3 cr) S. Theory of log, tree and stand measurement; construction and use of volume tables; constuction and application of yield tables; growth studies. Two lec and one 2-hr lab per wk. *Prereq:* 300, 307. (AULERICH)

475 Forest Finance (2 cr) F. Financial aspects of management of American forests; appraisal of land, growing stock, stumpage and damages; application of simple and compound interest, capitalization and discount formulae in forest business.

476 Forest Regulation (3 cr) S. Regulation of American forests for continuous timber production. One 2-day field trip. *Prereq:* 424, 474.

483 Economics of Conservation (3 cr) F. Economics of production of forest goods and services; role of economic forces in resource analysis and conservation; planning of forest resource use by the firm and society. *Prereq:* general economics. (SEALE)

484 Forest Policy and Administration (3 cr) S. Evaluation of land and forest problems and policies in the U.S.; analysis of current conditions and policies; historical development of governmental and private agencies concerned with the administration of forest conservation programs. *Prereq:* general economics. (WOHLETZ)

487 Forest Recreation (3 cr) F. Objectives and problems in the integration of recreation into multiple-use land management. Three days of field trips.

493 Environmental Law (2 cr) F. Basic laws governing the administration of wildland resources, and laws designed to regulate impact on the environment. *Prereq:* sr standing. (HUNGERFORD)

494 Models for Resource Decisions (3 cr) S. Also offered as InfSc 494. Use of mathematical models of resource systems to explore managerial strategy; problem analysis; systems concepts and optimization of resource allocation. *Prereq:* sr. standing in the College or perm. (AULERICH)

495 Fish and Wildlife Seminar (1 cr, max 2) F & S. Discussions integrating biological, social, political, economic and philosophic aspects of fish and wildlife problems. *Prereq:* sr standing in the College.

496 Forest Products Seminar (1 cr) F. Contemporary problems relevant to the manufacture of wood products including lumber, plywood, hardboard, particle-board and paper; equipment and basic layouts.

497 Land Management Seminar (1 cr, max 2) F & S. Assigned studies in wildland management. *Prereq:* sr standing in the College.

499 (s) **Directed Study** (cr arr) F & S (491). For the individual student; conferences, library, field, or laboratory work. Areas of concentration normally offered: forest, range, wildlife, fishery or watershed management, and wood utilization technology. *Prereq:* sr standing in the College, GPA 2.5 and perm of dept.

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

501 (s) **Seminar** (cr arr) F & S. Major philosophical, management, and research problems of wildlands; presentation of individual studies on assigned topics. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (591). Normally offered in forestry, range, wildlife, fishery, wood, and watershed sciences. *Prereq:* perm.

504 Fundamentals of Research (2 cr) F & S. Objectives and techniques of research; historical development of the scientific method; preparation of working plans; assembly, interpretation, and presentation of data; structure and use of the scientific literature, and preparation of manuscripts. Enrollment limited to fifteen. (PARTRIDGE)

WS507 Statistical Ecology (3 cr) F. Alt/yrs 1971-72. WSU BioSc 530. Collection and interpretation of ecological data according to biometrical procedures. (SCHULTZ)

ID510 Advanced Fishery Management (3 cr) S. Alt/yrs 1971-72. Compensation as a phenomenon basic to exploitation; yield in numbers and weight; models of yield; stock-recruitment functions; economic yield; application of theory of physical and economic yield to empirical examples in commercial and sport exploitation. One 5-day field trip. (CHAPMAN)

514 Fish Population Dynamics (2 cr) S. Alt/yrs 1972-73. Fish population dynamics; models and empirical examples of density changes, competition and predation, mechanisms controlling population density and biomass; social behavior; production in fish populations; aquatic community processes. (CHAPMAN, BJORNN)

521 Advanced Forest Soils (3 cr) F. Also offered as Soils 507. Wildland soils and their relation to vegetation; emphasis may be varied according to the specific interest of students. Two lec and one lab per wk; one or two 1-day field trips. *Prereq:* perm. (LOEWENSTEIN)

523 Forest Community Classification (3 cr) F. Application of the concepts of ecological classification of western forest communities; qualitative field application. Lec-disc periods and field labs. Three days of field trips. *Prereq:* plant ecology or silvics. Enrollment limited to six students. (JOHNSON)

525 Advanced Silviculture (2 cr) F or S. Silvicultural systems and intermediate cuttings. Two days of field trips. *Prereq:* 424, 425.

527 Forest Genetics (3 cr) F. Also offered as Genet 527. Application of principles of genetics to the improvement of trees and silvicultural practices. Two lec and one lab per wk. *Prereq:* 424 and general genetics. (WANG)

528 Forest Tree Improvement (3 cr) S. Also offered as Genet 528. Practical problems and techniques related to genetic improvement of forest trees. Two days of field trips. *Prereq:* 424 and general genetics. (WANG)

531 Advanced Wood Technology (2-3 cr) F. Anatomical features of wood, including fibers; methods of preparing woody tissues for study; physical properties of wood and their implications on technology. *Prereq:* 331, 437. (HOWE)

536 Wood Chemistry (3-4 cr) S. Chemistry of woody tissues, including lignin, cellulose, hemi-celluloses, and other polysaccharides; lab work in the analysis and the chemistry of wood. *Prereq:* 438. (HOWE)

541 Advanced Population Biology (2 cr) F or S. Alt/yrs 1972-73. Readings and discussions of current theories of population control, their biological basis and application to wildlife populations. *Prereq:* 442, 544. (KNIGHT)

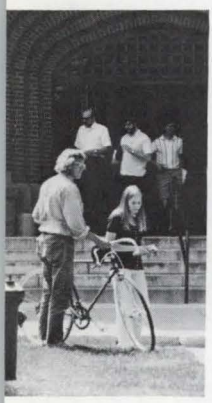
542 Wetland Habitat Management (2 cr) S. Alt/yrs 1971-72. Ecology and management of species using wetland habitats and current practices, problems and

proceudres for managing such habitats. Lec-disc periods, field labs; three days of field trips. *Prereq:* background in ecology, wildlife populations and knowledge of aquatic plants. (HUNGERFORD)

544 Big Game Management (3 cr) S (444). Big game species and their populations and habitats; objective balance of the components of habitats with population levels. One 3-hr lec per wk; three days of field trips. *Prereq:* 442, Zool 483. (KNIGHT)

545 Game Range Ecology (2 cr) F or S. Alt/yrs 1971-72. Reading and discussion on autecology of forage plants important to game animals and synecology of game ranges. *Prereq:* 442, perm, background in plant and animal ecology. (KNIGHT)

546 Upland Game Ecology (2 cr) S. Alt/yrs 1972-73. Ecology and management of wildlife species using forest and rangeland habitats; current management problems and procedures. Three days of field trips. *Prereq:* perm. (HUNGERFORD)



ID551 Range Ecology: Concepts (3 cr) F. Alt/yrs 1971-72. Ecological concepts and methods as applied to the classification and use of lands for grazing purposes; influence of livestock, big game, other biotic factors, including insects and rodents, and fire on plant species and communities. *Prereq:* plant ecology and at least one course in range management. (TISDALE)

552 Range Ecology: Quantitative (2 cr) S. Alt/yrs 1971-72. Quantitative treatment of ecological data to show species interaction, soil-vegetation relations, and classification and characterization of plant communities. *Prereq:* 307, 551. (HIRONAKA)

553 Range Forage Productivity and Management (3 cr) S. Alt/yrs 1972-73. Measurement of forage productivity and the factors that influence production, evaluation of animal response under various management systems. *Prereq:* animal nutrition, two courses in range management, including range methods. (SHARP)

555 Range Literature (3 cr) F. Alt/yrs 1972-73. Survey and analysis of the literature in range management and closely related fields. (TISDALE, SHARP)

ID563-564 Advanced Forest Pathology (2-4 cr) F or S. Field methods, laboratory techniques, and use of original literature in preparation for extensive studies of tree diseases and rots; deterioration of wood products, and the organisms which cause them; seminar in selected problems in forest pathology and their relations to forest practices. *Prereq:* 464. (PARTRIDGE)

566 Activities of Tree-Inhabiting Organisms (2 cr) F. Alt/yrs 1972-73. Environmental and biochemical actions and interactions of important bacteria, fungi, higher plants, and animals (excluding insects) associated with trees. *Prereq:* 563 or 564, and one year of organic chemistry. (PARTRIDGE)

569 Advanced Forest Entomology (3 cr) F. See Ent 569 for description.

574 Advanced Forest Mensuration (2 cr) F or S. Mathematical and statistical principles and techniques in determination of volume and growth of trees and stands; applications of sampling theory and correlation analysis. *Prereq:* courses in mensuration equivalent to 474 and in statistical methods, preferably beyond the elementary course. (SEALE)

575 Advanced Forest Management (2 cr) F or S. Aspects of forest regulation; recent developments in applied forest management and important contributions in forest management.

581-582 Advanced Forest Economics (2 cr) F or S. Economic principles, legislation and policies affecting forestry, particularly those bearing on the character and intensity of land use. (SEALE)

587 Advanced Forest Recreation (2 cr) F or S. Problems, practices and economics of the use of lands and waters for recreation. Two days of field trips. *Prereq:* course in forest recreation.

589 Water Resources Seminar (1 cr) F or S. See Inter 589 for description.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

FRENCH—*See Foreign Languages*

GENERAL ENGINEERING—*See Engineering (General)*

GENERAL SOCIAL SCIENCE—*See Social Science*

Genetics (Genet)

Doyle E. Anderegg, Coordinator (112 Life Sc. Bldg.). Professors Christian, Wang; Associate Professors Forbes, Slinkard, Tylutki; Assistant Professor Lingg.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

106 Human Heredity (2 cr) F. See Biol 150 for description.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

307 Elementary Forest Tree Improvement (1 cr) F or S. See For 327 for description.

314 General Genetics (3 cr) F & S. See Biol 351 and PlSc 314 for description.

315 General Genetics Laboratory (1 cr) S. See Biol 352 for description.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

421 Population Genetics (3 cr) F. See Anl 421 for description.

422 Animal Breeding (3 cr) S. See Anl 422 for description.

446 Plant Breeding (3 cr) S. See PlSc 446 for description.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

511 Genetics of Fungi (3 cr) S. See Bot 558 for description.

512 Microbial Genetics (2-4 cr) S. See Bact 512 for description.

519 Genetics Literature (2 cr) S. See PlSc 519 for description.

522 Statistical Genetics (3 cr) S. See Anl 522 for description.

527 Forest Genetics (3 cr) F. See For 527 for description.

528 Forest Tree Improvement (3 cr) S. See For 528 for description.

534 Cytogenetics (3 cr) S. See PlSc 534 for description.

537 Physiological and Molecular Genetics (2-3 cr) F or S. See Biol 555 for description.

Geography (Geog)

Morton W. Scripter, Department Head (210 Mines Bldg.). Professors Caldwell, Scripter; Associate Professor Day; Assistant Professor Allen.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

103 Physical Geography (4 cr) F & S. Earth sciences; weather, climate, landforms, water resources, ocean and ocean basins, native plants and animals, soils; data and map analysis. Three lec and one 2-hr lab per wk. (DAY)

112 Economic Geography (3 cr) F & S. Reciprocal relationships between mankind and its earth environment, resource distribution, changing pattern of commodity movement and industrialization; effect upon national and international developments. (ALLEN, CALDWELL)

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

251 Introductory Cartography (3 cr) F. Visual presentation, map projections, diverse lettering and sketching tech-

niques, layout, compilation and design problems, three dimensional models, map and photo interpretation. One lec and two 3-hr labs per wk. (CALDWELL, WOOD)

252 Cultural Geography (3 cr) F & S. Population growth, distribution, movement; origin and dispersal of culture traits; landscape settlement patterns; man's impact on the land and the environment's impact on man. (ALLEN, CALDWELL)

254 World Regional Geography (2 cr) S. Countries, regions and peoples of the world; interrelationships between man and his physical and cultural environments. (DAY)

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

340 Anglo America (3 cr) F. Alt/yrs. Geographic regions and occupance patterns; climate, topography, industries and natural resources as they underlie modern problems. Two 1-day field trips. *Prereq:* jr standing. (DAY)

343 Geography of Idaho and the Pacific Northwest (3 cr) S. Alt/yrs. Human and physical resources; changes; case studies of specific areas, problems of industries. One 2-day field trip. (DAY)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 Atmospheric Environment (3 cr) S. Alt/yrs. Weather, air masses, storms and associated phenomena, meteorological instruments, weather maps, forecasting; world's weather and climate types with emphasis on their application to man. One 1-day field trip. *Prereq:* 103 or Geol 101-102, or perm. (DAY)

416 Geography of Europe (3 cr) F & S. Europe, exclusive of USSR, by geographic regions and occupance patterns; climate, topography, human and economic resources which underlie contemporary problems. *Prereq:* jr standing.

424 Intermediate Economic Geography (3 cr) S. (124) Alt/yrs. Industrial location; distribution of manufacturing, transportation and traffic flow; case studies. (SCRIPTER)

437 Decision-Making in Resource Management. (3 cr) F. Impact of ecosystem analysis and conflicts over environmental quality control on conservation theory; economic, political, managerial, perceptual, and scientific factors in shaping decisions for allocating natural resources. (SCRIPTER)

444 Mexico and Middle America (3 cr) F. Regional analysis of relationships between physical landscapes and human responses (cultural, economic, and political) in Mexico and Middle America. (ALLEN)

445 Geography of Latin America (3 cr) F & S. Geographic factors, physical and cultural, basic to an understanding of the area; economic and social geography of individual countries. (ALLEN)

452 Advanced Cartography and Remote Sensing (2 cr) S. Scribing, reproduction, color, infrared, thermal, and radar imagery, airbrush, computer cartography and model construction. Two 3-hr labs per wk; one 2-day field trip. (CADWELL)

455 Geography of Asia (3 cr) F. Alt/yrs. Political, physical, cultural and economic analysis and interaction; demographic problems; Asia in world affairs. *Prereq:* jr standing. (CALDWELL)

470 Urban Geography (3 cr) S. Alt/yrs. Origin, development and distribution of cities; urban patterns, forms and functions; systems of urban land classification; forces affecting urban land use; geographic aspects of city planning. One 1-day field trip. (ALLEN)

480 Political Geography (3 cr) F. Geographic nature of states; organization, power, boundaries, ethnic units, internal and external relations as influenced by, and adjusted to, geographic conditions; geopolitics and contemporary problems. *Prereq:* jr standing. (CALDWELL)

493-494 Seminar in Urban Studies (2 cr) F-S. See Inter 493-494 for description.

495 Proseminar (1 cr, max 2) F & S. *Prereq:* sr standing. (SCRIPTER)

499 (s) **Directed Study** (cr arr) F & S (485). *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (504). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (501). *Prereq:* perm.

506 Location Theory (3 cr) S. Alt/yrs. Hypotheses, laws and theoretical constructs which apply to locational decision making in industry and agriculture; contributions of Weber, Palander, Launhardt, Greenhut, Hoover, Dunn, Von Thunen, Losch. *Prereq:* economic geography and statistics. (ALLEN)

507 Field Geography (3 cr) F. Alt/yrs. Geo-

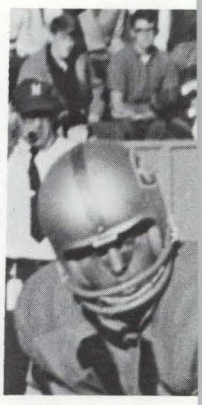
graphic field and mapping techniques; field problem.

521 Applied Climatology (3 cr) S. Alt/yrs. Climatic classifications, microclimatic investigations, instrumentation, impact of climate on agriculture, vegetation and economic activities. (DAY)

532 Recreational Geography (3 cr) S. Alt/yrs. Dynamics of recreational uses of land and water; measurement and planning; interaction of local and regional approaches; some economic impact studies. (CALDWELL)

ID595 Geometrics (3 cr) F. Alt/yrs. Quantitative techniques and their application to spatial and geologic problems. Two lec and one 2-hr lab per wk. *Prereq:* perm. (ALLEN)

596 Applied Geometrics (2 cr) S. Formulation of specific research project that culminates in a quantitative research document. One lec and one 2-hr lab per wk. *Prereq:* 595 or perm.



Geology (Geol)

George A. Williams, Department Head (107 Mines Bldg.). Professors Bond, Hall, Reid, Smiley, G. Williams, R. Williams; Associate Professors Jones, Knowles, Powell, Savage, Siems; Assistant Professors Allman, Bishop, Ralston.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Physical Geology (3 cr) F & S (109). The earth, its composition, structure and natural processes. Concurrent enrollment in 102 recommended. One 1-day field trip.

102 Physical Geology Laboratory (1 cr) F & S (109). Laboratory study relevant to 101. *Coreq:* 101.

106 Historical Geology (3 cr) S (110). Evolution of the physical earth, plants and animals, techniques used in interpretation of geologic history. Concurrent enrollment in 107 recommended. One 1-day field trip.

107 Historical Geology Laboratory (1 cr) S (110). Laboratory study relevant to 106. *Coreq:* 106.

111 Ancient Life (4 cr) F. Life in the different geologic periods; evolutionary development of organisms; lab study of fossils. Three lec and one 2-hr lab per wk. SMILEY)

X123 Geology of Idaho and the Pacific Northwest (3 cr) X. Geologic history, development of geologic structures and present-day distribution of rocks and mineral deposits; geology of area in which the course is given.

X150 Applied Geology (3 cr) X. Prospecting, mineral property development, water well location, flood control, foundation and excavation problems; laws affecting mineral resource exploration and development. *Prereq:* perm.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

202 Mineralogy and Petrology (4 cr) S. Identification and composition, physical and chemical conditions controlling origin, occurrence, and association of minerals and rocks. Two lec and two 2-hr labs per wk. Two 1-day and one 2-day field trips. *Prereq:* 101, 102, and Chem 103 or 111. (JONES)

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 Geomorphology (3 cr) S. Classification, recognition, origin, and significance of land forms; land form analysis in interpretation of geologic structure and history. One 2-day field trip. *Prereq:* 101, 102, or 106, 107, or perm. (HALL)

N407 Historical Geology (3 cr) SS. Rock and fossil record of earth's history; interpretation of geologic history from the evolutionary record. Four lec and 3 hrs of lab per wk; two 1-day field trips.

N409 Earth Science (3 cr) SS. Effects of geologic processes on earth's crust; rock and fossil record of earth's history; weather, climate, and the origin of land forms; relations of water resources, soils, oceans, and native plants and animals. Four lec and 3 hrs of lab per wk; two 1-day field trips.

412 Invertebrate Paleontology (3 cr) F or S. Morphology, evolutionary trends, and classification of invertebrate fossil groups. Two lec and one 3-hr lab per

wk; one 2-day field trip. *Prereq:* 101, 102, or 106, 107, or perm.

413 Sedimentology (2 cr) F. Environments and processes responsible for separation of clastic and non-clastic sedimentary rock materials; roles of transportation, deposition, including siltation, and lithification. One lec and one 3-hr lab per wk; one 1-day field trip. *Prereq:* 202.

414 Stratigraphy (2 cr) S. Description, classification distribution, and correlation of layered rocks; significance of stratigraphic analysis and geologic history. One lec and one 3-hr lab per wk; one 1-day field trip. *Prereq:* 413.

N416 Origin of Rocks and Minerals (3 cr) SS. Origin, identification, and classification of common rocks, rock-forming minerals and ore minerals; interpretation of hand specimens in terms of origin or history emphasized over descriptive mineralogy and petrography. Four lec and 3 hrs of lab per wk; two 1-day field trips.

421 Structural Geology (1-3 cr) F. Deformed rocks; mechanics of failure, recognition, description, classification, and genesis of folded and fractured rocks. Two lec and one 3-hr lab per wk; one 2-day field trip. *Prereq:* 101, 102. (HALL)

427 Earth Science (4 cr) S. Earth and its place in the solar system; processes responsible for changes; course patterned on ESCP recommendations for teachers of earth science. Three lec and one 2-hr lab per wk; two 1-day field trips. *Prereq:* 101, 102, Geog 103, or equiv.

431 Field Geology and Report Writing (6 cr) SS. Field problems and methods; use of instruments; interpretation of field data; preparation of reports based on field observations and interpretations. Three field trips taken away from camp. Accident and health insurance required. *Prereq:* 421 or perm.

441 Engineering Geology (3 cr) F. Application of geology to engineering problems; rock weathering, soil mechanics; fractures; landslide recognition; materials location; explosives; damsite and reservoir problems; earthquakes; route locations; requirements of a report for an engineering project. Two lec and one 2-hr lab per wk; two 1-day field trips. *Prereq:* 101, 102, Phys 113 or 220. (HALL)

445 Geological Engineering Design (3 cr) S. Application of engineering and geological principles to analysis and design in the construction industries. One 1-day field trip. *Prereq:* 441. (G. WILLIAMS)

447 Ground Water (2 cr) F. Ground water geology; introduction to ground-water hydrology. Two ½-day field trips. *Prereq:* 101, 102, or perm.

453 Advanced Paleontology (3 cr) S. Fossil assemblages of different ages and environments; sequence of floras and faunas through time. One 1-day field trip. *Prereq:* 106, 107, or 111, or perm.

458 Mineral Deposits (4 cr) F. Occurrence classification, and origin of metallic and non-metallic economic mineral deposits. Three lec and one 3-hr lab per wk; one 3-day field trip. *Prereq:* 202, 421. (SIEMS)

460 Exploration Geology (3 cr) S. Design of geologic surveys and mineral exploration programs; integration and evaluation of geologic, geochemical, and geophysical exploration techniques. *Prereq or coreq:* 458. (SIEMS)

ID485 Geochemical Exploration (3 cr) F. Rapid chemical tests on rock, soil, sediment, vegetation, or water samples to determine dispersion patterns in prospecting for mineral deposits. Two lec and one 3-hr lab per wk; two 1-day field trips. *Prereq:* 101, Chem 112. (SIEMS)

486 Principles of Geochemistry (3 cr) S. Chemical concepts applied to geology. *Prereq:* 202, Chem 112. (SIEMS, WAI)

497 Proseminar (1 cr) F. Evolution of geologic thought; geology as a science and profession. *Prereq:* sr standing.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (510). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (501). *Prereq:* perm.

WS520 Regional Stratigraphic Analysis (3 cr) F or S. Alt/yrs 1971-72. WSU 520. Analysis, synthesis, interpretation, and presentations of stratigraphic data. One lec and two 3-hr labs per wk. *Prereq:* stratigraphy. (SCOTT)

512 Methods in Paleontology and Biostratigraphy (3 cr) F or S. Alt/yrs 1971-72. Methods of collection, preparation, illustration of paleontologic data; principles of systematic paleontology; and statistical-graphic presentation of bio-

stratographic and paleontologic information. One lec and two 2-hr labs per wk; one 5-day field trip. (POWELL)

545 Advanced Igneous Petrology (3 cr) F or S. Alt/yrs 1972-73. Classification and genesis of igneous rocks; emphasis on plutonic bodies. Two lec and one 2-hr lab per wk. *Prereq:* 563.

ID548 Paleoecology (3 cr) F or S. Alt/yrs 1971-72. Also offered as Anthr ID573. Past environments; interrelations of physical and biological factors; changes in the physical environments of the past; their influence on distribution and evolution of organisms, including man. (SMILEY)

551 Stratigraphic Paleobotany (3 cr) F or S. Alt/yrs 1972-73. Fossil floras and floral successions; taxonomic problems; geologic ranges and past distributions of plant taxa; paleoecological interpretations; methods and correlation and dating by fossil plants. One 1-day and one 2-day field trip. (SMILEY)

553 Sedimentary Petrology and Petrography (3 cr) F or S. Alt/yrs 1972-73. Origin, classification, distribution, depositional environments of sedimentary rocks, with emphasis on petrographic methods of analysis. Two lec and one 2-hr lab per wk. (POWELL)

560 Theory of Mineral Exploration (3 cr) F or S. Alt/yrs 1971-72. History and development of thought; statistical methods; application of geologic studies in search for mineral deposits. (G. WILLIAMS)

561 Advanced Mineral Deposits I (3 cr) F. Alt/yrs 1972-73. Ore mineralogy and sulfide phase equilibria. Microscopic studies of natural and synthetic sulfide minerals. (SIEMS, G. WILLIAMS)

562 Advanced Mineral Deposits II (3 cr) S. Alt/yrs 1972-73. Modern concepts on the origin and geochemistry of metallic mineral deposits. (G. WILLIAMS, SIEMS)

563 Optical Mineralogy and Petrography (3 cr) F. Optical crystallography; identification of minerals by optical means; classification of rocks. Three 2-hr lec-labs per wk; one 3-day field trip. *Prereq:* 202. (JONES)

564 Volcanic Geology (3 cr) F or S. Alt/yrs 1971-72. Volcanoes, volcanic activity, petrology of volcanic rocks, and regional problems in layered volcanic rocks. Two lec and one 2-hr lab per wk; one 3½ day and three 1-day field trips. *Prereq:* 563. (JONES)

ID565 Metamorphism (3 cr) F or S. Alt/yrs 1971-72. Metamorphic minerals, rocks, processes, and facies; poly-metamorphic rocks; recent developments in structural geometry. Two lec and one 3-hr lab per wk. *Prereq:* 563.

570 Tectonics (3 cr) F or S. Alt/yrs 1972-73. Form, pattern, and evolution of large-scale units of the earth's crust. (JONES)

WS573 Advanced Topics in Economic Geology (2 cr) F or S. WSU 573. Recent ideas, concepts, and factual data relating to the character and origin of mineral deposits. *Prereq:* course in origin of mineral deposits. (MILLS)

580 Advanced Geochemical Exploration (3 cr) F or S. Alt/yrs 1971-72. Theory and use of colorimetric and instrumental analytical methods in mineral exploration; primary and secondary dispersion patterns; endogenetic and exogenetic behavior of individual elements. Two lec and one 3-hr lab per wk. *Prereq:* 485. (SIEMS)

581 Instrumental Techniques in Geochemistry (3 cr) F or S. Modern instrumentation, including X-ray fluorescence, gas chromatography, electron microprobe, atomic absorption, infrared and Mossbauer spectrometry applied to geochemical problems. Two lec and one 3-hr lab. *Prereq:* perm. (WAI)

585 Electron Microprobe (3 cr) F or S. Theory and application of the electron microprobe and scanning electron microscope in studying rock-forming minerals. Two lec and one 3-hr lab per wk. *Prereq:* 563 or perm. (KNOWLES)

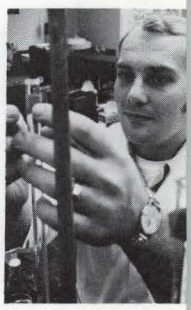
589 Water Resources Seminar (1 cr) F or S. See Inter 589 for description.

ID590 Photogeology (3 cr) F or S. Manipulation and analysis of air photos for geologic information; photogrammetry; map preparation and interpretation of stereo vertical and oblique air photos, some in color. Three 2-hr labs per wk. *Prereq:* 401, 421, or perm. (HALL)

592 Advanced Photogeology (3 cr) F or S. Alt/yrs 1971-72. New research techniques in photogeology; use of special photographic imagery, such as color, infrared color, and restricted wave length black-and-white materials. Three 2-hr labs per wk. *Prereq:* 590 or perm. (HALL)

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.



602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

GERMAN—*See Foreign Languages*

GREEK—*See Foreign Languages*

GUIDANCE AND COUNSELING—*See Psychology*

HEALTH—*See Physical Education*

History (Hist)

William S. Greever, Department Head (315 Admin. Bldg.). Professors Coonrod, Greever, Rolland, Winkler; Associate Professors Barnes, Harris, Proctor; Assistant Professors Baldridge, Hackmann.

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. Ordinarily six lower-division credits in history are required for registration in upper-division courses; exceptions by permission.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102 History of Civilization (3 cr) F & S. Great civilizations; contributions to the modern world. Hist 101: to 1650. Hist 102: 1650 to present. May be taken by correspondence. (HACKMANN, PROCTOR, WINKLER)

111-112 Introduction to United States History (3 cr) F & S. Political, diplomatic, economic, social, cultural history; earliest times to the present. Hist 111: to 1877. Hist 112: 1877 to present. May be taken by correspondence. (BALDRIDGE, BARNES, WINKLER)

271-272 History of England (3 cr) F-S. Political, social, economic, religious development of the British Isles. Hist 271: to 1714. Hist 272: 1714 to present. May be taken by correspondence. (HACKMANN)

411-412 American Colonial and Revolutionary History to 1789 (3 cr) F-S. Hist 411: foundations; political, intellectual, economic, military history of the colonies to 1750. Hist 412: Great War for empire, independence and founding of new nation, confederation period, framing and adoption of the Constitution. (ROLLAND)

413 United States: Early National Period (3 cr) F or S. Economic, political, constitutional, social problems; nationalism and beginnings of sectionalism; 1789-1828.

414 United States: Sectionalism and Civil War (3 cr) F or S. Jacksonian democracy, slavery, growing rift between sections, Civil War; 1828-1865.

415 United States: Emergence of Industrial America (3 cr) F or S. Reconstruction era, industrial development, resulting problems; 1865-1895.

417-418 Twentieth-Century America (3 cr) F-S. Evolution of 20th-century American policy, foreign and domestic. Hist 417: 1896 to 1929. Hist 418: 1929 to present. (BARNES)

423 Idaho and the Pacific Northwest (3 cr) F & S. Political, economic, social development; earliest times to the present; emphasis on Idaho and Inland Empire. May be taken by correspondence. (BARNES, ROLLAND)

427-428 History of the Westward Movement (3 cr) F & S. Westward migration of people, customs and institutions of the U.S.; appropriating and developing wilderness to uses of man. Hist 427: U.S. east of the Mississippi River. Hist 428: west of the Mississippi River. (BARNES, GREEVER)

429-430 History of American Diplomacy (3 cr) F-S. Hist 429: quest for diplomatic independence and emergence of the U.S. as a world power; 1783-1921. Hist 430: problems of the U.S. as a world power since 1921. (WINKLER)

432 The Negro in American History (3 cr) F or S. African background, slave trade,

slavery; abolition movement; emergence of the Negro as a significant element in American cultural, political, and economic life; the current Negro revolution and its various ramifications. (BARNES, ROLLAND)

433-434 Social and Cultural History of the United States (3 cr) F-S. Growth of customs, traditions, intellectual habits, American way of life from colonial times to the present. Hist 433: to 1865. Hist 434: 1865-1950. (GREEVER)

435 Colonial Latin America (3 cr) F or S. Iberian background; high Indian civilizations; European discovery and colonization; Spanish Imperial System; social and economic development; wars of independence. (BALDRIDGE)

438 Mexico Since Independence, Central America, and the Caribbean (3 cr) F or S. Political, economic, social, and cultural development; search for stability; growth of nationalism. (BALDRIDGE)

439 National Latin America: The South American Republics (3 cr) F or S. Political, economic, social, and cultural developments; search for stability; growth of nationalism. (BALDRIDGE)

440 Inter-American Relations (3 cr) F or S. Diplomatic relations between American republics, including regional agreements and the problem of U.S. preponderance. (BALDRIDGE)

441-442 Greek and Roman History (3 cr) F-S. Political, constitutional, social, cultural history. Hist 441: Greece from the earliest times to Roman conquest. Hist 442: Rome from the earliest times to the end of the Western Empire.

445-446 Medieval Europe (3 cr) F-S. Hist 445: transition from Graeco-Roman civilization to Byzantine, Islamic, Frankish realms in early middle ages. Hist 446: expansion and fruition of Latin Christian civilization in high middle ages; decline in later middle ages. (HARRIS, PROCTOR)

447 Renaissance and Reformation (3 cr) F or S. Europe, 1450-1648; transition from medieval to modern Europe; emphasis on political, economic, and religious aspects. (HARRIS)

449 Age of Absolutism (3 cr) F or S. Europe 1648-1789; rise of absolutism in the 17th century; the old regime of the 18th century. (HARRIS)

451 The French Revolution (3 cr) F or S. Revolutionary decade, 1789-1799; Napoleon and Europe; Restoration in France; July Monarchy and Second Republic. (HARRIS)

452 Europe from Vienna to Versailles (3 cr) F or S. Revolution and reform of the 19th century and international frictions culminating in irredentist and imperialist rivalries of WW I. (PROCTOR)

455-456 Recent Times (3 cr) F-S. Europe and its impact on world-wide events. Hist 455: 1914 to 1939. Hist 456: World War II and postwar era. (PROCTOR)

457 History of the Middle East (3 cr) F or S. Survey of the Middle East from the beginning of the Islamic period to the present; emphasis on modern period. (PROCTOR)

464 European Diplomatic History 1500-1914 (3 cr) F or S. Development of the European state system; struggle for control over central Europe; Near Eastern Question; diplomacy of imperialism; diplomatic background of World War I. (WINKLER)

465-466 Social and Cultural History of Europe (3 cr) F-S. Hist 465: Renaissance and 18th century Enlightenment. Hist 466: cultural and intellectual trends in the 19th and 20th centuries. (HARRIS)

467-468 History of Russia (3 cr) F-S. Hist 467: Imperial Russia from Peter the Great through the Revolution of 1905. Hist 468: Russia in WW I; Revolution of 1917; Soviet regime. (HARRIS)

469 Modern France (3 cr) F or S. French nation from the beginning of the Second Empire to the present. (HARRIS)

473-474 Tudor and Stuart England (3 cr) F-S. Royal prerogative versus representative government; rise of middle class; exploration and colonization; religious changes and conflicts; culture. Hist 473: Tudor rulers. Hist 474: Stuarts. (HACKMANN)

477 Georgian Britain, 1714-1830 (3 cr) F or S. Rule of the oligarchy; development of the Empire; wars against France; industrialization; Parliamentary Reform. (HACKMAN)

481 Japan, 1600-1890 (3 cr) F or S. Tokugawa institutions and thought; confrontation with West; Maiji Restoration; beginning of modernization.

482 Japan Since 1890 (3 cr) F or S. Rise as a world power; industrialization and urbanization; political and constitutional developments; militarism and totalitarianism; WW II; occupation and post-occupation periods.

483 **China, 1800-1911** (3 cr) F or S. Foreign incursions; rebellions; reform; revolution; and resistance to change.

484 **China Since 1911** (3 cr) F or S. Republican experiment and its failure; economic problems; international relations; rise and victory of the Chinese Communist Party.

496 **Theory and Practice in History** (3 cr) F or S. Readings and discussion of what outstanding historians have said about the nature and the methods of their craft. (HARRIS)

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (507-508). Areas normally offered include: early modern European history; late modern European history; English history; American history; and history of the American West. Consult the time schedule for specific seminars currently offered. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (509-510). Normally offered in the following areas:
American Foreign Relations
American Frontier
Society and Thought in America
Pacific Northwest
America Before 1789
Negro in America
U.S.-Latin American Relations
Early Modern England
Greek and Roman History
Middle Ages
Renaissance and Reformation
Age of Absolutism and the Revolutionary Era
19th-Century Europe
20th-Century Europe
Evolution of Russia
Evolution of France
Society and Thought in Europe
European Foreign Relations
Hispanic America
Modern Mexico
U.S. 1789-1828
U.S. 1828-1865
U.S. 1865-1895
U.S. Since 1896
England and the Georgian Era

Consult the time schedule for specific areas currently offered. *Prereq:* perm.

590 **Introduction to Historical Research** (2 cr) F. Techniques in compiling a bibliography, assembling material, composition, interpretation, and historical criticism. (ROLLAND)

591-592 **Historiography** (2 cr) F-S. Nature of history; major historians; ideas in history; philosophy of history; bibliography. Hist 591: American historians. Hist 592: European and British historians. (HARRIS, WINKLER)

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. See 501 for areas normally offered. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. See 502 for areas normally offered. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Home Economics (HEc)

Florence D. Aller, Acting Department Head (108A, Mary Hall Niccolls Home Economics Bldg.). Professors Aller, Bellinger; Associate Professor Newcomb; Assistant Professors Forbes, Kessel, Kiehn, Medsker, Myers, Old, Potter; Instructor Jonas.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

109 **Introduction to Home Economics** (0 cr) F. Orientation to home economics as a career; the founders, professional contributors and literature.

113 **Art** (3 cr) F & S. Art and crafts for home and community. One lec and two 3-hr labs per wk.

123 **Textiles** (3 cr) F & S. Properties of natural and synthetic fibers, yarns and fabric structure, dyes and finishes, labeling, legislation, and trade.

124 **Clothing** (3 cr) F & S. Principles of clothing construction and fitting; analysis and comparison of techniques related to efficiency, wear, appearance, fabric limitations, emphasis on self-evaluation and time management. One lec and six hrs of lab per wk.

170 **Family Nutrition and Meal Management** (2 cr) F & S. Basics. Open to men and women; primarily for non-majors. One lec and one 3-hr lab per wk.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

229 **Clothing Analysis** (2 cr) F & S. Factors affecting the selection of adult clothing; means of expressing individuality in the wardrobe.

234 **Introduction to Child Development** (2 cr) F & S. Development and guidance of the preschool child. One lec and two hrs of supervised nursery school observation per wk.

236 **Introduction to Child Development** (1 cr) F & S. Interpretation of the literature and analysis of preschool observations.

242 **Household Equipment** (3 cr) F & S. Selection, use and care. Two lec and one 3-hr lab per wk.

270 **Nutrition** (3 cr) F & S. Food selection and the daily diet; variations from the normal diet necessitated by difference in age, health and environmental conditions; inborn errors of metabolism and dietary treatment; obesity, malnutrition, over-nutrition, food fads, food additives, and nutrition for athletes. Open to non-majors.

271 **Foods** (2 cr) F & S. Basic cookery and meal planning. One lec and one 3-hr lab per wk. *Prereq or coreq:* 270, Chem 103 or 111, Phys 101.

272 **Food Management** (2 cr) F & S. Food preservation, marketing, table service, meal planning, and food preparation techniques. Two lec and one 3-hr lab per wk. *Prereq:* 271.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

314 **Weaving** (3 cr) F & S. Principles, techniques and aesthetics of handweaving. One lec and six hrs of lab per wk.

324 **Flat Pattern Study** (3 cr) F & S. Fitting and pattern alteration for individualized shell and sloper; flat pattern design, construction related to original patterns. One lec and six hrs of lab per wk. *Prereq:* 124.

326 **Housing and Home Furnishings** (3 cr) F & S. Housing principles, furniture, materials and color in the present day home. Two lec and three hrs of lab per wk; one field trip.

327 **Tailoring** (3 cr) F. Alt/yrs 1971-72. Textile selection for tailored garments; comparative study of tailoring techniques. One lec and six hrs of lab per wk. *Prereq:* 124.

329 **History of Costume and Textiles** (3 cr) F. Alt/yrs 1971-72. Costume as an expression of the times. *Prereq:* 229.

334 **Child Development** (3 cr) F & S. Principles of development in infants and children. Two lec and supervised nursery school experience equiv to one 3-hr lab per wk. *Prereq:* Psych 100, Soc 110, or perm. May be taken by correspondence.

340 **Family Relations** (3 cr) F & S. Interpersonal relationships throughout the family life cycle. *Prereq:* Psych 100 or Soc 110 or perm. May be taken by correspondence.

346 **Principles of Home Management** (2 cr) F & S. Analysis of resources in meeting family goals; time and money management; work simplification; emphasis on decision making and evaluation as family processes. Open to non-majors by perm.

347 **Home Management House Residence** (3 cr) F & S. Management, emphasis on relationships, decision-making. Residence 6-8 wks. Advance reservation with dept required. *Prereq:* 272 and perm of dept; *prereq or coreq:* 346.

349 **Home Management for Married Students** (3 cr) F & S. Comparable to 347 for homemakers or students with special dietary or other problems. *Prereq:* 272; *prereq or coreq:* 346.

352 **Methods in Teaching Home Economics** (3 cr) F & S. Techniques and materials for secondary schools; lesson plan development for homemaking classes. Field trip included. *Prereq:* Ed 287, Psych 206, AgEd 351, or perm.

370 **Nutrition for the Elementary School** (2 cr) SS. Fundamentals of nutrition and methods of teaching nutrition in the elementary grades. Primarily for elementary teachers and student teachers. May be taken by correspondence.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

409 **Trends and Perspectives in Home Economics** (1 cr) F & S. Literature, professional role, leaders, concerns, issues, and trends.

413 **Textile Design** (2 cr) S. Alt/yrs 1971-72. History of design and production of fabrics as an expression of man's cultural achievement; textile design applied to rugs, upholstery and drapery fabrics; experience in media for textile design. One lec and one 3-hr lab per wk. *Prereq:* 113.

423 Advanced Textiles (3 cr) S. Textile performance and problems involving recent development in textile products. Two lec and one 3-hr lab per wk. One field trip. *Prereq:* 123.

424 Original Design (3 cr) S. Alt/yrs 1972-73. Design, rendering, and construction of apparel; emphasis on contemporary environment. One lec and six hrs of lab per wk. *Prereq:* 324, 329, 429.

426 History of Interiors and Furnishings (3 cr) S. Alt/yrs 1972-73. History and development of styles and design in furniture and interiors as expressions of changes in art and culture. *Prereq:* 326 or perm.

428 Family Housing (2 cr) F. Housing for contemporary living; family life cycles, socio-economic aspects of family housing, site selection, floor plans, building materials and outside environment. One lec and three hrs of lab per wk.

429 Social-Psychological Aspects of Clothing (2 cr) F. Alt/yrs 1972-73. Clothing in relation to culture, human behavior, aesthetics, the economy, and the physical self. *Prereq:* 229, Psych 100, Soc 110, or perm.

433 Preschool Resources (2 cr) F. Professional organizations, methods, resources, and research facilities in U.S. and internationally. *Prereq:* perm.

434 Nursery School Participation (2-4 cr) F & S. Active participation in the preschool laboratory; application of child development theory, direction and preparation of preschool curriculum. *Prereq:* jr standing or perm.

435 History and Philosophy of Child Development (2 cr) S (335). Includes one field trip. *Prereq:* 234 or 334, or Soc 110 and Psych 100.

436 Current Theories in Child Development (3-4 cr) S. Educational, psychological, and sociological theories of child development.

442 Current Developments in Household Equipment (2 cr) SS. Available space and selection of functional equipment; materials, construction, operation, care and relative cost. *Prereq:* 242.

448 Consumer Education (3 cr) F & S. Consumer motivation and behavior, protection, information, organizations, use of credit, and selected problems in consumer decision-making.

455 Problems in Teaching Homemaking and Adult Education (3 cr) F & S. Analysis of the organization, implementation, and evaluation of homemaking programs for youth and adults. Orientation to the nature and scope of the students teaching role. Field trip. *Prereq:* 352.

457 Student Teaching in Home Economics Classes (9 cr, max 9) F & S. Supervised teaching at secondary-school level. Apply to home economics teacher educator one semester prior to registration. *Prereq:* cumulative GPA of 2.25; HEc GPA of 2.50; HEc 352; special project; acceptance into teacher education program.

460 Family as an Ecosystem (3 cr) S. Survey of the literature and discussion 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) F or S. Recent advances; emphasis on investigation of infant, child and adult nutrition. *Prereq:* 270, Zool 118, sr or grad standing.

471 Dietetics (4 cr) S. Diet therapy; adaptation of the normal diet to meet needs of adults and children in disease and convalescence. One field trip. *Prereq:* Anl 305.

472 Food Chemistry and Analysis (3 cr) S. See AgBiC 422 for description. (Lab sec A for home economics majors.)

475 Nutrition Principles for the Classroom Teacher (3 cr) SS. Designed to prepare elementary and secondary teachers for teaching food selection and the daily diet; variations from the normal diet due to age, environmental conditions, metabolism are explored, as well as malnutrition, over-nutrition, food fads, additives, obesity, and nutrition for athletes.

478 Recent Advances in Foods (2 cr) F or S. Topics in food preservation and processing; development of low calorie foods and commercial mixes; food additives. *Prereq:* 271 or equiv.

482 Quantity Cookery (3 cr) F or S. Preparation of food in large quantities; menu planning for institutions; lab experience in institution food services. One lec per wk; two 6-hr labs per wk for nine wks (1-7 pm); one 1-day field trip.

483 Institutional Administration (4 cr) F or S. Organization and scientific management applied to institutional administration in food service units; selection, arrangement, and care of equip-

ment. Three lec and one 2-hr lab per wk.

485 **Institution Food Buying** (2 cr) F or S. Food distribution, specifications and legislation; methods of quantity food purchasing. *Prereq:* 272 or perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

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

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

540 **Parent-Child Relationships** (2 cr) F or S. The developing family; patterns of child rearing. *Prereq:* 334, 340 and six cr in psych and/or soc or equiv. Open to non-majors.

546 **Problems in Home Management** (2 cr) SS. Selected topics. *Prereq:* 346 or equiv.

551 **Techniques of Supervision** (2 cr) SS.

553 **Home Economics Education** (1-4 cr, max 4) F or S.

554 **Curriculum in Home Economics** (2 cr) F or S. Problems and planning in secondary-school homemaking education.

557 **Internship** (6-9 cr, max 9) F & S. Supervised internship in educational institutions, government and social agencies, hospitals, or industry; geared to the educational and vocational goals of students.

570 **Current Concepts in Nutrition** (2 cr) SS. Innovative concepts and special techniques in nutrition research; current scientific investigations; present-day nutrition problems. *Prereq:* 470, Zool 118, 127, or equiv.

583 **Recent Trends in Institutional Management** (2 cr) SS. Management principles applied to food service institutions. *Prereq:* 483.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

604 **Interstate Doctoral Study** (1-15 cr, max 24) F & S. *Prereq:* perm of dept.

Hydrology (Hydro)

George A. Williams, Head, Department of Geology (107 Mines Bldg.). Professor R. Williams; Assistant Professors Allman, Ralston.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

500 **Master's Rsearch and Thesis** (cr arr) F & S.

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

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

563 **Geohydrology** (3 cr) F or S. 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 447, Math 200 or perm. (R. WILLIAMS)

566 **Geochemistry of Ground Water** (3 cr) F or S. 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 per wk. *Prereq:* Geol 447 or perm.

567 **Hydrometerology** (3 cr) F or S. Exchange of water between the atmosphere and the lithosphere or hydrosphere; factors influencing areal and temporal distribution, evapotranspiration and micrometerology; instrumentation techniques and theory. Two lec and one lab per wk.

568 **Advanced Geohydrology** (3 cr) F or S. Analysis of problems which have confronted the geohydrologist since the inception of quantitative methods. *Prereq:* Geol 563 or perm. (R. WILLIAMS)

569 **Application of Hydrogeological Concepts** (3 cr) F or S. Application of hydraulic and chemical characteristics of well and aquifer systems to practical field problems. (ALLMAN)

Industrial Education (IEd)

William R. Biggam, Chairman (Room C, Industrial Ed. Bldg.). Professor Biggam; Assistant Professors Amos *(Metals)*, R. Smith *(Electronics, Plastics)*.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

130 Basic Electricity (4 cr) F or S. Technical theory and skills in electrical testing procedures; preparation of instructional materials for a junior high school program.

131 Basic Electronics (4 cr) F or S. Continuation of 130. Electron tube and semiconductor circuits. *Prereq:* 130.

140 Woodwork I (3 cr) F. Hand tool and machine operations; materials, equipment and processes; selection and fabrication of industrial woodwork products.

170 Machine Woodwork (3 cr) S. Adjustment and safe operation of basic woodwork power tools; selection and fabrication of products for machine woodwork; materials and processes. *Prereq:* 140.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

R211 Introduction to Quality Assurance (3 cr) F or S. Overview of quality assurance; special emphasis on the nuclear industry; planning, managing, conducting and evaluating quality assurance programs.

235 Communication Electronics (4 cr) F or S. Application of electronic circuits to communications equipment; radio receivers and transmitters; technical radio and TV for avocational use. *Prereq:* 130-131.

236 Industrial Electronics (4 cr) F or S. Continuation of 235. Theory and test procedures common to industrial control and automatic processing; computer electronics. *Prereq:* 235.

250 General Metals (3 cr) F or S. Materials, machines, and fabricating processes; methods and techniques of fabricating products from perforated and expanded metal, aluminum, wrought iron, mild steel, and galvanized iron.

251 Plastics (2 cr) F or S. Materials and industrial methods of fabrication; vacuum, blow, and pressure forming; laminating; extrusion; plastisol and injection molding.

253-254 Materials Processing Laboratory I-II (1 cr) F & S (ME 253-254). IEd 253: use of standard machine tools for shaping metals. IEd 254: theory and practice of welding, casting, heat treatment; developments in forming and shaping materials. Charge for materials payable at Business Office. One lec-dem and one 2-hr lab per wk; one 1-day field trip. *Prereq:* Engr 101 for 253; 253 for 254.

280 Carpentry (2 cr) F or S. Alt/yrs 1972-73. Framing, rafter layout; materials and job estimating. *Prereq:* 170 or perm.

290 Industrial Arts Crafts (2 cr) F or S. Alt/yrs 1972-73. Creative craftwork in leather, Keene cement, metal tooling, metal enameling, craft plastics, and mosaic tile.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

300 Finishing Materials and Methods (2 cr) F or S. Alt/yrs 1972-73. Methods and materials relative to finishing wood, metal, composition board, plastics, and other industrial products.

303 Advanced Machine Tool Laboratory (2-3 cr) F & S (ME303). Practice in fabrication of metals beyond that covered in 253-254; extra credit for individual projects. Charge for materials payable at Business Office. One lec and one 3-hr lab per wk. *Prereq:* 254 and perm.

310 Maintenance of Tools and Equipment (3 cr) F. Selection, care, and maintenance of hand tools and machines common to industrial arts and vocational-technical shops. *Prereq:* 170 or perm.

315 Industrial Design (2 cr) F or S. Alt/yrs 1971-72. Planning, designing, and fabricating products from a variety of industrial materials; period furniture and principles of product design. *Prereq:* 170 or perm.

R320 Electronic Drafting (3 cr) F or S. Drafting philosophy as related to instrumentation and control circuits; design, layout and fabrication of printed circuit boards; drafting as related to circuit fabrication.

360 Welding (2 cr) F (ME 360). Principles and practices in cutting metals and fabrication by modern methods of weld-

ing; design, inspection, testing of weldments. Charge for materials payable at Business Office. One lec and one 3-hr lab per wk. *Prereq:* perm.

365 Industrial Supervision (2 cr) F or S. Alt/yrs 1972-73. Principles and practices; duties and responsibilities of the industrial plant supervisor; use of rating scales and other employee evaluating devices; supervisory methods utilized in on-the-job training and in-plant training programs; methods of conducting job analysis; preparation and use of job descriptions and specifications.

375 Heat Treatment of Metals (2 cr) S (ME 365). Properties of metals, annealing and normalizing, hardening, tempering, surface hardening, stress relief of welds; equipment and methods. One lec and one 3-hr lab per wk. *Prereq:* perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 (s) **Workshop** (cr arr) SS (350). Consult the summer school bulletin for the complete title and the length of each workshop when offered. *Prereq:* perm.

404 Industrial Education and Work Experience Programs for Special Education Teachers (3 cr) F or S. Industrial education programs in schools; development and coordination of work experience programs; planning and implementation of manual arts therapy programs.

405 Advanced Woodwork (3 cr) F or S. Alt/yrs 1972-73. Design and construction of wood products; use of fixtures, jigs, and templates; structural details of cabinet construction; fastening devices; materials and processes. *Prereq:* 140, 170 or perm.

410 Advanced Metals (3 cr) F or S. Alt/yrs 1971-72. Materials, tools, and processes of metal technology; students may specialize in one or several areas. *Prereq:* 250 or perm.

420 Evaluation in Industrial Education (3 cr) F & S. Alt. yrs 1971-72. Also offered as VocEd 420. Methods and techniques; construction and use of objective-type tests, performance tests, rating scales, check lists, and grading industrial products and projects.

R424 Computer Hardware Organization and Control (3 cr) F or S. Utilization and arithmetic and related hardware; timing and control of computers; description of computer hardware/software interface.

425 Advanced Electricity-Electronics (4 cr) F or S. Independent readings, research, and lab experimentation. *Prereq:* 235-236 or perm.

450 Industrial Safety (3 cr) F or S. Also offered as VocEd 450. Organization and administration of safety programs in industry and vocational-technical education shops; materials, research, literature, methods, and techniques relative to industrial safety education.

451 School Shop Planning and Administration (3 cr) F or S. Also offered as VocEd 451. Technical shops and laboratories; selecting, purchasing, and storage of shop supplies and equipment; organizing a shop personnel system; implementing shop safety programs; maintaining shop records.

460 Industrial Education for Elementary Teachers (3 cr) F or S (360). Common hand tools and processes useful in developing creative craft programs in elementary-school classes; project work in wood, metals, plastics; correlation and integration of manual activities with instruction in elementary school subjects.

462 Industrial Education Curriculum (3 cr) F or S. Also offered as VocEd 462. Principles of occupational analysis and course construction; subject content; state curriculum patterns; special education programs; trends and new concepts.

472 Industrial Education Methods (3 cr) F or S. Also offered as VocEd 472. Particularized to industrial education and technical education subjects; demonstration, lecture, and problem solving; construction and use of instructional aids; preparation and use of individual instruction sheets and programmed instructional material.

480 History and Philosophy of Industrial Education (3 cr) F or S. Development of vocational and general education phases of industrial education; comparative and conflicting philosophies; leaders and their contributions.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

510 Professional Problems (1-3 cr, max 6) F & S. Max six cr in 510-511 combined. *Prereq:* perm.

511 Technical Problems (1-3 cr, max 6) F & S. Max six cr in 510-511 combined. *Prereq:* perm.

530 Administration and Supervision of Industrial Education Programs (3 cr) F or S. Principles and practices; secondary-school and post high school levels; federal and state legislation regarding industrial education programs.

540 Instructional Media for Industrial Education (3 cr) SS. Preparation and use of new instructional media and systems for industrial-technical arts and technical-vocational subjects.

Information Science (InfSc)

Dale O. Everson, Coordinator (10 Ag. Science Bldg.). Professors Crowley, Edwards, Everson, E. Kelly, Montgomery, Rathbone; Associate Professors Bobisud, Crandall, Haber, Lynch, Rigas, Sun, Turner; Assistant Professors Aulerich, Maki, Nelson, Olson, Potratz, C. Rice, W. Thompson, Wang; Instructor Shaw.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

COMPUTER SCIENCE

131 Digital Computer Programming (1-2 cr) F & S. See Engr 131 for description.

205 Introduction to Computer Programming (3 cr) F or S. See Math 205 for description.

233 Introduction to Computers (3 cr) F & S. See Bus 233 for description.

305 Digital Computers (3 cr) F or S. See Math 305 for description.

333 Electronic Computers in Business and Economics (3 cr) S. See Bus 333 for description.

370 Numerical Analysis (3 cr) S. See Math 370 for description.

402 Applied Numerical Methods (3 cr) F or S. See ES 402 for description.

439 Systems Analysis and Simulation (3 cr) S. See Bus 439 for description.

440 Digital Systems Engineering (3 cr) F & S. See EE 440 for description.

450 The Computer and Information Science (3 cr) F or S. See Bus 450 for description.

533 Automation Systems (1 cr) F. See Bus 533 for description.

540 Computation Structures and Machine Organization (3 cr) F or S. See EE 540 for description.

541 Theoretical Foundations in Computers (3 cr) F or S. See EE 541 for description.

543 Mathematical Theory of Computation and Symbol Manipulation (3 cr) F or S. See EE 543 for description.

546 Simulation Techniques (3 cr) F or S. See EE 546 for description.

554-555 Information Theory I-II (3 cr) F or S. See EE 554-555 for description.

APPLIED STATISTICS

231 Statistics (4 cr) F & S. See Bus 231 for description.

317 Introduction to Statistics for the Behavioral Sciences (3 cr) F. See Psych 317 for description.

320 Probability and Statistics (3 cr) F or S. See Math 320 for description.

321 Biometry (3 cr) F. See Ag 321 for description.

334 Statistics for Business Decisions (3 cr) S. See Bus 334 for description.

401 Engineering Statistics (3 cr) F or S. See ES 401 for description.

406 Statistical Research Methods (3 cr) S. See Ag 406 for description.

418 Intermediate Statistics for the Behavioral Sciences (3 cr) S. See Psych 418 for description.

432 Quantitative Methods in Business and Economics (3 cr) S. See Bus 432 for description.

438 Advanced Statistics (3 cr) S. See Bus 438 for description.

451-452 Probability Theory and Mathematical Statistics (3 cr) F or S. See Math 451-452 for description.

494 Models for Resource Decisions (3 cr) S. See For 494 for description.

505 Engineering Statistics (1-3 cr) F or S. See ES 505 for description.

507 Experimental Design (3 cr) F. See Ag 507 for description.

532 Dynamics of Business Decisions (3 cr) S. See Bus 532 for description.

565 Dynamic Programming, Markov Processes and Queueing Theory (3 cr) F or S. See EE 565 for description.

Interdisciplinary Studies (Inter)

Elmer K. Raunio, Coordinator (114 Administration Building)

Courses in this subject area are under the general jurisdiction of the University Curriculum Committee and its Subcommittee on Interdisciplinary Studies.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Man in a Nuclear Age (2 cr) F or S. Also offered as SocSc 101. Concerns about man and his environment presented by leading university authorities in such fields as foreign policy, nuclear physics, ecology, psychology, urban affairs, cybernetics, and race relationships.

200 (s) **Seminar** (cr arr) F & S. Each seminar under this number is offered jointly by two or more departments and has been approved by the University Curriculum Committee. Consult the time schedule for seminars currently offered. *Prereq:* perm.

203 Environmental Pollution (3 cr) S. See Ag 203 for description.

299 (s) **Independent Study** (cr arr) F & S. Projects which have been approved by two or more departments and by the University Curriculum Committee. *Prereq:* perm.

300 (s) **Seminar** (cr arr) F & S. See 200 for description.

399 (s) **Independent Study** (cr arr) F & S. See 299 for description.

400 (s) **Seminar** (cr arr) F & S. See 200 for description.

490 Technology and Human Values (2-3 cr) F or S. Also offered as Engr 490 and RelSt 490. Ideological and value implications of technology for the future of man and his environment.

493-494 Seminar in Urban Studies (2 cr) F-S. Also offered as Arch, Bus, Econ, Geog, PolSc, or Soc 493-494. Interdisciplinary inquiry focusing on the analysis and alternative solutions to problems of communities, physical factors, transportation and communication, housing, planning business and industrial districts, zoning, aesthetics, socio-cultural and psychological factors, neighborhoods, local government and finance, urban renewal, regional planning, government programs and dynamics of development; discussions led by faculty members and consultants.

499 (s) **Independent Study** (cr arr) F & S. See 299 for description.

501 (s) **Seminar** (cr arr) F & S. See 200 description.

502 (s) **Directed Study** (cr arr) F & S. See 299 for description.

580 Seminar in Administration and Contemporary Issues (3 cr) F or S. Also offered as Bus, Ed or PolSc 580. Interdisciplinary approach to complex problems confronting administrators in the fields of business, education, and government; resources and talents from such academic disciplines as business, education, and public administration are utilized. *Prereq:* perm.

589 Water Resources Seminar (1 cr) F or S. Also offered as AgE, For, or Geol 589. Reports by faculty members and graduate students on current problems and projects; reports are organized to give maximum interchange of ideas between divisions.

INTERIOR DESIGN — *See Architecture*

ITALIAN — *See Foreign Languages*

Journalism (Jour)

Bert C. Cross, Department Chairman (104 Journ. Bldg.). Associate Professor Cross; Assistant Professor Van Leuven; Instructor Harrison.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

215 **Photojournalism** (2 cr) F or S. Fundamentals of news photography; camera techniques, processing, and printing. One 3-hr lab per wk. *Prereq:* perm.

221 **News Writing** (2 cr) F & S. Principles of news writing for newspapers and radio. Two 2-hr lec-labs per wk. *Prereq:* ability to type.

222 **Reporting** (3 cr) S. Types and sources of news; gathering and writing news for newspaper and radio use. Two lec and one lab per wk. *Prereq:* 221.

224 **Lettering and Layout** (2 cr) S. See Art 224 for description.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

324 **Special Feature Articles** (2 cr) S. Writing of feature articles for newspapers and magazines in specialized areas such as home, garden and agriculture. *Prereq:* 221 or perm.

354 **News Editing** (3 cr) S. News selection, evaluation, editing, display; responsibilities of copyreader. Two lec and one lab per wk. *Prereq:* 221-222 or perm.

362 **Retail Advertising** (2 cr) F. Application of fundamentals of advertising to a retail program; preparation, selling and servicing of advertising through local media.

366 **Advertising Copy and Layout** (3 cr) S. Selection and presentation of advertising appeals through the media; typography, layout; copywriting. Two lec and one lab per wk. *Prereq:* 221, 224, or perm.

370 **Advertising Media** (2 cr) S. Analysis in terms of markets and audience; planning regional and national campaigns.

384 **Industrial Journalism** (3 cr) S. Writing, editing, layout and other operations of the business press; layout and publication of periodicals and brochures. Two lec and one lab per wk.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

405 **Supervising High School Publications** (2 cr) S. For secondary-school teachers. Planning and direction of the newspaper and yearbook; teaching methods for journalism.

423 **Public Affairs Reporting** (3 cr) F. Practice in reporting public affairs; practical work in the professional field. One lab per wk. *Prereq:* 221-222 or perm.

432 **Magazine Article Writing** (2 cr) S. For students in any field. Development of articles for publication in trade, regional and national magazines; all types of magazines studied.

433 **Interpreting Contemporary Affairs** (2 cr) F. Interpretive and explanatory writing on current affairs; practice in writing editorials and columns. *Prereq:* 221-222 or perm.

445 **Media Internship** (1-5 cr, max 9) F & S. Directed internship in the professional news media and related agencies; supervised work in advertising, reporting and editing; students work in positions commensurate with their abilities and interests. Graded on the basis of P or F. *Prereq:* perm.

455 **History of Mass Communications** (2 cr) F. Evolution of the newspaper and mass media; role of the press from colonial to modern times.

472 **Principles of Public Relations** (3 cr) F. Problems and practices; techniques for mass media; projects related to student's major interest.

491 **Law of Mass Communications** (2 cr) F. Freedom of the press, libel, right to know, privacy, contempt, regulation of advertising, radio and television.

492 **Journalism and Public Opinion** (2 cr) F or S. Role of news media in formation of public opinion; publicity and propaganda techniques of government, economic and social groups.

496 (s) **Proseminar** (2 cr) S. Current problems; responsibilities, ethics, criticism; current research. *Prereq:* sr standing or perm.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

LANDSCAPE ARCHITECTURE — *See Architecture*

LATIN — *See Foreign Languages*

LAW (Law)

Albert R. Menard, Dean (128 Admin. Bldg.). Professors Bell, Grant, Jones, Menard, Peterson, Stevenson, Vieira; Associate Professors Brabham, Harrington.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols. For complete descriptions of the courses in this section, see the annual announcement of the College of Law. Registration in any course offered by the College of Law by non-law students requires the permission in advance by the dean and the instructor of the course.

505-506 Procedure I-II (3 cr) F-S.

507-508 Property I-II (3 cr) F-S.

509-510 Torts I-II (3 cr, 2 cr) F-S.

511 Fundamentals of Public Law (2 cr) F.

512 Criminal Law and Its Administration (3 cr) S.

513-514 Contracts I-II (3 cr) F-S. (501-502).

515-516 Legal Writing I-II (1 cr) F-S (503-504).

601 (s) **Seminar** (cr arr) F & S.

605 Constitutional Law (4 cr) F (530).

607 Administrative Law (3 cr) F (531).

608 Labor Law (2 cr) F (538).

609 Federal Jurisdiction (3 cr) S (543).

610 Government Regulation of Business (3 cr) S (550).

611 Municipal Corporations (2 cr) F (546).

612 Legislation (2 cr) S (553).

620 Business Associations (4 cr) F (535).

622 Corporate Securities (3 cr) F (555).

623 Commercial Paper (2 cr) F (533).

624 Sales and Products Liability (3 cr) S (544).

625 Security (2 cr) F (545).

626 Creditor's and Debtor's Rights (3 cr) F (532).

627 Seminar, Business Planning (3 cr) S (556).

630-631 Taxation I-II (3 cr, 2 cr) F-S (536-537).

632 Estate Planning (4 cr) F (547).

640 Family Law and Community Property (3 cr) S (539).

641 Wills, Estates and Trusts (3 cr) S (542).

642 Natural Resources (3 cr) F (534).

643 Seminar, Selected Problems in Natural Resources (2 cr) S (560).

644 Seminar, Land Use Planning (2 cr) S (557).

650 Evidence (4 cr) S (540).

652 Remedies and Restitution (3 cr) S (541).

653 Criminal Procedure (3 cr) F (554).

654-655 Practice Court I-II (1 cr) F-S (548-549).

656 Appellate Court (1 cr, max 2) F (573).

660 Conflict of Laws (3 cr) S (552).

661 Seminar, Jurisprudence (2 cr) S (558).

662 Legal Practice (1 cr) S (551).

681 Legal Aid (2 cr) S (571).

682 Law Review (1-2 cr, max 2) S (572).

683 Legal Research (1-2 cr, max 4) F & S (570).

Library Science (LibSc)

Thomas O. Bell, Head, Department of Education (404-B Education Bldg.) Instructor Krukar.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

420 Classification and Cataloging (4 cr) F & S. Organization of library materials; principles of cataloging, subject analysis, classification, bibliographical methods; Dewey decimal system.

421 Selection of Books and Related Materials (3 cr) F & S. Evaluation and selection of books and other materials for libraries; analysis of community library needs and interests.

422 Use of the School Library (2 cr) F & S. Methods of interesting students in the library and using it to best advantage.

423 Reference in School Libraries (3 cr) F & S. Reference books in school and public libraries; judging and selecting reference collections.

424 Children's Literature (3 cr) F & S. Selection of children's literature for elementary-school libraries; trends; interests of various ages; illustrators.

425 School Library Problems (2-4 cr, max 4) F & S. Directed study; organization and management of school libraries.

427 Library and Media Center Practicum (1-3 cr, max 6) F & S. To provide practical experience through work in libraries and other information centers under professional supervision. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Mathematics (Math)

Howard E. Campbell, Department Chairman (300 Faculty Office Bldg.). Professors Campbell, Crowley; Associate Professors Bobisud, Calvert, Cobb, Dierker, Walker; Assistant Professors Barbut, Christenson, Goetschel, Neuhaus, Potratz, Royalty, Voxman, Wang.

CREDIT LIMITATIONS: Max 12 cr in Math 111, 112, 140, 141, 180 combined; Math 111 carries no cr after 140; Math 112 carries 3 cr after 140 or former 9; Math 140-141 each carry 2 cr after 111; Math 140 carries no cr after 111-112 or former 9; Math 141 carries 2 cr after 112.

PREREQUISITE: All mathematics courses allow either the stated prerequisite or permission, except where specifically noted.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

R70 Review of Mathematics (0 cr) F or S. *Prereq:* perm.

R80 Remedial Mathematics (0 cr) F or S. Fundamentals of algebra. *Prereq:* 1 yr high school algebra and perm.

R90 Basic Engineering Mathematics (0 cr) F or S. Review of parts of college algebra, calculus and differential equations important in engineering curricula. *Prereq:* perm.

111-112 Fundamentals of Mathematics (4 cr) F & S. Terminal sequence. Nature of mathematics; fundamental concepts of algebra, set theory, geometries, probability, and calculus. *Prereq:* 1 yr high school algebra and 1 yr of plane geometry.

135-136 Number System and Its Structure (3 cr) F-S. For elementary school teachers. Language and nature of deductive reasoning, elements of set theory, whole numbers, numeration systems, integers, rational numbers, elementary number theory, decimals and real numbers. May be taken by correspondence.

140 College Algebra (3 cr) F & S. Properties of real numbers; algebraic, exponential and logarithmic functions, complex numbers, sequences and series. May be taken by correspondence.

Prereq: 1½ yrs high school algebra and 1 yr of plane geometry, or equiv, or 111.

141 Analytic Trigonometry (2 cr) F & S. Circular and trigonometric functions, inverse functions, applications including De Moivre's theorem. May be taken by correspondence. *Prereq:* 2 yrs high school algebra and 1 yr plane geometry or 140. (If prereq to 140 satisfied, 140-141 may be taken concurrently.)

180 Analytic Geometry and Calculus I (4 cr) F & S. Functions, limits, continuity, differentiation, integration, applications, differentiation and integration of transcendental functions. May be taken by correspondence. *Prereq:* 2 yrs high school algebra and 1 yr plane geometry and ½ yr of analytic trigonometry, or equiv, or 141.

R181 Analytic Geometry and Calculus I (3 cr) F or S. Function, rate of change, limits, continuity, differentiation of algebraic functions with applications, integration. *Prereq:* perm.

184 Elements of Linear Algebra (2 cr) F or S. Vector spaces, linear transformations, matrices, linear equations and determinants, characteristic values. *Prereq:* 140.

186 Theory of Numbers (3 cr) S. Elementary number theory, including divisibility properties, congruences and Diophantine equations. *Prereq:* 180.

190 Analytic Geometry and Calculus II (4 cr) F & S. Differentiation and integration of transcendental functions, integration techniques, general mean value theorem, numerical techniques, series. *Prereq:* 180.

R191 Analytic Geometry and Calculus II (3 cr) F or S. Applications of the definite integral, differentiation and integration of transcendental functions, methods of integration, determinants and linear equations. *Prereq:* perm.

200 Analytic Geometry and Calculus III (3 cr) F & S. Vectors, functions of several variables, multiple integration. *Prereq:* 190.

R201 Analytic Geometry and Calculus III (3 cr) F or S. Two and three dimensional analytic geometry, vectors, hyperbolic functions, parametric equations, polar coordinates. *Prereq:* perm.

202 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

205 Introduction to Computer Programming (3 cr) F or S. All offered as InfSc 205. Characteristics of digital computers from programmer's viewpoint; programming principles; introduction to programming in Fortran and PL/1.

R211 Analytic Geometry and Calculus IV (3 cr) F or S. Partial derivatives, infinite series, complex numbers and functions. *Prereq:* perm.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

300 Mathematics for Teachers (3 cr) F or S. Sets, number systems, elementary number theory, geometric constructions, projective geometry, Euclidean geometry. *Prereq:* 180.

N301 Calculus (3 cr) SS. Review of basic calculus, functions, graphs, slopes, limits, continuity, derivative, rate of change, extrema, integral, moments, applications.

303 Mathematics as an Art (3 cr) F or S. Introduction to the creative process of mathematics. Primarily for students of non-mathematical fields. Graded on basis of P or F.

305 Digital Computers (3 cr) F or S. Also offered as InfSc 305. Advanced programming techniques, data management and retrieval, operating systems. *Prereq:* 205 or Engr 131.

310 Ordinary Differential Equations (3 cr) F & S. 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, existence theorems. *Prereq:* 200.

315 Vector Calculus (3 cr) F or S. Differential and integral calculus of vectors, line, surface and volume integrals, divergence, curl, Stokes' theorem, related applications. *Prereq:* 200.

320 Probability and Statistics (3 cr) F or S. Also offered as InfSc 320. Sample spaces, random variables, distribution functions, estimation and testing of hypotheses. *Prereq:* 180.

331 Algebra for Elementary School Teachers (3 cr) F. Properties of real numbers, linear equations and inequalities, modular arithmetic, complex numbers, polynomials, algebraic structures, functions. *Prereq:* 136.

332 Geometry for Elementary School Teachers (3 cr) S. Experimental and informal geometry, points, lines, planes, space, congruence and measurement, geometric construction, space figures, similari-

ty and trigonometry, spherical geometry, plane coordinated geometry. *Prereq:* 136.

370 Numerical Analysis (3 cr) S. Also offered as InfSc 370. Numerical methods useful in solving applied problems; calculus of finite differences. *Prereq:* 200.

380 Introduction to Complex Variables (3 cr) F or S. Theory of functions of one complex variable and its applications. *Prereq:* 200.

390 Postulational Geometry (3 cr) F or S. Postulates of Hilbert and Euclid; non-Euclidian geometries; the Erlanger program; projective geometry. *Prereq:* 200.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

N401 Computer Programming (3 cr) SS. Introduction to the characteristics of digital computers, programming principles and language, with some program writing.

N402 Structure of the Real Number System (3 cr) SS (N502). Topics include a systematic development of the rational and real numbers from the integers, elementary properties of the real number system, sequences, and the limit concept.

N406 Concepts of Analysis (3 cr) SS (N506). Sets, relations, functions, Dedekind cuts, sequences, limits of functions, differentiation and integration.

N407 Number Theory (3 cr) SS. Elementary number theory, including dividibility properties, congruences, Diophantine equations, primitive roots, well-known theorems and conjectures.

N408 Directed Reading (1-6 cr, max 6) SS (N508). Max 3 cr may be completed in absentia.

N409 Topology (3 cr) SS (N509). Construction of topologies, closure, dense sets, compactness, connectedness.

411 Elementary Topology (3 cr) F or S. Alt/yrs 1972-73. Primarily topology of metric spaces; compactness, connectedness, continuity, completeness, finite products, general topological spaces, function spaces, Urysohn's Lemma. *Prereq:* 184, 200, or perm of dept.

420 Introduction to Complex Variables (3 cr) F or S (380). Theory of functions of one complex variable and its applications. *Prereq:* 200.

440 Linear Algebra (3 cr) F or S. Algebra and geometry of vector spaces, linear transformations and matrices, quadratic forms, symmetric matrices, characteristic vectors and roots. *Prereq:* 184.

N441 Linear Algebra (2 cr) SS. Algebra of vector spaces, linear transformations and matrices.

451-452 Probability Theory and Mathematical Statistics (3 cr) F-S. Also offered as InfSc 451-452. Random variables, distribution functions, characteristic functions, limit theorems, distribution of sample statistics, order statistics, estimation, testing hypotheses. *Prereq:* 184, 200.

N453 Probability and Statistics (3 cr) SS. Basic probability theory, distributions, frequency, sampling theory, testing hypotheses.

N460 Set Theory and Logic (3 cr) SS. Elementary set operations, cardinality and symbolic logic.

461-462 Higher Algebra (3 cr) F-S. Abstract algebra. *Prereq:* 184.

471-472 Advanced Calculus (3 cr) F-S. Analysis: elementary topology of Euclidian n-space, limit concept and continuity, differentiation, and integration theory. *Prereq:* 184, 200.

481 Fourier Analysis (3 cr) F. Fourier series, Fourier transforms and boundary value problems of mathematical physics. *Prereq:* 310.

482 Advanced Applied Mathematics (3 cr) S. Partial differential equations and boundary value problems, Green's functions, perturbation techniques, calculus of variations. *Prereq:* 481.

N483 Modern Algebra (3 cr) SS. Properties of groups, rings, integral domains and fields. *Coreq:* N460 recommended.

490 Introduction to Set Theory (3 cr) F or S. Alt/yrs 1971-72. Set operations, functions, binary operations and relations, cardinal and ordinal numbers, axiom of choice, partially ordered sets, and Zorn's lemma. *Prereq:* 200.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

N503 The Structure of the Real Number System (3 cr) SS (N502). Topics include a systematic development of the rational and real numbers from the integers, elementary properties of the real number system, sequences, and the limit concept.

511-512 Topology (3 cr) F-S. Alt/yrs 1971-72. Basic concepts of point set and algebraic topology.

516 Topics in Topology (3 cr) F or S. Algebraic methods and topics in topology.

521 Seminar in Topology (1-2, max arr) F & S. Current literature.

523-524 Algebraic Topology (3 cr) F-S. Alt/yrs 1972-73. Basic homotopy theory, covering spaces, constructive and axiomatic homology and chomology theory, applications.

525-526 Advanced Topics in Topology (3 cr, max 12) F-S.

530 Differential Geometry (3 cr) F or S. Space curves, surfaces and geometry on surfaces; Gaussian and mean curvature, non-Euclidean geometries, Riemanian geometry.

531-532 Complex Variables (3 cr) F-S. Alt/yrs 1972-73. Theory of functions of complex variables.

535-536 Real Variables I-II (3 cr) F-S. Alt/yrs 1971-72. Theory of functions of real variables.

539 Theory of Ordinary Differential Equations (3 cr) F or S. Alt/yrs 1971-72. Systems of ordinary equations of first order, linear equations, equations of n'th order with analytic coefficients and regular singular points, self-adjoint boundary value problems.

541 Seminar in Analysis (1-2, max arr) F & S. Current literature.

545-546 Advanced Topics in Analysis (3 cr, max 12) F-S.

551-552 Abstract Algebra I-II (3 cr) F-S. Alt/yrs 1971-72. Structure of rings, Galois theory. *Prereq:* 462.

553-554 Abstract Algebra III-IV (3 cr) F-S. Alt/yrs 1972-73. Group theory; nonassociative algebras. *Prereq:* 462.

561 Seminar in Algebra (1-2 cr, max arr) F & S. Current literature.

565-566 Advanced Topics in Algebra (3 cr, max 12) F-S.

R570 Advanced Numerical Analysis (3 cr) F or S. Interpolation; numerical methods of differentiation, integration, and solution of algebraic and differential equations. *Prereq:* numerical analysis.

571-572 Functional Analysis (3 cr) F-S. Alt/yrs 1972-73. Linear functionals on the space of continuous functions, linear transformations, Hilbert and Banach spaces, spectral theory. *Prereq:* 536.

574 Topics in Applied Mathematics (3 cr) F or S. Integral and differential equations.

R577-R578 Advanced Mathematical Statistics (3 cr) F or S. Development and application of mathematical statistics to problems in the engineering sciences; applications. *Prereq:* perm.

R580 Numerical Solutions of Partial Differential Equations (3 cr) F or S. 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 Developments in Mathematics (3 cr) F or S. For students with extensive background in specific phases.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Mechanical Engineering (ME)

Richard B. Stewart, Department Chairman (111 Engr. Bldg.). Professor Barnes, Stewart, Warner; Associate Professors Falkenhagen, Norgord, Place, Silha; Assistant Professors Avery, Jacobsen, Penton, Scofield.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

253 Materials Processing (3 cr) F. Theory and practice of machining, casting, forming, and shaping materials. Two lec

and one 2-hr dem per wk; two 1-day field trips.

261 **Engineering Materials** (4 cr) S. Materials and properties; fundamental factors influencing properties and selection in design and fabrication. Three lec and one 3-hr lab per wk. *Prereq:* Phys 221.

299 (s) **Directed Study** (cr arr) F & S. Individual study of selected topics. Detailed report on study project is required. *Prereq:* perm of dept.

304 **Materials Selection for Mechanical Design** (2 cr) F or S. Service conditions encountered by engineering components. Selection of materials as related to service. *Prereq:* 261.

322 **Applied Thermodynamics** (4 cr) S. First and second law topics: property relations, irreversibility, mixtures, compressible flow, combustion, systems analysis. Classical and statistical concepts. Three lec and one 3-hr lab per wk. *Prereq:* ES 321.

324 **Mechanical Design I** (3 cr) S. Kinematic principles and their applications (with statics and dynamics) to analysis and synthesis of machines. Two lec and one 3-hr lab per wk; one 1-day field trip. *Prereq:* ES 211,221.

326 **Mechanical Engineering Project** (1-3 cr) F & S. Individual investigation and report; may include design, experiment or analytical studies. *Prereq:* jr standing and perm of dept.

366 **Advanced Engineering Materials** (3 cr) F or S. Advanced applications of concepts and theory associated with dislocation theory; strengthening and softening mechanisms in ferrous materials; non-metallic materials; component failures as applied to mechanical engineering systems. *Prereq:* 261.

390 **Mechanical Engineering Analysis** (3 cr) S. Applications of mathematical analysis to problems of mechanical engineering. Analysis of discrete and continuous systems. *Prereq:* Math 310.

404 **Advanced Materials Processing** (3 cr) F or S. Materials processing, fabrication and finishing. Two lec and one 3-hr lab per wk. *Prereq:* 253.

410 **Production Engineering** (3 cr) F or S. Planning, analysis, and control of engineering design processes; decision models, planning models, CPS, PERT, queueing theory, data collection and analysis, linear programming, Monte Carlo simulation, materials management and inventory, quality control, and computer techniques.

422 **Statistical Thermodynamics** (3 cr) F or S. Principles of probability theory and quantum mechanics. Formulation of bacis postulate of statistical mechanics, thermodynamic probability, and most probable macrostate. Molecular interpretation of first and second laws. Introduction to Kinetic theory of a perfect gas. *Prereq:* ES 321.

425 **Mechanical Design II** (4 cr) F. Stress and strain analysis, failure theories, combined stresses; design properties of materials; design for variable and impact loading; design of machine elements and components; lubrication theory, bearing design. *Prereq:* 324, ES 340.

426 **Mechanical Systems Design** (2 cr) S. Individual or team development and design of a system, including its economic aspects; final report to include each student's computations and drawings. Two 2-hr labs and 2 hrs of indep work per wk. *Prereq:* 425.

427 **Optimum Design** (3 cr) F or S. Techniques for optimum design with application to simple mechanical elements in problems with practical constraints. *Prereq:* 425.

432 **Energy Conversion Systems** (3 cr) F or S. Principles of energy conversion and irreversible thermodynamics; internal combustion engines, nuclear and fossil fuel power production systems; design theory and analysis of thermo-electric, thermoionic, photovoltaic, and magnetohydrodynamic conversion systems; fuel cells; selected other modes of direct energy conversion. *Prereq:* 322.

441 **Thermal Systems Design** (3 cr) F or S. Design of integrated thermal system such as a steam power plant, including economics, influence on design of variable output, and environmental considerations. *Prereq:* 322.

444 **Environmental Engineering** (4 cr) F or S. Phenomena and problems associated with man's environment; air conditioning, refrigeration, solar heating, thermoelectric cooling, air pollution, means for controlling environment. Three lec and one 3-hr lab per wk. *Prereq:* 322.

445 **Heat Transfer** (4 cr) S. Transmission by conduction of heat in steady and unsteady states, free and forced convection, radiation; combined effects of conduction, convection, radiation, and fluid friction. Three lec and one 3-hr lab per wk. *Prereq:* ES 320, 321.

451 **Aerospace Propulsion** (3 cr) F or S. Thermodynamic, fluid flow, heat transfer, and aerodynamic problems in jet

propulsion systems. *Prereq:* ES 321.

467 Fuels and Lubricants (2 cr) F or S. Correlation between properties of fuels and lubricants and their performance in an engine or machine, and in the significance of the standard tests conducted on these materials. One lec and one 3-hr lab per wk. *Prereq:* perm.

468 Engineering Acoustics (3 cr) F or S. Theory of sound generation; noise measurement and control; noise in buildings, industrial and aircraft noise; underwater sonics; instrumentation techniques; transducers and signal processing for measurement of sound and vibration from various sources. *Prereq:* perm.

472 Mechanical Vibrations (4 cr) F. Free, forced and transient vibrations with and without damping; multimass and distributed systems; single degree and two degrees of freedom; special techniques; vibration control. Three lec and one 3-hr lab per wk. *Prereq:* ES 221, 340, Math 310.

473 Applied Stress Analysis (3 cr) F or S. For students interested in design. Analytical and experimental techniques for determining stresses and strains under static and dynamic loads, including photoelastic methods. Two lec and one 3-hr lab per wk. *Prereq:* ES 340.

491-492 Seminar (0 cr) F,S. One 3-6 day field trip. Graded on the basis of P or F. *Prereq:* sr standing.

499 (s) **Directed Study** (cr arr) F & S. Individual study of selected topics. A detailed report on study project is required. *Prereq:* sr standing and perm of dept.

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

501 (s) **Seminar** (cr arr) F & S. Engineering and engineering-related topics. Graded on the basis of P or F. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (560). Primarily for advanced graduate students. Supervised study, including critical reading of current literature. *Prereq:* perm of dept.

505 Dynamics (3 cr) F or S. Kinematical analysis, dynamic specification of a solid body, basic principles of dynamics; dynamics of rectangular, angular, plane motion; dynamics in three dimensions; beams. *Prereq:* ES 220, Math 310, or perm.

506 Photoelasticity (3 cr) F or S. Mathematical approach; optical bench, its parts and their functions; analysis of specimens of various materials in two and three dimensions. Two lec and one 3-hr lab per wk. *Prereq:* 473, Math 310, or perm.

507 Machine Design (3 cr) F or S. Topics to meet needs and interests of students; special projects. *Prereq:* 425 or perm.

510 Hydrodynamics (3 cr) F or S. Incompressible flow treated from idealized or inviscid viewpoint; use of complex functions to solve fluid fields. *Prereq:* ES 320-321 or perm.

512 Gas Dynamics (3 cr) F or S. Basic concepts of compressible flow. Principles of unidimensional flow, shock wave phenomena, and flow in variable and constant area ducts. *Prereq:* 322, ES 320.

515 Transport Phenomena (3-4 cr) F or S. See ChE 515 for description.

524 Thermodynamics (3 cr) F or S. Development of the thermodynamic laws for the design and optimization of thermodynamics systems; introduction of statistical methods; equations of state, properties of ideal and real fluids. Applications to recent developments in the experimental and theoretical aspects of thermodynamics. *Prereq:* 322 or perm.

527 Advanced Fluid Mechanics (3 cr) F or S. Fundamentals and applications of fluid flow, irrotational inviscid flow, two dimensional subsonic, transonic and supersonic flow; unsteady flow, shock waves, compressible boundary layers; advanced topics. *Prereq:* ES 320 or perm.

541 Mechanical Engineering Analysis I (2-3 cr) F or S. See ChE 541 for description.

548 Elasticity (3 cr) F. See CE 548 for description.

550 Vibration Engineering (3 cr) F or S. Analysis of vibrating systems; including several degrees of freedom, branched systems, closed systems, applications of energy method; vibration measurement and control. *Prereq:* 472 or perm.

553 Radiation (2 cr) F or S. Analytical study of radiative transfer with current engineering applications. *Prereq:* 445 or perm.

554 Advanced Heat Transfer (3 cr) F or S. Analytical study and applications of heat transfer by convection, radiation, conduction. Laminar, turbulent, and

two-phase convection; radiation exchange in enclosures; steady and transient conduction in one, two, and three dimensions. *Prereq:* 445 or perm.

563 Theory of Lubrication (3 cr) F or S. Properties and laws of lubricants; contact modes and friction; characteristics and design of journal, thrust, gas-lubricated bearings; lubrication practice. *Prereq:* 425, ES 320 or perm.

Metallurgy (Met)

J. R. Hoskins, Head, Department of Mining Engineering and Metallurgy (217 Mines Bldg.). Professors Clifton, Newton; Assistant Professor Bobeck.

See the beginning of part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

102 Materials and Their Manufacture (1 cr) S. Introduction to materials for students who wish to know how and from what the material things of our civilization are made. One 3-hr lab per wk; one 1-day field trip. (CLIFTON)

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

201 Elements of Materials Science (2 cr) F & S. Principles relating properties and behavior of metals, ceramics, polymers, and composites to their structures and environments. *Prereq:* Chem 103 or 111 or 114. (NEWTON)

203 Metallography (1 cr) S. Lab preparation of metal specimens for microscopic examination; hardness testing. One 3-hr lab per wk. *Prereq:* 201. (BOBECK)

305 Elements of Crystallography (2 cr) F. Includes an introduction to crystal chemistry and physics. *Prereq:* Chem 103 or 111 or 114, Phys 211. (CLIFTON)

308 Introduction to Metallurgical Thermodynamics (2 cr) S. Aspects of thermodynamics most used in metallurgy; applications to problems. *Prereq:* Chem 305, ES 321. (BOBECK)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

403 Introductory Extractive Metallurgy (3 cr) F. Introduction to ore dressing, smelting, refining, hydrometallurgy, electrometallurgy. *Prereq:* Chem 103 and 111 or 114, Phys 220, 221. (NEWTON)

410 Metallurgical Laboratory (2 cr) S. Ore dressing, sampling, hydrometallurgy, electrometallurgy, high-temperature metallurgy, fire assaying for gold and silver. Two 3-hr labs per wk. *Prereq:* 403. (NEWTON)

412 Mechanical Metallurgy (2 cr) S. Alt/yrs 1972-73. Mechanical forming and testing of metals. One 1-day field trip. *Prereq:* 203, ES 340. (CLIFTON)

413 Physical Metallurgy (3 cr) F. Theory, structure, and properties of metals and alloys; their relation to industrial problems. Two lec and one 3-hr lab per wk. *Prereq:* 203, 308. (BOBECK)

414 Materials Engineering (2-3 cr) S. Alt/yrs 1971-72. Selection of materials; manufacturing processes; industrial practices. *Prereq:* 201, ES 340.

417 X-Ray Diffraction (3 cr) F. Diffraction of X-rays by crystals; application to study of polycrystalline materials. Two lec and one 3-hr lab per wk. *Prereq:* Phys 114 or 221.

WS418 Polymeric Materials (3 cr) S. WSU 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 engineering or physical science.

421 Ceramic Materials (3 cr) F. Properties and uses; cermets and related materials. *Prereq:* Phys 113-114 or 220-221, Chem 103 or 111 or 114. (BOBECK)

422 Ceramics Laboratory (2 cr) S. Ceramic fabrication; PCE and DTA determinations. Two 3-hr labs per wk. *Prereq:* 421. (BOBECK)

431 Proseminar (1 cr, max 2) F & S. Review of current literature. One 3-day field trip. *Prereq:* sr standing or perm.

441 Ore Dressing (3 cr) F. Methods of communication and concentration of ores. Two 1-day field trips. *Prereq:* 403.

442 Extractive Metallurgy (3 cr) S. Extraction and refining of ferrous and nonferrous metals. *Prereq:* 403.

499 (s) **Directed Study** (cr arr) F & S (423). *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F &S.

501 (s) **Seminar** (cr arr) F & S.

502 (s) **Directed Study** (cr arr) F & S.

503 **Advanced Extractive Metallurgy** (3 cr) F (ID503). Topics in the extraction and refining of metals. *Prereq:* 403 or perm. (NEWTON)

506 **Advanced Ore Dressing** (3 cr) F or S (502). Theories of comminution; flotation and related surface phenomena; electrical and magnetic concentration; process control. *Prereq:* 403, 410 or perm. (NEWTON)

ID507 **Advanced Ceramics** (3 cr) S. Alt/yrs 1972-73. Theoretical aspects; constitution of green bodies; shrinkage; porosity; sintering; effect of structure on mechanical, electrical, and magnetic properties; glasses. *Prereq:* perm. (BOBECK)

510 **Research Methods** (3 cr) S. Alt/yrs 1972-73. Experimental methods and apparatus; planning and evaluation. Two lec and one lab per wk. *Prereq:* perm. (CLIFTON)

511 **Advanced Physical Metallurgy** (3 cr) F. Theory of metals and alloys; application to problems of structure; properties of engineering metals. *Prereq:* perm.

512 **Metallurgical Thermodynamics** (3 cr) S. Alt/yrs 1971-72. Aspects of thermodynamics most used in metallurgy; application to problems. *Prereq:* perm. (BOBECK)

514 **Phase Rule and Phase Relations** (3 cr) S. Alt/yrs 1972-73. Phase rule; construction and interpretation of phase diagrams; metastable and unstable phase relations. *Prereq:* perm.

517 **Kinetics of Metallurgical Reactions** (3 cr) F. Alt/yrs 1971-72. Application of absolute rate theory; time and temperature dependence; kinetics of gas-solid reactions; corrosion; diffusion; recrystallization. *Prereq:* perm.

518 **Advanced Mechanical Metallurgy** (3 cr) S. Alt/yrs 1971-72. Microscopic and macroscopic theories of deformation; materials-forming processes; mechanical tests. *Prereq:* perm.

ID520 **Nucleation in Solids** (3 cr) S. Alt/yrs 1972-73. Theories of Volmer-Weber and Becker-Doring; application to solid-state nucleation; relation to solid-state transformations. *Prereq:* perm. (BOBECK)

ID522 **Surface Reactions of Metals** (3 cr) S. Alt/yrs 1971-72. Surface chemistry and physics; illustrative examples from metallurgy. *Prereq:* perm.

R525 **Physical Chemistry of Metals** (3 cr) F or S. Thermodynamics, heterogenous equilibria, electrochemistry, diffusion, kinetics. *Prereq:* perm.

R531 **Behavior of Engineering Materials** (3 cr) F or S. Static and dynamic properties; relation of mechanical properties to physical properties and crystal imperfections. *Prereq:* perm.

ID533 **Advanced X-ray Diffraction** (3 cr) F or S. Principles and applications to advanced problems. *Prereq:* perm.

534 **Radiation Effects in Materials** (3 cr) F or S. Interactions between radiation and solids. *Prereq:* perm.

535 **Failure of Structural Materials** (3 cr) F & S. Mechanisms by which failure can occur in structural materials.

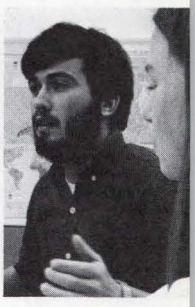
R536 **Theoretical Structural Metallurgy** (3 cr) F or S. Structure of metals and alloys; free electron theory; zone theory; equilibrium; order-disorder; kinetics of phase changes and shear processes. *Prereq:* perm.

R538 **Corrosion in Metallurgy** (3 cr) F or S. Corrosion by aqueous media, gases, liquid metals, and fused salts. *Prereq:* physical chemistry, including electrochemistry, or perm.

R539 **Electron Metallography** (3 cr) F or S. Operation and applications in metallurgy of the electron microscope, microprobe, and other instruments applying charged particle optics. *Prereq:* perm.

WS541 **Anisotropy of Solids** (3 cr) F. WSU 517. Representation of physical properties by tensors and matrices; equilibrium properties; elasticity; thermodynamics of irreversible processes. *Prereq:* thermodynamics.

WS544 **Advanced Topics in Material Science** (2 cr, max 4) F & S. WSU 501. Topics of current interest in chemical crystallography, quantum theory of metals, theories of ideal and imperfect solids.



MINING ENGINEERING-METALLURGY (MinMt)

The courses listed below are limited to stu-

dents enrolled in the composite doctoral program in mining engineering-metallurgy.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Military Science (MS)

Paul M. Fletcher, Department Head (101 Memorial Gym). Professor Fletcher; Assistant Professors Jinks, Mirus, Muth, Ratchye.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102 Fundamentals of Military Leadership and Management (1 cr) F-S. Orientation to ROTC, organization, missions, functions of the Army; military map reading; introduction to military leadership and management.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

201-202 Applied Leadership and Management (1 cr) F-S. Leadership training, command experience, organization and employment of basic military units, and a study of unit management, leadership and problems. *Prereq:* 101-102.

205 Fundamentals and Applied Leadership and Management (Compressed) (2 cr) F-S. Compression of 102, 201-202. Leadership training, command experience, organization and employment of basic military units; map reading, and unit leadership problems. *Prereq:* outstanding work in 101 and perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301-302 Advanced Leadership and Management (3 cr) F-S. Leadership and management; leader's role in offensive and defensive missions of units ranging from squad to battalion. *Prereq:* 201-202 and two semesters in art of communications, i.e., speech or English composition, or perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401-402 Seminar in Leadership and Management (3 cr) F-S. Application of leadership and management skills; Army organization; team work in military operations. *Prereq:* 301-302.

403 Army Aviation ROTC Flight Training (0 cr) F & S. To prepare students for Army Aviation flight training and FAA examinations leading to private pilot's license. Ground school, plus 36½ hrs of flight instruction. *Coreq:* 401-402.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Mining Engineering (Min)

J. R. Hoskins, Head, Department of Mining Engineering and Metallurgy (217 Mines Bldg.). Professors Gregory, Hoskins, Hall; Associate Professor Chan; Assistant Professor Green.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Elements of Mining I (2 cr) S (201). Terminology and first principles of mineral industry economics, history, activities, operations, and engineering.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

202 Elements of Mining II (2 cr) F (201). Basis of mining problems in materials handling, support and removal of metals, and environmental control.

210 Geophysical Prospecting I (3 cr) S. Alt/yrs 1972-73. Principles and practical methods; magnetic, electrical, electromagnetic seismic, gravitational, radioactive, and geothermal methods; geophysical well logging. One 3-day field trip. *Prereq:* physical geology and physics. (CHAN)

301 Mining Engineering I (2 cr) F. Explosives and blasting practices; drilling and rock penetration; methods of mining and tunneling. (HOSKINS)

304 Explosives (2 cr) F. Drilling and blasting equipment, detonation; use of commercial explosives and detonators; design of blasting rounds (surface and underground); forming metal shapes with explosives; use of shaped charges. One 1-day field trip. *Prereq:* jr standing or perm. (GREGORY)

306 Industrial Safety (2 cr) S (305). Underground and surface environmental problems of accident and health; statistics, prevention, economy, research on dusts, lighting, rock stability, air, and contaminants. One 2-day field trip. (HOSKINS)

350 Mineral Economics (3 cr) S. Domestic and foreign sources and production of mineral commodities; domestic economy in relation to mineral production, ore reserve calculation, metal market, and stock exchange; assessment of deposits and mine value in relation to economic factors, metal price, and predictions. (GREEN)

352 Mine Management (3 cr) F. Principles of mineral economics, labor management, accounting, administration, and costs. One 2-day field trip. *Prereq:* 202 (GREEN)

371 Mining Engineering II (2 cr) S. Mine water, electric service, and compressed air. (GREGORY)

372 Mine Ventilation (3 cr) F. Sources, evaluation and dispersal of contaminants; health and explosion hazards, heat stress; methods of dispersal and mitigation; fluid mechanics applied to mine ventilation; hygrometry, resistance of airways; surveys, natural ventilation; fans, ventilation economics; design of systems, equipment; ventilation networks. Two lec and one 3-hr lab per wk. (GREGORY)

391 Mining Principles (3 cr) S. Mine design, planning, problem solving, electrical distribution. One 4-day field trip. *Prereq:* 202, ES 211; *coreq:* ES 340. (HOSKINS)

400 (s) **Seminar** (cr arr) F & S (490). *Prereq:* perm of dept.

401 Rock Mechanics (3 cr) F. Application of engineering principles in solving problems of crushing, drilling, blasting, breaking, and supporting rock structures. One 4-day field trip. *Prereq:* 202, ES 340. (HALL)

410 Mine Plant Design (2 cr) S. Alt/yrs 1971-72. Design of mine structures such as headframes, buildings, ore bins, and mechanical devices. Two 3-hr labs per wk; one 1-day field trip. *Prereq:* ES 340.

420 Mineral Resources Management and the Environment (3 cr) F. Factors which must be considered in the management, development, or exploitation of nonrenewable natural resources. One 2-day field trip. *Prereq:* jr standing. (GREEN)

R431 Industrial Fire Protection I (3 cr) F or S. Application of engineering principles to industrial fire protection; analysis and use of building codes; management of industrial fire protection programs. *Prereq:* perm.

R432 Industrial Fire Protection II (3 cr) F or S. A review and analysis of significant fire loss experience in the United States. The cause factors and lessons learned will be emphasized and related to development of Fire Codes. Modern trends in fire safety research technology are analyzed.

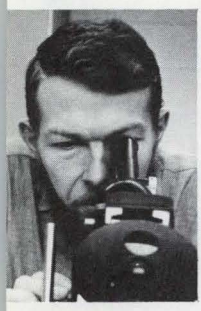
R433 Environmental Health I—Industrial (3 cr) F or S. Types, mechanisms, and magnitudes of toxicity are examined, defined, and related to the human system as an industrial environmental problem. Metals, compounds, reagents, of all types are considered for their influence and effect on the productivity of the human. Sampling and analysis of contaminants is included.

R434 Environmental Health II—Occupational Stress (3 cr) F or S. Introduction to the human system response and susceptibility to problems of occupation originating from air conditioning, air cleaning, ventilation, respiratory devices, air pressure, noise, lighting, temperature, and radiation. Identification, documentation, and reporting of problems and results are included.

450 Mine Planning I (3 cr) F. Design of surface systems, open cuts, quarries, alluvial, strip mining; slope stability, stripping, earthmoving; applications of operation research techniques, transportation by rail, belt, cable, and wheel. One 3-day field trip. *Prereq:* 301. (HALL)

451 Mine Planning II (3 cr) S. Design of underground openings and systems, industrial engineering practices; operations research techniques, equipment selection. One 3-day field trip. *Prereq:* 301. (HOSKINS)

470 Mine Services (3 cr) S. Movement of materials which includes the principles of fluids and mechanics; ventilation fundamentals, pumping, hoisting, con-



veying, track, and rail haulage. One 4-day field trip. *Prereq:* 202, ES 211, 320. (GREGORY)

499 (s) **Directed Study** (cr arr) F & S (492). *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

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

502 (s) **Directed Study** (cr arr) F & S (592) *Prereq:* perm.

503 **Mine Stress Analysis** (3 cr) F. Alt/yrs 1972-73. Application of techniques in experimental stress analysis for structural design in all phases of the engineering system; photo-elastic modeling and coating; and strain gage techniques; stress patterns in frameworks, rock masses, and foundations. One lec and two 3-hr labs per wk. *Prereq:* ES 340. (CHAN)

504 **Rock Mechanics II** (3 cr) S. Alt/yrs 1972-73. Theories of rupture of elastic and inelastic, brittle materials; mechanism of fracture propagation and effects in engineering 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) S. Alt/yrs 1972-73. Application of experimental stress analysis and the principles of engineering similitude in the design of stable mine structures. One lec and three 3-hr labs per wk. *Prereq:* 401 and 503 or 504.

510 **Mine Plant Design II** (3 cr) S. Alt/yrs 1971-72. Practical problems; system synthesis of design of headframes, buildings, bridges, ore bins, road, railroad, and other structures; engineering case methods. Three 3-hr labs per wk. *Prereq:* 202, 410, and ES 340 or perm.

513 **Mine Ventilation Planning** (3 cr) S. Alt/yrs 1971-72. Physical and economic factors involved in providing adequate air flow to a typical mine circuit affected by gas, emission, heat flux from rock walls, and dust sources, ventilation networks. Two lec and 3-hr lab per wk. *Prereq:* perm. (GREGORY)

514 **Mine Environmental Analysis** (3 cr) F. Alt/yrs 1972-73. Contaminating effects of gases, dust, radiation, heat, and moisture in a mine environment; work efficiency of miners subjected to various environmental conditions. Two lec and one 3-hr lab per wk. One 3-day field trip. *Prereq:* perm. (GREGORY)

520 **Mining Geophysics II** (3 cr) S. Alt/yrs 1972-73. Theory and application of magnetic, electrical, electromagnetic, and radioactive methods of geophysical prospecting for metallic and non-metallic mineral deposits. Two lec and one 3-hr lab per wk; one 3-day field trip. *Prereq:* 210 or perm (CHAN)

530 **Mining Exploration Techniques** (3 cr) F. Alt/yrs 1972-73. Underground exploration for mining engineers; application of geological, geochemical, geophysical, and statistical methods in exploration; reduction, correlation, and overall interpretation of data; computer application. Two lec and one 3-hr lab per wk; one 3-day field trip. *Prereq:* 210 or perm.

540 **Mine Valuation** (3 cr) S. Alt/yrs 1971-72. Mine examination and valuation; sampling methods and calculations; determining present value of a deposit.

560 **Mine Management** (3 cr) F. Financing, management labor relations, operations and government regulations. *Prereq:* perm.

561 **Mine Industrial Engineering** (3 cr) S. Alt/yrs 1972-73. Industrial engineering, operations research, and computer programming; application to mining engineering problems. *Prereq:* perm.

570 **Mine Systems Design** (3-6 cr) S. Alt/yrs 1971-72. Integration and synthesis of equipment, methods, and design; use of latest operation research tools to provide a complete mine plan of operation. *Prereq:* perm.

571 **Two-Phase Pipeline Transportation** (3 cr) S. Alt/yrs 1972-73. Fluid-bourne transport of mill tailing, crushed ore, and mine sludge in pipes; hydraulic and pneumatic transport; critical and limiting conditions. Two lec and one 3-hr lab per wk. *Prereq:* perm.

573 **Haulage Systems Design** (3 cr) F. Alt/yrs 1972-73. 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 per wk. *Prereq:* perm.

MINING ENGINEERING—METALLURGY (MinMt)

The courses listed below are limited to students enrolled in the composite doctoral program in mining engineering-metallurgy.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Museology (Museo)

Roderick Sprague, Head, Department of Sociology/Anthropology (4 Faculty Office Bldg.). Associate Professor Burcaw *(Director, University Museum).*

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301 **Introduction to Museology** (3 cr) F. Museum appreciation for the general student; history, theory, and practice of museums; not specialized as to subject field. One 1-day and two ½-day field trips. May be taken by correspondence.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

402 **Intermediate Museology** (3 cr) S. Primarily for students considering museum work as a career. Techniques of caring for collections, preparing exhibits, and museum administration; not specialized as to subject field. Two lec and one 3-hr lab per wk. One 4-day field trip. *Prereq:* 301 and/or perm.

450 **Advanced Museology** (2 cr, max 4) F & S. Actual museum work, under supervision, suited to the individual needs of the student; some travel may be necessary. *Prereq:* 402 and perm.

499 (s) **Directed Study** (cr arr) F & S (399). *Prereq:* perm of dept.

501 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

502 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Music

Floyd H. Peterson, Director (206 School of Music Bldg.). Professors Bauer, Billingsley, Frykman, Lockery, Logan, Peterson; Associate Professors Bray, Klimko, Seiler, Walton, Assistant Professors Bilyeu, R. Hahn, Jones, Probasco, Skinner, Spevacek; Instructors Barnes, S. Hahn, Werner.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

MUSIC—APPLIED PERFORMANCE STUDIES (MusA)

101 (s) **Individual Instruction** (1-3 cr, max arr) F & S (Mus 101). 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 courses. Consult the School of Music for proficiency requirements for admission to the various levels (MusA 101, 301, 401, 505). Enrollment may be limited to majors in the School of Music. *Prereq:* perm of dept.

103 **Concert Choir** (1 cr, max arr) F & S (Mus 103). Five rehearsals per wk. *Prereq:* audition and perm.

104 (s) **Chorus** (1 cr, max arr) F & S (Mus 104). Section A is a balanced mixed chorus with 3 rehearsals per wk; section B is a women's chorus with 2 rehearsals per wk. *Prereq:* perm.

105 (s) **Orchestra** (1 cr, max arr) F & S (Mus 105). Three rehearsals per wk, with occasional evening rehearsals. *Prereq:* perm.

106 (s) **Band** (1 cr, max arr) F & S (Mus 106). Three to five rehearsals per wk. *Prereq:* perm.

108 **Festival Chamber Orchestra** (1 cr, max arr) SS (Mus 108). Two to five rehearsals per wk; may include evening rehearsals. *Prereq:* perm.

109 **Festival Choir** (1 cr, max arr) SS (Mus 109). Daily rehearsals; open to all summer session students.

145-146 **Piano Class** (1 cr) F-S (Mus 145-146) *Prereq:* perm of dept.

147-148 Voice Class (2 cr) F-S (Mus 147-148). *Prereq:* perm of dept.

151-152 Guitar Class (1 cr) F & S (Mus 151-152). *Prereq:* perm of dept.

200 (s) **Seminar** (cr arr) F & S *Prereq:* perm of dept.

265 (s) **Chamber Ensemble** (1 cr, max arr) F & S (Mus 265). Areas normally offered are: vocal, keyboard, string, woodwind, brass, percussion, jazz. Chamber music performing groups; organized each semester. *Prereq:* perm.

266 Collegium Musicum (1 cr, max arr) F & S (Mus 265c). *Prereq:* perm.

280 Opera Workshop (1 cr, max 4) F & S (Mus 280). Analysis, rehearsal, performance of operatic literature. *Prereq:* perm.

299 (s) **Directed Study** (cr arr) F & S (Mus 295). *Prereq:* perm of dept.

301 (s) **Individual Instruction** (1-3 cr, max arr) F & S (Mus 301). See MusA 101 for description and areas. *Prereq:* perm of dept.

303 Concert Choir (1 cr, max arr) F & S (Mus 303). Five rehearsals per wk. *Prereq:* 4 cr in choral groups, audition, and perm.

304 (s) **Chorus** (1 cr, max arr) F & S (Mus 304). See MusA 104 for description. *Prereq:* 4 cr in choral groups and perm.

305 (s) **Orchestra** (1 cr, max arr) F & S (Mus 305). See MusA 105 for description. *Prereq:* 4 cr in instrumental groups and perm.

306 (s) **Band** (1 cr, max arr) F & S (Mus 306). See MusA 106 for description. *Prereq:* 4 cr in instrumental groups and perm.

308 Festival Chamber Orchestra (1 cr, max arr) SS (Mus 308). See MusA 108 for description. *Prereq:* 4 cr in instrumental groups and perm.

309 Festival Choir (1 cr, max arr) SS (Mus 309). See MusA 109 for description. *Prereq:* 4 cr in choral groups and perm.

365 (s) **Chamber Ensemble** (1 cr, max arr) F & S (Mus 365). See MusA 265 for areas normally offered. *Prereq:* 2 cr in MusA 265 or upper-div standing in indiv instruction in applied performance studies.

366 Collegium Musicum (1 cr, max arr) F & S (Mus 365c). *Prereq:* perm

387-388 Conducting (2 cr) F-S (Mus 387-388). Baton techniques, score reading, problems of conductor of large choral and instrumental organizations. *Prereq:* MusC 122 or MusC 142.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 (s) **Individual Instruction** (1-3 cr, max arr) F & S (Mus 401). Primarily for graudate students not concentrating in performance studies. See MusA 101 for description and areas. *Prereq:* perm of dept.

464 (s) **(Workshop** (cr arr) SS (Mus 464) Consult the summer bulletin for the complete title, length, and credits permitted for each workshop when offered. *Prereq:* perm.

480 Opera Workshop (1-3 cr, max 8) F & S (Mus 480). See MusA 280 for description. *Prereq:* 2 cr in MusA 280 or perm.

490 Senior Recital (0 cr) F & S (Mus 499). *Prereq:* perm of dept.

498 Proseminar (2 cr) F & S (Mus 498). *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S (Mus 495. *Prereq:* perm of dept.

500 Master's Research and Thesis (cr arr) F & S (Mus 500).

501 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

502 (s) **Directed Study** (cr arr) F & S (Mus 595). *Prereq:* perm of dept.

505 (s) **Individual Instruction** (1-2 or 6 cr, max arr) F & S (Mus 501). Primarily for majors concentrating in musical performance. See MusA 101 for description and areas. *Prereq:* perm of dept.

513-514 Seminar in Conducting (1-4 cr, max 8) F-S (Mus 513e-514e). *Prereq:* perm.

565 (s) **Chamber Ensemble** (1 cr, max 3) F & S (Mus 565). See MusA 265 for areas normally offered. *Prereq:* perm.

566 Collegium Musicum (1 cr, max 3) F & S (Mus 565c). *Prereq:* perm.

590 Master's Recital (0 cr) F & S (Mus 599). Registration for recital related to degree. Credit is granted under MusA 505. *Prereq:* perm of dept.

MUSIC — THEORY AND COMPOSITION (MusC)

120 Fundamentals of Music (2 cr) F & S (Mus 120). 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) F-S (Mus 121-122). For minors and students majoring in fields other than music. Singing, playing, diction, writing of scales, intervals, chords, progressions. Not open for credit to students who have taken MusC 141-142. Max 8 cr in any combination of MusC 120, 121-122, 141-142. Five lec per wk. *Prereq:* MusC 121 for 122.

133 Theory Keyboard Laboratory (1 cr) F & S (Mus 133). Fundamentals of keyboard technique as related to theoretical concepts and skills. *Coreq:* MusC 141.

141 Musicianship and Music Literature (4 cr) F (Mus 141). Primarily for and may be limited to majors. Fundamentals of music, sight-singing; introduction to electronics used in reproducing music; analysis of selected works from each period of music history. Students who have taken MusH 100, MusC 120, 121, or similar courses, must deduct the previously-earned credits on the class permit for MusC 141 when registering. Duplicate credit is not permitted. One lec and 4 rec per wk. *Prereq:* perm of dept; *coreq:* MusC 133.

142 Theory of Music I (3 cr) S (Mus 142). Primarily for and may be limited to majors. Sight-singing, ear-training; analysis and written exercises of melody, harmony, rhythm, and form based on examples from Gregorian chant through Palestrina. One lec and four rec per wk. *Prereq:* MusC 141; *coreq:* MusH 144.

149 Rudiments of Music (3 cr, max 6) SS (Mus 149). Flexible content to meet the needs of students. *Prereq:* perm.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

241 Theory of Music II (4 cr) F (Mus 241). Primarily for majors. Emphasis on harmony and forms of the Baroque and Rococo periods. Five lec per wk. *Prereq:* MusC 142; *coreq:* MusH 243.

242 Theory of Music III (4 cr) S (Mus 242). Primarily for majors. Emphasis on harmony and forms of the Classic and Romantic periods. Five lec per wk. *Prereq:* MusC 241; *Coreq:* MusH 244.

299 (s) **Directed Study** (cr arr) F & S (Mus 295). *Prereq:* perm of dept.

323 Tonal Counterpoint (2 cr) F (Mus 323). Stylistic approach to writing counterpoint; emphasis on the *Two-Part Inventions* and *French Suites* of J. S. Bach. *Prereq:* MusC 341 or perm.

324 Modal Counterpoint (2 cr) S (Mus 324). Stylistic approach to writing two-part counterpoint; emphasis on the vocal polyphony of the 16th century. *Prereq:* MusC 341 or perm.

325-326 Composition (2 cr) F-S (Mus 325-326). Study and practice of composing with 20th-century techniques and devices. *Prereq:* MusC 242 or perm.

327 Instrumentation (2 cr) F (Mus 327). Elementary principles of transcription and orchestration; emphasis on instrument ranges, idiomatic characteristics, and score preparation. *Prereq:* MusC 242 or perm.

328 Choral Arranging (2 cr) S (Mus 328). Primarily for music education students and others generally interested in composition. Devices and techniques. *Prereq:* MusC 122 or 142, or perm.

341 Twentieth-Century Music Theory and Literature (4 cr) F (Mus 341). Techniques of composition studies through aural and visual analysis of significant works by 20th-century composers. *Prereq:* MusC 242 or perm.

345 Theory Review (3 cr) SS (Mus 345). Primarily for advanced-degree candidates. Summary of subject-matter covered in MusC 141, 142, 241, 242, 341.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

420 Advanced Tonal Counterpoint (2 cr) F or S (Mus 420). Continuation of MusC 323. Emphasis on three-and four-part counterpoint, including the fugue, beginning with the style of the 18th century. *Prereq:* MusC 323 or perm.

421 Advanced Modal Counterpoint (2 cr) F or S (Mus 421). Continuation of MusC 324. Emphasis on three-and four-part vocal polyphony of the 16th century. *Prereq:* MusC 324 or perm.

423-424 Advanced Composition (2 cr) F-S (Mus 423-424). Continuation of MusC 325-326. Increasing emphasis on varied media and larger forms, but with value being placed on student's originality. *Prereq:* MusC 326 or perm.

427 Orchestration (2 cr) F (Mus 427). Instrumental scoring; emphasis on orchestral styles of various periods and on creativity in orchestral writing. *Prereq:* MusC 327 or perm.

429 Theoretical Basis of Jazz (2 cr) F or S

(Mus 429). Harmonic, melodic, rhythmic, and stylistic analysis of principal trends. *Prereq:* perm.

461 **Band Arranging** (2-4 cr, max 4) F or S (Mus 461). Scoring for wind instruments; range, transposition, tone color. *Prereq:* MusC 242 or perm.

464 (s) **Workshop** (cr arr) SS (Mus 464). Consult the summer bulletin for the complete title, length, and credits permitted for each workshop when offered. *Prereq:* perm.

498 **Proseminar** (2 cr) F & S (Mus 498). *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S (Mus 495). *Prereq:* Perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S (Mus 500).

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

502 (s) **Directed Study** (cr arr) F & S (Mus 595). *Prereq:* perm.

513-514 **Seminar in Music Theory** (1-4 cr, max 8) F-S (Mus 513b-514b). *Prereq:* perm.

515-516 **Seminar in Composition** (1-4 cr, max 8) F-S (Mus 513c-514c). *Prereq:* perm.

521 **Musical Analysis** (3 cr, max 6) F & S (Mus 521). Analysis of selected musical compositions. *Prereq:* perm.

523-524 **Counterpoint** (2 cr) F-S (Mus 523-524). Advanced contrapuntal writing, including canon and fugue. *Prereq:* MusC 421.

527 **Advanced Orchestration** (2-4 cr, max 4) F or S (Mus 527). Orchestral scoring; recent trends. *Prereq:* MusC 427 or perm.

MUSIC — HISTORY AND LITERATURE (MusH)

100 **Music Appreciation** (3 cr) F & S (Mus 100, 125-126). Introduction to the art and nature of music; emphasis on aural skills, historical styles, musical forms, and the literature of music. Not open for credit to majors or to those who have taken MusC 141.

127 **Introduction to Symphonic Music** (2 cr) F or S (Mus 127). Primarily for students in fields other than music. Masterworks of symphonic literature.

128 **Introduction to Opera** (2 cr) F or S (Mus 128). Primarily for students in fields other than music. Masterworks of operatic literature.

129 **Introduction to Chamber Music** (2 cr) F or S (Mus 129). Primarily for students in fields other than music. Masterworks of chamber music literature.

144 **History of Music I** (2 cr) S (Mus 144). Primarily for and may be limited to majors. Medieval period through Renaissance. Two lec per wk. *Prereq:* perm of dept; *coreq:* MusC 142.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

243 **History of Music II** (2 cr) F (Mus 243). Primarily for and may be limited to majors. Baroque through Rococo period of 18th century. Three lec per wk. *Prereq:* perm of dept, MusC 142; *coreq:* MusC 241.

244 **History of Music III** (2 cr) S (Mus 244). Primarily for and may be limited to majors. Classic through Romantic period of 19th century. Three lec per wk. *Prereq:* perm of dept, MusC 241, MusH 243; *coreq:* MusC 242.

299 (s) **Directed Study** (cr arr) F & S (Mus 295. *Prereq:* perm of dept.

321-322 **Music in Western Civilization** (3 cr) F-S (Mus 321-322). Primarily for minors and students majoring in fields other than music. History 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 322 without having had 321.

343-344 **History of Music IV-V** (2 cr) F-S (Mus 343-344). Primarily for majors. History and aesthetics of the late 19th and 20th centuries. Three lec per wk. *Prereq:* MusH 243-244.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* Perm of dept.

410 **Historical Survey of Jazz** (2 cr) F or S (Mus 410). Origins, sources, evolution, styles, and performers of jazz music.

411 **Music in the Medieval World** (2 cr) F or S (Mus 411a). *Prereq:* perm.

412 **Music in the Renaissance** (2 cr) F or S (Mus 411b). *Prereq:* perm.

413 **Music in the Baroque Era** (2 cr) F or S (Mus 411c). *Prereq:* perm.

414 **Rococo and Pre-Classical Music** (2 cr) F or S (Mus 411d). *Prereq:* perm.

415 **Viennese Classical Period** (2 cr) F or S (Mus 411e). *Prereq:* perm.

416 Music in the Romantic Era (2 cr) F or S (Mus 411f). *Prereq:* perm.

417 Late Nineteenth-Century Music (2 cr) F or S (Mus 411g). *Prereq:* perm.

418 Music in the Twentieth Century (2 cr) F or S (Mus 411h). *Prereq:* perm.

431-432 Piano Literature (2 cr) F-S (Mus 431-432). Baroque through contemporary period. *Pereq:* perm.

435 Solo Vocal Literature (2 cr) F or S (Mus 435). Baroque through contemporary period. *Prereq:* perm.

464 (s) **Workshop** (cr arr) SS (Mus 464). Consult the summer bulletin for the complete title, length, and credits permitted for each workshop when offered. *Prereq:* perm.

498 Proseminar (2 cr) F & S (Mus 498). *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S (Mus 495). *Prereq:* perm of dept.

500 Master's Research and Thesis (cr arr) F & S (Mus 500).

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

502 (s) **Directed Study** (cr arr) F & S (Mus 595). *Prereq:* perm.

513-514 Seminar in Music History (1-4 cr, max 8) F-S (Mus 513a-514a). *Prereq:* perm.

MUSIC — TEACHING (MusT)

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

250 (s) **Instrumental Techniques** (1 cr, max 12) F & S (Mus 250). Group instruction. Problems in playing and teaching instruments in elementary 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 credit. *Prereq:* perm.

251 String Instrument Techniques (1 cr) F & S (Mus 251). Group instruction. Problems of playing and teaching stringed instruments in elementary and secondary schools. *Prereq:* perm.

252 Reed Instrument Techniques (1 cr) F & S (Mus 252). Group instruction. Problems of playing and teaching clarinet, oboe and bassoon in elementary and secondary schools. *Prereq:* perm.

253 Brass Instrument Techniques (1 cr) F & S (Mus 253). Group instruction. Problems of playing and teaching brass instruments in elementary and secondary schools. *Prereq:* perm.

254 Flute and Percussion Techniques (1 cr) F & S (Mus 254). Group instruction. Problems of playing and teaching flute and the percussion instruments in elementary and secondary schools. *Prereq:* perm.

299 (s) **Directed Study** (cr arr) F & S (Mus 295). *Prereq:* perm of dept.

381 Elementary School Music Methods I (2 cr) F & S (Mus 381). Curriculum, organization, and instructional materials for teaching general classroom music. *Prereq:* MusC 120 or demonstration of basic music skills.

382 Elementary School Music Methods II (1 cr) S (Mus 382). Methods and techniques for teaching general classroom music. One lec and one lab per wk. *Prereq:* MusT 381.

383 Music in the Secondary Schools (3 cr) F (Mus 383). Principles, practices, curriculum, and organization of the secondary school music program. *Prereq:* MusC 122 or 142.

385 Choral Music in the Secondary School (2) S (Mus 385). Methods, instructional materials, and techniques for teaching choral music in grades 7-12. Two lec and one lab per wk. *Prereq:* MusC 122 or 142; *prereq or coreq:* MusT 383, MusA 387, or perm.

386 Instrumental Music in the Secondary School (2 cr) S (Mus 386). Methods, instructional materials, and techniques for teaching instrumental music in grades 7-12. Two lec and one lab per wk. *Prereq:* MusC 122 or 142; *prereq or coreq:* MusT 383, MusA 387, or perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

433 Piano Pedagogy (2 cr) F or S (Mus 433). Methods and materials of teaching piano. *Prereq:* perm.

437 Vocal Pedagogy (2 cr) F or S (Mus 437). Methods and materials of teaching voice. *Prereq:* perm.

441 String Pedagogy (2 cr) F or S (Mus 441). Methods and materials of teaching stringed instruments. *Prereq:* perm.

463 (s) **Instrumental Techniques** (1-3 cr, max 6) F & S (Mus 463). Group instruction. Problems involved in the playing and teaching of instruments in elemen-

tary and secondary schools. *Prereq:* perm.

464 (s) **Workshop** (cr arr) SS (Mus 464). Consult the summer bulletin for the complete title, length, and credits permitted for each workshop when offered. *Prereq:* perm.

466 **Marching Band Techniques** (1 cr) F (Mus 466). Techniques of drilling; materials for field and street maneuvers; preparation of shows. *Prereq:* MusC 242.

467 **Literature for Instrumental Ensembles** (2 cr) F or S (Mus 467). Chamber music materials suitable for use in schools.

468 **Literature for Vocal Ensembles** (2 cr) F or S (Mus 468). Chamber music materials suitable for use in schools.

470 **School Orchestra Problems** (2 cr) F or S (Mus 470). Emphasis on assisting school band directors establish orchestra programs.

498 **Proseminar** (2 cr) F & S (Mus 498). *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S (Mus 495). *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S (Mus 500).

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

502 (s) **Directed Study** (cr arr) F & S (Mus 595). *Prereq:* perm.

513-514 **Seminar in Music Teaching** (1-4 cr, max 8) F-S (Mus 513d-514d). *Prereq:* perm.

562 **Choral Literature and Techniques** (2 cr) F or S (Mus 562). *Prereq:* MusT 385, MusA 387, or perm.

563 **Orchestral Literature and Techniques** (2 cr) F or S (Mus 563). *Prereq:* MusT 386, MusA 387, or perm.

564 **Band Literature and Techniques** (2 cr) F or S (Mus 564). *Prereq:* MusT 386, MusA 387, or perm.

581 (s) **College Music Teaching** (3 cr, max 6) F & S (Mus 581). Contemporary teaching techniques in one or more of the following fields: theory, music literature, piano, voice, woodwind instruments, stringed instruments, brass instruments, percussion, and music education. *Prereq:* perm.

583 **School Music Administration** (2 cr) F or S (Mus 583). Principles underlying sound policies in the supervision and administration of school music. *Prereq:* one yr of teaching experience or perm.

MUSIC — MISCELLANEOUS COURSES (MusX)

140 **Convocation** (0 cr) F & S (Mus 140). For majors. Attendance at designated musical events.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

283-284 **Diction for Singers** (2 cr) F-S (Mus 283-284). MusX 283: German. MusX 284: French.

299 (s) **Directed Study** (cr arr) F & S (Mus 295). *Prereq:* perm of dept.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

464 (s) **Workshop** (cr arr) SS (Mus 464). Consult the summer bulletin for the complete title, length, and credits permitted in each workshop when offered. *Prereq:* perm.

498 **Proseminar** (2 cr) F & S (Mus 498). *Prereq:* perm.

499 (s) **Directed Study** (cr arr) F & S (Mus 495. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S (Mus 500).

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

502 (s) **Directed Study** (cr arr) F & S (Mus 595. *Prereq:* perm.

511 **Introduction to Musical Scholarship** (2 cr) F (Mus 511). Orientation to graduate study; bibliography and research procedures.

MUSIC — HIGH SCHOOL SUMMER CAMP COURSES (MusZ)

011 (s) **Musicianship Laboratory** (0 cr) SS (Mus 11).

021 (s) **Band** (0 cr) SS (Mus 21).

023 (s) **Chorus** (0 cr) SS (Mus 23).

025 (s) **Orchestra** (0 cr) SS (Mus 25).

027 **Stage Band** (0 cr) SS (Mus 27).

029 **Opera Workshop** (0 cr) SS (Mus 29).

035 **Piano** (0 cr) SS (Mus 35).

036 **Organ** (0 cr) SS (Mus 36).

041 **Voice** (0 cr) SS (Mus 41).

043 **Violin** (0 cr) SS (Mus 43).

044 **Viola** (0 cr) SS (Mus 43).

045 **Cello** (0 cr) SS (Mus 45).

046 **String Bass** (0 cr) SS (Mus 45).

051 (s) **Woodwind Instruments** (0 cr) SS (Mus 51).

061 (s) **Brass Instruments** (0 cr) SS (Mus 61).

071 (s) **Percussion Instruments** (0 cr) SS (Mus 71).

Naval Science (NS)

Jack R. Voorhees, Department Head (Navy Bldg.). Professor Voorhees; Associate Professor Elliott; Assistant Professors Dowling, Haskell, Wetherell, Yanaros.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102 **Naval Ship Systems I-II** (3 cr) F-S. Naval objectives and organization for logistics, service, and support; missions of major components of the Navy and Marine Corps. Design and structure of ships, dynamics of ship stability and impaired stability, conventional and nuclear propulsion systems, basic weapons systems, auxiliary systems, and damage control. Three lec and one lab per wk; one 5-day field trip.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

201-202 **Seapower and Maritime Affairs** (1 cr) F-S. National and international naval and merchant marine affairs as reflected in current events and history; importance today; future role. One lec and one lab per wk; one 5-day field trip.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301-302 **Navigation and Operations I-II** (3 cr) F-S. NS 301: theory, principles, procedures of terrestrial and celestial navigation; time. NS 302: practice of navigation; naval operations and tactics. Three lec and two labs per wk; one 5-day field trip. *Prereq:* 301 for 302.

311 **Evolution of Warfare** (3 cr) S. Alt/yrs 1971-72. Evolution of warfare; principle of war; theory of modern strategy and tactics; land navigation; principles of leadership. Three lec and two labs per wk; one 5-day field trip.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401-402-403 **Naval Weapons I-II-III** (3 cr) F-S. NS 401: weapons systems and systems approach; linear analysis of ballistics and weapons; dynamics of basic components. NS 402: weapons control, components propulsion systems, trajectories and damage criteria; effectiveness and kill probability. NS 403: content of 402 scaled for students not having technical requirements. Three lec and 1 lab per wk; one 5-day field trip. *Prereq:* 401, calculus and physics for 402; 401 for 403.

404-405 **Naval Leadership** (1 cr) F-S. Seminar in the problems of leadership; case studies and situations encountered in group control.

406 **Naval Management and Leadership** (3 cr) S. Principles and theory of management as applied to management resources in the Navy; emphasis on leadership skills. Three lec and one lab per wk; one 3-day field trip.

412 **Amphibious Operations** (3 cr) S. Alt/yrs 1972-73. Modern doctrinal techniques and concepts of amphibious operations; USMC leadership; command and staff organization; personnel administration. Three lec and two labs per wk; one 5-day field trip.

451 **Navy Flight Indoctrination Program** (0 cr) F & S. Includes 30 hrs of ground school and approximately 36 hrs of flying time (20 hrs dual, 16 hrs solo); students receive FAA pilot's licenses upon successful completion of written examination and flight checks. Graded on the basis of P or F. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Nuclear Engineering (NE)

William P. Barnes, Chairman, Nuclear Engineering Committee (240 Gause Lab.). Professors Barnes, Furgason, Rathbone, Stewart; Associate Professor Dixon.

RELATED FIELDS: For other courses offered in the nuclear field, see Chem 416, Chem 513, Phys 465, and Phys WS 565.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

323 Introduction to Nuclear Engineering (2--3 cr) F & S. For students in all fields. Nuclear and atomic physics, elementary reactor principles, materials, chemical processes, reactor types. *Prereq:* jr standing or perm.

380 Fallout Shelter Analysis (2 cr) F or S. Primarily for practicing engineers and architects. Determination of radiological protection of buildings when subjected to nuclear fallout. *Prereq:* perm.

460 Nuclear Reactor Design (3 cr) F or S. Nuclear reactor design problems in thermodynamics, fluid flow, heat transfer, reactor theory, shielding, control, materials, safety, as they affect engineering analysis. *Prereq:* 323 or perm.

461 Nuclear Reactor Laboratory (1-2 cr) F or S. Use of subcritical reactor for experiments on diffusion length, Fermi age, thermal utilization, buckling; use of alpha, beta, gamma and neutron detectors and counters. One or two 3-hr labs per wk. *Coreq:* 323 or perm.

472 Reactor Control Systems (3 cr) F or S. Alt/yrs 1971-72. Reactor kinetics, model development, reactivity feedback effects, control techniques, simulation studies. *Prereq:* 323, EE 300 or equiv.

473 Nuclear Instrumentation (3 cr) F or S. Alt/yrs 1971-72. Radiation detection instruments and associated circuitry as applied to nuclear engineering. *Prereq:* EE 314 or equiv.

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

502 (s) **Directed Study** (cr arr) F & S. (566). *Prereq:* perm.

R650 Topics in Advanced Nuclear Engineering (3 cr) F or S. *Prereq:* perm.

554 Nuclear Reactor Theory (3 cr) F or S. Interaction, diffusion and absorption of neutrons, Fermi theory, reactor kinetics, group diffusion methods, as applied to bare and relected reactors. *Prereq:* perm.

WS556 Experimental Reactor Techniques (2 cr) S. WSU ChE 516. Special experiments using the subcritical reactor, WSU TRIGA critical reactor, probes, detectors, counters. *Prereq:* perm.

ID561 Advanced Nuclear Engineering (3 cr) F or S. Fuel preparation and configuration, materials, fluid flow, heat removal, product separation, reactor theory, control, waste treatment, safety, economics. *Prereq:* perm.

R565 Reactor Engineering (3 cr) F & S. Radiation shielding, materials, instrumentation and controls, separation of stable isotopes, chemical separation and processing, special techniques. *Prereq:* Phys R566 or perm.

Office Administration (OAd)

Robert M. Kessel, Department Chairman (230 Admin. Bldg.). Professor Kessel; Assistant Professor Dacres; Instructor Marlatt.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101-102-103 Typewriting I-II-III (2 cr) F & S. OAd 101: development of skill sufficient for personal use. OAd 102: speed and control to occupational competence levels. OAd 103: occupational competence, including correspondence, manuscripts, legal documents, and other special problems.

115-116 Shorthand I-II (4 cr) F-s. OAd 115: theory of Gregg shorthand simplified. OAd 116: dictation and introduction to transcription.

185 Office Machines (2 cr) F & S. Operation of commonly used office adding-calculating machines.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

271-272 Shorthand III-IV (3 cr) F-S. OAd 271: speed development. OAd 272: transcription skill to occupational competency levels. *Prereq:* perm.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

395-396 Secretarial Procedures (3 cr) F & S. OAd 395: filing systems; operation of transcribing and duplicating mach-

ines; secretarial duties, responsibilities and procedures. OAd 396; office experience with related seminars; secretarial administration; advanced dictation and transcription. *Prereq:* perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

Philosophy (Phil)

Francis Seaman, Chairman (305-C, Admin. Bldg.). Professor Seaman; Assistant Professors Holmes, Roberts.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Introduction to Philosophy: Types of Philosophy (3 cr) F & S. Chief types of philosophic thought through a study of their more distinguished representatives: Plato, Lucretius, DesCartes, Berkeley, and James. Not open to students who have taken 103. (SEAMAN)

103 Introduction to Philosophy: Principles and Problems (3 cr) F & S. Nature of philosophy through a consideration of certain key philosophic questions reflecting student interest, explored by methods appropriate to their solution. Not open to students who have taken 101. (ROBERTS)

111 Introduction to the Philosophy of Religion (2-3 cr) F & S. Main points of view. (SEAMAN)

121 Philosophy of the Arts (3 cr) F & S. The chief conceptions of the nature of the arts and their role in society.

201 Ethics (3 cr) F & S. Development of ethical thought. *Prereq:* 101 or 103 or soph standing. May be taken by correspondence. (ROBERTS, SEAMAN)

211 Logic (3 cr) F. Methods of reasoning, function of logic in the methods of science. *Prereq:* 101 or 103 or soph standing. (HOLMES)

305 Philosophy of Religion (3 cr) F. Current dialogue between the religious and the secular. (SEAMAN)

309 History of Ancient Philosophy (3 cr) F. Philosophic and political thought from the early Greeks through the Middle Ages. May be taken by correspondence. (ROBERTS)

310 History of Modern Philosophy (3 cr) S. Philosophic and political thought from DesCartes through Kant. May be taken by correspondence. (HOLMES)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

403 Advanced Logic (3 cr) S (303). Ideas and techniques of contemporary logic.

411 Philosophy of the Social Sciences (3 cr) F or S. Concepts and methods of the social sciences.

412 Philosophy of Science (3 cr) F. Basic concepts of modern science. (SEAMAN)

414 Ethical Theory (3 cr) F or S (314). Main points of view. (ROBERTS)

415-416 Contemporary Philosophy (3 cr) F-S. (315-316). Movements of the 20th century.

421 Existentialism (3 cr) F. Readings in such writers as Kierkegaard, Nietzsche, Camus, and Sartre.

422 Philosophical Ideas in Recent Literature (3 cr) S (322). Ethical, social, political trends; Nietzsche, Stein, Sartre, Maugham, Joyce, Hardy. (SEAMAN)

425 American Philosophy (3 cr) F or S. Philosophical ideas of the U.S.; emphasis on period since 1875.

432 India's Philosophies (3 cr) S. Survey of the Indian philosophical tradition, including Upanishads, Bhagavad Gita, Buddhism, Nyaya-Vaiseshika, Samkhya-Yoga, and Vedanta.

442 Philosophy of Mind (3 cr) S (332). Recent discussion of the concept of mind, action, emotion, private language; identity theory. (HOLMES)

499 (s) **Directed Study** (cr arr) F & S. (491-492). *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S. (507-508). Normally offered in history of philosophy, value theory, contemporary philosophy, philosophy of science, metaphysics, and medieval philosophy. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (509). Normally offered in history of philosophy, value theory, contemporary philosophy, philosophy of science, and metaphysics. *Prereq:* perm.

Photography (Photo)

Gordon Law, Head, Department of Radio-Television (5 Radio-TV Center). Associate Professor Bell *(Chairman)*.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

281-282 Introduction to Photography (3 cr) F-S. Techniques, development and present-day uses of photography.

285 Photography Workshop (2 cr) SS. Better use of the camera, composition and photographic processing.

481-482 Advanced Photography (3 cr) F-S. Applications and advanced techniques. *Prereq:* 281-282.

483-484 Miniature Photography (3 cr) F-S. History, present day uses and techniques of the miniature camera; practical application of color. *Prereq:* 281-282.

Physical Education (PE)

Leon G. Green, Head, Department of Health, Physical Education, and Recreation (203 Men's Gym). Professors Betts *(Chairman for Women, WHEB 102)*, Green *(Chairman for Men)*, Kirkland *(Recreation)*; Associate Professors Parberry *(Intramurals)*; Peterson, Porter *(Research)*, Young; Assistant Professors Hall, Lathen, MacFarlane, Marten *(Health Education)*, Thompson *(Service Program)*, Walker *(Dance)*, Wolf; Instructors Gorton, Parker.

ACTIVITY COURSES — PE 105, 106, 107, 108, and 135 may be repeated for credit if the student engages in a different activity. See general academic regulation "J-3-b" in Part 3 of this catalog for requirements in physical education.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

REQUIRED ACTIVITY COURSES

105 Dance (1 cr, max arr) F & S. Modern and folk dancing; rhythmic expression. 2 hrs per wk. Graded on the basis of P or F.

106 (s) **Individual and Dual Sports** (1 cr, max arr) F & S. Equitation, bowling, racket sports, fencing, golf, gymnastics, and conditioning. 2 hrs per wk. Graded on the basis of P or F.

107 (s) **Team Sports** (1 cr, max arr) F & S. Field sports, volleyball, basketball, softball. 2 hrs per wk. Graded on the basis of P of F.

108 Swimming (1 cr, max arr) F & S. All levels of proficiency, including senior life-saving and diving. 2 hrs per wk. Graded on the basis of P or F.

135 Restricted Physical Education (1 cr, max arr) F & S. Replaces 105-108 when the University physician certifies that the student needs specific activities. 2 hrs per wk. Graded on the basis of P or F.

FUNDAMENTAL SKILL COURSES

111 Fundamentals of Movement (2 cr) F or S. Physical principles, kinesthetic patterns, and rhythmic structure involved in fundamental movement activities. One lec and 2 labs per wk.

112 Dance Techniques (1 cr) F or S. Modern dance, composition, and rhythmic analysis. 2 hrs per wk.

113 Problems in Dance Composition (1 cr, max 4) F & S. Various styles, choreography, movement quality, music, costuming, and staging. 2 hrs per wk. *Prereq:* 105 or perm.

115 Team Sports Backgrounds (2 cr) F & S. Field sports, softball, volleyball, and basketball. 4 hrs per wk.

116-117 Individual Sports Backgrounds I-II (2 cr) F & S. PE 116: racket games and golf. PE 117: bowling, archery, fencing, track, and field. 4 hrs per wk.

126 Weight Training and Calisthenics (1 cr) F & S. 2 lec-labs per wk.

138 Swimming (1 cr) F & S. Advanced swimming and diving. 2 hrs per wk. *Prereq:* proficiency or perm.

139 Gymnastics (2 cr) F or S. Teaching techniques and skills of gymnastics. One lec and one 2-hr lab per wk.

141 Wrestling (1 cr) F & S. 2 lec-labs per wk.

142 Tumbling, Pyramids, and Stunts (2 cr) S. Emphasis on skill development and progressions from elementary through high school. One lec and 2 labs per wk.

226 Officiating Women's Sports (1 cr) F or S. Volleyball and basketball. *Prereq:* knowledge and skill in these sports.

228 Square and Social Dance. (1 cr) F & S. Social, round, and square dance. 2 hrs per wk.

237 Archery and Bowling (1 cr) F & S. 2 hrs per wk. *Prereq:* perm.

240 Tennis and Badminton (1 cr) F & S. 2 hrs per wk. *Prereq:* perm.

243 Highly Organized Games (2 cr) S. Techniques and skills of games of high organization and lead up activities. One lec and 2 labs per wk.

244 Life Saving (1 cr) F & S. Students passing the Red Cross tests receive advanced swimmer and life saving certificates. One lec and 2 labs per wk. *Prereq:* 138 or perm.

PROFESSIONAL COURSES

110 Health Issues (2 cr) F & S. Project approach to the health problems of the college student and the community.

145 Introduction to Physical Education (2 cr) F. Survey, philosophy, aims, and objectives.

C147 History of Physical Education (2 cr) C. Backgrounds and development; trends in various countries; modern trends in the U.S.

150 General Hygiene (3 cr) F & S. Maintaining health; individual and public health.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

220 Rhythms for Children (2 cr) F. Alt/yrs 1971-72. Movement; structured rhythmic movement form; creative rhythmic movement; teaching rhythms and creative movement. One lec and 2 hrs lab per wk.

252 Elementary School Physical Education (2 cr) F & S. Organization and teaching methods. 3 hrs per wk. May be taken by correspondence.

254 Camp Leadership (2-3 cr, max 3) S. Objectives, program and philosophy of private, organizational and school camp programs. One 3-4 day field trip.

261 Recreational Arts and Crafts (2 cr) F & S. Handicrafts suitable for playground. *Prereq:* perm.

264 Recreational Music (1 cr) S. Musical program in recreational and community centers.

266 Aquatic Instructor's Course (2 cr) F & S. Methods. Students passing Red Cross tests will receive instructor's certificates. 3 hrs per wk. *Prereq:* senior life-saving and 18 yrs old.

271 Interpretation of Physical Education, Health, and Recreation (3 cr) F. Importance of these related fields to general education from the Greeks to the present day.

288 First Aid (2 cr) F & S. Emergency care of injuries resulting from accidents or illness; advanced Red Cross first aid card given.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

316 Elementary School Health Materials (2 cr) F or S. For elementary classroom teachers.

317 (s) **Recreational Skills** (1 cr, max 3) SS. Areas normally offered are fly fishing, marksmanship, and scuba. For elementary and secondary school teachers and recreation leaders, with basic skills and methods of teaching. One lec and 3 hrs lab per wk per cr. Students may enroll for more than one of the areas. *Prereq:* perm.

320 Labanotation (1 cr) F. Alt/yrs 1972-73. Introduction to methods of notating movement; history of notation; fundamentals of labanotation; drafting a score; reconstruction of movement score notated in labanotation; teaching methods. 2 hrs lab per wk.

321 Theory and Techniques of Teaching Dance (2 cr) F or S. Teaching modern dance, dance composition, and folk dance. 3 hrs per wk.

322 Teaching Individual Sports (2 cr) F or S. Methods for majors and minors.

323 **Teaching Team Sports** (2 cr) F or S. Methods for majors and minors.

325 **Dance Production** (2 cr) S. Alt/yrs 1972-73. Organization and production of dance concerts; publicity; set design; costumes; lighting; make-up; accompaniment; house and stage management. One lec and 2 hrs lab per wk.

329 **Leadership in Recreation** (2 cr) F. Organization, planning and conduct of school and community, social, recreation, and extra-curricular events.

341 **Basketball Coaching Methods** (2 cr) F.

342 **Baseball Coaching Methods** (2 cr) F.

343 **Track Coaching Methods** (2 cr) S.

344 **Football Coaching Methods** (2 cr) S.

348 **Athletic Injuries** (2 cr) F. Care, prevention and treatment, training methods.

C&X371 **Principles of Physical Education** (3 cr) C & X. Interpretation of aims and objectives.

387 **Intramural and Athletic Officiating** (3 cr) F or S. Intramural programs in schools; rules and methods of officiating athletic contests; includes 30 hrs of officiating in the intramural department.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

418 **Physiology of Exercise** (3 cr) F & S. Effects of physical activity on the circulatory, respiratory, and other systems. Two lec and one 2 hr lab per wk. *Prereq:* Zool 118.

419 **Human Kinesiology** (3 cr) F & S. The body movement; anatomical and mechanical analysis. *Prereq:* Zool 127.

424 **Adaptive and Corrective Physical Education** (2 cr) F or S. Fundamentals of body mechanics; emphasis on development of adaptive and corrective activites.

427 **Methods and Materials in Physical Education** (2 cr) F or S. For majors. Practices, problems, program planning, and teaching methods.

430 **Advanced Techniques and Skills** (2 cr) SS. Designed to offer opportunity for increasing knowledge, skill, and teaching techniques in specific motor activities.

450 **Coaching Clinic** (1-3 cr, max 3) SS. Alternate summers. Procedures and techniques in coaching high school and college sports. Consult the summer school bulletin for information.

467 **Physical Education and Recreation for the Handicapped** (3 cr) F or S. Adaption of these programs to the mentally and physically handicapped child.

481 **Tests and Measurements** (3 cr) F & S. Testing in physical education. *Prereq:* Psych 100 or 205 or 206.

486 **Program Planning for Recreation Centers** (3 cr) F or S. Organization, management, programs, and public relations involved in the operation of recreation centers, settlement-housing, military posts, and college student unions.

494 **Community Recreation** (3 cr) F or S. Planning and development of community recreation programs; leadership, facilities, finances, services, and public relations.

495 **Internship in Recreation** (9 cr) F & S. Supervised field work in recreation centers, playgrounds, camps, churches, and other social agencies; placement in a full time professional recreation position for a minimum of 9 wks. Graded on the basis of P or F.

496 **Organization and Administration** (3 cr) S. Health and physical education programs in the public schools.

497 **Athletic Problems** (3 cr) F & S. Scheduling, facilities, equipment, maintenance, budgeting, , and public relations in the school is stressed.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S. Current trends in physical education, health, and recreation. *Prereq:* perm of dept.

502 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

503 (s) **Workshop** (cr arr) SS (594). Consult the time schedule for complete title and the number of credits of each workshop when offered. *Prereq:* perm.

506 **Foundations of Motor Skills** (3 cr) F. Application of psychological, kinesiological, and mechanical principles leading to an understanding of motor activity.

518 **Advanced Principles in Physiological Assessments of Human Performance** (3 cr) F or S. Principles and methods

essential to the experimental approach to physiological performance problems. Two lec and one lab per wk.

544 Program Development (3 cr) S. Physiological, sociological, and psychological growth characteristics of the student; principles, problems, and procedures.

581 Research in Physical Activity, Theory, and Design (1-6 cr, max 6) F & S. Principles of scientific inquiry and their application to the study of physical activity; individual research projects.

591 Social Basis of the Profession (3 cr) F & S. Democratic philosophy for physical education, health education, and recreation; principles and objectives as related to the development of the individual and man's cultural heritage.

592 The School Health Program (3 cr) F or S. For teachers and administrators. Well-balanced health program; organization and administration; health services, healthful school living, and health instruction.

596 Advanced Organization and Administration (3 cr) S. Policies and problems; classification of children, the time schedule, teaching staff, training, load, office organization and administration, state laws, and finances.

Physics (Phys)

Lawrence H. Johnston, Acting Department Chairman (13 Physical Science Bldg.). Professors Browne, Johnston, Peck, Sieckmann; Associate Professors Davis, Ingerson, Kearney; Assistant Professors Deutchman, Patsakos, Willmes.

Students with superior preparation may challenge any undergraduate course in this field. Consult the chairman of the department for information.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 Fundamentals of Physical Science (4 cr) F & S. Primarily for students in nonscientific fields. General, non-mathematical study of chemistry and physics and their role in contemporary society; quantitative aspects of science presented through demonstrations, experiments, and problem-solving; basic physical laws and concepts, and their applications. Three lec and one 2-hr lab per wk.

105 Physics and Society (3 cr) F & S. Nonmathematical, penatrating investigation of the interaction of science and society; emphasis on current topics, including radioactivity; pollution, transportation, communications, weapons, power generation, and ecology; exploration of the ethical, technological, and economic impact of science. Recommended companion course: 106.

106 Physics and Society Laboratory (1 cr) F & S. Relevant lab work to accompany 105. One 3-hr lab per wk. *Coreq:* 105.

111 Elementary Physics (3-4 cr) F & S. Survey of classical and modern physics for non-science majors. Not open to students who have taken 113 or 220. Three lec and one 2-hr lab per wk.

113-114 General Physics (3-4 cr) F-S. Phys 113: mechanics, sound, and heat. Phys 114: magnetism, electricity, light, and modern physics. 113 is not open to students who have taken 111 or 220; 114 is not open to students who have taken 221. Three lec, one rec, and one 2-hr lab per wk. *Prereq:* Math 140-141.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

R205-R206-R207 Principles of Physics (3 cr) F or S. Phys 205: mechanics. Phys 206: electricity and magnetism. Phys 207: heat, sound, and optics. *Prereq:* Math R181 and perm.

R208-R209 Introduction to Radiological Health Physics (3 cr) F-S. Sources, properties, detection, and measurement of radiation; interaction of radiation with matter and with biological systems; shielding, contamination; waste disposal; control of radiation hazards. *Prereq:* 113-114.

220 Engineering Physics I-Mechanics (3 cr) F & S (210). Basics of mechanics; statics of rigid bodies; one and two dimensional linear and rotational motion; simple harmonic motion; Newton's law of gravitation; problems on static forces and torques, and the motion of general bodies under the laws of simple mechanics. Two lec, one 2-hr lab, and one quiz section per wk. *Prereq or coreq:* Math 180.

221 Engineering Physics II—Electricity and Magnetism (3 cr) F & S (211). Coulomb's, Ampere's, Faraday's, and Gauss's laws of electricity and magnetism; simple electrical circuits; elementary electronics; Maxwell's equations; laws of electromagnetic radiation; laws of magnetic materials (ferromagnetism, paramagnetism, etc.). Two lec, one 2-hr lab, and one quiz section per wk. *Prereq:* 220, or ES 211 or equiv; *prereq or coreq:* Math 190.

222 Engineering Physics III—Wave Motion (3 cr) F & S (212). Nature and properties of wave motion with applications to sound, optics, and elementary atomic physics; laws of reflection and refraction with treatment of geometrical and physical optics, lasers; interference and diffraction, construction of telescopes and microscopes, color, polarization, optical activity, electro-optical effects, elementary acoustics, propagation of sound waves, interference and diffraction of sound, and kinetic theory. Two lec, one 2-hr lab, and one quiz section per wk. *Prereq:* 221; *prereq or coreq:* Math 200.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

N301 Physics for High School Teachers (3 cr) SS. Mechanics, heat, sound, light, electricity, and magnetism, modern physics; examples from PSSC materials. Four lec and one 3-hr lab per wk.

N302 Seminar in Experimental Physics (1 cr) SS. Discussion of high school physics lab experiences, including experiments based on N301 and with PSSC physics.

N303 Experimental Physics (4 cr) SS. Introductory lab work designed to emphasize the experimental approach in the teaching of physics; majority of experiments employ apparatus available in high-school labs; special emphasis on design of simple experiments to test physical hypotheses.

304 General Astronomy (3 cr) F or S. Descriptive and physical astronomy.

N306 Astronomy (3 cr) SS. Descriptive and physical astronomy; includes experience with the University's sixteen-inch reflector.

307 Sound Waves and Acoustics (3 cr) F or S. Sources of sound, propagation of sound waves through elastic media, and architectural acoustics. *Prereq:* 114 or 222, Math 200, or perm.

308 Acoustics Laboratory (1 cr) F. Basic experiments in physical, physiological, musical, and architectural acoustics. One 3-hr lab per wk. *Coreq:* 307.

R309 Fundamentals of Radiation Biophysics (3 cr) F or S. Nuclear physics, interaction of radiation with matter, detection of radiation, radiation dose limits, theory of ionization, dosimetry, dosimetry techniques, biological and medical effects of radiation, radiation shielding, radiation protection standards, counting statistics, related topics. *Prereq:* perm.

N310 Analytical Mechanics (3 cr) SS (N520). Dynamics and kinematics of particles; statics, dynamics and kinematics of rigid bodies.

R311 Health Physics in Industrial Safety (3 cr) F or S. Basic concepts of physics, biology, and radiation control as related to personnel protection from ionizing radiation.

314 Experimental Astronomy (1 cr) F or S. Experimental techniques. One 3-hr lab per wk. *Prereq or coreq:* 304.

R317 Electronics (3 cr) F or S. Electron ballistics, vacuum and gaseous tubes. *Prereq:* perm.

321-322 Analytical Mechanics (3 cr) F-S. Statics; kinematics and dynamics of a particle; system of particles; rigid continuous media; introduction to Lagrange's equations. *Prereq:* 114 or 222, Math 200.

N340 Electricity and Magnetism (3 cr) SS (N540). Electrostatics, magnetostatics, electromagnetism; dc and ac circuits; fundamental electrical measurements. Four lec and one 3-hr lab per wk.

341-342 Electricity and Magnetism (3 cr; 3-4 cr) F-S. Theory using vector methods; electrostatics, magnetostatics, electromagnetism, analysis of dc and ac circuits; Maxwell's equations; and radiation and propagation of electromagnetic waves; use, calibration, care of precision electrical engineering instruments. Three lec per wk and one 3-hr lab per wk second semester. *Prereq:* 114 or 222, Math 200.

351 Elementary Quantum Mechanics (3 cr) F or S. Methods; one dimensional harmonic oscillator, free particle, rectangular potential barrier, hydrogen atom, perturbation theory. *Prereq:* 322, 360.

360 Introduction to Modern Physics—Engineering Physics IV (3-4 cr) F or S. Fundamentals of the qualitative and quantitative description of atomic and nuclear physics; quantum theory, radioactivity,

relativity, fusion and fission, spectra, x-rays, neutron physics, elementary particles, solid state. Three lec and one 3-hr lab per wk. *Prereq:* 114 or 222, Math 200.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

N403 Concepts in Physics I (4 cr) SS. Review and extension of basic physical concepts in the areas of mechanics, heat, and sound. Six hrs lec and four hrs lab per wk.

N404 Concepts in Physics II (4 cr) SS. Review and extension of basic physical concepts in the areas of magnetism, electricity, and light. Six hrs lec and four hrs lab per wk.

411-412 Physical Instrumentation I-II (3 cr; 2 cr) F-S. Methods and instruments used in experimental physics; electronic techniques; design problems in electronic measurement of physical quantities encountered in research. Two lec (one lec second semester) and one 3-hr lab per wk. *Prereq:* 222 and Math 200 for 411; 411 for 412.

413 Advanced Physics Laboratory (2 cr) F or S. Two 3-hr labs per wk. *Prereq or coreq:* 412.

431-432 Thermodynamics and Kinetic Theory (3 cr) F-S. Laws of thermodynamics, kinetic theory and their application to topics in physics; material chosen to prepare students for advanced study in statistical physics. *Prereq or coreq:* 321 or perm.

443 Optics (4 cr) F or S. Geometrical optics and photometry, interference, diffraction, double refraction, polarization; applications to modern optical instruments, experiments in optics of lenses, photometry, lasers, interferometry, polarized light. Three lec and one 3-hr lab per wk. *Prereq:* 114 or 222, Math 200.

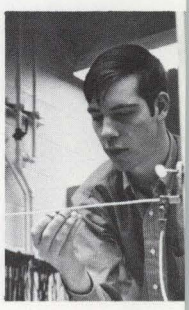
444 Quantum Optics (3 cr) S. Theory and applications of lasers, optical spectrum analyzers, electro-optic modulators, detectors. Modern optical concepts and techniques; spatial and temporal coherence, holography, spatial filtering and data processing, light-scattering spectroscopy. One lec and two 2-hr labs per wk. *Prereq:* 221-222, or 114 and Math 180.

N460 Atomic and Nuclear Physics (3 cr) SS (N560). Concepts; methods of determining fundamental constants of atomic physics, structure of the nucleus, processes of transformation, nuclear reactions, particle accelerators, fission and nuclear reactors.

N461 Structure of Matter (3 cr) SS (N509). See Chem N461 for description.

N462 Electronics (3 cr) SS. Emphasis on radio and other communication devices; to make the high-school teacher conversant with this area of modern physics and help him answer students' questions.

463-R464 Introduction to Solid State (3 cr) F or S. Physics of bulk matter; structure and types of solids, elastic and thermal properties of solids, electrical and magnetic properties of solids, theory of conduction in metals and semiconductors. *Prereq:* 322 or perm.



465 Introduction to Nuclear Physics (3-4 cr) F or S. Elementary particles, structure of the nucleus, processes of transformation, interaction of nuclear radiation with matter, nuclear reactions, particle accelerators, fission, nuclear reactors, cosmic rays. Three lec and one 3-hr lab per wk. *Prereq:* 360.

N467 Elementary Particles (3 cr) SS. Recent theoretical work and experimental methods.

R471 Introduction to Theoretical Physics (3 cr) F or S. Vector and tensor methods in conjunction with Newtonian and Lagrangian methods in solving problems of mechanical systems. *Prereq:* general physics, differential equations and perm.

N480 Professional Problems (1-6 cr, max 6) SS (N580). Individual study in any field of physics. *Prereq:* perm.

491 Proseminar (1 cr) F. Recent developments. *Prereq:* sr standing in physics.

498 Research (1-6 cr, max 6) F & S (499). Undergraduate thesis. *Prereq:* jr standing in physics and perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

R506 Radiological Shielding and Design Concepts (3 cr) F & S. Radiation shielding and engineering design principles of materials, structures, and facilities. *Prereq:* basic differential and integral calculus, and perm.

507-508 Modern Techniques of Science Instruction in Physics (2 cr) F-S. Also offered as Ed 587-588. Emphasis on extent and nature of subject-matter material for secondary schools and colleges.

511-512 Techniques of Experimental Physics (3 cr) F & S. Development of experimental techniques and skills in active research fields; foundation for any field of physics. Nine hrs of lab per wk. *Prereq:* 412 and perm.

521 Advanced Mechanics (3 cr) F or S. Classical mechanics; Lagrange's and Hamilton's principle, 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 Statistical Mechanics (3 cr) F or S. Classical statistical mechanics of Maxwell, Boltzmann and Gibbs; Maxwell-Boltzmann distribution law; Boltzmann's H-theorem, quantum statistical mechanics. Bose-Enstein and Fermi-Dirac statistics; applications to problems in thermodynamics. *Prereq:* 431, 551, or perm.

541-542 Electromagnetic Theory (3 cr) F-S. Including 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 Mechanics (3 cr) F-S; F or S. Phys 551-552: physical basis; Schroedinger wave formulation, Heisenberg matrix formulation, transformation theory, approximation methods, radiation theory, theory of scattering; some applications to atomic systems. Phys 553: relativistic quantum mechanics, field theory and quantum electrodynamics; applications to theory of radiation, pair production, scattering. *Prereq:* 322, 360 for 551-552; 552 for 553.

ID561 Atomic Spectra and Atomic Structure (3 cr) F or S. Experimental methods for the production and investigation of spectra; interpretation of spectral series, stationary states, spinning electrons and fine line structure, vector models; Zeeman and Stark effects, intensity of spectral lines. *Prereq:* 351 or 551.

ID562 Molecular Spectra (3 cr) S. Molecular spectra and their relations to molecular structure; emphasis on diatomic and triatomic molecules. *Prereq:* 561 or perm.

563-564 Solid State Physics (3 cr) F-S. Modern theory of metals, semiconductors and insulators; crystal structure, thermal, electrical and magnetic properties of solids, band theory of solids, crystal imperfections, semi-conductors, superconductivity, and photoconductivity. *Prereq:* 342; *prereq or coreq:* 551.

WS565-R566 Nuclear Physics (3 cr) F or S. WSU 565. 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) F-S. Methods and problems. *Prereq:* 322 or perm.

581 (s) **Topics in Advanced Physics** (1-9 cr, max 9) F or S. Topics of interest to students and staff. Three lec per wk.

R585-R586 Fundamental Reactor Kinetics (3 cr) F-S. Complex plane transformations, transfer functions for various systems; derivation of reactor kinetics equations; analysis of nuclear feedback systems; statistical control theory as applied to nuclear systems. *Prereq:* perm.

R587 Reactor Physics for Engineers (3 cr) F or S. Review of nuclear physics, nuclear fission, chain reaction, and reactor theory. *Prereq:* Math 310 or equiv.

R588 Experimental Nuclear Physics (3 cr) F or S. Experimental methods of interpretation of experimental measurements to determine the static and dynamic properties of nuclei. *Prereq:* 360 and perm.

R589 Advanced Reactor Theory (3 cr) F or S. Integrodifferential Boltzmann equation; integral Boltzmann equation; Pn approximation; double Pn approximation; diffusion theory as obtained from transport theory; microscopic hetrogeneous reactor theory, small source theory; reactor kinetics; perturbation theory; burnable poisons, control rod theory; *Prereq:* perm.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Physiology

Professors Christian, L.W. Roberts, Wiese; Associate Professors J. Bailey, S. Beck, Ferguson, D. Huber, G. Porter, H.W. Smith; Assistant Professors Boe, Bull, O'Keeffe, Rees, Ridley, Sasser.

Teaching and research programs in physiology are available in several colleges and departments of the University. Master's and doctoral programs with concentrations in animal and plant physiology are available through the Department of Animal Industries, the Department of Biological Sciences, and the Department of Plant 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 course sections.

ANIMAL PHYSIOLOGY

Animal Industries (AnI)

451 **Endocrine Physiology** (3 cr) F.

452 **Physiology of Reproduction and Lactation** (4 cr) S.

511 **Animal Nutrition** (3 cr) F.

512 **Energy Metabolism** (3 cr) S.

513 **Microbiology and Physiology of Ruminant Nutrition** (3 cr) F.

514 **Physiology and Non-Ruminant Nutrition** (3 cr) F.

551 **Advanced Endocrine Physiology** (3 cr) F.

552 **Experimental Reproductive Physiology** (3 cr) S.

Bacteriology (Bact)

503 **Physiology of Bacteria** (2-4 cr) F.

Entomology (Ent)

484 **Insect Anatomy and Physiology** (4 cr) S.

582 **Insect Physiology** (4 cr) S.

Physical Education (PE)

418 **Physiology of Exercise** (3 cr) F & S.

518 **Advanced Principles of Physiological Assessments of Human Performance** (3 cr) F or S.

Psychology (Psych)

341 **Physiological Psychology** (3 cr) F.

Veterinary Science (VS)

371 **Anatomy and Physiology** (4 cr) F.

Zoology (Zool)

118 **Introductory Human Physiology** (3 cr) S.

315 **General Physiology** (4 cr) F.

412 **Comparative Vertebrate Reproduction** (3 cr) S.

416 **Mammalian Physiology** (4 cr) S.

417 **Endocrine Physiology** (3 cr) F.

513 **Comparative Animal Physiology** (3 cr) F.

PLANT PHYSIOLOGY

Botany (Bot)

311 **Plant Physiology** (3 cr) F.

413 **Mineral Nutrition** (3 cr) F.

512 **Plant Growth Substances** (3 cr) S.

Agricultural Biochemistry (AgBiC)

461 **Plant Biochemistry** (3 cr) F.

462 **Plant Biochemistry Laboratory** (1 cr) F.

Plant Sciences (PlSc)

202 **Plant Propagation** (3 cr) S.

312 **Agriclimatology** (3 cr) S.

401 **Crop Physiology** (3 cr) F.

514 **Physiology of Disease** (4 cr) S.

516 **Environmental Plant Physiology** (3 cr) S.

517 **Tree Physiology** (3 cr) F.

586 **Properties and Function of Herbicides** (2 cr) S.

Soils (Soils)

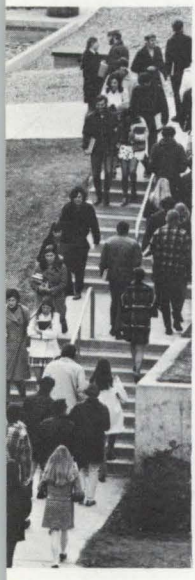
446 **Soil Fertility** (3 cr) S.

448 **Mineral Nutrition** (3 cr) S.

515 **Chemistry of Plant Nutrients** (3 cr) F.

546 **Advanced Soil Fertility** (3 cr) S.

PLANT PHYSIOLOGY—*See Physiology*



Plant Sciences (PlSc)

A. M. Finley, Department Head (28 Ag. Science Bldg.). Professors Erickson, Fenwick, Finley, Guthrie, Helton, Seely, Watson; Associate Professors Huber, Slinkard; Assistant Professors Boe, Murray, Ridley.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

102 **Plant Sciences in Agriculture** (3 cr) S. Importance and distribution of economic plants; relationship of plants to man's welfare; basic plant growth processes, plant relationships and development. (MURRAY)

201 **Turfgrass Management** (2 cr) F. Adaptation, characteristics and utilization of turf grasses; management principles and physiological bases for the establishment and maintenance of turf. (SLINKARD)

202 **Plant Propagation** (3 cr) S. Propagation of plants of economic importance; physiology of sexual and asexual reproduction. Two lec and one 2-hr lab per wk. *Prereq:* Biol 203 or perm. (BOE)

303 **Plant Pathology** (4 cr) F. Plant diseases due to bacteria, fungi, viruses and nematodes; causes, symptoms, effects, dissemination and control. Two lec and two 2-hr labs per wk. *Prereq:* Biol 203. (FENWICK)

305 **Biology of Field Crops** (3 cr) F. Alt/yrs 1972-73. Classification, identification and adaptation of field crops; factors influencing yield, composition, quality and utilization. One 1-day field trip. (ERICKSON)

308 **Forage Crops** (2 cr) S. Production, management and utilization of annual and perennial forage plants for green manure, hay and pasture. (SLINKARD)

312 **Agriclimatology** (3 cr) S. Relationship of organisms to their environment, significance of environment to agricultural production. *Prereq:* Biol 203 or perm. (FINLEY)

314 **General Genetics** (3 cr) F. Also offered as Biol 351 and Genet 314. See Biol 351 for description. (SLINKARD)

317 **Woody Plant Materials** (2 cr) F. Ornamental woody plants for landscape use. Two 2-hr labs per wk; one 1-day field trip. (BOE)

338 **Weed Control** (3 cr) S. Biological, chemical and cultural control of weeds. Two lec and one 2-hr lab per wk. (SEELY)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 **Crop Physiology** (3 cr) F. Principles of crop management and their relationship to physiology of vegetative and reproductive growth of crop plants. *Prereq:* Bot 311 recommended. (RIDLEY)

402 **Undergraduate Research** (1-2 cr, max 4) F & S (400). *Prereq:* perm.

405 **Biology of Weeds** (3 cr) F. Alt/yrs 1971-72. Classification, identification, and distribution of weeds; morphology, anatomy, physiology and ecology. One lec and two 2-hr labs per wk; one 1-day field trip. (ERICKSON)

438 **Pesticides in the Environment** (2 cr) S. See Ent 438 for description.

446 **Plant Breeding** (3 cr) S. Alt/yrs 1971-72. Also offered as Genet 446. Application of genetic principles to the improvement of crop plants. Two lec and one 2-hr lab per wk. *Prereq:* 314. (SLINKARD)

461 **Pomology** (3 cr) F. Alt/yrs 1972-73. Production and management of tree fruit; physiology of the tree and stored fruit. Three lec per wk; one 2-day field trip. *Prereq:* perm. (BOE)

463 **Olericulture** (3 cr) F. Alt/yrs 1971-72. Production and management of vegetable crops, including potatoes, sugar beets and vegetable seed crops. Three lec per wk; one 2-day field trip. *Prereq:* Biol 203 or perm. (BOE)

465 **Crop Production and Management** (3 cr) F. Integration of factors relating to efficient production of farm crops and crop management practices. (FINLEY)

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (510). *Prereq:* perm.

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

508 **Ecology of Soil-Borne Plant Pathogenic Organisms** (3 cr) S. Effects of climate, crop management and microbial associations on the prevalence and pathogenic activity of soil-borne plant pathogenic organisms. (WATSON)

512 **Plant Virology** (3 cr) S. Nature and properties of plant viruses as related to pathogenic activity. One lec and two 2-hr labs per wk. (GUTHRIE)

514 **Physiology of Disease** (4 cr) S. Physiological aspects of parasitism, pathogenesis and host-parasite interactions. Three lec and one 2-hr lab per wk. (HUBER)

516 **Environmental Plant Physiology** (3 cr) S. Advanced study in crop physiology. *Prereq:* perm. (RIDLEY)

517 **Tree Physiology** (3 cr) F. Alt/yrs 1971-72. The physiology of woody perennial plants of economic importance. *Prereq:* Bot 311 or perm. (BOE)

519 **Genetics Literature** (2 cr) F. Also offered as Genet 519. *Prereq:* 314. (SLINKARD)

520 **Advanced Crop Production** (1-3 cr, max 6) F & S. Specialized training in selected phases of crop production and management.

530 (s) **Research Methods** (2 cr, max 4) F & S. Normally offered in plant pathology, horticulture, plant breeding, and weed control. Individual and group training and experience.

532 **Advanced Weed Studies** (1-3 cr, max 6) F & S. Specialized training in selected phases.

534 **Cytogenetics** (3 cr) S. Alt/yrs 1972-73. Also offered as Genet 534. Chromosomal behavior, polyploidy, chromosomal aberrations and mutagens in relation to genetics. Two lec and one 3-hr lab per wk. *Prereq:* 314. (SLINKARD)

536 **Properties and Functions of Herbicides** (2 cr) S. Physical and chemical properties and mode of action of herbicides, and their effect on plant structure, internal mechanisms, processes and sites of action. *Prereq:* 338 or perm. (SEELY)

538 **Pesticide Toxicology** (3 cr) S. See Ent 538 for description.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Political Science (PolSc)

Robert E. Hosack, Department Chairman (207 Ad. Bldg.). Professors Borning, Duncombe, Hosack, Martin; Assistant Professors Blank, Rouyer; Instructor Higginbottom.

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. Ordinarily PolSc 105 or six credits in other lower-division courses in political science are required for registration in upper-division courses; exceptions by permission.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 American Government (3 cr) F & S. Political processes and major political institutions in American national government, including basic constitutional concepts; includes basic models for analysis of democracy and policy-making. May be taken by correspondence.

C102 American Government (3 cr) C. Policy issues and functions.

105 Elements of Political Science (3 cr) F or S. Primarily for majors. Principles and nature of the discipline, comparative processes, ideas, problems in government and politics in the modern world.

152 Politics and Pollution (1 cr) F or S. The political, governmental and administrative aspects of overcoming air, water, and other types of pollution of our environment. May be taken by correspondence.

153 Politics and Peace (1 cr) F or S. Political and governmental aspects of American foreign policy and the search for peaceful solutions to world issues.

154 Politics and the Economy (1 cr) F or S. Political aspects of governmental policies in the fields of business, labor, and agriculture.

155 Politics and Contemporary Issues (1 cr) F or S. Consult the departmental office for course topic currently offered.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

237 International Politics (3 cr) F. Such basic principles as nationalism, militarism, internationalism, and problems that result therefrom; introduction to other courses in the area.

275 American State Government (3 cr) F. State politics, parties, interest groups, constitutions, legislative, executive and judicial branches, federal-state relations; key issues of state politics-taxation, education, water, and welfare. May be taken by correspondence.

276 American Local Government (3 cr) S. Organization and problems of cities, counties, school districts and other local units, community power, key functions and issues in local government-planning, urban renewal, race relations, poverty, and transportation. May be taken by correspondence.

285 Systems of Parliamentary Democracy (3 cr) F or S. Systems of parliamentary democracy; responsible ministry, executive-legislative dynamics, recent political development. May be taken by correspondence.

286 Authoritarian Political Systems (3 cr) F or S. Autocratic systems such as the USSR and Communist China, origins, role of party, functions of government, and status of the individual.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

341 World Politics (3 cr) SS. Recent developments in international politics, chief elements in current foreign policies of major world powers.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

425 Western Political Thought (3 cr) F or S. Evolution of key concepts and themes from ancient Greeks to modern political philosophers.

426 Recent Political Thought (3 cr) F or S. Modern political ideas and their role in domestic and world politics, major contemporary ideologies and currents of thought.

428 American Political Thought (3 cr) F or S. Political philosophy in America in pertinent writing and movements throughout our history, ideas of dissent, prevalent concepts of various eras.

430 Political Participant Internship (1-9 cr, max 9) F or S. Directed student internship as a participant-observer in the political process, work during a political campaign with a political candidate, party or interest group. *Prereq:* perm.

431 Political Parties (3 cr) F or S. Public opinion and the political process, party machines, spoils system, nominating methods, conduct of elections.

432 The Legislative Process (3 cr) F or S. Theories of representation, recruitment of legislators, legislative organization and behavior, structures of power, relationship to the executive, lobbying, and role in the political system.

433 Public Opinion and Propaganda (3 cr) F or S. Survey of political behavior as revealed by attitude and opinion research and as an analysis of the techniques and functions of political propaganda.

434 Interest Groups (3 cr) F or S. Interest groups, their organizational patterns,

pressure-group activities in their relation to our political system and to the public interest.

435 Political Research Methods and Approaches (3 cr) F or S. Science in political science; computer analysis in political research; behavioral approaches to political phenomena—systems analysis, decision-making, communications, survey research, content analysis, roll-call analysis, aggregate date analysis, social background analysis.

436 Political Participation (1 cr) F or S. Planning a political career, understanding the political environment of your constituency, identification of issues, campaign organization and techniques, responsibilities and political opportunities in elective office. *Prereq:* 12 cr in political science and perm.

438 Conduct of American Foreign Policy (3 cr) S. Processes by which our foreign policy is made and executed, roles of pressure groups, Congress, the President, Department of State and its Foreign Service, their effect upon specific policies.

440 Principles of International Law and Organization (3 cr) S. Chief agencies of international cooperation, past and present, sources and uses of international law; evolution of general principles of international law; development of the UN.

443 Contemporary Far Eastern Politics (3 cr) F or S. Problems of the area, their sources and proposed solutions, as presented by Orientals; conflict of interest of Powers in Eastern Asia; situation of China and Japan.

446 The Chinese Empire (3 cr) F or S. Comparative study of the oldest continuous political entity existing today; aspects of traditional Chinese culture whose political connotations presumably contributed to this continuity.

451 Presidential and Administrative Decision-Making (3 cr) F. Administrative institutions and relationships in the executive branch of government; dynamics of decision-making at the White House and departmental levels; role played by staff agencies in national government.

452 Administrative Law and Regulation (3 cr) F or S. Rule-making, adjudication and other modes of regulation as practiced by administrative agencies; judicial review and Congressional oversight of administrative acts.

453 Public Management Techniques (3 cr) S. Staff techniques important to persons entering many types of administrative work in government and other agencies, personnel, management, surveys, data processing, budgeting, purchasing, public relations.

454 Administrative Organization and Behavior (3 cr) S. Characteristics of individual decision-making, behavior of small work groups and organizational theory, leadership in administration.

457 Staff Management Techniques in State Government (4 cr) F or S. Primarily for students planning to enter state government administration. Personnel, budgeting, management surveys, data processing, purchasing, public relations.

458 Management Internship (1-9 cr, max 9) F or S. Directed internship in an agency of federal, state or local government or special projects involving federal, state or local government; supervised work in management practices; students are placed in positions commensurate with their abilities and interests. One credit will be given for each week of internship work. *Prereq:* perm.

459 Legislative Internship (1-9 cr, max 9) F or S. Directed internship in a national, state, municipal or corporate legislative body. Supervised work experience. Report required. *Prereq:* perm.

467 Constitutional Law (3 cr) F. The Supreme Court as a constitutional policy-maker; constitutional principles concerning judicial review, federalism, implied powers, due process, equal protection, civil rights, and civil liberties.

469 The Judicial Process (3 cr) F or S. Judicial and legal processes in American government and politics; court structure, procedures and the administration of justice; judicial behavior and decision-making; selection of judges; socio-political theories of law.

483-484 Developing States (3 cr) F-S. Comparative analysis of political institutions and processes in selected countries in the developing areas of the world.

485 African Political Systems (3 cr) F or S. Origins, structure, and working of selected African political systems; problems of development and stability.

493-494 Seminar in Urban Studies (2 cr) F-S. See Inter 493-494 for description.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Rasearch and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S. Consult the time schedule for seminars currently offered and the credit permitted in each. One 2-day field trip is authorized for the seminar in public administration. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S. Consult the time schedule for areas currently offered. *Prereq:* perm.

528 **Seminar in the Theory of Democracy** (3 cr) F or S. Intensive analysis of the liberal-democratic theoretical model, critical examination of relevant political literature.

531 **Seminar in American Political Institutions** (3 cr) F or S. History of social and economic bases in the development of American political institutions and government.

555 **Seminar in Comparative Public Administration** (3 cr) F or S. Administrative process in foreign nations and its relation to governmental, economic, social institutions, administrative aspects of U.S. governmental relations with other nations, art of overseasmanship.

580 **Seminar in Administration and Contemporary Issues** (3 cr) F or S. See Inter 580 for description.

590 **Scope and Methods of Political Science** (3 cr) F or S. Relation of political science to other disciplines, systems of analysis, scientific methods and traditional approaches, research strategies appropriate to particular political problems.

591 **American Government and Politics** (3 cr) F or S. Review of significant issues and methodological problems in the field.

592 **Comparative Government** (3 cr) F or S. Review of significant issues and methodological problems in the field.

593 **International Relations** (3 cr) F or S. Review of significant issues and methodological problems in the field.

594 **Political Thought** (3 cr) F or S. Review of significant issues and methodological problems in the field.

595 **Public Administration** (3 cr) F or S. Review of significant issues and methodological problems in the field.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

POULTRY SCIENCE—*See Animal Industries*

Psychology (Psych)

Victor E. Montgomery, Department Head (210 Education Bldg.). Professors Crandall, Montgomery; Associate Professors Ching, Kjos *(Counselor Education)*; Assistant Professors Bergquist, Hipple *(Vocational Counselor Education)*, Rees, Sprecher *(Trade-Technical Education).*

PREREQUISITE: Psych 100 is prerequisite to all other courses in this field. Unless a prerequisite is specifically stated, the prerequisite to all graduate courses is a major in psychology or permission of the department.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

100 **Introduction to Psychology** (3 cr) F & S. Introduction to psychological topics, including sensation and perception, learning and thinking, motivation, personality and adjustment, social processes, psychological testing; emphasis on fundamental principles. May be taken by correspondence.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

201-202 **General Experimental Psychology** (4 cr) F & S. Primarily for majors and

minors. Psych 201: statistics, sensation, perception, and conditioning. Psych 202: physiological, learning, social psychology, developmental, and abnormal. Lab exercises and reports accompany each topic. Two lec and two 3-hr labs per wk.

205-206 Developmental Psychology (3 cr) F & S. Psych 205: conception to preadolescence; genetics, anatomy, physiology, biological changes during development, learning, socialization, cognition, and personality. Psych 206: adolescence to maturity; psychosocial growth, biological changes, values, attitudes, independence, and emotional maturity. May be taken by correspondence.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

301 The Exceptional Individual (3 cr) F. Individuals who deviate from average mentally, physically, socially, and emotionally to such an extent that special treatment and services are needed; identification, diagnosis, treatment, training, and employment. *Prereq:* 205 or 206.

305 Comparative Psychology (3 cr) F. Infrahuman behavior, particularly vertebrates; experimental studies in motivation, learning, innate behavior, retention, and problem solving. *Prereq:* Biol 202 or equiv.

311 Abnormal Psychology (3 cr) F & S. Nature, causes, treatment, and prevention of patterns of emotional disturbances and personality disorganization, including neuroses and psychoses. One or two 1-day field trips.

316 Industrial Psychology (3 cr) S. Contributions of experimental, social, counseling, and clinical psychology to the every day problems of organizations; emphasis on industrial organizations.

317 Introduction to Statistics for the Behavioral Sciences (3 cr) F. Also offered as InfSc 317. Descriptive statistics; elementary correlation analysis; sampling theory and statistical inference. *Prereq:* Math 111-112.

320 Social Psychology (3 cr) S. The individual as he influences and is influenced by society; attitudes, prejudice, propaganda, cultural difference, personality, leadership, and crowd behavior.

322 Vocational Guidance (3 cr) S. Also offered as VocEd 322. Identification of individuals who can profit from vocational-technical education programs, information for realistic vocational and educational planning, adjustments in vocational education programs, occupational placement and adjustment, and follow-up procedures.

341 Physiological Psychology (3 cr) F. Physiological bases of animal and normal human behavior. *Prereq:* Biol 201-202.

344 Sensation and Perception (3 cr) S. Fundamental processes and variables involved in sensory experiences of animals and man. *Prereq:* 201-202.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

402 Theory of Psychological Measurement (3 cr) S. Measurement, techniques, and problems of response measurement, reliability and validity, theoretical and practical limits of behavior measurement. *Prereq:* 317.

418 Intermediate Statistics for the Behavioral Sciences (3 cr) S. Also offered as InfSc 418. Theory and application of statistical methods in behavioral science; correlation, statistical inference, analysis of variance and covariance. *Prereq:* 317.

420 Principles and Practices in Guidance (3 cr) F & S. Nature of the guidance process and the services provided in pupil personnel work. May be taken by correspondence. *Prereq:* 6 cr in psych or ed.

421 Educational Psychology (3 cr) F & S. Application of psychological principles to the classroom situation. May be taken by correspondence. *Prereq:* 205 or 206.

455 Psychology of Motivation (3 cr) F. Biological and social variables influencing the activation, direction, and self-maintenance of behavior. *Prereq:* 6 cr in psych.

460 Occupational-Educational Information (3 cr) F. Sources, distribution, and utilization of vocational and educational information. Two 1-day field trips.

461 Psychology of Personality (3 cr) F. Theories of personality, basic concepts, techniques of measurement, and experimental methods; the normal personality. *Prereq:* one adv course in psych.

481 Mental Deficiency (3 cr) F. History, nature, diagnosis, etiologies, clinical types, and management of mentally deficient individuals. Primarily for students planning professional careers in this or closely related area. One 1-day

field trip. *Prereq:* 205 or 206, and 301, 311, and perm.

490 Psychology of Learning (3 cr) S. Experimental literature on the nature and conditions of behavior change. *Prereq:* sr standing and 12 cr in psych.

498 History and Systems of Psychology (3 cr) S. Origin and development of psychology within philosophy and science; development and elaboration of modern systems. *Prereq:* sr standing and 15 cr in psych and social science, or perm of dept.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (555). *Prereq:* perm.

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

503 Advanced Experimental Psychology Laboratory (3 cr, max arr) F or S. Advanced laboratory procedures for manipulation and control of variables involved in research. Max three cr in any one content area.

504 Theory and Research in Physiological Psychology (3 cr) F or S. Critical analysis of classical and contemporary literature.

505 Theory and Research in Learning (3 cr) F or S. Critical analysis of classical and contemporary literature.

506 Theory and Research in Perception and Cognition (3 cr) F or S. Critical analysis of classical and contemporary literature.

507 Theory and Research in Personality (3 cr) F or S. Critical analysis of classical and contemporary literature.

508 Theory and Research in Motivation (3 cr) F or S. Critical analysis of classical and contemporary literature.

509 Theory and Research in Developmental Psychology (3 cr) F or S. Critical analysis of classical and contemporary literature.

510 Theory and Research in Social Psychology (3 cr) F or S. Critical analysis of classical and contemporary literature.

511 Psychological Evaluation I (3 cr) F or S. Assessment of the general intelligence capacities of the individual; relevant history, concepts, and supervised practice in test administration; interpretation and reports.

513 Mental Health (3 cr) F or S. Critical and historical review of current concepts of positive mental health; applications to treatment, prevention, and growth toward individual maturity. *Prereq:* 205, 311, 461, and perm.

515-516 Quantitive Methods and Experimental Design (3 cr) F-S (501-502). Advanced quantitative methods and factorial experimental design methods analyzed in the context of contemporary psychological research. *Prereq:* 418 or equiv.

520 Group Standardized Tests (3 cr) F. Theories and group techniques of appraising individual characteristics, performance, and behavior; lab experience in the evaluation of group tests and the collection and interpretation of data. Two lec and one 3-hr lab per wk. *Prereq:* 317.

523 Guidance Laboratory (2 cr) S. Supervised school experience in cumulative records and reports, information, placement, follow-up. *Prereq:* 420 and 460.

525 Techniques of Counseling (3 cr) F. Case studies, role playing, and tape and video recordings.

527 Psychometric Assessments (3 cr) S. Developmental assessment techniques utilized by counselors in various settings. *Prereq:* 520 and 525.

529 Practicum in Counseling (3 cr) F & S. To develop skill in individual counseling. *Prereq:* 525 and perm.

530 Introduction to Clinical Psychology (3 cr) F or S. Practical, theoretical, research, and professional aspects of clinical psychology; breadth of the area; social-professional issues.

540 Psychological Evaluation II (3 cr) F or S. Projective techniques with supervised practice in administration, scoring, and interpretation of the three most frequently used devices.

560 Theories of Vocational Choice (3 cr) S. Psychological, sociological and economic foundation of vocational choice and adjustment. Two 1-day field trips. *Prereq:* 460.

561 Organization and Administration of Guidance Services (3 cr) S. Local, state, and federal levels; primarily for those who will be responsible for the guidance services in public school systems.

564 Group Counseling (3 cr) F. Principles

and techniques of counseling with groups; dilectic and lab learning experiences. *Prereq:* 529 or perm.

565 Theories of Counseling (3 cr) F. Consideration and evaluation of contemporary theories. *Prereq:* 525.

567 Advanced Practicum (3 cr) S. Individual and group counseling procedures; field experiences in a variety of settings; minimum of 30 hrs of supervised counseling experience. *Prereq:* 501 (group dynamics), 529.

569 Seminar in Guidance (1 cr) F. Analysis and critique of individual guidance counseling experiences.

570 (s) **Internship** (2-9 cr, max 12) F or S. Normally offered in counselor education, college student personnel services, school pupil personnel services, and school psychology. For students desiring additional training and supervised experience in guidance and counseling, and for students who intend to qualify as school psychologists. Not open to first-year graduate students. *Prereq:* perm of dept.

571 Psychological Evaluation IV (2-6 cr, max 6) F or S. Clinical assessment of the individual; integration of the various measures of behavior, quantitative and qualitative, to provide sensitive, relevant and insightful descriptions of behavior. *Prereq:* 511, 540, 551, and perm of dept.

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Radio-Television (Rad-TV)

Gordon Law, Department Head (5 Radio-TV Center). Professor Law; Associate Professor Haggart *(Chairman)*; Assistant Professor Byrd; Instructors Ayer, Bondurant.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

141 Introduction to Radio-Television Broadcasting (3 cr) F & S. History, organization, operation and regulation of radio and television stations and networks. (BYRD)

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

253 Recording and Broadcasting Techniques (3 cr) F & S. Procedures for audio and video; uses and limitations of broadcasting equipment. (BONDURANT)

282 Introduction to Television Production (3 cr) F & S. Basic production tools and theories; studio control equipment, sets, lighting, composition and sound; students assist in KUID-TV productions. Two lec and one lab per wk. *Prereq:* 253 or perm. (BONDURANT)

285 Announcing I (2 cr) F. Voice control, pronunciation, enunciation, articulation, timing, phrasing and board operation; work required on KUID-FM and or KUID-TV. Two lec and one lab per wk. (AYER)

287 Station Writing (2 cr) F. Writing for radio and television; script format, terminology and commercial writing; all types of writing assignments encountered on small market radio and television stations. (HAGGART)

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

311 Advanced Broadcasting Techniques and FCC Regulations (2 cr) F & S. Operation and maintenance of broadcasting equipment; preparation for FCC license. *Prereq:* 253 or perm. (AYER)

322 Educational Uses of Radio and Television (2 cr) S. Broadcast media in educational, instructional, informational and public relations applications. Open to non-majors. (BYRD)

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

488 Cinematography for Television (3 cr) F & S. Basics of 16mm motion picture production and theory as they apply to the television industry; documentary and news film techniques. Three lec and one lab per wk. *Prereq:* 282, Photo 281, or perm. (HAGGART)

491 Announcing II (2 cr) S. Various types of announcing duties and execution of each; work required on KUID-FM TV. Two lec and one lab per wk. *Prereq:* 285 or perm. (AYER)

492 Advanced Television Production (3 cr)

S. Planning and execution of complete television programs; work required on KUID-TV. Two lec and one lab per wk. *Prereq:* 282 or perm. (LAW)

493 **Commercial Broadcasting** (3 cr) F. Place of sales in broadcasting; duties of station reps, ad agencies; station coverage, rate cards, contracts, sales promotion and ratings. *Prereq:* 141, 282, or perm. (LAW)

494 **Radio-Television News** (3 cr) F. Techniques of editing, writing, and producing news programs; use of wire copy; news policies, codes and legal applications. *Prereq:* 287 or perm. (AYER)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

RECREATION—*See Physical Education and Forestry*

Religious Studies (RelSt)

Stanley W. Thomas, Coordinator (203-A, Admin. Bldg.). Affiliate Professor Thomas; Lecturers Gleed, Schumacher, Weston.

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 parts of the University, they secure the University's approval of courses and instructors.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

104 **Biblical History and Thought** (3 cr) F or S. Comprehensive study of the salvation history, persons, and theology of the two Testaments to give a total view of the biblical books.

106 **Essentials of Christianity** (2 cr) F or S. Principles of the Christian religion from its foundation until modern times.

131 **Religion and the Meaning of Existence** (3 cr) F or S. Introduction to religion in today's world; emphasis upon its social and psychological implications for the individual.

133 **Religion and Marriage** (2 cr) F or S. Religious viewpoints as they relate to dating, courtship, and family life.

186 **Dynamics of Religious Leadership** (2 cr) F or S. Charismatic authority, bureaucratic structure and processes of routinization and their effect upon religious expression.

190 (s) **Great Religious Thinkers** (1 cr, max 4) F & S. 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 semester.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

273 **World Religions** (2 cr) F & S. Main beliefs of Islam, Hinduism, Buddhism, Confucianism, Judaism, and Christianity within the context of the internationalization of culture.

282 **The New Morality** (2 cr) F or S. Development of religious ethics in the West and its bearing upon contemporary expressions.

284 **Religion and World Problems** (1 cr) F or S. Viewpoints concerning such issues as war and peace, population and environment, identity and alienation considered in international perspective.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

321 **Contemporary Theological Thought** (2 cr) F & S. Recent developments in Christian theology, writings of such men as Teilhard de Chardin, Dietrich Bonhoeffer, and Paul Tillich.

322 **Religious Institutions** (2 cr) F or S. 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) F or S. Analysis of the societal manifestation of religion, sociological significance of schisms, "sect" and "church" in sociological theory. *Prereq:* 131 or perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

490 **Technology and Human Values** (2-3 cr) F or S. See Inter 490 for description.

499 (s) **Directed Study** (cr arr) F & S (430). *Prereq:* perm of coord.

ROMANCE LANGUAGES—*See Foreign Languages*

RUSSIAN—*See Foreign Languages*

SCHOOL ADMINISTRATION—*See Education*

SECONDARY EDUCATION—*See Education*

SECRETARIAL STUDIES—*See Office Administration*

Social Science (SocSc)

Robert E. Hosack, Coordinator (207 Ad. Bldg.). Professors Caldwell, Fletcher, Hosack, Montgomery, Rolland; Associate Professor Sprague.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

101 **Man in a Nuclear Age** (2 cr) F or S. See Inter 101 for description.

103 **Introduction to Black Culture** (2 cr) F or S. Black contributions, particularly to American society; emphasis on the concept of identity and the problems of alienation treated in both historic and contemporary perspective. See related courses in anthropology, English, history, and music.

185 **Study Tour Abroad** (1-9 cr, max 9) SS. Participation in a tour conducted by a member of the University of Idaho faculty providing direct observation of the political, economic, and social life of one or more foreign countries. Students pay own expense. Max one cr per wk. *Prereq:* grad from high school.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

385 **Study Tour Abroad** (1-9 cr, max 9) SS. See 185 for basic description. *Prereq:* jr standing or perm.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of coord.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of coord.

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

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

Sociology (Soc)

Roderick Sprague, Head, Department of Sociology/Anthropology (4 Faculty Office Bldg.). Associate Professor Chapin *(Social Work)*; Assistant Professors Carlson, Johnson, Wenner.

PREREQUISITE FOR UPPER-DIVISION COURSES: Ordinarily three credits in lower-division courses in sociology are required for registration in upper-division courses in this field; exceptions by permission.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

110 **Introduction to Sociology** (3 cr) F & S. Basic concepts, principles, processes, including socialization, primary groups, race relations, the family, religion, and population. May be taken by correspondence.

130 **Social Problems** (3 cr) F & S. Concepts relating technological and institutional

changes to current social problems. May be taken by correspondence.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

220 **Marriage** (3 cr) F or S. Preparation for marriage, mate selection, courtship, sexual, economic, and personal marital adjustment, marital problems, child birth, and child rearing.

240 **Introduction to Social Welfare** (3 cr) F. Analysis of the forces which led to the development of current social welfare fields. *Prereq:* 110 or 130.

241 **Organization of Social Services** (3 cr) S. Contemporary public social welfare policy and programs. *Prereq:* 240.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

310 **Rural Sociology** (3 cr) F or S. Rural-urban relationships, role of agricultural class in industrial society, number, origin, distribution, composition of rural population. Two 1-day field trips. May be taken by correspondence.

311 **Urban Sociology** (3 cr) F or S. Population, spatial, social patterns characteristic of modern urban communities. One 1-day field trip.

312 **Sociology of Organizations** (3 cr) F or S. Analysis of positions, roles, norms, authority structures in traditional, formal, complex, and bureaucratic organizations.

320 **The Family** (3 cr) F or S. Historical and economic background; the family today from a cross-cultural perspective; conditions affecting the family in America. May be taken by correspondence.

321 **The Community** (3 cr) F or S. Origins, types, structural and functional patterns, and processes of the community. Two 1-day field trips. May be taken by correspondence.

322 **Racial and Ethnic Relations** (3 cr) F or S. See Anthr 322 for description.

330 **Sociology of Youth** (3 cr) F or S. Assessment of contemporary youth, their aspirations, outlook, influence, distinctive social patterns, and deviant behavior. May be taken by correspondence.

331 **Criminology** (3 cr) F or S. Behavior systems and deviant patterns; modern penal institutions and methods; crime prevention. One 1-day field trip.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

410 **Introduction to Social Research** (3 cr) F or S. Principal methods of data collection, analysis, and interpretation.

411 **Contemporary Sociological Theory** (3 cr) F or S. Schools and trends of sociological thought.

420 **Social Stratification** (3 cr) F or S. Comparative study of differential status patterns, including origins, forms, functions, and trends.

421 **Population and Human Ecology** (3 cr) F or S. Theories and methods of population analysis, migration patterns, and the implications of overpopulation for world resources.

430 **Social Control** (3 cr) F or S. The means by which social groups exact conformity, including force, persuasion, rewards, and deprivation; an examination of the role of the communications media.

431 **Problems of Aging People** (3 cr) F or S. Social, psychological, and biological problems relating to the role of older people. Twenty hours of field work.

440 **Methods of Social Work** (3 cr) F & S. Methods, principles, values, occupational roles in social work practice and interviewing. *Prereq:* 240.

441-442 **Field Experience** (3-4 cr, max 8) F & S. Seminar, supervised study, observation, and experience in selected social agencies. One day weekly or 6-wk block placements. *Prereq or coreq:* 440.

493-494 **Seminar in Urban Studies** (2 cr) F-S. See Inter 493-494 for description.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S. Subjects normally offered are: methods of sociological research, contemporary social problems, and social theory. *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S. Subjects normally offered are: sociological theory, demography and human ecology, and race relations. *Prereq:* perm.

Soils (Soils)

Alvin C. Wiese, Head, Department of Agricultural Biochemistry and Soils (112 Ag. Science Bldg.). Professor Lewis; Associate Professors Fosberg, Harder, Jones; Assistant Professor Naylor.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

205 General Soils (3 cr) F & S. Physical, biological, and chemical properties of soils and their relationships to plant growth. *Prereq:* Chem 111 or equiv. *coreq for agriculture students:* 206.

206 General Soils Laboratory (1 cr) F & S. One 2-hr lab per wk. *Coreq:* 205.

344 Soil Conservation and Management (3 cr) S. Alt/yrs 1972-73. Relationships of soil type, slope, climate, and erosion to land capability; conservation and management practices for erosion control. Two 1-day field trips. *Prereq:* 205. (HARDER)

401 Undergraduate Research (1-2 cr, max 4) F & S (400). Individual study in animal or plant biochemistry. *Prereq:* sr standing and perm.

408 Forest Soils (2 cr) S. See For 408 for description.

412 Soil Chemistry (4 cr) S. Alt/yrs 1972-73. Chemical properties of soil and their measurement, including ion exchange, fixation reactions, soil testing techniques, and total elements present. Two lec and two 3-hr labs per wk. *Prereq:* 205, Chem 253. (NAYLOR)

413 Water Quality (2 cr) F. Alt/yrs 1971-72. Water chemistry and interaction between water and soils. *Prereq:* Chem 253 or equiv, or perm. (LEWIS)

417 Soil Clay Mineralogy (2 cr) F. Alt/yrs 1972-73. Structure, chemical and physical properties of clay minerals found in soils. *Prereq:* Chem 112 or 114. (LEWIS)

425 Soil Microbiology (3 cr) F. See Bact 425 for description.

435 Soil Physics (3 cr) F. Physical properties of soils and their relationships to moisture, aeration, and temperature; cultural practices and erosion problems. Two lec and one 3-hr lab per wk. *Prereq:* 205. (HARDER)

446 Soil Fertility (3 cr) S. Alt/yrs 1971-72. Principles of soil fertility maintenance; availability of plant nutrients and their relationship to plant growth and fertilization practices. *Prereq:* 205. (JONES)

448 Mineral Nutrition (3 cr) S. Alt/yrs 1971-72. See Bot 413 for description.

454 Soil Development and Classification (3 cr) S. Factors influencing soil development and their relationship to soil properties; methods for soil profile descriptions, classification and interpretations. Two lec and one 2-hr lab per wk; two 1-day or one 2-day field trips. *Prereq:* 205. (FOSBERG)

490 Proseminar (1 cr, max 2) F & S. *Prereq:* jr standing and perm.

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

501 (s) **Seminar** (cr arr) F & S (590). *Prereq:* perm.

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

505 Advanced Laboratory Techniques (4 cr) F. See AgBiC 505 for description.

507 Advanced Forest Soils (3 cr) F. See For 521 for description.

ID511 Soil Organic Matter (2 cr) F. Alt/yrs 1972-73. Formation, chemical properties and significance of the soil organic fraction. *Prereq:* 412, Bact 425 and a course in organic chemistry, or perm. (NAYLOR)

512 Advanced Soil Chemistry (3 cr) S. Alt/yrs 1971-72. Theory of chemical properties of soil colloidal systems. *Prereq:* 412 and course in physical chemistry, or perm. (NAYLOR)

515 Chemistry of Plant Nutrients (3 cr) F. Alt/yrs 1971-72. Chemistry of plant nutrients in the soil and relationship to uptake and use by plants. *Prereq:* 205, Chem 253, or perm. (LEWIS)

WS536 Advanced Soil Physics (3 cr) S. Alt/yrs 1971-72. WSU 511. Physics and physical chemistry of the soil-water system. Two lec and one 3-hr lab per wk. *Prereq:* course in soil physics and physical chemistry or perm. (GARDNER)

546 **Advanced Soil Fertility** (3 cr) S. Alt/yrs 1972-73. Methods used in the evaluation of soil fertility, experimental techniques and interpretations of results. *Prereq:* 446 or 515, or perm (JONES)

555 **Advanced Soil Genesis and Classification** (3 cr) F. Alt/yrs 1971-72. Genesis, classification and interpretation of soils; field investigations emphasizing the interrelationships to development of soil properties, their classification and interpretation. Two lec and one 3-hr lab per wk; one 3-day or three 1-day field trips. *Prereq:* 454 or perm. (FOSBERG)

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

SPANISH—*See Foreign Languages*

Special Education (SpEd)

Laurance B. Carlson, Department Head (112 Education Bldg.). Associate Professors Carlson, Potter; Assistant Professor Nickelsburg.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

190 **Special Education Laboratory** (1 cr, max 6) F & S. (Ed 190). Supervised observation and participation with exceptional children. Graded on the basis of P or F.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

375 **Education of Exceptional Children** (3 cr) F & S (Ed 375). Methods, materials, curriculum and procedures for facilitating growth of crippled children, those defective in speech, hearing or vision, the maladjusted or mentally handicapped. May be taken by correspondence.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 (s) **Workshop** (cr arr) SS (Ed 401). Consult the summer bulletin and time schedule for the complete title and description of each workshop when offered, as well as the credit permitted in each. *Prereq:* perm of dept.

450 **Children with Behavioral Disorders** (3 cr) F & S (Ed 450). Contrasting normal and deviant personality development; classical and contemporary description of deviant behavior relationship of community and family interaction to deviant behavior; functional analysis of behavior.

451 **Education of Emotionally Disturbed Children** (3 cr) F & S (Ed 451). Models of organizing and teaching the emotionally disturbed; techniques of classroom management; techniques of behavior modification.

476 **Education of Severely Mentally Retarded Children** (3 cr) F & S (Ed 476). Organization of special classes in public school programs for severely mentally retarded children; development of teaching materials and techniques; emphasis on community organization and parent education. *Prereq:* 375 or Psych 301.

477-478 **Teaching the Mentally Retarded I-II** (3 cr) F & S (Ed 477, 478). SpEd 477: problems and curricular approaches. SpEd 478: techniques and instructional materials. *Prereq for 477:* 375 or perm; *prereq for 478:* 477 or perm.

480 **Student Teaching** (9 cr) F & S (Ed 480). Directed student teaching in classes for exceptional children. Submit application to director of student teaching by December 1 of school year prior to enrolling. Graded on the basis of P or F. *Prereq:* perm of dept.

487 **Speech Correction Methods** (3 cr) SS (Ed 487). Functional and organic speech disorders; functions and activities of classroom teachers in aiding children with speech handicaps.

497 **Teaching Gifted Children** (3 cr) F & S (Ed 497). Identification and teaching of gifted children in elementary schools.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (Ed 540). *Prereq:* perm.

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

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

504 (s) **Practicum** (cr arr) F & S (Ed 524). *Prereq:* perm.

505 (s) **Internship** (3-9 cr, max 9) F & S (Ed 537). Supervised field experience in an appropriate public or private agency, for doctoral students nearing the completion of their program. Graded on the basis of P or F. *Prereq:* perm.

522 **Diagnostic and Remedial Instruction** (3 cr) F & S (Ed 522). Methods and materials; problems of accelerations as well as retardation. *Prereq:* Ed 430 or teaching experience.

541 **Mental Retardation Trends and Issues** (3 cr) F & S (Ed 541). Current research; innovative approaches to solutions; development of comprehensive community programs.

542 **Guidance of Exceptional Children** (3 cr) F & S (Ed 542). Personal and social problems of exceptional children and their families; techniques of working with them; working with parent groups.

545 **Community Service Seminar** (3 cr) F & S (Ed 545). Analysis of needed ancillary services; planning for and implementing community services; role of the educator on the interdisciplinary team.

546 **Assessment of Learning Disorders** (3 cr) F & S (Ed 546). Evaluation of techniques of assessment of handicapped children.

548 **Special Education Curriculum** (3 cr) F & S (Ed 548). Problems relating to the programming of handicapped; different curriculum approaches; practice in developing curricula for handicapped children.

549 **Communication Disorders of Handicapped Children** (3 cr) F & S (Ed 549). Analysis of language disorders in handicapped children; identification of sensory deficits; techniques for correction; theory of communication and its relationship to communication disorders.

600 **Doctoral Research and Dissertation** (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.

Speech (Sp)

Edmund M. Chavez, Head, Department of Drama/Speech (U-Hut 104). Professor Whitehead *(Chairman, Speech),* Assistant Professors Jenness, Mendoza, Miles.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

109 **Intercollegiate Forensics** (1 cr, max 4) F & S. Preparation and intercollegiate competition on the national debate topic and in individual speaking events.

111 **Great Speakers on Great Issues** (2 cr) F. Great speakers of the Western World; history and criticism of the public address; such speakers as Churchill, Hitler, Roosevelt, Disraeli, Gladstone, and others.

112 **Great Speakers on Great Issues** (2 cr) S. Great speakers of the Eastern World; history and criticism of the public address; such speakers as Gandhi, Nehru, Nasser, Mao Tse-Tung, various African leaders, and others.

131 **Fundamentals of Speech** (2 cr) F & S. Skills and techniques of effective speaking; preparation, delivery, and listening.

151 **Voice, Diction, and Oral Interpretation.** (2 cr) F & S. Use of the voice and body in communicating the intellectual and emotional meanings of literature.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

209 **Argumentation** (3 cr) F or S (395, 295). Analysis, reasoning, types of evidence, organization, and refutation in debate.

232 **Informative Speech** (3 cr) S (132, 231). Practice in preparation and delivery of

speeches to inform, persuade, entertain, and various types of speeches; emphasis on speech to inform. *Prereq:* 131 or perm.

262 **Parliamentary Law and Procedure** (2 cr) F & S. Practice of speech under parliamentary conditions.

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

309 **Intercollegiate Forensics** (1 cr, max 4) F & S. Advanced training for intercollegiate competition on the national debate topic and individual event.

331 **Persuasive Speech** (3 cr) F (351-352). Oral style; psychology of attention and suggestion; other speech problems; preparation and presentation of speeches; emphasis on speech to persuade.

362 **Discussion and Conference Methods** (2 cr) S (361). Responsibilities of the chairman and participants; group discussion of current problems; evidence, fallacies and types of reasoning.

370 **Speech and Social Control** (3 cr) F (362). Psychology of persuasion and other aspects of speech as a means of social control.

375 **Business and Industrial Communication** (3 cr) F. Basic principles of communication in business and industry.

391 **Propaganda and Public Opinion** (2 cr) F. Sources and psychology of propaganda and its relation to the formation of public opinion.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

421 **Introduction to Rhetorical Theory** (3 cr) F (494). Development of modern rhetorical theory; contributions of Aristotle, Cicero, Quintibian, Campbell, Blair, Whately, Adams, and contemporary rhetoricians.

422 **British Public Address** (3 cr) S (493). Alt/yrs. History and criticism of British public address; specifically concerned with the speeches, speakers, and circumstances that influenced British history.

424 **American Public Address** (3 cr) S (492). Alt/yrs Selected American speakers from the colonial period to the present; theories of rhetorical criticism.

440 **Speech for Teachers** (3 cr) S. Speech problems that confront the teacher in the classroom; speech pedagogy.

480 **General Semantics** (3 cr) S (496). Alt/yrs. Basic relationships between language and the people who create, use, and respond to it.

488 **Theory in Communication** (3 cr) S (497). Alt/yrs. Interdisciplinary approach to understanding the process of communication.

499 (s) **Directed Study** (cr arr) F & S. *Prereq: perm of dept.*

STATISTICS—*See Information Science*

TELEVISION—*See Radio-Television*

Veterinary Science (VS)

Floyd W. Frank, Department Head (101 Vet. Science Bldg.). Professors Ardrey, Frank; Associate Professor Bailey; Assistant Professor Stauber.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept. (FRANK)

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept. (FRANK)

371 **Anatomy and Physiology** (4 cr) F. Structure and function of tissues and organ systems of domestic and wild animals. Three lec and one 2-hr lab per wk. (BAILEY)

400 (s) **Seminar** (cr arr) F & S (410). *Prereq:* perm of dept.

452 **Diseases and Care of Laboratory Animals** (4 cr) S. Vertebrate animal species commonly employed as laboratory animals; diseases, sanitation, environmental control, and general care. Three lec and one 2-hr lab per wk. (FRANK)

462 **Meat Inspection and Veterinary Hygiene** (3 cr) S. Antemortem recognition of signs indicative of disease and postmortem examination for pathological

changes; differentiation of those conditions which may or may not render the carcass suitable for human consumption; sanitation of processing plants for domestic animals and poultry. One 1-day field trip. Two lec and one 3-hr lab per wk. (BAILEY)

473 Non-infectious Diseases (4 cr) F. Of domestic and game animals. Three lec and one 2-hr lab per wk. (BAILEY)

474 Animal Diseases—Infectious (4 cr) S. Causes, transmission, susceptibility, symptoms, diagnosis, prevention, and control of major infectious disease and parasites of domestic animals. Three lec and one 2-hr lab per wk. *Prereq:* 371, Bact 250. (BAILEY)

499 (s) **Directed Study** (cr arr) F & S (400). *Prereq:* perm of dept.

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

501 (s) **Seminar** (cr arr) F & S (550). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (520). *Prereq:* perm.

514 Advanced Study of Animal Diseases (1-3 cr, max 6) SS. Intensive study (lecture and laboratory) of a single or related group of animal diseases.

516 Methods of Animal Experimentation (4 cr) S. Methods of experimentation, including anesthesia, sedation, surgical technique, aughanasia, germ free animals, drug administration, physiological measurements, radiation, and electronic monitoring of physiological phenomena. Two lec and two 3-hr labs per wk. *Prereq:* 371 or Zool 324. (STAUBER)

Vocational Teacher Education (VocEd)

Everett V. Samuelson, Coordinator (Education Bldg.). Professors Kessel *(Business Education)*, Kindschy *(Agricultural Education)*; Associate Professors Cvancara *(Agricultural Education)*, Ertel *(Distributive Education)*, Kjos *(Counselor Education)*, Parker *(Home Economics)*; Assistant Professors Hipple *(Counselor Education)*, Kiehn *(Home Economics)*, Sprecher *(Trade-Technical Education)*.

Trade and industrial education, and vocational-technical education majors fulfill their major requirements from the courses listed in this section.

RELATED FIELDS: For other course offerings in vocational teacher education, see agricultural education, business education (office occupations, and distributive education), home economics, and psychology (vocational guidance) course sections.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

200 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

270, 370, 470 Technical Competence I, II, III (1-10 cr, max 10 each course) F & S. Credits may be awarded to students who are recommended by the State Department of Vocational Education, in cooperation with the University of Idaho, as qualified to teach in the technical phases of a vocational subject matter area. *Prereq for 270:* 9 cr in residence in vocational teacher education. *Prereq for 370:* completion of jr yr in vocational teacher education. *Prereq for 470:* enrollment in the final semester of the degree program in vocational teacher education. Credits for technical competency will not qualify toward fulfilling senior residency requirements. Grades for successful completion of 270, 370, and 470 will be entered as P (pass).

299 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

322 Vocational Guidance (3 cr) S. See Psych 322 for description.

351 Principles of Vocational Education (2 cr) F. See AgEd 351 for description.

400 (s) **Seminar** (cr arr) F & S. *Prereq:* perm of dept.

401 (s) **Workshop** (cr arr) F & S (440). Professional issues in vocational teacher education. Consult the time schedule

for areas of concentration currently offered. *Prereq:* perm.

420 **Evaluation in Vocational Education** (3 cr) S. See IEd 420 for description.

450 **Industrial Safety** (3 cr) F. See IEd 450 for description.

451 **School Shop Planning and Administration** (3 cr) F. See IEd 451 for description.

461 **Occupational and Job Analysis** (3 cr) F. Methods, techniques, and procedures in analyzing occupations and jobs into their basic elements.

462 **Vocational Education Curriculum** (3 cr) S. See IEd 462 for description. *Prereq:* 461 or perm.

472 **Vocational Education Methods** (3 cr) F. See IEd 472 for description.

480 **Advanced Technical Competency** (1-6 cr, max 6) F & S. Experiences to enable the individual to gain depth in technical competency beyond the basic certification requirements, and to maintain skills in harmony with current industrial practice. *Prereq:* perm.

481 **Foundations of Vocational Education** (2 cr) S. Business-industry and individual needs as related to the various approaches to vocational education.

497 **Coordination Techniques** (3 cr) S. See BusEd 497 for description.

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

500 **Master's Research and Thesis** (cr arr) F & S.

501 (s) **Seminar** (cr arr) F & S (555). *Prereq:* perm.

502 (s) **Directed Study** (cr arr) F & S (560). *Prereq:* perm.

503 **Organization of Vocational Education** (2 cr) S. Federal, state, and local organization of the support and conduct of vocational programs.

518 **Practicum** (3-6 cr, max 6) F & S. Application of theories and techniques; supervised field experiences in selected settings.

540 **Occupational Orientation Programs** (3 cr) F or S. Design of programs for occupational orientation and experimentation.

570 **Development of Vocational Education** (3 cr) F & S. Vocational education programs from ancient apprenticeship to current practices.

590 (s) **Internship** (1-8 cr, max 8) F & S. Supervised experience in teacher education, administration, supervision or ancillary services in vocational education. Graded on the basis of P or F. *Prereq:* perm of dept.

Zoology (Zool)

Doyle E. Anderegg, Head, Department of Biological Sciences (112 Life Sc. Bldg.). Professor Schell *(Chairman)*; Associate Professors Ferguson, Forbes, Larrison; Assistant Professors Mead, Rabe, Wallace.

See the beginning of Part 5 (Course Descriptions) for numbering system and key to abbreviations and symbols.

118 **Introductory Human Physiology** (3 cr) S. Two lec and one 3-hr lab per wk. *Prereq:* 127. (FERGUSON)

127 **Introductory Human Anatomy** (3 cr) F. Two lec and one 3-hr lab per wk. (FORBES)

315 **General Physiology** (4 cr) F. Cells, tissues, organ systems. Three lec and one 3-hr lab per wk. *Prereq:* Biol 202 and organic chemistry. (FERGUSON)

323 **Comparative Vertebrate Embryology** (4 cr) F. Organogeny, ovulation, fertilization, cleavages, hormonal control, experimental methods; frog, chick, pig development. Two lec and two 3-hr labs per wk. *Prereq:* one yr general biology or Biol 202.

324 **Comparative Vertebrate Anatomy** (4 cr) S. Dissection; general vertebrate anatomy; evolution of organ systems. Two lec and two 3-hr labs per wk. *Prereq:* Biol 202. (MEAD)

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

N404 **Economic Zoology** (2 cr) SS (504). Economic relations of animals to man; means of determining economic values; theory of control; esthetic and cultural uses of animals.

412 Comparative Vertebrate Reproduction (3 cr) S. Major events in reproductive cycles of vertebrates, using mammals as the basic example and contrasting their reproductive processes with those of fish, amphibians, reptiles, birds. Two lec and one 3-hr lab per wk. *Prereq:* Biol 202 and course in zoology. (MEAD)

416 Mammalian Physiology (4 cr) S. Organs and organ systems of vertebrates; emphasis on mammals. Three lec and one 3-hr lab per wk. *Prereq:* 315 or perm. (FERGUSON)

417 Endocrine Physiology (3 cr) F. See Anl 451 for description.

427 Vertebrate Histology and Organology (4 cr) F. Tissues and minute structure of chief mammalian organs. Two lec and two 3-hr labs per wk. *Prereq:* 324 or perm. (MEAD)

436 Limnology (3 cr) S. See For 415 for description.

N438 Aquatic Biology (3 cr) SS (N537). Problems and factors affecting populations of plants and animals in aquatic environment; sampling methods and identification of aquatic organisms. Four lec and two 3-hr labs per wk; field labs. *Prereq:* perm.

481 Ichthyology (3 cr) F. Also offered as For 411. Taxonomy, anatomy, physiology, distribution and ecological relationships of fishes. Two lec and one 3-hr lab per wk; two 1-day field trips; field labs. *Prereq:* Biol 202. (WALLACE)

482 Natural History of Birds (3 cr) S. Habits, adaptations ecology, distribution, classification, field and lab identification, economic values, conservation, and relation to man's culture; birds of Idaho and the Pacific Northwest. Two lec and one 3-hr lab per wk; two 1-day field trips. *Prereq:* Biol 202 or perm. (LARRISON)

483 Natural History of Mammals (3 cr) F. Classification, distribution, ecology, food habits, economic importance, conservation, and relation to man's culture; mammals of Idaho and the Pacific Northwest. Two lec and one 3-hr lab per wk. *Prereq:* Biol 202 or perm. (LARRISON)

484 Invertebrate Zoology (5 cr) F. Freshwater, marine, terrestrial invertebrates; morphology, ecology, evolution. Three lec and two 3-hr labs per wk; one 5-day field trip. *Prereq:* Biol 202 or perm.

N485 Biology of Warm-Blooded Vertebrates (3 cr) SS (N588). Ecological factors affecting populations and communities as demonstrated by local field studies. *Prereq:* perm.

N486 Biology of Cold-Blooded Vertebrates (3 cr) SS (N586). Systematics and evolution of fishes, amphibians, reptiles. Four lec and two 3-hr labs per wk. *Prereq:* perm.

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

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

489 Herpetology (3 cr) S. Evolution, taxonomy, natural history, biology of amphibians and reptiles. Two lec and one 3-hr lab per wk. *Prereq:* Biol 202. (WALLACE)

499 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm of dept.

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

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

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

504 Colloquium (1 cr, max 2) F & S.

513 Comparative Animal Physiology (3 cr) F. Alt/yrs 1971-72. Physiology, morphology, evolution, ecology of various animal groups. *Prereq:* 315 and perm. (FERGUSON)

536 Hydrobiology (4 cr) F. Alt/yrs 1971-72. Freshwater ecology; water chemistry, primary and secondary production, micro-invertebrates, investigation of nearby lotic and lentic environments. Three lec and one 3-hr lab per wk; field labs. *Prereq:* perm. (RABE)

538 Zoogeography (2 cr) F. Dynamics and causes of distribution of animals in time and space. *Prereq:* perm. (WALLACE)

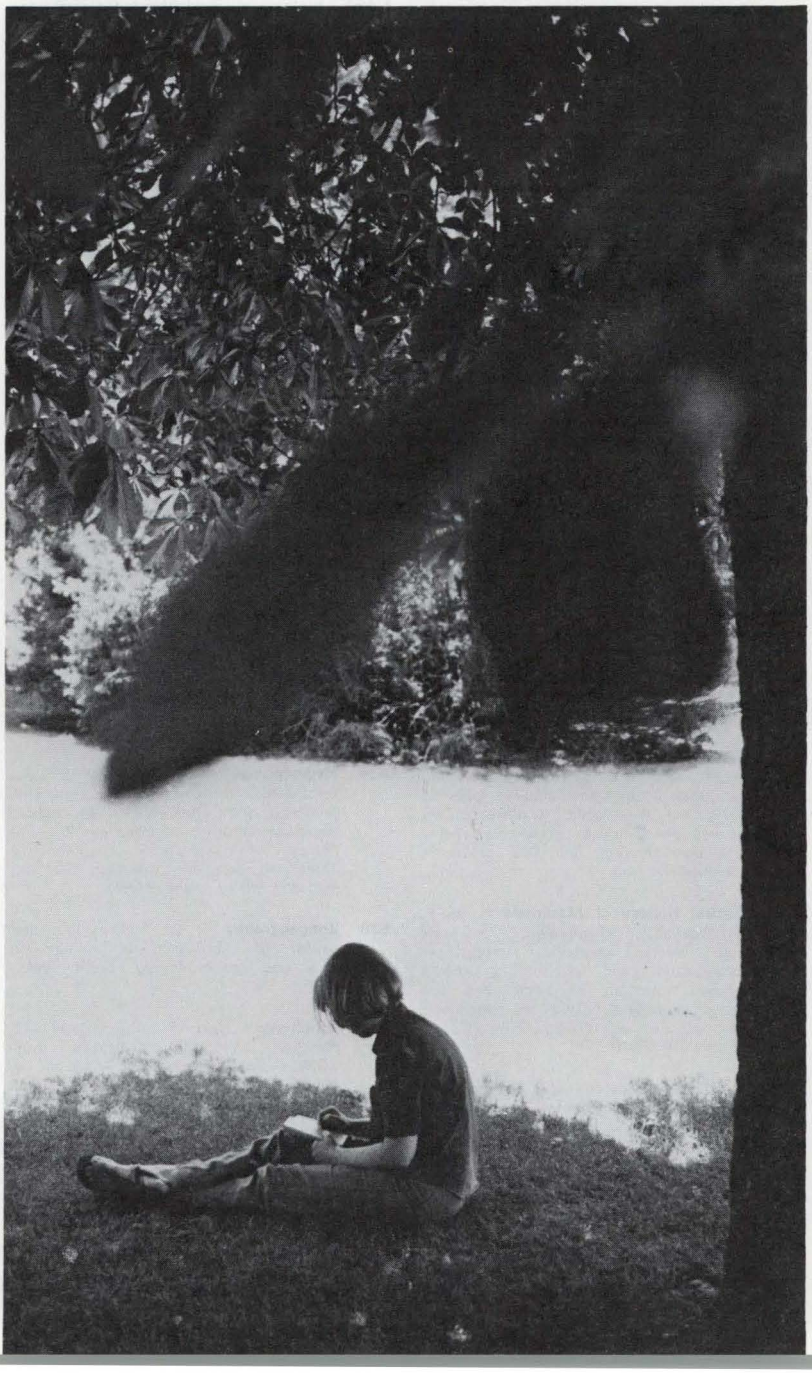
584 Ethology (2 cr) F. Alt/yrs 1971-72. Function, biological significance, causation, evolution of species — typical behavior in wild animals. Two 2-day field trips. *Prereq:* perm. (LARRISON)

600 Doctoral Research and Dissertation (cr arr) F & S.

601 (s) **Seminar** (cr arr) F & S. *Prereq:* perm.

602 (s) **Directed Study** (cr arr) F & S. *Prereq:* perm.

603 (s) **Independent Study** (cr arr) F & S. *Prereq:* perm.



Agricultural Experiment Station

James E. Kraus, Director (111 Agricultural Science Bldg.); Ronald D. Ensign, Associate Director.

THE IDAHO AGRICULTURAL EXPERIMENT STATION was established in 1892 as a division of the College of Agriculture. The Experiment Station is responsible to conduct research in all areas of agriculture and agriculturally-related businesses. The Experiment Station is the research division of the College which is administratively coordinated with the teaching and extension divisions of the College.

The Agricultural Experiment Station is composed of all departments of the College of Agriculture with the exception of the Department of Agricultural Education. Thus, most of the teaching faculty in the College also have part-time appointments in the Experiment Station. Several staff members on campus are assigned to full-time research, and thus do not share dual appointments with the teaching division. A few individuals may have dual appointments between teaching and extension, and also, selected individuals may have a three-way appointment among teaching, research and extension.

Departments which compose the Idaho Agricultural Experiment Station and the specific research discipline in each department are as follows:

Agricultural Biochemistry & Soils — Plant and animal biochemistry, enzymes, metabolic processes, air-water pollution, soil-nutrition-fertility, soil classification, minerology, and soil chemistry.

Agricultural Economics — Production economics, marketing, water and soil resources, agricultural programs and policies, rural economic development.

Agricultural Engineering — Mechanization, food processing, farm structures, environment, irrigation-drainage, farm electrification, and water pollution.

Agricultural Information — Publications and publicity.

Animal Industries — Livestock-poultry nutrition, animal physiology-endocrinology, livestock management, livestock poultry housing, pasture-range management-nutrition, meats, quality-carcass development, breeding-genetics.

Bacteriology — Soil microbiology, pathogenic microbiology, bactro-physiology, food microbiology, general-applied bacteriology, pollution-waste disposal-water quality.

Food Science — Food processing, product microbiology, food chemistry, pesticide residues, food packaging.

Entomology — Systematic entomology, biology-ecology, insect physiology, morphology-anatomy, agricultural entomology, forest entomology, aquatic entomology.

Home Economics Research — Food nutritional quality, food texture, product use-evaluation, food-product marketing, consumer preference.

Plant Science — Plant breeding-genetics, microbiology, plant physiology,

climatology, crop management, plant nutrition, product storage, weeds-pesticide, plant virology-bacteriology-pathology, landscaping-ornamental-turf, nematology.

Veterinary Science — Animal pathology, virology, bacteriology, veterinary medicine, physiology.

Administration — Statistics-general research administration, statistical design analysis, computer programming, climatology.

The Idaho agricultural research program is state wide. 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 of the University of Idaho. In addition, there are seven branch locations in strategic agricultural areas in the State where resident research personnel are located.

The Idaho Agricultural Experiment Stations share the responsibility of developing and training future scientists through the graduate fellowship programs. Currently there are approximately ninety graduate students enrolled in the College of Agriculture of which about one-half hold research fellowships or 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

James E. Kraus, Director (111 Agricultural Science Bldg.); James L. Graves, Associate Director.

THE COOPERATIVE EXTENSION SERVICE was first financed by the Smith-Lever Act of Congress, approved May 8, 1914, to help 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 county commissioner boards into the three-way partnership of financing and cooperation.

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

Agricultural and home economics agents work in forty-two of Idaho's forty-four counties, plus the Fort Hall and Nez Perce Indian Reservations. 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 Burley, Blackfoot, Idaho Falls, Caldwell, Soda Springs, Twin Falls, Coeur d'Alene, and St. Anthony.

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, and Twin Falls. These specialists, in turn, are kept up to date by research scientists of the University's College of Agriculture and the U.S. Department of Agriculture.

The educational work of the Cooperative Extension Service is no longer only for farm families. Town and city residents benefit from information about lawn and garden care, insect control, landscaping, family health, clothing, home furnishings, nutrition and home maintenance. Low-income families receive specialized help.

More and more urban youth discover 4-H and its rewards each year. More than 20,000 young Idahoans from city and country are enrolled in 4-H Clubs supervised by over 4,000 volunteer leaders.

Idaho Extension Homemaker Council clubs are found in nearly every county. Membership totals over 20,000.

Idaho's Cooperative Extension Service has progressed considerably since its beginning many years ago. Its programs have been adjusted, expanded, changed and enlarged always with the needs of the people in mind.

Water Resources Research Institute

C. C. Warnick, Director (34 Engineering Bldg.); E. L. Michalson, Associate Resource Economist; R. D. Gordon, Assistant to the Director.

THIS INSTITUTE was established in 1963 and operates principally as an interdisciplinary effort. It has the following objectives:

1. To increase, improve, and coordinate the efforts of the various university divisions and departments concerned with water resources research by assisting in (a) defining problem areas; (b) encouraging and promoting team efforts between different disciplines, and (c) assisting in the planning and implementation of interdisciplinary research in cooperation with federal, state and private agencies.

2. To strengthen and coordinate undergraduate and graduate programs and course offerings so that the University can supply well-trained teachers and leaders capable of coping with the complex water problems at the local, state, regional and national levels by: (a) encouraging the use of improved teaching techniques and the upgrading of the staff; (b) developing logical sequences of courses to maximize teaching efforts; (c) conducting interdisciplinary seminars to acquaint students and faculty with the broad aspects of water resources; and (d) bringing outstanding authorities to the campus for seminars and conferences.

3. To gather, disseminate and coordinate ideas and research findings between the University and various federal and state agencies and local and civic groups interested in water resources by: (a) publishing quality reports of findings; (b) sponsoring or appearing at meetings and workshops to serve all interests; and (c) building and maintaining a library which will be a central source of information to all concerned.

The institute was funded in January, 1965, to function with other like institutes under the federal Water Resources Research Act of 1964 (Public Law 379-88). It was established as one of the first fourteen such institutes in the nation and as such has a mission to conduct competent research in relation to water resources and to train scientists and engineers through such research.

Engineering Experiment Station

H. Sidwell Smith, Director (131 Engineering Bldg.); Richard W. Warner, Associate Director.

THE ENGINEERING EXPERIMENT STATION was formally organized in June, 1928. Its purpose is to expedite and administer the research program of the College of Engineering.

Research is a necessary adjunct of modern engineering academic programs. For this reason, the College of Engineering research effort is integrated with its academic programs and is conducted by the regular faculty and students of the College. Research projects provide the thesis topics and student support needed for the graduate programs. Undergraduate students are also frequently involved in research projects.

Applied research, having direct bearing on the economy of the State and region, may also have outstanding academic significance. This type of research is earnestly solicited by the College, as one important means of fulfilling its service obligations. This kind of applied research also is valuable for helping to relate academic fundamentals to practical applications.

Development work which does not involve new applications of engineering principles usually has limited academic value. Such work is ordinarily conducted by commercial development organizations or private consultants and it is the expressed policy of the College of Engineering to avoid competing with private enterprise. For these reasons the development work undertaken by the College is necessarily limited.

Limited research funds are available through budgeted appropriations to the Engineering Experiment Station. The great majority of the engineering research program is supported outside of regularly budgeted funds by means of research contracts with sponsoring agencies. These agencies include various local, state and federal agencies and private industry.

The College must recover costs for effort expended on sponsored projects. Therefore, negotiation of agreements to cover direct and indirect costs is a necessary part of research administration.

The entire College of Engineering faculty constitutes a valuable research resource. Not all faculty members are engaged in research at any given time but those who are not engaged carry heavier teaching loads to relieve those who are engaged.

There are no separate research facilities. This is consistent with the policy of integrating the academic and research programs. The College's present laboratory facilities include 90,000 square feet of space and $2,000,000 of equipment. Some of the equipment is of the most advanced design found in very few laboratories. College of Engineering equipment is supplemented, when necessary, by cooperative arrangement with other Colleges of the University.

The Engineering Experiment Station also serves as the publications office for the College of Engineering. Research reports, circulars, bulletins and reprints are produced and distributed to interested parties. Copies are available upon request.

Forest, Wildlife and Range Experiment Station

John H. Ehrenreich, Director (Forestry Bldg.); Edwin W. Tisdale, Associate Director; Maurice G. Hornocker, Leader, Cooperative Wildlife Research Unit; Donald W. Chapman, Leader, Cooperative Fisheries Unit.

ALL MEMBERS OF THE COLLEGE STAFF are also on the staff of the Experiment Station, on joint teaching-research appointments. Other members of the station staff include full-time research associates and technicians, as well as graduate assistants and fellows.

The station staff conducts research on a wide variety of problems in the areas of forest management, wood technology, range management, wildlife and fisheries. Typical projects include studies of the effects of disease and insects on Douglas-fir, ponderosa pine and other valuable tree species, as well as problems of survival in seeded and planted stands. Improvement of ponderosa pine through breeding and selection is another major project in forest management. Investigation of the quality of inland Douglas-fir and the influence of its physical properties on wood strength are under way. Methods for maximizing the production of reseeded ranges are being studied, along with ecological investigations of native sagebrush-grass and mountain shrub rangelands and undesirable range plants. Wildlife projects include studies of the habits and productivity of elk and white-tailed deer, the ecology of predators such as the cougar and bobcat, and studies of rare or endangered species including the sandhill crane and golden eagle. Fisheries research includes evaluation of methods for increasing stocks of native cutthroat, and the ecology of young chinook salmon and steelhead. The effects of water quality in the Snake River on steelhead migration, and the evaluation of toxins for controlling undesirable fish species are also being investigated.

Funds for the station are provided by the University, by several state departments and by grants from federal and other "outside" sources. Currently about fifty-four per cent of these funds are from outside sources.

Research Council and Research Foundation

Board of Directors, University of Idaho Research Foundation, Inc.: R. W. Coonrod (Chairman), H. Sidwell Smith (Vice Chairman), Edgar H. Grahn (Secretary-Treasurer).

THE RESEARCH COUNCIL was established to foster research in all legitimate ways, to encourage and assist research workers to coordinate the various research programs being carried on by the University, and to administer certain research funds. The University of Idaho Research Foundation, Inc., is a separate legal entity which implements the provisions of the University patent policy. Its purpose is to protect the interests of the inventor, the public and the University, and to handle inventions growing out of University research programs.

The Steering Committee of the Research Council is composed of representa-

tive Idaho citizens whose guidance and advice concerning the Short-Term Applied Research (STAR) program assures Idaho of a research program geared closely to the needs of the State. The membership of the Steering Committee is listed in Part 7 of this catalog.

Bureau of Business and Economic Research

Norman C. Olson, Director (211-A, Admin. Bldg.); Norman Nybroten, Associate Director.

AN INTEGRAL PART of the University, the Bureau of Business and Economic Research takes responsibilities in the general area of business and economics. The Bureau's work is primarily in applied research of immediate interest to the State's business and economy. Some of the work of the Bureau could be classified as professional service aimed at developing the State's resources and providing some of the conditions for engaging University staff and students on the State's problems and orienting them to the economic climate.

The Bureau maintains a minimum full-time staff, but has a responsive flexibility which can be geared to projects undertaken. When problems submitted to the Bureau result in broad projects requiring various research specialists they can usually be borrowed from other divisions of the University. In some instances this is done through inter-divisional cooperation. The availability of suitable personnel is, of course, one of the principal factors in determining whether specific work will be undertaken. The Bureau is organized on the basis of projects and work underway, rather than by departments.

Work of the Bureau is reported occasionally on selected subjects as conditions warrant. Publications are mainly reports of research. There are two series of occasional publications — the *monograph* and the *research report*. Subject matter varies. To date the project areas have been in highway economics, credit and finance, Indian affairs, taxation, employment, general statistics, and in economic development. The first issue of a periodical, *Idaho Business and Economic Review,* appeared in April, 1970. Currently one of the major tasks is the revision and updating of the *Idaho Statistical Abstract.*

Bureau of Educational Research and Service

Everett V. Samuelson, Director (Education Bldg.); Edward L. Kelly, Associate Director.

THE BUREAU OF EDUCATIONAL RESEARCH AND SERVICE, College of Education, was established to conduct research, to facilitate research among College of Education faculty 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 Bureau. The Upward-Bound Program, a program to help youth from low-income families achieve a college education, is housed in the Bureau as was the Occupational

Research and Coordinating Unit prior to its transfer to Boise.

Bureau 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 and projects under federal acts, and school district reorganization studies. Research reports or monographs of these and other activities are published through the Bureau. These reports or monographs are not published on a regular basis.

In addition to its regular appropriations, the Bureau of Educational Research and Service is financed in part through cost-reimbursement funds from state and federal sources.

Idaho Bureau of Mines and Geology

Rolland R. Reid, Director (206 Mines Bldg.)

THE IDAHO BUREAU OF MINES AND GEOLOGY functions primarily as a research and service organization in fields pertaining to the mineral industry of the State. Cooperative relations are maintained with federal agencies working in this area, particularly the U.S. Bureau of Mines and the U.S. Geological Survey.

Geological and mineral engineering field studies of a reconnaissance nature as well as those designed to obtain detailed information of particular areas and commodities are conducted throughout the State. Reports are issued incorporating the results of such investigations.

The Bureau maintains laboratories in the College of Mines building where research designed to find better or more economical methods for processing ores and mineral products is conducted.

Bureau of Public Affairs Research

Boyd A. Martin, Director (108 Admin. Bldg.); H. Sydney Duncombe, Associate Director; Donnell E. Jerome, Assistant to the Director.

THE BUREAU OF PUBLIC AFFAIRS RESEARCH was established in 1959 as a unit of the Department of Social Sciences in the College of Letters and Science. Today the Bureau is an integral part of the Department of Political Science and Public Affairs Research. In its eleven years of existence, the Bureau has completed twenty-two major research studies: eleven on municipal government, two on county government, four on state government, four compilations of election statistics, and a study of computer utilization.

In addition to its research function, the Bureau has, in recent years entered into the area of providing training services on a large scale. Since 1967, the Bureau has sponsored short courses and workshops for city mayors and councilmen, county commissioners and clerks, city fiscal officers, legislative budget

staff, local law enforcement administrators and tax assessors and appraisers. The Bureau is currently in the process of developing a series of workshops for secondary teachers of Idaho state and local government. In connection with this latter program, the Bureau has developed a high school text and a supplementary reader for high school students as well as a multi-media package of audio-visual instructional materials.

In addition to providing short courses and training institutes, the Bureau provides consulting services to state and local agencies. The associate director of the Bureau assisted the state budget director in designing a program budgeting system for the state of Idaho and has done extensive consulting work for the Legislative Committee on Accounting and Data Processing Systems in developing a financial management and information reporting system.

In its training and research activities the Bureau has maintained close cooperative relationships with similar agencies within 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 College, 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 which it maintains through reciprocal exchange agreements with other bureaus and state agencies throughout the nation.

In addition to its regular appropriation, the Bureau is financed in part by grants from state and federal sources. During the 1969-1970 fiscal year, the Bureau was financed twenty-seven per cent from regular state appropriations, six per cent from short-term applied research grants, and sixty-seven per cent from federal funds. The Bureau received a $20,000 federal grant from the Department of Health, Education and Welfare to provide training and consulting services during fiscal year 1970-71.

The Bureau employs a full-time assistant to the director, an associate director during the summer, a part-time graduate assistant and two part-time secretaries. In addition to its regular staff, the Bureau periodically employs graduate students and law students on an irregular basis as research assistants thereby permitting them to gain useful experience for future careers in education, public administration or law.

Computer Services

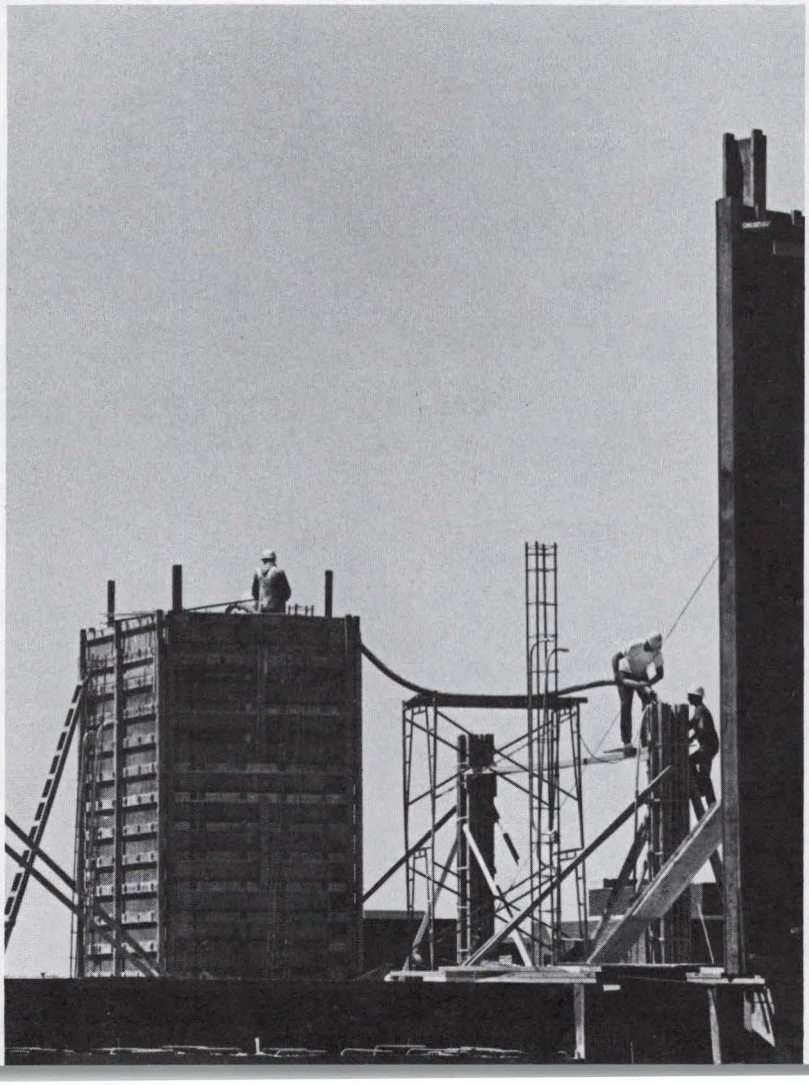
H. Ward Crowley, Director (338 Admin. Bldg.)

ADMINISTRATIVE DATA PROCESSING, established in 1953 as the Statistical Service Center, and the Computer Center, established in 1962, were combined

in 1970 to form Computer Services. This center 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 an IBM 360 model 40 with tape, disk, card, and printer, a 360 model 20 computer, and other subsidiary equipment. 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 departments of Mathematics, Business, General Engineering, and Electrical Engineering.



General Faculty of the University

President Ernest W. Hartung, Chairman; Vice President Robert W. Coonrod, Vice Chairman; William R. Parish, Chairman of the Faculty Council (1970-72); R. Bruce Bray, Secretary.

THE UNIVERSITY FACULTY is constituted of the president, vice presidents, deans, professors, associate professors, assistant professors, instructors (including those professors, associate professors, assistant professors, and instructors whose titles have research or visiting designations, e.g., "assistant research professor," and "visiting associate professor," etc.), professional librarians (those who have a designated equivalent rank), and such administrative and service officers as the president may designate. (*Constitution of the Faculty, Article II, Section 1.*)

In the broader sense, the General Faculty also includes members of the Cooperative Extension Faculty of the College of Agriculture, the Affiliate Faculty, and emeriti. These non-voting members are included in this list in recognition of their many contributions to the University and to the state of Idaho.

Off-campus members are identified with an asterisk (*). The date following each name indicates the beginning of service with the University. Members of the Graduate Faculty are identified by the letter "g."

All appointments shown are as of February 1, 1971, except that promotions in academic rank announced in the spring of 1971 are included.

A

Abbasi, Ali D., 1957, Assistant Professor of Engineering Science and Mechanical Engineering; B.S.Ch.E., 1957, Iowa; M.S.Ch.E., 1963, Idaho.

***Alldaffer, Robert C.**, 1955, Caribou County Extension Agricultural Agent, Cooperative Extension Service, Soda Springs; B.S.Ag., 1950, Idaho.

Allen, Ralph K., 1970, Assistant Professor of Geography; B.A., 1965, California State (Long Beach); M.A., 1967, San Fernando State. **(g)**

Aller, Alvin R., 1959, Associate Professor of Botany (Ecology); B.S., 1931, Bethany; M.S., 1932, Kansas State; Ph.D., 1949, Oregon State. **(g)**

Aller, Florence D., 1962, Professor of Home Economics (Home Management-Family Life); A.B., 1930, Bethany-Peniel; M.S., 1947, Oregon State; Ed.D., 1962, Idaho. **(g)**

Allman, David W., 1970, Assistant Professor of Hydrogeology; Geologist; B.S.Geol., 1964, Hamilton (Ontario); M.S.Geol., 1967, Illinois.

Amos, Harold C., 1954, Assistant Professor of Industrial Education; B.Sc.M.E., 1952, Nebraska; M.S.M.E., 1958, Idaho. **(g)**

Anderegg, Doyle E., 1967, Professor of Biology; Head, Department of Biological Sciences; B.Sc., 1952, M.Sc., 1957, Ph.D. 1959, Ohio State. **(g)**

Anderson, George A., 1961, University Auditor; B.S.Bus., 1958, M.Acctg., 1966, Idaho; C.P.A.

Anderson, Guy R., 1946, Professor of Bacteriology; Bacteriologist; B.S.Ag., 1942, M.S.Ag., 1947, Idaho; Ph.D., 1956, Washington State. **(g)**

***Anderson, Joanne K.**, 1968, Latah County Extension Home Economics Agent, Cooperative Extension Service, Moscow; B.S.Ed., 1968, Idaho.

***Anderson, Moselle**, 1967, Extension Home Economics Agent for the Fort Hall Indian Reservation, Cooperative Extension Service, Fort Hall; B.S., 1967, Idaho State.

***Anderson, Newton R.**, 1967, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1958, M.S., 1965, Kansas State.

***Anderson, Ruth**, 1946, Associate Professor Emerita of Office Administration; B.A., 1926, M.S.Ed., 1941, Idaho.

Anduiza, John P., 1966, Assistant Director of Admissions; B.A., 1964, St. Martins.

***Annest, Jeanene B.**, 1970, Extension Home Economics Agent for Blaine, Camas, and Lincoln Counties, Cooperative Extension Service, Shoshone; B.A., 1969, Idaho State.

Araji, Ahmed A., 1968, Assistant Professor of Agricultural Economics (Production Economics); Assistant Agricultural Economist, B.S., 1962, M.Sc., 1964, Nebraska; Ph.D., 1968, Missouri. **(g)**

Ardrey, William B., 1939, Professor of Veterinary Science; Veterinary Microbiologist; B.S., 1934, Monmouth; M.S., 1936, Ph.D., 1939, Michigan State. **(g)**

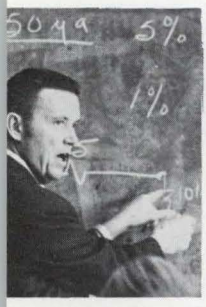
***Arendts, James G.**, 1970, Affiliate Professor of Civil Engineering, NRTS, Idaho Falls; B.S., 1966, M.S., 1968, Ph.D., 1969, Iowa State.

Armstrong, Terry R., 1969, Associate Professor of Education; B.S., 1959, Southern Mississippi; M.Nat.Sc., 1963, Ed.D., 1969, Idaho. **(g)**

Ashland, Walter I., Jr., 1970, Associate Professor of Landscape Architecture; B.S.L.A., 1951, Rhode Island School of Design; M.L.A., 1968, Massachusetts. **(g)**

Atkinson, Nancy I., 1943, Head, Catalog Department, University Library (equivalent rank: Associate Professor); A.B., 1935, A.B.-L.S., 1936, Michigan.

***Augustin, Jorg A. L.**, 1968, Associate Research Professor of Agricultural Biochemistry, Aberdeen; Diplomierter Ingenieur Agronom, Eidgenoessische Technische Hochschule, 1955, Zurich; M.S., 1957, Illinois; Ph.D., 1964, Michigan State.



Aulerich, Dean E., 1970, Assistant Professor of Forestry (Operations); B.S.F.E., 1960, Oregon State; M.B.A., 1964, Arizona State.

Avery, Jasper R., 1959, Assistant Professor of Mechanical Engineering; B.S.M.E., 1957, Idaho.

Ayer, Larry L., 1968, Instructor in Radio-Television; Engineering Technician; Program Director, KUID-FM; B.A., 1963, Idaho.

B

Babb, Daniel P., 1969, Assistant Professor of Chemistry; B.A., 1963, Mankato State.

Bailey, James W., 1953, Associate Professor of Veterinary Science; Associate Veterinarian; Extension Veterinarian, Cooperative Extension Service, Moscow; B.Ed., 1935, Western Illinois; D.V.M., 1943, Texas A & M. **(g)**

Bailey, Everett M., 1961, Associate Professor of Electrical Engineering; B.S.E.E., 1961, M.S.E.E., 1964, Idaho; Ph.D., 1968, Stanford. **(g)**

Bain, Philip T., 1970, Assistant Registrar; B.A., Muskingum, 1965; M.Ed., Ph.D., 1970, Ohio.

***Baker, G. Orien**, 1935, Professor Emeritus of Soils; B.S., 1923, M.S., 1924, Washington State.

Baker, William H., 1948, Professor of Botany; Chairman, Botany; B.S., 1935, M.S., 1942, Ph.D., 1949, Oregon State. **(g)**

Baldridge, Donald C., 1969, Assistant Professor of History (Latin American History); B.A., 1960, Idaho.

***Baldwin, Jon M.**, 1969, Affiliate Professor of Chemistry, NRTS, Idaho Falls; A.B., 1962, Thomas Moore; Ph.D., 1967, Illinois.

***Balkovetz, Fred J.**, 1968, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1965, M.S., 1967, Montana State.

***Banks, William C.**, 1927, Professor Emeritus of English; A.B., 1926, M.A., 1937, Washington.

Barber, David S., 1968, Assistant Professor of English; A.B., 1962, Hamilton; M.A., 1963, Ph.D., 1968, Michigan.

Barbut, Erol, 1967, Assistant Professor of Mathematics; B.A., 1963, California (Berkeley); M.A., 1965, Ph.D., 1967, California (Riverside). **(g)**

***Barnes, Carolyn S.**, 1969, Cassia County Extension Home Economics Agent, Cooperative Extension Service, Burley; B.A., 1969, Northwest Nazarene.

Barnes, Dorothy T., 1969, Instructor in Music (Voice); B.Mus., 1948, M.Mus., 1964, Idaho.

Barnes, Willard, 1965, Associate Professor of History (American History); B.S.Ed., 1949, M.S.Ed., 1950, Idaho; Ph.D., 1968, Washington State. **(g)**

Barnes, William P., 1957, Professor of Mechanical Engineering; Chairman, Nuclear Engineering; B.S.M.E., 1947, Idaho; M.M.E., 1949, Yale; P.E. **(g)**

Barnhart, John L., 1934-35; 1956, Associate Professor of Food Science; Associate Food Scientist; Acting Department Head; B.S., 1930, Pennsylvania State; M.S., 1932, West Virginia; Ph.D., 1940, Pennsylvania State. **(g)**

Barr, William F., 1947, Professor of Entomology; Entomologist; B.S., 1945, M.S., 1947, Ph.D., 1950, California (Berkeley). **(g)**

Barrus, James L., 1949, Assistant Professor of Chemistry; Director, General Chemistry Laboratories; B.S., 1949, Wyoming; M.S., 1956, Idaho.

Bartell, Charles G., 1950, Professor of Architecture; B.Arch., 1949, Washington; M.S.Arch., 1950, Columbia. **(g)**

***Baston, V. Forest**, 1967, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.S., 1960, Ph.D., 1965, Wyoming.

Bauer, LeRoy O., 1956, Professor of Music (Conducting, Violin, Viola); B.S.Mus.Ed., 1941, Wisconsin (Milwaukee); M.Mus., 1946, Northwestern. **(g)**

Baumgardner, Carl A., 1967, Assistant Professor of Physics; B.S., 1962, Detroit; M.S., 1964, Ph.D., 1967, Michigan State. **(g)**

***Baune, Joan M.**, 1965-1967; 1968, Boundary County Extension Home Economics Agent, Cooperative Extension Service, Bonners Ferry; B.S.H.Ec., 1965, Idaho.

***Beardsley, Bruce M.**, 1970, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1955, Brigham Young.

***Beattie, Mabel R.**, 1925, Professor Emerita of Foreign Languages (Latin, French); B.A., 1923, Idaho; M.A., 1925, Radcliffe.

Beck, Richard J., 1957, Associate Director of Libraries (equivalent rank: Professor); B.A., 1949, St. Thomas; B.S.L.S., 1950, M.A., 1955, Minnesota.

Beck, Sidney M., 1951, Associate Professor of Bacteriology; Associate Bacteriologist; A.B., 1941, M.A., 1948, Brigham Young; Ph.D., 1951, Pennsylvania State. **(g)**

***Beeston, Joseph M.**, 1961, Affiliate Professor of Metallurgy, NRTS, Idaho Falls; B.S., 1949, Ph.D., 1953, Utah.

Bell, George M., 1949, Professor of Law; B.S., 1935, Utah State; J.D., 1940, George Washington.

Bell, Harold I., 1969, Assistant Professor of Military Science; B.A., 1965, Stanford.

Bell, Roy A., 1950, Associate Professor of Photography; B.A., 1938, M.A., 1954, Idaho.

Bell, T. Donald, 1957, Professor of Animal Science; Animal Scientist; B.S.Ag., 1932, M.S.Ag., 1936, Idaho; Ph.D., 1939, Wisconsin. **(g)**

Bellinger, Gladys I., 1960, Professor of Home Economics (Child Development); B.S., 1933, Kansas State (Emporia); M.S., 1948, Ph.D., 1950, Cornell.

Belt, George H., Jr., 1965, Associate Professor of Forestry (Watershed Management); B.S., 1960, North Carolina State; M.F., 1962, Yale; D.F., 1968, Duke. **(g)**

***Bengston, Steven J.**, 1967, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1964, M.S., 1966, Oregon.

Berg, John A., 1968, Assistant Professor of Architecture; B.A., 1958, Iowa; B.Arch., 1967, Massachusetts Institute of Technology.

Bergeson, Donald E., 1966, Assistant Professor of Architecture; B.S.Arch.E., 1952, Colorado.

Bergquist, William H., 1969, Assistant Professor of Psychology; A.B., 1962, Occidental; M.A., 1964, Ph.D., 1970, Oregon.

Bergstrom, Edward A., 1967, Assistant Professor of Psychology; A.A., 1958, Clark; B.S., 1961, M.Ed., 1966, Washington State.

***Berman, Herbert A.**, 1952, Professor Emeritus of Law; A.B., 1924, J.D., 1927, Harvard.

***Berry, Eugene L.**, 1968, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1953, South Dakota; M.S., 1968, Idaho.

***Berry, Ray M.**, 1946, Professor Emeritus of Education; A.B., 1917, Illinois College; M.A., 1932, Columbia; Ed.D., 1942, Stanford.

Bessette, Gerard A., 1969, Instructor in Foreign Languages (Classics); B.A., 1963, Assumption; M.A., 1965, California (Berkeley).

Bethlahmy, Nedavia, 1968, Affiliate Professor of Forest Hydrology (U.S. Forest Service, Moscow); B.S., 1939, Pennsylvania State; M.S., 1940, Yale; Ph.D., 1956, Cornell.

Betts, Edith, 1951, Professor of Physical Education; Chairman, Physical Education for Women; B.S., 1943, Wisconsin; M.S., 1951, Smith; Ph.D., 1968, Oregon. **(g)**

***Betts, Jane D.**, 1967, Washington County Extension Home Economics Agent, Cooperative Extension Service, Weiser; B.S.H.Ec., 1967, Idaho.

***Bevan, Roland C.**, 1946, Associate Professor Emeritus of Agricultural Economics; B.S., 1923, M.S., 1937, Minnesota; Ph.D., 1959, Illinois.

Bevans, Ronald D., 1970, Assistant Professor of Architecture; B.Arch., 1964, Nebraska; M.Arch., 1965, Washington. **(g)**

Biggam, William R., 1959, Professor of Industrial Education; Chairman, Industrial Education; B.S., 1947, Minnesota (Duluth); M.A., 1948, Minnesota (Minneapolis); Ed.D., 1957, Bradley. **(g)**

Billingsley, William A., 1954, Professor of Music (Theory, Composition, Trumpet); B.Mus.Ed., 1952, M.Mus., 1953, Drake. **(g)**

Bingham, Richard T., 1958, Affiliate Professor of Forest Genetics (U.S. Forest Service, Moscow); B.S.For., 1940, M.S.For., 1942, Idaho.

Bishop, Donald T., 1965, Assistant Professor of Geology; Mining Engineer; B.S.-Geol., 1962, M.S.Geol., 1964, Wyoming.

Bishop, Guy W., 1957, Professor of Entomology; Entomologist; B.S., 1951, M.S., 1953, Oregon State; Ph.D., 1957, Washington State. **(g)**

***Bithell, Nondus H.**, 1955, Bingham County Extension Home Economics Agent, Cooperative Extension Service, Blackfoot; B.S.H.Ec., 1940, Idaho.

Bizeau, Elwood G., 1967, Assistant Professor of Wildlife Management; Assistant Leader, Idaho Cooperative Wildlife Research Unit; B.S., 1948, Oregon State; M.S.For., 1951, Idaho. **(g)**

Bjornn, Theodore C., 1966, Associate Professor of Fishery Management; Assistant Leader, Idaho Cooperative Fishery Unit; B.S., 1956, Utah State; M.S., 1957, Idaho; Ph.D., 1966, Utah State. **(g)**

Black, Robert E., 1954, District Extension Agent Supervisor, Cooperative Extension Service, Moscow; B.S.A., 1950, Arkansas; M.Ag., 1964, Idaho.

Blanton, Paul L., 1958, Associate Professor of Architecture; B.S., 1957, Idaho; M.Arch., 1963, California (Berkeley). **(g)**

Bloomsburg, George L., 1961, Professor of Agricultural Engineering and Engineering Science; Chairman, Engineering Science; B.S.Ag.E., 1957, M.S.Ag.E., 1959, Idaho; Ph.D., 1964, Colorado State; P.E. **(g)**

***Boas, Ruth H.**, 1958, Assistant Professor Emerita of English; B.A., 1925, M.A., 1928, Idaho.

Bobeck, Gene E., 1967, Assistant Professor of Metallurgy; B.A., 1952, Knox; M.S., 1956, Iowa State; Ph.D., 1970, Denver. **(g)**

Bobisud, Larry E., 1967, Associate Professor of Mathematics; B.S., 1961, College of Idaho; M.S., 1963, Ph.D., 1966, New Mexico. **(g)**

***Bodily, Glenn L.**, 1946, Owyhee County Extension Agricultural Agent, Cooperative Extension Service, Marsing; B.S.Ag., 1939, M.S.Ag., 1939, Idaho.

Boe, Arthur A., 1967, Assistant Professor of Horticulture; Assistant Horticulturist; B.S., 1962, Ph.D., 1966, Utah State. **(g)**

Bond, John G., 1968, Professor of Geology; Senior Geologist; B.S., 1954, Idaho; M.S., 1959, Ph.D., 1962, Washington. **(g)**

Bondurant, Cecil W., 1962, Instructor in Radio-Television; Senior Staff Engineering Technician; B.S., 1952, American Television Institute of Technology.

***Bondurant, James A.**, 1969, Affiliate Professor of Agricultural Engineering (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1949, Kansas State; M.S., 1951, Nebraska.

Boone, Lalia P., 1965, Professor of English (Linguistics); B.A., 1938, East Texas State; M.A., 1947, Oklahoma; Ph.D., 1951, Florida. **(g)**

Borning, Bernard C., 1949, Professor of Political Science; B.A., 1936, Ph.D., 1951, Minnesota. **(g)**

***Botsford, J. Lawrence**, 1949, Associate Professor Emeritus of Mathematics; A.B., 1925, Washington; Ph.D., 1933, California Institute of Technology.

***Bowers, Alfred W.**, 1949, Professor Emeritus of Anthropology/Sociology; B.S., Beloit; M.S., Ph.D., Chicago.

Boyd, Raymond J., Jr., 1963, Affiliate Professor of Silviculture (U.S. Forest Service, Moscow); B.S., 1948, M.F., 1950, Colorado State.

***Boyer, William H.**, 1930, Professor of Psychology and Department Head Emeritus (Head, Department of Psychology, 1946-1966); B.S., 1929, M.S., 1930, Idaho; Ph.D., 1936, George Peabody.

***Boyle, F. J. (Packey)**, 1955, Instructor Emeritus in Physical Education; D.O., 1930, Astill.

Brabham, B. J., 1970, Associate Professor of Law; B.A., 1951, Texas A & M; LL.B., 1956, Texas; M.A., 1962, North Texas State; LL.M., 1966, New York.

Bray, R. Bruce, 1961, Associate Professor of Music (Music Education); Secretary of the University Faculty; B.A., 1949, M.Mus., 1955, Oregon. **(g)**

Brickell, James E., 1964, Affiliate Professor of Forest Mensuration (U.S. Forest Service, Moscow); B.S., 1961, Washington State.

***Brinkman, Charles R.**, 1968, Affiliate Professor of Metallurgy, NRTS, Idaho Falls; B.S., 1960, M.S., 1961, Ph.D., 1966, Utah.

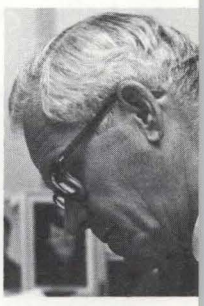
***Brockelbank, William J.**, 1943, Professor Emeritus of Law; B.A., 1919, Haverford; LL.B., 1923, Harvard; LL.M., 1932, Montpelier; Doctor en Droit, 1934, Paris.

***Brockway, Charles E.**, 1965, Assistant Research Professor of Civil Engineering (Water Resources), Twin Falls; B.S.C.E., 1959, Idaho; M.S.C.E., 1960, California Institute of Technology. **(g)**

Brogly, Edward R., 1967, Assistant Professor of Psychology (Counselor Education); B.S., 1953, M.S., 1958, Northern Illinois; Certificate of Advanced Study, 1963, Illinois; Ph.D., 1967, Iowa. **(g)**

Browne, Michael E., 1967, Professor of Physics; Department Chairman; B.S., 1952, Ph.D., 1955, California (Berkeley). **(g)**

***Brugger, Robert M.**, 1956, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1951, Colorado College; M.S., 1953, Ph.D., 1955, Rice.



***Brusven, Merlyn A.,** 1965, Associate Professor of Entomology; Associate Entomologist; B.S., 1959, M.S., 1961, North Dakota State; Ph.D., 1965, Kansas State. **(g)**

***Buckham, James A.**, 1956, Affiliate Professor of Chemical Engineering, NRTS, Idaho Falls; B.S., 1945, M.S., 1948, Ph.D., 1953, Washington.

Bull, Richard C., 1967, Assistant Professor of Animal Science; Assistant Animal Scientist; B.S., 1957, M.S., 1960, Colorado State; Ph.D., 1966, Oregon State. **(g)**

***Bunderson, Marlene M.**, 1970, Bear Lake County Extension Home Economics Agent, Cooperative Extension Service, Paris; B.S., 1955, Ricks; M.S., 1957, Utah State.

Burcaw, G. Ellis, 1966, Associate Professor of Museology; Director, University Museum; B.A., 1943, Maryville (Tenn.).

***Burlingame, E. Mildred**, 1942, Associate Professor Emerita of Psychology; A.B., 1925, M.A., 1927, Stanford; Ph.D., 1930, Minnesota.

Burlison, Prudence B., 1962, Assistant Professor of English Composition; B.A., 1936, Western State; M.A., 1966, Idaho.

Burlison, Vernon H., 1946, Extension Forester, Cooperative Extension Service, Moscow; B.S.For., 1943, M.S.For., 1949, Idaho.

Busch, John R., 1970, Assistant Professor of Agricultural Engineering; Assistant Agricultural Engineer; B.S.Ag.E., 1965, Colorado State; M.S., 1967, Idaho.

Byers, Roland O., 1954, Professor of General Engineering; Chairman, General Engineering; B.S., 1946, M.S., 1949, Ohio.

Byrd, William A., 1965, Assistant Professor of Radio-Television; Coordinator, Instructional TV; Production and Promotion Director, KUID-TV; B.A., 1954, Whitman; M.S., 1956, Syracuse.

C

***Cady, Louis C.**, 1922, Professor of Chemistry and Dean Emeritus (Dean, Graduate School, 1953-1965); B.S.Ch.E., 1925, M.S., 1927, Idaho; Ph.D., 1934, Wisconsin.

Caldwell, Harry H., 1948, Professor of Geography; Acting Department Head; B.A., 1941, Clark; M.A., 1946, Nebraska; Ph.D., 1951, Clark. **(g)**

***Callihan, Robert H.**, 1967, Assistant Research Professor of Horticulture, Aberdeen; B.S.Ag., 1957, Idaho; M.S., 1961, Oregon State.

***Calnon, Mark B.**, 1945, Ada County Extension Agricultural Agent, Cooperative Extension Service, Boise; B.S.Ag., 1940, Idaho.

Calvert, James E., Jr., 1967, Associate Professor of Mathematics; A.B., 1963, California (Berkeley); M.A., 1964, Ph.D., 1966, California (Davis). **(g)**

Campbell, Colin, 1962, Catalog Librarian (equivalent rank: instructor); B.A., 1957, New Hampshire; M.L.S., 1961, Rutgers.

***Campbell, Elizabeth M.**, 1969, Clearwater County Extension Home Economics Agent, Cooperative Extension Service, Orofino; B.S.H.Ec., 1969, Idaho.

Campbell, Howard E., 1963, Professor of Mathematics; Department Chairman; B.S., 1946, M.S., 1947, Ph.D., 1949, Wisconsin. **(g)**

Carlson, John E., 1970, Assistant Professor of Sociology; B.S., 1964, M.A., 1969, Washington State.

Carlson, Laurence B., 1968, Associate Professor of Special Education, Department Head; B.A., 1957, Northern Colorado; M.Ed., 1964, Montana; Ed.D., 1968, Northern Colorado. **(g)**

***Carpenter, Gene P.**, 1966, Assistant Research Professor of Entomology, Assistant Entomologist, Aberdeen; B.Sc., 1955, Oklahoma State; M.S., 1961, Ph.D., 1963, Oregon State.

***Cartan, Frederick O.**, 1965, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.S., 1951, California (Berkeley); Ph.D., 1959, Montana State.

***Carter, David L.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1955, M.S., 1956, Utah State; Ph.D., 1960, Oregon State.

***Carter, Louise A.**, 1923, Dean of Women Emerita; B.A., Washington; M.A., Columbia.

Carter, Sherman F., 1969, Professor of Business; Financial Vice President/Bursar; Treasurer, Board of Regents; B.S., 1956, Georgia; M.B.A., 1958, Syracuse; Ph.D., 1968, American. **(g)**

***Cary, John W.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1956, M.S., 1958, Colorado State; Ph.D., 1961, Utah State.

***Cazier, Gail A.**, 1961, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1953, Ricks, M.S., 1961, Idaho.

Chan, Samuel S. M., 1962, Associate Professor of Mining Engineering; B.S., 1957, Cheng Kung; M.S.Min.E., 1960, M.S.Geol., 1962, Missouri School of Mines & Metallurgy; Ph.D., 1966, Idaho. **(g)**

Chapin, Zaye, 1968, Associate Professor of Sociology (Social Work); B.A., 1948, California (Los Angeles); M.S.W., 1964, Southern California.

Chapman, Donald W., 1964, Professor of Fishery Management; Leader, Idaho Cooperative Fishery Unit; B.S., 1953, M.S., 1957, Ph.D., 1961, Oregon State. **(g)**

Chavez, Edmund M., 1951, Associate Professor of Drama; Head, Department of Drama-Speech; B.A., 1949, Southwest Texas State; M.F.A., 1951, Texas. **(g)**

Cheesman, Melvin L., 1971, Assistant Professor of Education; B.A., 1948, Dartmouth; M.Ed., 1950, Oregon; M.A., 1963, Washington; Ph.D., 1965, Idaho.

***Cherrington, Virgil A.**, 1928, Professor of Bacteriology and Department Head Emeritus (Head, Department of Bacteriology, 1946-1970); B.S., 1928, Iowa State; M.S., 1930, Idaho; Ph.D., 1941, Iowa State. **(g)**

***Chester, Thomas J.**, 1939, District Extension Agent Supervisor, Cooperative Extension Service, Pocatello; B.S.Ag., 1938, Idaho.

Christenson, Charles O., 1964, Assistant Professor of Mathematics; B.A., 1958, M.A., 1960, Kansas; Ph.D., 1964, New Mexico State. **(g)**

***Christensen, Lynn J.**, 1970, Affiliate Professor of Engineering, NRTS, Idaho Falls; B.S., 1958, Iowa State; M.S., 1965, Ph.D., 1968, Idaho.

Christian, Ross E., 1956, Professor of Animal Science; Animal Scientist; B.S., 1947, Pennsylvania State; M.S., 1949, Ph.D., 1951, Wisconsin. **(g)**

***Christianson, Oscar O.**, 1949, Professor Emeritus of Bacteriology; A.B., 1928, St. Olaf; M.D., 1932, Rush.

Chrysler, Russell L., 1959, Professor of Marketing; Chairman, Department of Business; Acting Dean, College of Business and Economics; Acting Director, Bureau of Business and Economic Research; B.B.A., 1932, M.A., 1937, Minnesota; Ph.D., 1953, Northwestern. **(g)**

Cichanski, Gerald, 1968, Assistant Professor of Architecture; B.Arch., 1967, Ohio State; M.Arch., 1968, Washington.

Clark, Robert W., 1956, Professor of Accounting; Department Chairman; B.S.Bus., 1956, M.S.Bus., 1958, Idaho; C.P.A. **(g)**

***Clayton, Rosalee**, 1971, Extension Home Economics Agent, Butte and Custer Counties, Arco; B.A., 1971, Idaho State.

***Cleveland, George W.**, 1934-1946; 1951-1957; 1961, Extension Dairyman, Cooperative Extension Service, Boise; B.S., 1931, Utah State.

Clifton, Donald F., 1957, Professor of Metallurgy; B.S., 1940, Michigan College of Mining and Technology; Ph.D., 1957, Utah. **(g)**

Cobb, John I., 1969, Associate Professor of Mathematics; B.A., 1960, Florida State; M.A., 1961, Ph.D., 1966, Wisconsin.

Cocotis, Margaret A., 1970, Instructor in Education; Associate Director, Upward Bound Program; B.A., 1957, Portland; M.A.H.S., 1967, Reed.

Cohee, Padraic J., 1970, Instructor in Foreign Languages (French); B.A., 1959, M.A., 1965, California (Los Angeles).

***Cole, Joseph W.**, 1957, Cassia County Extension Agricultural Agent, Cooperative Extension Service, Burley; B.S.Ag., 1950, Idaho.

***Collette, Jean**, 1931, Professor Emerita of Drama; B.A., 1928, M.A., 1932, Idaho.

***Collier, Rex M.**, 1966, Professor Emeritus of Psychology; B.A., 1927, Iowa; M.A., 1929, Ph.D., 1934, Northwestern. **(g)**

***Colson, James B.**, 1960, Affiliate Professor of Electrical Engineering, NRTS, Idaho Falls; B.S., 1957, Utah; M.S., 1959, New York.

Conder, Robert A., 1968, Assistant Professor of Naval Science; B.A.Ed., 1964, Western State.

Conditt, Paul C., 1961, Head, Acquisitions Department, University Library (equivalent rank: Assistant Professor); B.A., 1956, Trinity (San Antonio); M.S., 1958, Columbia.

***Cone, William H.**, 1924, Professor Emeritus of Chemistry (Head, Department of Physical Sciences, 1947-1959); B.S., 1924, M.S., 1927, Idaho; Ph.D., 1936, Washington.

***Cooke, Russell W.**, 1967, Affiliate Professor of Civil Defense Education (U.S. Office of Civil Defense, Boise); B.A., 1935, College of Idaho.

Cooley, James H., 1957, Professor of Chemistry; B.A., 1952, M.S., 1954, Middlebury; Ph.D., 1958, Minnesota. **(g)**

Coonrod, Robert W., 1969, Professor of History (Russian History); Vice President for Academic Affairs; B.S., 1942, Southwest Missouri State; M.A., 1947, Ph.D., 1950, Stanford. **(g)**

Cooper, John M., 1969, Assistant Professor of Economics; B.A., 1965, Sacramento State.

Corey, Gilbert L., 1949-1954; 1957, Professor of Agricultural Engineering; Department Chairman; Agricultural Engineer; B.S., 1948, M.S., 1949, Ph.D., 1965, Colorado State; P.E. **(g)**

***Couch, Jay E.**, 1967, Assistant Professor of Education; Area Supervisor of Student Teaching, North Idaho; B.S.Ed., 1951, M.Ed., 1952, Prof. Cert. Ed., 1965, Idaho.

***Cowin, Cleon C.**, 1945, Instructor Emeritus in Chemistry; B.S., 1921, William Jewell; M.S., 1932, Idaho.

Crandall, James E., 1967, Professor of Psychology; B.A., 1955, M.P.S., 1956, Colorado; Ph.D., 1963, Oregon. **(g)**

Cross, Bert C., 1962, Associate Professor of Journalism; Department Chairman; B.A., 1947, Washington; M.S., 1951, Oregon.

Crowley, H. Ward, 1956, Professor of Mathematics; Director, Computer Services; B.A., 1931, M.A., 1932, Washington State; Sc.M., 1937, Brown; Ph.D., 1965, Washington State.

Cunningham, Helen H., 1961, Assistant Research Professor, Department of Home Economics Research; Assistant Home Economist; B.S., 1928, Idaho; M.S., 1938, Iowa State.

Curtis, Nelson S., 1969, Assistant Professor of Art; B.F.A., 1963, Memphis Academy of Arts; M.F.A., 1969, Idaho.

***Cushman, John H.**, 1919, Professor Emeritus of English; B.A., 1913, Brown; M.A., 1914, Harvard.

Cvancara, Joseph G., 1968, Associate Professor of Agricultural Education; B.S., 1955, North Dakota State; M.S., 1957, Ph.D., 1964, Minnesota. **(g)**

D

Dacres, Geraldine A., 1959, Associate Professor of Office Administration; B.S.Com.Ed., 1945, M.S.Bus.Ed., 1963, Idaho.

***Dahmen, Jerome J.**, 1947, Research Professor of Animal Science; Superintendent, Caldwell Branch Experiment Station; B.S.Ag., 1947, Idaho; M.S., 1952, Ph.D., 1966, Oregon State.

***Dailey, Gordon H.**, 1946, Latah County Extension Agricultural Agent, Cooperative Extension Service, Moscow; B.S.Ag., 1943, Idaho.

***Dalke, Paul D.**, 1947, Professor Emeritus of Wildlife Management; B.S.F., 1925, M.S.F., 1928, Ph.D., 1934, Michigan.

***Dallimore, Clarence E.**, 1955, Assistant Research Professor of Plant Pathology; Assistant Plant Pathologist, Aberdeen; B.S., 1940, Utah State; M.S., 1943, Nebraska.

Daniels, William E., 1969, Visiting Lecturer in Business Education; B.S.Bus., 1963, M.Ed., 1965, Ed.D., 1969, Idaho.

Davey, Harry E., Jr., 1961, Dean of Men; B.S., 1939, U.S. Naval Academy; M.Ed., 1964, Idaho.

Davis, Jack L., 1967, Assistant Professor of English; B.A., 1957, M.A., 1959, Washington State; Ph.D., 1967, New Mexico. **(g)**

***Davis, James R.**, 1968, Assistant Research Professor of Plant Pathology; Assistant Plant Pathologist, Aberdeen; A.B., 1956, California (Riverside); M.S., 1961, Ph.D., 1967, California (Davis).

Davis, John M., 1966, Instructor and Research Associate in Animal Science.

Davis, Joseph T., Jr., 1969, Assistant Professor of Aerospace Studies; B.S.For., 1961, Georgia.

Davis, Karen R., 1969, Assistant Research Professor (Foods and Nutrition), Department of Home Economics Research; B.S., 1963, M.S., 1969, Wyoming.

Davis, Lawrence W., Jr., 1968, Associate Professor of Physics; B.A., 1952, Pomona; B.S., 1956, California Institute of Technology; Ph.D., 1961, Stanford. **(g)**

***Davis, Raynold D.**, 1961, Bonner County Extension Agricultural Agent, Cooperative Extension Service, Sandpoint; B.S.Ag., 1951, Idaho.

Day, Richard L., 1961, Associate Professor of Geography; A.B., 1948, M.A., 1950, Clark; Ph.D., 1959, Illinois. **(g)**

***Dean, Leslie L.**, 1950, Research Professor of Plant Pathology; Plant Pathologist, Twin Falls; B.S.Ag., 1942, M.S.Ag., 1947, Idaho; Ph.D., 1951, Purdue.

***Dearien, John A.**, 1969, Affiliate Professor of Civil Engineering, NRTS, Idaho Falls; B.S., 1962, M.S., 1963, Arkansas; Ph.D., 1968, Missouri.

***d'Easum, Cedric G.**, 1949, Extension Editor, Cooperative Extension Service, Boise; B.A., 1930, Idaho.

Decker, Charles O., 1946, Dean of Students; B.A., 1940, Antioch; M.A., 1942, Northwestern.

Deitschman, Glenn H., 1970, Affiliate Professor of Silviculture (U.S. Forest Service, Moscow); B.S., 1947, Minnesota; M.F., 1948, Pennsylvania State.

Dempsey, Jack D., 1970, Assistant Professor of Military Science; B.A., 1967, Idaho State.

Denton, Robert E., 1966, Affiliate Professor of Forest Entomology (U.S. Forest Service, Moscow); B.S., 1948, State University College of Forestry (Syracuse, N.Y.); M.F., 1950, Michigan.

Deters, Merrill E., 1940, Professor of Forestry (Management); B.S., 1928, M.S., 1930, Ph.D., 1935, Minnesota. **(g)**

Deutchman, Philip A., 1968, Assistant Professor of Physics; B.S., 1959, M.S., 1961, New Mexico; Ph.D., 1967, Oregon. **(g)**

***Dick, Kenneth A.**, 1931, Professor of Accounting and Vice President Emeritus (Vice President for Financial Affairs, 1961-1967); B.S.Bus., 1931, M.S.Bus., 1938, Idaho; M.B.A., 1951, Stanford; C.P.A.

***Dickey, Billy Ray**, 1965, Affiliate Professor of Chemical Engineering, NRTS, Idaho Falls; B.S., 1954, M.S., 1962, Ph.D., 1964, Texas A&M.

Dierker, Paul F., 1966, Associate Professor of Mathematics; B.S., 1960, Dayton; M.S., 1963, Ph.D., 1966, Michigan State. **(g)**

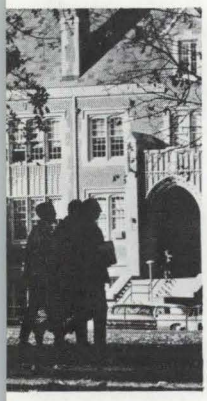
Di Noto, Michael J., 1970 Assistant Professor of Economics; B.A., 1967, M.A., 1969, New York State (Buffalo).

Dixon, John E., 1954, Associate Professor of Agricultural Engineering; Associate Agricultural Engineer; Director, Professional Advisory Service Center; B.S.Ag., 1951, B.S.Ag.E., 1951, Oregon State; M.S.Ag.E., 1957, Idaho; P.E. **(g)**

Dobler, Clifford I.,1941, Professor of Business Law; B.S., 1938, J.D., 1941, M.A., 1950, Idaho.

***Dobson, Joseph L.**, 1967, Kootenai County Extension Agricultural Agent, Cooperative Extension Service, Coeur d'Alene; B.S.Ag., 1966, Idaho.

Dotts, Charles S., 1962, Associate Professor of Architecture; B.A., 1936, LL.B., 1938, B.S.Arch., 1957, Kansas; M.Arch., 1959, Illinois. **(g)**



***Douglas, Dexter R.**, 1969, Affiliate Professor of Plant Pathology (Cooperating, U.S. Department of Agriculture Branch Experiment Station, Aberdeen); B.S., 1961, Kent State; M.S., 1965, Wyoming; Ph.D., 1968, Minnesota.

Duncombe, Herbert S., 1962, Professor of Political Science; Associate Director, Bureau of Public Affairs Research; B.A., 1948, Yale; M.P.A., 1955, Syracuse; Ph.D., 1963, Washington. **(g)**

Duncombe, Mary C., 1971, Visiting Assistant Professor of Home Economics; B.S., 1946, Iowa State; M.S., 1949, Columbia.

***Dunham, Charles S.**, 1959, Area 4-H Specialist, Cooperative Extension Service, Pocatello; B.S.Ag., 1957, Idaho; M.S., 1967, Colorado State.

Dunn, Alfred C., 1941, Professor of Art (Graphic Design)' B.A., 1936, Idaho; M.F.A., 1950, California College of Arts and Crafts. **(g)**

***Duren, Edward P.**, 1960, Area Extension Livestock Agent (Bear Lake, Caribou and Franklin Counties), Cooperative Extension Service, Soda Springs; B.S.Ag., 1957, Kansas State; M.S.Ag., 1959, Idaho.

***DuSault, Donald D.**, 1923, Assistant Professor of Chemistry and Registrar Emeritus (Registrar, 1944-1962); B.S., 1923, M.S., 1926, Idaho.

***Dyer, Ruth G.**, 1964, Bannock County Extension Home Economics Agent, Cooperative Extension Service, Pocatello; B.S., 1950, Minnesota.

E

***Eakin, James I.**, 1956-1960; 1965, Blaine County Extension Agricultural Agent, Cooperative Extension Service, Hailey; B.S., 1951, Utah State.

Early, John O., 1971, Extension Agricultural Economist (Marketing Information), Cooperative Extension Service; B.S., 1950, Ohio State; M.S., 1956, Colorado State.

Eden, Owen D., 1968, Instructor in English; B.S., 1964, Northwest Missouri State; M.A., 1967, Wyoming.

***Edmiston, Fred, L.**, 1967, Custer County Extension Agricultural Agent, Cooperative Extension Service, Challis; B.S.Ag., 1964, Idaho.

***Edwards, Herbert M.**, 1947, Elmore County Extension Agricultural Agent, Cooperative Extension Service, Mountain Home; B.S.Ag., 1947, Idaho.

Edwards, Louis L., Jr., 1961, Professor of Chemical Engineering; B.S.Ch.E., 1958, Rensselaer Polytechnic; M.S.Ch.E., 1960, Delaware; Ph.D., 1966, Idaho. **(g)**

***Eggen, Robert T.**, 1970, Affiliate Professor of Bacteriology (St. Luke's Hospital, Spokane, Wn.); B.Sc., 1950, M.D., 1954, Alberta.

Elwood, Karen H., 1960, Instructor in English; B.A., 1956, Washington State.

Elliott, Jack B., 1969, Associate Professor of Naval Science; B.S.Bus., 1951, Idaho.

Emery, Michael P., 1971, Acting Assistant Professor of Psychology; B.A., 1965, Occidental; Ph.D., 1970, Columbia.

Ensign, Ronald, D., 1952, Research Professor of Agriculture; Associate Director, Agricultural Experiment Station; B.S., 1946, Northwest Missouri State; M.S., 1949, Colorado State; Ph.D., 1952, Cornell. **(g)**

Erickson, Albert W., 1970, Professor of Wildlife Management and Zoology; Director, Wilderness Research Center; B.S., 1954, M.S., 1955, Ph.D., 1964, Michigan State. **(g)**

Erickson, Lambert C., 1945, Professor of Agronomy; Agronomist; B.S., 1940, Minnesota; M.S., 1943, Wyoming; Ph.D., 1962, Minnesota. **(g)**

***Erickson, L. F.**, 1969, Affiliate Professor of Civil Engineering (Idaho Department of Highways, Boise); B.S.C.E., 1937, Idaho.

Ertel, Kenneth A., 1962, Professor of Business Education (Distributive Education); B.S., 1953, Minnesota; M.Ed., 1960, Eastern Washington State; Ed.D., 1967, Washington State. **(g)**

***Eschen, Veryl G.**, 1969, Affiliate Professor of Engineering, NRTS, Idaho Falls; B.S., 1959, South Dakota; M.S., 1966, Idaho.

***Esser, Francis J.**, 1970, Power County Extension Agricultural Agent, Cooperative Extension Service, American Falls; B.S.Ag., 1965, Idaho.

***Evans, Keith E.**, 1970, Affiliate Professor of Entomology (U.S. Department of Agriculture, Twin Falls); B.S.Ag., 1938, Idaho.

Everson, Dale O., 1962, Professor of Statistics; Statistician; B.S.Ag., 1952, M.S.Ag., 1956, Idaho; Ph.D., 1960, Iowa State. **(g)**

F

***Fahrenwald, Arthur W.**, 1919, Research Professor of Metallurgy and Dean Emeritus (Dean, College of Mines, 1934-1954); B.S.-Met.E., 1914, South Dakota School of Mines and Technology; E.M., 1916, New Mexico Institute of Mining and Technology; LL.D., 1970, Idaho.

Falkenhagen, George L., 1970, Associate Professor of Mechanical Engineering; B.S.-M.E., 1962, M.S.M.E., 1966, Washington State; Ph.D., 1970, Virginia.

Falter, C. Michael, 1969, Assistant Professor of Fishery Management; B.S., 1964, Kansas State; M.S., 1966, Pittsburgh; Ph.D., 1969, Idaho.

Farley, Melvin W., 1953, Professor of Education; Director, Student Teaching; A.B., 1940, Westmar; A.M., 1948, South Dakota; Ph.D., 1953, Nebraska. **(g)**

***Farmer, Ralph H.**, 1927, Professor of Finance and Dean Emeritus (Dean, School of Business Administration, 1928-1950); A.B., 1916, Oberlin.

***Farrell, Kathleen A.**, 1967, Bonner County Extension Home Economics Agent, Cooperative Extension Service, Sandpoint; B.S.H.Ec., 1967, Idaho.

***Featherstone, Marion,** 1931-1946, 1948, Associate Professor Emerita of Home Economics; B.S.Ed., 1925, Idaho; M.A.Ed., 1931, Southern California.

Fenwick, Harry S., 1956, Professor of Plant Pathology; Plant Pathologist, Extension Plant Pathologist, Cooperative Extension Service, Moscow; B.S., 1949, M.S., 1953, Montana State; Ph.D., 1956, Oregon State. **(g)**

Ferguson, J. Homer, 1964, Associate Professor of Zoology; B.S., 1958, Sul Ross State; Ph.D., 1964, Arizona. **(g)**

***Fields, Lenora S.**, 1969, Canyon County Extension Home Economics Agent, Cooperative Extension Service, Caldwell; B.S.H.Ec., 1968, Idaho.

***Fiez, Edward A.**, 1970, District Extension Dairyman, Cooperative Extension Service, Caldwell; B.S., 1963, Fresno State; M.S., 1970, Idaho.

Finley, Arthur M., 1950, Professor of Plant Pathology; Head, Department of Plant Sciences; Plant Pathologist; B.S., 1941, M.A., 1948, Ph.D., 1950, Missouri. **(g)**

Fiske, John C., 1970, Assistant Professor of Foreign Languages (French); A.B., 1930, Harvard; A.M., 1940, Columbia; Ph.D., 1954, Harvard.

Fitzgerald, William D., 1966, University Physician; Director, Student Health Services; B.S., 1939, Millsaps; M.D., 1943, Tulane.

Fitzsimmons, Delbert W., 1959, Professor of Agricultural Engineering; Acting Department Chairman (1970-71); Agricultural Engineer; B.S.Ag.E., 1959, M.S.Ag.E., 1962, Idaho; Ph.D., 1970, Washington State; P.E. **(g)**

***Fitzsimmons, Norman D.,** 1955, Clearwater County Extension Agricultural Agent, Cooperative Extension Service, Orofino; B.S.Ag., 1952, M.Ag., 1968, Idaho.

***Fjeld, David S.**, 1967, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.A., 1962, Concordia; M.S., 1966, Wyoming.

Fletcher, Charles I., 1971, Acting Instructor in Psychology; B.S., Idaho.

Fletcher, Max E., 1958, Professor of Economics; Department Chairman; B.A., 1946, Washington; M.A., 1949, Idaho; Ph.D., 1957, Wisconsin. **(g)**

Fletcher, Paul M., 1968, Professor of Military Science; Department Head; B.S., 1942, Virginia Polytechnic Institute.

Foiles, Marvin W., 1970, Affiliate Professor of Silviculture (U.S. Forest Service, Moscow); B.S., 1947, Colorado State.

***Foley, Richard F.**, 1957, Associate Research Professor of Horticulture; Associate Horticulturist, Parma; B.S., 1948, M.S., 1949, New Hampshire; Ph.D., 1955, Cornell.

Folz, Carolyn A., 1945, Law Librarian (equivalent rank: Assistant Professor); A.B., 1929, Evansville; B.S.L.S., 1933, Illinois; M.A., 1939, Idaho.

Folz, William E., 1935, Professor of Agricultural Economics; Department Head; Agricultural Economist; B.S., 1927, Evansville; M.S., 1933, Ph.D., 1935, Illinois. **(g)**

Forbes, Clifford, 1957, Associate Professor of Zoology; A.B., 1950, Humboldt State; M.A., 1952, Ph.D., 1958, California (Berkeley). **(g)**

Forbes, Rose L., 1965, Assistant Professor of Home Economics (Foods); B.S., 1962, M.S., 1964, Pennsylvania State.

Foriyes, Katheryn M., 1967, Assistant Professor of English; B.S., 1965, Wisconsin State (La Crosse); M.F.A., 1967, Iowa. **(g)**

Fosberg, Maynard A., 1949, Associate Professor of Soils; Associate Soil Scientist; B.S., 1949, M.S., 1949, Ph.D., 1963, Wisconsin. **(g)**

***Foster, Zeph H.**, 1963, Associate Professor of Education; Area Supervisor, Student Teaching, Boise; B.A., 1951, Walla Walla; M.S.Ed., 1956, Ed.D., 1963, Idaho. **(g)**

Frank, Floyd W., 1955, Professor of Veterinary Science; Department Head; Veterinarian; Acting Associate Director, Agricultural Experiment Station (second semester, 1970-71); B.S., 1951, D.V.M., 1951, Ph.D., 1963, Washington State. **(g)**

***Franklin, Delance F.**, 1942, Research Professor of Horticulture; Horticulturist; Superintendent, Parma Branch Experiment Station; B.S.Ag., 1942, M.S.Ag., 1955, Idaho.

***Frederiksen, Kenneth R.**, 1951, Associate Research Professor of Animal Science; Associate Animal Scientist, Dubois; B.S.Ag., 1950, Idaho; M.S., 1961, Colorado State.

***Freer, Mark L.**, 1969, Instructor in Education; Area Supervisor of Student Teaching, Lewiston; A.B., 1959, Miami; M.Ed., 1968, Idaho.

Fronek, Donald K., 1968, Instructor in Electrical Engineering; B.A., 1960, B.S., 1964, Washington State; M.S., 1968, Idaho; P.E.

Frykman, Marian I., 1947, Professor of Music (Literature, Piano, Organ); B.S.Mus.Ed., 1938, M.A., 1950, Minnesota. **(g)**

***Fuehrer, Richard L.**, 1970, Twin Falls County Extension Agricultural Agent, Cooperative Extension Service, Twin Falls; B.S.Ag., 1970, Idaho.

Furgason, Robert R., 1957, Professor of Chemical Engineering; Department Chairman; B.S.Ch.E., 1956, M.S.Ch.E., 1958, Idaho; Ph.D., 1961, Northwestern; P.E. **(g)**

Furniss, Malcolm M., 1963, Affiliate Professor of Forest Entomology (U.S. Forest Service, Moscow); B.S., 1950, California (Berkeley); M.S., 1966, Idaho.

***Futter, Homer I.**, 1949-1950; 1954, Latah County Extension Agricultural Agent, Cooperative Extension Service, Moscow; B.S.Ag., 1948, Idaho.

G

Gagon, George, 1947, University Engineer; Director, Physical Plant; B.S.C.E., 1936, Idaho; P.E.

***Gallinger, Duane D.**, 1970, Valley County Extension Agricultural Agent, Cooperative Extension Service, Donnelly; B.S., 1958, M.S., 1965, Wyoming.

***Gardner, George F.**, 1965, Oneida County Extension Agricultural Agent, Cooperative Extension Service, Malad; B.S.Ag., 1953, M.S.Ag., 1957, Idaho.

***Gardner, Max A.**, 1961, Canyon County Extension Agricultural Agent, Cooperative Extension Service, Caldwell; B.S.Ag., 1960, M.S.Ag., 1961, Idaho.

Gardner, Melita B., 1966, Assistant Professor of Foreign Languages (Russian); B.A., 1958, Washington.

***Garner, Jay G.**, 1946, Area Extension Potato Specialist, Cooperative Extension Service, Blackfoot; B.S.Ag., 1943, Idaho.

***Garner, Richard W.**, 1964, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1958, Oklahoma; M.S., 1963, Idaho.

Garrard, Verl G., 1946, Associate Professor of Chemistry; B.S.Ch.E., 1945, M.S., 1952, Idaho; Ph.D., 1967, Utah. **(g)**

***Gephart, Floyd C.**, 1958, Idaho County Extension Agricultural Agent, Cooperative Extension Service, Grangeville; B.S.Ag., 1952, M.S.Ag., 1966, Idaho.

Ghazanfar, Shaikh M., 1968, Assistant Professor of Economics; B.A., 1962, M.A., 1964, Ph.D., 1968, Washington State. **(g)**

***Gibbs, Raphael S.**, 1934-1936; 1946, Professor Emeritus of Journalism (Director of Information and University Editor, 1949-1970); B.S., 1934, Idaho.

***Gilbert, Catherine C.**, 1961, Professor Emerita of Foreign Languages (French); B.A., 1917, Ohio Wesleyan; M.A., 1918, Ohio State.

***Gibson, Chad C.**, 1968, Adams County Extension Agricultural Agent, Cooperative Extension Service, Council; B.S.Ag., 1965, Idaho; M.S., 1967, Nevada.

Gibson, Gene W., 1966, Instructor and Research Associate in Animal Science; B.S.Ag., 1965, Idaho.

***Gifford, Norma J.**, 1970, Caribou County Extension Home Economics Agent, Cooperative Extension Service, Soda Springs; B.A., 1970, Idaho State.

***Gilbert, Fred H.**, 1970, District Extension Animal Scientist, Cooperative Extension Service, Twin Falls; B.S., 1959, California Polytechnic; M.S., 1962, Nevada.

Gilbertson, Philip N., 1969, Instructor in English; B.A., 1965, Augustana (Sioux Falls).

***Giles, Eugene**, 1948, Professor Emeritus of Psychology (Counselor Education and School Psychology); B.A., 1926, M.A., 1926, Washington State; Ph.D., 1947, Washington.

Gilmour, Campbell M., 1970, Professor of Bacteriology; Department Head; Bacteriologist; B.S.A., 1941, M.S.A., 1945, British Columbia; Ph.D., 1949, Wisconsin. **(g)**

Gingles, John R., 1969, Instructor in English; B.A., 1965, M.A., 1966, Wyoming.

Gittins, Arthur R., 1955, Professor of Entomology; Department Head; Entomologist; B.Sc., 1952, Alberta; M.S.Ag., 1955, Idaho; Ph.D., 1963, Montana. **(g)**

***Glenn, Karen M.**, 1968, Assistant Professor of Education; Area Supervisor of Student Teaching, Twin Falls; B.S.Ed., 1963, M.Ed., 1966, Idaho.

***Glenn, McNeil**, 1965, Affiliate Professor of Business, NRTS, Idaho Falls; M.S., 1964, Utah.

Godfrey, E. Bruce, 1970, Assistant Research Professor of Agricultural and Forestry Economics; B.S., 1967, M.S., 1968, Utah State. **(g)**

Goetschel, Roy H., Jr., 1969, Assistant Professor of Mathematics; B.S., 1954, Northwestern; M.S., 1958, De Paul; Ph.D., 1966, Wisconsin.

Golis, Eugene F., 1963, Associate Professor of Management; A.B., 1955, Vermont; M.B.A., 1961, Denver. **(g)**

Gonzalez, Silvino F., 1966, Assistant Professor of Foreign Languages (Spanish); B.A., 1943, Valladolid; M.A., 1949, Madrid; Doctor en Filologia, 1966, Cuenca.

***Gooch, Rex I.**, 1946, Jefferson County Extension Agricultural Agent, Cooperative Extension Service, Rigby; B.S.Ag., 1941, Utah State.

***Goodell, Robert A.**, 1960, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1956, Brigham Young; M.S.M.E., 1961, Idaho.

Gordon, C. Douglas, 1969, Instructor in Fishery Management; Assistant to Director, Water Resources Research Institute; B.Sc., 1963, M.Sc., 1966, British Columbia; Ph.D., 1970, Idaho.

***Gossman, Sergio R.**, 1963, Affiliate Professor of Electrical Engineering, NRTS, Idaho Falls, B.S., 1955, Texas, M.S., 1962, Idaho.

Grahn, Edgar H., 1941-1943; 1946, Professor of Chemistry; Associate Dean, Graduate School; B.S., 1941, Puget Sound; M.S., 1948, Idaho; Ph.D., 1955, Illinois. **(g)**

***Grahn, Elna H.**, 1947, Associate Professor Emerita of Mathematics, B.S., 1935, M.S., 1941, Wisconsin.

Grant, Douglas L., 1968, Professor of Law; B.A., 1962, Iowa; J.D., 1967, Colorado. **(g)**

***Graue, Erwin**, 1928, Professor Emeritus of Economics; B.S., 1923, Ph.D., 1928, Cornell.

Graves, James L., 1949, Associate Director, Cooperative Extension Service; B.S.Ag., 1949, Idaho; M.S., 1962, Wisconsin.

***Gray, Charlotte L.**, 1946-1948; 1958, Nez Perce County Extension Home Economics, Cooperative Extension Service, Lewiston; B.S.H.Ec., 1945, Idaho.

Gray, Earl E., 1962, Associate Professor of Electrical Engineering; B.S.E.E., 1955, M.E.E., 1960, Colorado State. **(g)**

Green, Leon G., 1940, Professor of Physical Education (Principles, Administration, Problems); Head, Department of Health, Physical Education and Recreation; Chairman, Physical Education for Men, B.S.Ed., 1937, M.S.Ed., 1940, Idaho, Ed.D., 1953, New York. **(g)**

Green, William R., 1965, Assistant Professor of Mining Engineering; Mining Engineer; B.S., 1962, Idaho; M.S., 1964, Nevada.

Greever, William S., 1949, Professor of History (American History); Department Head; A.B., 1938, Pomona; A.M., 1940, Ph.D., 1949, Harvard. **(g)**

Gregory, Cedric E., 1968, Professor of Mining Engineering; B.E., 1931, B.A., 1944, Adelaide; B.Econ., 1960, M.E., 1960, Ph.D., 1966, Queensland; P.E. **(g)**

Grieb, Merland W., 1956, Associate Professor of Chemistry; B.S., 1942, M.S., 1949, Idaho; Ph.D., 1953, Illinois. **(g)**

***Griebe, Roger W.**, 1970, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1964, M.S., 1966, Ph.D., 1968, Purdue.

***Grieve, Dorothy K.**, 1969, Gooding County Extension Home Economics Agent, Cooperative Extension Service, Gooding; B.S.H.Ec., 1938, Idaho.

***Grimmett, Earl S.**, 1969, Affiliate Professor of Chemical Engineering (Idaho Nuclear Corp., Idaho Falls); B.S.Ch.E., 1943, M.S.Ch.E., 1948, Idaho.

***Gross, Robert J.**, 1968, Washington County Extension Agricultural Agent, Cooperative Extension Service, Weiser; B.S., 1965, Washington State.

Gustafson, Donald A., 1944, Professor of Chemistry, B.S., 1937, Ph.D., 1945, Washington.

Guthrie, James W., 1952, Professor of Plant Pathology; Plant Pathologist; B.S., 1949, M.S., 1950, Utah State; Ph.D., 1952, Wisconsin. **(g)**

H

Haber, Donald F., 1969, Associate Professor of Engineering Science and Civil Engineering (Systems); B.S.E., 1956, M.S.E., 1960, Missouri; Ph.D., 1966, Oklahoma State; P.E. **(g)**

***Hackler, Frank E.**, 1946, Washington County Extension Agricultural Agent, Cooperative Extension Service, Weiser; B.S., 1942, Oregon State.

Hackmann, W. Kent, 1967, Assistant Professor of History (English History); B.A., 1959, Yale; M.A., 1962, Ph.D., 1969, Michigan. **(g)**

Hagen, Jack I., 1965, Associate Research Professor of Electrical Engineering; B.S., 1948, M.S., 1949, Oregon State. **(g)**

Haggart, Peter A., 1963, Associate Professor of Radio-Television,; Chairman, Radio-Television; Program Director, KUID-TV; B.A., 1959, South Dakota; M.A., 1963, Kansas.

Hahn, Richard R., 1967, Assistant Professor of Music (History, Flute); B.A., 1964, B.Mus., 1964, Washington State; M.Mus., 1966, Wisconsin.

Hahn, Sandra L., 1970, Instructor in Music (Piano); B.A., 1962, Washington State; M.Mus., 1964, Wisconsin.

Hall, Chester D., 1967, Assistant Professor of Physical Education and Recreation; Swimming Coach; B.S.Ed., 1959, M.Nat.Sc., 1963, Idaho.

Hall, Forrest H., 1946, Professor of Civil Engineering (Structures); B.S., 1939, Colorado State; M.S.C.E., 1940, California Institute of Technology. **(g)**

***Hall, Grant B.**, 1950, District Extension Agent Supervisor, Cooperative Extension Service, Boise; B.S.Ag., 1950, M.Ag., 1960, Idaho.

***Hall, Richard F.**, 1967, Associate Research Professor of Veterinary Science; Extension Veterinarian, Cooperative Extension Service, Caldwell; B.S.Ag., 1953, Idaho; D.V.M., 1958, Washington State.

Hall, Theodore L., 1968, Associate Professor of Law; B.A., 1957, Minnesota (Duluth); J.D., 1960, Minnesota (Minneapolis).

Hall, William B., 1965, Professor of Geology; A.B., 1950, Princeton; M.S., 1951, Cincinnati; Ph.D., 1961, Wyoming. **(g)**

***Halland, Leonard**, 1921, Instructor Emeritus in Physics, B.S.M.E., 1919, M.S.M.E., 1928, Idaho.

Hallaq, John H., 1970, Assistant Professor of Business; B.S., 1963, M.B.A., 1964, California (Los Angeles).

Hamilton, David Alexander, Jr., 1970, Affiliate Professor of Forest Mensuration (U.S. Forest Service, Moscow); B.S., 1965, Iowa State.

***Hamilton, George**, 1968, Clark County Extension Agricultural Agent, Cooperative Extension Service, Dubois; B.S.Ag., 1966, Idaho.

Hamilton, Joel R., 1970, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist; B.S., 1962, Wisconsin.

***Hamilton, Lee W.**, 1952, Extension Agricultural Agent for the Fort Hall Indian Reservation, Cooperative Extension Service, Fort Hall; B.S.Ag., 1952, Idaho; M.A., 1961, Colorado State.

***Hanks, Kenneth O., Jr.**, 1965, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1945, Illinois; M.S., 1957, Oklahoma.

Hannaford, Richard G., 1970, Assistant Professor of English; B.A., 1963, Puget Sound; M.A., 1966, Ph.D., 1970, Indiana.

***Hansen, Henry C.**, 1925, Assistant Professor Emeritus of Dairy Science (Bacteriology and Chemistry of Dairy Products); B.S.Ag., 1925, M.S.Ag., 1929, Idaho; Ph.D., 1936, Iowa State.

***Hansen, Robert H.**, 1968, Affiliate Professor of Business, NRTS, Idaho Falls; M.B.A., 1967, Utah State.

Hanson, David G., 1965, Affiliate Professor of Civil Defense Education (U.S. Office of Civil Defense); A.B., 1959, Northwest Nazarene; M.S.T., 1967, Cornell.

***Hanson, D. Jay**, 1968, Bonneville County Extension Agricultural Agent, Cooperative Extension Service, Idaho Falls; B.S.Ag., 1968, Idaho.

***Hansten, Beverly A.**, 1969, Owyhee County Extension Home Economics Agent, Cooperative Extension Service, Marsing; B.A., 1969, Idaho State.

Harder, Roger W., 1947, Associate Professor of Soils; Associate Soils Specialist; Extension Soils Specialist, Cooperative Extension Service, Moscow; B.A., 1942, M.S., 1947, Wisconsin. **(g)**

Hardies, Roderick R., 1965, Science/Technology Librarian (equivalent rank: Assistant Professor); B.A., 1940, Washington; M.A., 1952, Columbia; M.L.S., 1955, Washington.

***Harmsworth, Harry C.**, 1944, Professor Emeritus of Sociology; A.B., 1928, M.A., 1932, Northern Colorado; Ph.D., 1943, Southern California.

Harrington, James E., Jr., 1970, Visiting Associate Professor of Law; B.A., 1962, Williams; LL.B., 1966, Harvard.

Harris, Jerry W., 1969, Assistant Professor of Music (Choir, Music Education); Coordinator, Music Education; B.Mus.Ed., 1955, M.Mus.Ed., 1956, Lewis & Clark; Ed.D., 1966, Oregon. **(g)**

Harris, Robert D., 1959, Associate Professor of History (European History); B.A., 1951, Whitman; M.A., 1953, Ph.D., 1959, California. **(g)**

Harrison, Steven D., 1969, Instructor in Journalism; Program Director, Office of University Relations; B.S., 1967, Idaho; M.B.A., 1970, Sacramento State.

Hartung, Ernest W., 1965, President; A.B., 1938, Dartmouth; A.M., 1940, Ph.D., 1944, Harvard; LL.D., 1965, Rhode Island; LL.D., 1966, College of Idaho. **(g)**

Harvey, Alan E., 1965, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S., 1960, College of Idaho; M.S., 1962, Idaho; Ph.D., 1968, Washington State.

Haskell, Edwin R., 1969, Assistant Professor of Naval Science; B.A., 1965, Washington State.

***Hastings, Kent R.**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1964, Colorado; M.A., 1967, Western State.

Hathaway, Cecil W., 1955-56; 1960, Associate Professor of Civil Engineering (Transportation); B.S.C.E., 1955, Idaho; M.E., 1958, California (Berkeley); P.E. **(g)**

Hattrup, Hubert E., 1941, Professor of Electrical Engineering; B.S.E.E., 1930, E.E., 1946, Idaho; P.E.

Haupt, Harold F., 1963, Affiliate Professor of Forest Hydrology (U.S. Forest Service, Moscow); B.S.For., 1948, M.S.For., 1951, Idaho.

***Hause, E. Malcolm**, 1948, Professor Emeritus of History and Political Science; B.A., 1922, Union; M.A., 1924, Nebraska; Ph.D., 1936, Northwestern.

***Hawkins, James N.**, 1970, Bannock County Extension Agricultural Agent, Cooperative Extension Service, Pocatello; B.S.Ag., 1969, Idaho.

Haynes, Robert C., 1955, Associate Professor of Agricultural Education (Farm Mechanics); B.S.Ag., 1938, M.S.Ag., 1957, Idaho. **(g)**

***Hazen, William F.**, 1970, Camas County Extension Agricultural Agent, Cooperative Extension Service, Fairfield; B.S.Ag., 1969, Idaho.

***Helmer, Richard G.**, 1961, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1956, M.S., 1957, Ph.D., 1961, Michigan.

Helton, Audus W., 1951, Professor of Plant Pathology (Chemotherapy, Virology); Plant Pathologist; B.A., 1947, M.S., 1949, Ohio Wesleyan; Ph.D., 1951, Oregon State. **(g)**

Hemstrom, Morris L., 1959, Associate Professor of Animal Science; Extension Animal Scientist, Cooperative Extension Service, Moscow; B.S., 1950, Colorado State; M.S., 1958, Nebraska.

Heningham, Eleanor K., 1966, Associate Professor of English; A.B., 1931, Mount Holyoke; M.A., 1932, Ph.D., 1937, New York. **(g)**

***Henry, John A.**, 1963, Canyon County Extension Agricultural Agent, Cooperative Extension Service, Caldwell; B.S.Ag., 1954, M.S.Ag., 1962, Idaho.

Hespelt, George G., 1957, Associate Professor of Electrical Engineering; B.S.E.E., 1953, Idaho; M.S.E.E., 1964, Oregon State. **(g)**

***Hess, L. Ann**, 1967, Kootenai County Extension Home Economics Agent, Cooperative Extension Service, Coeur d'Alene; B.S.H.Ec., 1967, Idaho.

Hickman, John E., 1968, Controller; B.S.Bus., 1939, Colorado.

Higginbottom, P. Scott, 1969, Instructor in Political Science; B.A., 1962, Kansas; J.D., 1965, Vanderbilt.

***Higgins, Robert E.**, 1946, Extension Agronomist, Cooperative Extension Service, Twin Falls; B.S.Ag., 1941, M.S.Ag., 1959, Idaho.

Hilden, Shirley A., 1970, Assistant Professor of Zoology; B.A., 1962, St. Olaf; A.M., 1967, Ph.D., 1969, Stanford.

***Hilfiker, Herman G.**, 1936, Extension Professor and Ada County Extension Agricultural Agent Emeritus, Cooperative Extension Service; B.S.Ag., 1933, Idaho.

Hill, A. Jean, 1968, Assistant Dean of Women; B.Mus.Ed., 1964, M.S., 1966, Indiana.

***Hill, Archie Dee**, 1967, Affiliate Professor of Electrical Engineering, NRTS, Idaho Falls; B.S., 1955, Utah; M.S., 1965, Idaho.

***Hillman, Russell G.**, 1950, Fremont County Extension Agricultural Agent, Cooperative Extension Service, St. Anthony; B.S.Ag., 1950, Idaho.

Hipple, John LeRoy, 1970, Student Counselor; B.A., 1961, Iowa; M.Ed., 1962, Idaho State; Ph.D., 1970, Iowa.

Hipple, Thomas E., 1969, Assistant Professor of Psychology (Counselor Education); B.S., 1954, Northern Illinois; B.S., 1959, Wisconsin; Professional Certificate, 1964, Missouri; Ph.D., 1970, Kent State. **(g)**

Hironaka, Minoru, 1954, Associate Professor of Range Management; B.S., 1952, Utah State; M.S.For., 1954, Idaho; Ph.D., 1963, Wisconsin. **(g)**

***Hoag, Kenneth**, 1935, Professor Emeritus of English; B.A., 1924, M.A., 1926, Michigan.

Hodgson, Charles W., 1945, Associate Professor of Animal Science; Associate Animal Scientist; B.S.Ag., 1934, Idaho; M.S., 1936, Arizona; Ph.D., 1940, Michigan State.

Hoff, Raymond J., 1962, Affiliate Professor of Forest Genetics (U.S. Forest Service, Moscow); B.A., 1957, Western Washington State; Ph.D., 1968, Washington State.

Hoffman, Dwight S., 1938, Professor of Chemical Engineering; Associate Dean, College of Engineering; B.S.Ch.E., 1938, M.S., 1947, Idaho; P.E. **(g)**

Hofstrand, Arland D., 1959, Assistant Professor of Wood Utilization; B.S.For., 1950, M.S.For., 1952, Idaho. **(g)**

***Hogg, George William**, 1970, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1958, Iowa State; M.S., 1965, Ph.D., 1968, Idaho.

Hole, Dorothy S., 1957, Assistant State 4-H Club Leader, Cooperative Extension Service, Moscow; B.S., 1936, Oregon State; M.Ed., 1967, Colorado State.

Holick, David L., 1968, Assistant Professor of Naval Science; B.S., 1965, Colorado.

***Holmes, Ronald L.**, 1969, Assistant Professor of Philosophy; B.A., 1964, Occidental; M.A., 1968, California (Los Angeles).

***Homan, Hugh W.**, 1965, Area Extension Entomologist (Canyon, Owyhee and Payette Counties), Cooperative Extension Service, Caldwell; B.S.Ed., 1957, M.S., 1965, Idaho.

Hook, Robert D., 1968, Public Service Librarian (equivalent rank: Assistant Professor); B.A., 1964, Chico State; M.A., 1968, San Jose State.

***Hopkins, Ivan C.**, 1959, Lincoln County Extension Agricultural Agent, Cooperative Extension Service, Shoshone; B.S.Ag., 1956, Idaho.

***Horn, Anton S.**, 1946, Extension Horticulturist, Cooperative Extension Service, Boise; B.S.Ag., 1937, Kansas State; M.S., 1941, Illinois.

Hornocker, Maurice G., 1968, Associate Professor of Wildlife Management; Leader, Idaho Cooperative Wildlife Research Unit; B.S., 1960, M.S., 1962, Montana; Ph.D., 1967, British Columbia. **(g)**

Hosack, Robert E., 1943, Professor of Political Science; Chairman, Department of Political Science and Public Affairs Research; A.B., 1932, Wooster; A.M., 1934, Chicago; Ph.D., 1951, Duke. **(g)**

***Hosking, Roy W.**, 1968, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1954, Purdue; M.B.A., 1961, Washington.

Hoskins, John R., 1967, Professor of Mining Engineering; Head, Department of Mining Engineering and Metallurgy; B.S.Min.E., 1947, Idaho; Ph.D., 1962, Utah. **(g)**

***Hovey, Bette A.**, 1968, Power County Extension Home Economics Agent, Cooperative Extension Service, American Falls; B.S., 1968, Idaho State.

Howe, John P., 1956, Professor of Wood Utilization; A.B., 1935, Amherst; M.S., 1955, Yale; Ph.D., 1966, Michigan. **(g)**

Hower, Charles O., 1966, Assistant Professor of Chemistry; B.A., 1956, Whitman; Ph.D., 1962, Washington. **(g)**

Huber, Don M., 1963, Associate Professor of Plant Pathology; Associate Plant Pathologist, B.S.Ag., 1957, M.S., 1959, Idaho; Ph.D., 1963, Michigan State. **(g)**

Huber, Jon D., 1968, Instructor and Research Associate in Food Science; B.S.Ag., 1962, M.S., 1965, Idaho.

***Hughes, Edward D.**, 1969, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1963; M.S., 1967, Ph.D., 1969, North Carolina State.

Hulbert, Theodore E., Jr., 1970, Assistant Professor of Business; B.A., 1965, Central Washington State; M.S., 1966, Wyoming.

***Humpherys, Allan S.**, 1969, Affiliate Professor of Agricultural Engineering (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1954, M.S., 1960, Utah State.

***Hungerford, Charles W.**, 1919, Professor of Plant Pathology and Dean of the Graduate School Emeritus (Dean, Graduate School, 1931-1951); B.S., 1910, Upper Iowa; M.S., 1915, Ph.D., 1925, Wisconsin.

Hungerford, Kenneth E., 1942-1945; 1946, Professor of Wildlife Management; B.S.For., 1938, Idaho; 1940, Connecticut; Ph.D., 1952, Michigan. **(g)**

Hungerford, Roger D., 1970, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S.For., 1963, Idaho.

Huppert, Lorraine E., 1968, Head, Serials Department, University Library (equivalent rank: Assistant Professor); B.A., 1963, North Carolina (Greensboro); M.S.L.S., 1968, North Carolina (Chapel Hill).

I

***Ickes, Millard W.**, 1969, Affiliate Professor of Veterinary Science (Veterinarian, Nampa); B.S., 1943, Nebraska; D.V.M., 1950, Colorado State.

Iiams, Carlton L., 1961, Professor of Foreign Languages (German); Department Chairman; A.B., 1950, M.A., 1952, Ph.D., 1956, California (Berkeley).

Ingerson, Thomas E., 1968, Associate Professor of Physics; A.B., 1960, California (Berkeley); Ph.D., 1965, Colorado. **(g)**

J

Jackson, Melbourne L., 1953, Research Professor of Chemical Engineering (Dean, Graduate School, 1965-1970); B.S., 1941, Montana State; Ph.D., 1948, Minnesota. **(g)**

***Jacobs, Frank H.**, 1954, Madison County Extension Agricultural Agent, Cooperative Extension Service, Rexburg; B.S.Ag., 1948, Idaho.

Jacobs, John A., 1970, Assistant Professor of Animal Science; Assistant Animal Scientist; B.S., 1963, M.S., 1965, Kentucky; Ph.D., 1970, Wyoming. **(g)**

Jacobsen, Richard T., 1963, Assistant Professor of Mechanical Engineering; B.S.M.E., 1963, M.S.M.E., 1965, Idaho; P.E. **(g)**

Janssen, Allen S., 1931, Professor of Civil Engineering (Dean, College of Engineering and Director, Engineering Experiment Station, 1946-1967); B.Arch., 1930, B.S.C.E., 1933, M.S.C.E., 1937, Idaho; P.E.

***Jeffers, Dwight S.**, 1935, Professor of Forestry and Dean Emeritus (Dean, School of Forestry, 1935-1953); A.B., 1906, Illinois Wesleyan; M.F., 1911, Ph.D., 1935, Yale.

***Jeffery, William G.**, 1969, Affiliate Professor Economics, NRTS, Idaho Falls, B.A., 1964, Carroll; M.A., 1967, Washington State.

Jenness, Tom E., 1969, Assistant Professor of Speech; B.S., 1962, M.A., 1969, Brigham Young.

Jensen, Alfred W., 1968, Assistant Professor of Foreign Languages (Spanish); B.A., 1963, Utah State; M.A., 1965, Wisconsin.

***Jensen, Gary Joseph**, 1970, Affiliate Professor of Accounting, NRTS, Idaho Falls; A.S., 1959, Dixie College; B.S., 1961, Brigham Young; J.D., 1968, Utah.

***Jensen, Marvin E.**, 1969, Affiliate Professor of Agricultural Engineering (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1951, M.S., 1952, North Dakota State; Ph.D., 1965, Colorado State.

***Jensen, Pansy S.**, 1959, Valley County Extension Home Economics Agent, Cooperative Extension Service, Donnelly; B.S., 1932, Linfield.

Jerome, Donnell E., 1970, Acting Research Instructor in Political Science; Assistant to the Director, Bureau of Public Affairs Research; B.A., 1969, Idaho.

Jinks, James R., 1969, Assistant Professor of Military Science; B.S., 1964, U.S. Military Academy.

***Johannesen, Erling J.**, 1945, Gem County Extension Agricultural Agent, Cooperative Extension Service, Emmett; B.S.Ag., 1945, Idaho.

***Johnson, Bryce W.**, 1969, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S.M.E., 1954, Idaho; M.S., 1958, North Carolina State; Ph.D., 1966, Stanford.

Johnson, Donald R., 1968, Associate Professor of Biology; B.A., 1953, M.S., 1958, Idaho; Ph.D., 1962, Colorado State. **(g)**

Johnson, Frederic D., 1952, Associate Professor of Forestry (Ecology); B.S., 1950, Oregon State; M.S.For., 1952, Idaho **(g)**

***Johnson, Hyrum G.**, 1955, Bear Lake County Extension Agricultural Agent, Cooperative Extension Service, Paris; B.S.Ag., 1952, Utah State; M.S.Ag., 1955, Idaho.

***Johnson, J. Hugo**, 1918, Professor of Electrical Engineering and Department Head Emeritus (Head, Department of Electrical Engineering, 1918-1953); B.A., 1909, B.S.-E.E., 1911, Wisconsin.

Johnson, James L., 1962-1964; 1966, Associate Professor of Agricultural Information; Department Head; Editor, Agricultural Experiment Station and Cooperative Extension Service, Moscow; B.S., 1953, Ex.M., 1969, Washington State.

Johnson, Kenneth A., 1969, Assistant Professor of Sociology; B.A., 1966, M.A., 1967, Inter-American (Puerto Rico).

***Johnson, Lynn F.**, 1968, Associate Research Professor of Agricultural Engineering, Aberdeen; B.S.Ag.E., 1953, M.S.Ag.E., 1958, Idaho.

Johnson, Maurice E., 1958, State 4-H Club Leader, Cooperative Extension Service, Moscow; B.S.Ag., 1956, M.S.Ag., 1957, Idaho.

Johnston, Lawrence H., 1967, Professor of Physics; A.A., 1938, Los Angeles City College; A.B., 1940, Ph.D., 1950, California (Berkeley). **(g)**

Jolley, J. Irving, 1937-1946; 1947, Professor of Chemistry; Chairman, Pre-medical and pre-dental Studies; B.S., 1930, Ph.D., 1940, Washington.

***Jones, Earl G.**, 1970, Affiliate Professor of Accounting, NRTS, Idaho Falls; B.S., 1947 Ricks; M.S., 1968, Idaho.

Jones, Frank C., 1968, Director of Development.

Jones, Harold L., 1969, Assistant Professor of Accounting; B.S., 1948, Indiana; M.B.A., 1964, Harvard; C.P.A.

Jones, Loring M., 1969, Instructor in Forestry (Recreation); A.B., 1942, Dartmouth; A.M., 1949, Harvard.

Jones, J. Preston, 1967, Associate Professor of Soils; Associate Soil Scientist; B.S., 1957, Mississippi State; M.S., 1960, Ph.D., 1966, Arizona. **(g)**

Jones, Robert W., 1958, Associate Professor of Geology, B.S., 1950, M.S., 1957, Ph.D., 1959, Washington. **(g)**

Jones, Robert L., 1968, Professor of Law; A.B., 1948, Harvard; J.D., 1951, Michigan.

Jones, W. Howard, 1969, Assistant Professor of Music (History, Cello, String Bass); B.S., 1961, M.Ed., 1969, Oregon. **(g)**

***Jordan, Marilyn E.**, 1967, Elmore County Extension Home Economics Agent, Cooperative Extension Service, Mountain Home; B.S.H.Ec., 1944, Iowa State; M.S., 1967, Oregon.

***Judd, Harry L.**, 1955, Benewah County Extension Agricultural Agent, Cooperative Extension Service, St. Maries; B.S.Ag., 1954, Idaho.

Junk, Frank S., 1949, Associate Professor of Civil Engineering; B.S.C.E., 1937, Iowa; M.S.C.E., 1950, Idaho; P.E.

***Just, Franklin H.,** 1965, Affiliate Professor of Engineering, NRTS, Idaho Falls; B.S., 1958, Utah State; M.S.E.E., 1963, Idaho.

K

***Kaiser, Richard E.**, 1968, Affiliate Professor of Nuclear Engineering, NRTS, Idaho Falls; B.S., 1959, Northwestern; M.S., 1961, Ph.D., 1967, Kansas State.

***Kambitsch, R. Loren**, 1946, Nez Perce County Extension Agricultural Agent, Cooperative Extension Service, Lewiston; B.S.Ag., 1943, Idaho.

Karr, M. Linda, 1962, Assistant Professor of English Composition; B.A., 1962, M.A., 1965, Idaho.

Kaus, Paul F., 1955, Associate Professor of Education; Director, Summer Sessions; Coordinator, Continuing Education; B.A., 1951, North Idaho (Lewiston); M.Ed., 1954, Ed.D., 1966, Washington State.

Kearney, Robert J., 1964, Associate Professor of Physics; B.S., 1957, M.S., 1959, New Hampshire; Ph.D., 1964, Iowa State. **(g)**

Kees, Donald J., 1954, Director, Student Counseling Center; B.S., 1951, M.S., 1952, Idaho; Ed.D., 1967, Washington State.

***Keith, Thomas B.**, 1947, Professor Emeritus of Animal Science; B.S.Ag., 1924, Idaho; M.S., 1926, Illinois; Ph.D., 1933, Pennsylvania State.

***Keller, Joseph H.**, 1968, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.S., 1956, Washington (Md.); M.S., 1958, Pennsylvania State.

Kelly, Edward L., 1962, Research Professor of Education; Associate Director, Bureau of Educational Research and Service; B.S.Ed., 1953, M.Ed., 1954, Pennsylvania State; Ed.D., 1962, Illinois. **(g)**

Kelly, Joseph Thomas, 1970, Assistant Professor of Education; B.S., 1958, Nebraska; M.A., 1965, Denver; Ed.D., 1970, California (Berkeley).

***Kennedy, Virgil D.**, 1945, Extension Farm Management Specialist, Cooperative Extension Service, Boise; B.A.Ag., 1940, Oregon State; M.S.Ag., 1942, Iowa State.

***Kenzy, Sam G.**, 1969, Affiliate Professor of Veterinary Science (Washington State University); B.S., 1934, South Dakota State; D.V.M., 1942, M.S., 1948, Ph.D., 1950, Iowa State.

***Kerr, Thomas S.**, 1924, Professor of Political Science/Business Law and Dean Emeritus (Dean, College of Letters and Science, 1937-1955); A.B., 1913, Indiana; J.D., 1918, Michigan.

Kessel, Elizabeth M., 1965, Assistant Professor of Home Economics (Home Management-Equipment); B.S., 1948, Wisconsin State (Stevens Point); M.S.H.Ec., 1964, Idaho.

Kessel, Robert M., 1957-1959; 1960, Professor of Office Administration and Business Education; Chairman, Department of Office Administration; B.E., 1946, Wisconsin State (Whitewater); M.S., 1951, Ph.D., 1957, Wisconsin. **(g)**

Kiehn, Shirley O., 1968, Visiting Assistant Professor of Home Economics (Education-Foods); B.A., 1943, B.Ed., 1949, M.A.T., 1967, Washington State.

Kindschy, Dwight L., 1947, Professor of Agricultural Education; Department Head; B.S.Ag., 1939, Montana State; M.S., 1946, Iowa State; Ed.D., 1960, Washington State. **(g)**

***King, Elton A.**, 1968, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1953, Brigham Young; M.S., 1965, Idaho.

Kirkland, Eric B., 1947, Professor of Physical Education (Recreation, Administration); B.S., 1937, M.Ed., 1946, Washington. **(g)**

***Kirkwood, Mary B.**, 1930, Professor Emerita of Art; B.A., 1926, Montana; M.F.A., 1930, Oregon. **(g)**

Kirtley, Bacil F., 1968, Professor of English; B.A., 1949, M.A., 1950, Texas; Ph.D., 1955, Indiana. **(g)**

Kjos, O. E.,1965, Associate Professor of Psychology (Counselor Education); Coordinator, Vocational Teacher Education; B.S., 1942, North Dakota (Ellendale); M.Ed., 1949, Colorado State; Ed.D., 1954, Missouri. **(g)**

Klimko, Ronald J., 1968, Associate Professor of Music (Theory, Bassoon); B.Mus.Ed., 1959, Milton; M.Mus., 1963, Ph.D., 1968, Wisconsin. **(g)**

Knecht, Edward T., 1969, Director of Athletics; B.A., 1950, Toledo; M.S., 1957, Michigan.

Knight, Joseph E., 1970, Assistant Professor of English; B.A., 1964, San Francisco; M.A., D.A., 1970, Oregon.

***Knight, Lawrence, L.**, 1970, Affiliate Professor of Bacteriology (St. Luke's Hospital, Boise); B.S.Pre-Med., 1956, Idaho; M.D., 1958, Washington.

Knight, Richard R., 1967, Associate Professor of Wildlife Management; B.S., 1956, M.S., 1960, Montana State; Ph.D., 1968, Minnesota. **(g)**

Knowles, Charles R., 1970, Assistant Professor of Geochemistry; Microprobe Analyst; M.S., 1964, Chicago.

***Kochan, Walter J.**, 1955, Research Professor of Horticulture, Parma; B.S., 1950, M.S., 1952, Utah State; Ph.D., 1955, Rutgers.

***Koester, Edward F.**, 1950, Gooding County Extension Agricultural Agent, Cooperative Extension Service, Gooding; B.S.Ag., 1947, M.S., 1968, Idaho.

***Kohl, Fred E.**, 1950, Program Leader, Cooperative Extension Service, Boise; B.S.-Ag., 1950, Idaho; M.S., 1966, Ph.D., 1968, Wisconsin.

***Kohl, Robert A.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1958, Purdue; M.S., 1960, Ph.D., 1962, Utah State.

***Kolar, John J.**, 1956, Associate Research Professor of Agronomy; Associate Agronomist, Twin Falls; B.S., 1950, M.S., 1952, Montana State; Ph.D., 1955, Iowa State.

Kotnour, Thomas A., 1970, Instructor in General Engineering and Chemical Engineering; B.Ch.E., 1967, Minnesota; M.S., 1969, Idaho.

Kraus, James E., 1941, Professor of Agriculture; Dean, College of Agriculture; Director, Agricultural Experiment Station and Cooperative Extension Service; B.S., 1932, Colorado State; M.S., 1934, Wisconsin; Ph.D., 1940, Cornell. **(g)**

***Kunkel, Glenn R.**, 1956, Extension Agricultural Agent for the Fort Hall Indian Reservation, Cooperative Extension Service, Fort Hall; B.S.Ag., 1935, Idaho.

***Kunze, Jay F.**, 1959, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1954, M.S., 1955, Ph.D., 1958, Carnegie-Mellon.

L

***LaFray, Sharon E.**, 1970, Jerome County Extension Home Economics Agent, Cooperative Extension Service, Jerome; B.A., 1970, Idaho State.

***Lampman, Clifford E.**, 1928, Professor Emeritus of Poultry Science; B.S.Ag., 1921, Wisconsin.

Larrison, Earl J., 1949, Associate Professor of Zoology; B.S., 1941, M.S., 1946, Washington. **(g)**

***Larsen, Dorrell C.**, 1956, Extension Irrigationist, Cooperative Extension Service, Boise; B.S.Ag.E., 1952, Idaho; P.E.

***Larson, James M.**, 1969, Affiliate Professor of Electrical Engineering, NRTS, Idaho Falls; B.S., 1959, Brigham Young; M.S., 1969, Idaho.

***Larson, Jay R.**, 1968, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1955, Illinois; M.S., 1960, Washington; Ph.D., 1964, Purdue.

Lashbrook, Austin M., 1967, Professor of Foreign Languages (Classics); A.B., 1942, Western Kentucky State; M.A., 1948, Kentucky; Ph.D., 1960, Pennsylvania.

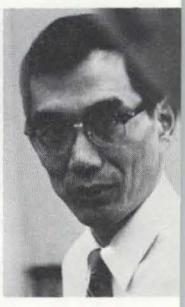
Lathen, Calvin W., 1967, Assistant Professor of Physical Education and Recreation; B.A., 1963, M.P.E., 1967, Idaho State.

Law, Gordon, 1961, Professor of Radio-Television; Department Head; Station Manager, KUID-FM and KUID-TV; A.B., 1955, Denver; M.S., 1956, Syracuse; Ed.D., 1962, Washington State.

***Lawroski, Mary A.**, 1965, Bonneville County Extension Home Economics Agent, Cooperative Extension Service, Idaho Falls; B.S., 1955, Arkansas; M.S., 1959, Pennsylvania State.

Leaphart, Charles D., 1965, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S., 1948, Montana; M.F., 1949, Ph.D., 1954, Yale.

***LeBaron, Marshall J.**, 1947, Research Professor of Agronomy; Superintendent, Branch Experiment Station, Twin Falls; Extension Agronomist, Cooperative Extension Service, Twin Falls; B.S.Ag., 1947, M.S.Ag., 1950, Idaho.



***Leggett, Glen E.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1950, M.S., 1951, Utah State, Ph.D., 1957, Washington State.

Leonard, Robert R., 1966, Associate University Physician; M.D., 1948, Indiana.

LePere, JoAnn, 1970, Visiting Instructor in Physical Education; B.S., 1952, Pepperdine.

LeTourneau, Duane J., 1953, Professor of Agricultural Biochemistry; Agricultural Biochemist; B.S., 1948, M.S., 1951, Ph.D., 1954, Minnesota. **(g)**

***Lewis, Adah**, 1923, Associate Professor Emerita of Home Economics; B.S., 1907, M.S., 1909, Kansas State.

Lewis, Glenn C., 1947, Professor of Soils; Soil Scientist; B.S.Ag., 1945, M.S.Ag., 1947, Idaho; Ph.D., 1962, Purdue. **(g)**

Lind, Leon P., 1951, Assistant Professor of Communications; Head, Department of Audio Visual Services; B.S., 1951, M.A., 1956, Idaho.

Lindeborg, Karl H., 1959, Professor of Agricultural Economics; Agricultural Economist; B.S., 1947, Royal Veterinary & Agricultural College (Copenhagen); M.S., 1956, Utah State; Ph.D., 1958, Oregon State. **(g)**

***Linford, Blaine**, 1961, District Extension Agent Supervisor, Cooperative Extension Service, Twin Falls; B.S., 1942, Wyoming.

Lingg, Al J., 1969, Assistant Professor of Bacteriology; Assistant Bacteriologist; B.S., 1964, M.S., 1966, Ph.D., 1969, Kansas State. **(g)**

***Lisman, Fred**, 1965, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.S., 1960, Fairfield; Ph.D., 1965, Purdue.

***Little, Miriam H.**, 1930, Assistant Professor Emerita of Music; B.Mus., 1918, B.F.A., 1923, Nebraska; M.A., 1940, Idaho.

Locke, Mabel, 1930-1936; 1947, Professor of Physical Education; B.S., 1929, Northwestern; M.S., 1936, Wisconsin. **(g)**

Lockery, Glen R., 1947, Professor of Music (Choir, Voice); B.A., 1940; B.Mus., 1942, Lawrence; M.A., 1947, Columbia. **(g)**

Loewenstein, Howard, 1958, Professor of Forestry (Soils); B.S., 1952, Colorado State (Ft. Collins); Ph.D., 1955, Wisconsin. **(g)**

Logan, Norman R., 1947, Professor of Music (Choir, Music Education, Voice); B.S., 1947, M.S.Mus.Ed., 1947, Idaho; M.Mus., 1963, Southern California. **(g)**

Long, Roger B., 1966, Associate Professor of Agricultural Economics; Associate Agricultural Economist; B.S., 1955, M.F., 1959, Ph.D., 1963, Minnesota. **(g)**

Lottman, Robert P., 1966, Professor of Civil Engineering; B.S.C.E., 1954, Polytechnic Institute of Brooklyn; M.S.C.E., 1956, Purdue; Ph.D., 1965, Ohio State. **(g)**

***Loucks, Robert R.**, 1967, Lemhi County Extension Agricultural Agent, Cooperative Extension Service, Salmon; B.S.Ag., 1965, Idaho.

***Ludden, T. E.**, 1950, Affiliate Professor of Bacteriology (Deaconess Hospital, Spokane, Wn.); B.A., 1939, Willamette; M.S., 1948, Minnesota; M.D., 1943, Oregon.

Lynch, Gary A., 1964, Associate Professor of Economics; B.A., 1960, St. Joseph's; Ph.D., 1970, Washington State. **(g)**

M

MacFarlane, Douglas, 1963, Assistant Professor of Physical Education; B.A.Ed., 1953, Washington; M.Ed., 1958, Oregon State.

MacKinnon, Mary-Ann K., 1970, Instructor in Art; B.A., 1964, Wilson; M.F.A., 1969, Washington State.

***Macklin, Hall M.**, 1935, Professor of Music and Department Head Emeritus (Head, Department of Music, 1948-1969); B.Mus., 1931, Illinois; M.Mus., 1938, Idaho. **(g)**

MacPhee, Craig, 1957, Professor of Fishery Management; B.A., 1947, M.A., 1949, British Columbia; Ph.D., 1954, Washington. **(g)**

Maddox, Robert W., 1967, Catalog Librarian (equivalent rank: Instructor); B.S., 1951, Southwest Missouri; M.L.S., 1967, Brigham Young.

Madsen, Edwin L., 1968, Instructor in Education; Director; Upward-Bound Program; B.S.Ed., 1964, Idaho.

Maib, Frances B., 1951, Professor of Education; Chairman, Elementary Education; B.S., 1935, Central Washington State; M.A., 1943, Ed.D., 1950, Washington. **(g)**

Maki, Gary K., 1969, Assistant Professor of Electrical Engineering; B.S., 1965, Michigan Technological; M.S., 1968, Ph.D., 1969, Missouri. **(g)**

Malek, James S., 1968, Associate Professor of English; B.A., 1963, Earlham; A.M., 1966, Ph.D., 1968, Chicago. **(g)**

Mann, Paul, 1948, Professor of Electrical Engineering; B.S.E.E., 1938, M.S.E.E., 1951, Idaho; P.E. **(g)**

Marlatt, Jean C., 1969, Instructor in Office Administration; B.S.Bus., 1942, M.S.Bus.Ed., 1953, Idaho.

Marousek, Gerald E., 1962, Professor of Agricultural Economics; Agricultural Economist; B.S., 1951, M.S., 1954, South Dakota State; Ph.D., 1960, Oklahoma State. **(g)**

Marr, David M., 1970, Instructor in English; B.A., 1965, M.A., 1967, Iowa.

Marsden, Michael A., 1970, Affiliate Professor of Statistics (U.S. Forest Service, Moscow); B.S., 1963, Utah State.

Marshall, Don A, 1950, Professor of Agricultural Economics; Associate Dean, College of Agriculture; B.S., 1937, M.S., 1938, Oklahoma State; Ph.D., 1947, Cornell. **(g)**

***Marshall, Neldon H.**, 1967, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1958, Brigham Young; M.S., 1966, Idaho.

Marten, Dwaine J., 1964, Assistant Professor of Physical Education (Health); B.S., 1958, Bemidji State; M.S., 1960, Southern Illinois. **(g)**

Martin, Boyd A., 1938, Borah Distinguished Professor of Political Science; Director, Bureau of Public Affairs Research; Director, Institute of Human Behavior (Dean, College of Letters and Science, 1955-1970); B.S., 1936, Idaho; A.M., 1937, Ph.D., 1943, Stanford. **(g)**

Martin, James W., 1946, Professor of Agricultural Engineering; Agricultural Engineer; B.S.E.E., 1933, B.S.Ag.E., 1937, Kansas State; M.S., 1938, Iowa State. P.E. **(g)**

Martin, Neil E., 1966, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S., 1961, Iowa State; M.S., 1963, South Dakota State.

***Matlock, Robert G.**, 1967, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1960 Washington; Ph.D., 1966, Colorado.

***Matsen, Gilbert**, 1942, Payette County Extension Agricultural Agent, Cooperative Extension Service, Payette; B.S.Ag., 1940, Idaho.

***Mayland, Henry F.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1960, M.S., 1961, Wyoming; Ph.D., 1965, Arizona.

***McCallum, Bruce A.**, 1966, Assistant Research Professor of Agronomy; Assistant Agronomist, Tetonia; B.S., 1958, M.S., 1960, Montana State.

***McCandless, Carol M.**, 1955, Jefferson County Extension Home Economics Agent, Cooperative Extension Service, Rigby; B.S., 1955, Utah State.

McCauley, Walter T., 1966, Social Sciences and Documents Librarian (equivalent rank: Assistant Professor); B.A., 1957, Murray State; M.A.L.S., 1958, George Peabody.

***McClure, John A.**, 1967, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1956, Geneva; M.S., 1957, Rochester; Ph.D., 1962, Virginia Polytechnic.

McConnell, Robert E., 1969, Professor of Architecture; Head, Department of Art and Architecture; B.Arch.E., 1952, Washington State; M.Arch., 1954, Massachusetts Institute of Technology. **(g)**

McCreary, Frank P., 1964-1968; 1970, Director, University Relations; B.A., 1965, Idaho.

***McDole, Robert E.**, 1969, Assistant Research Professor of Soils, Aberdeen; B.S., 1952, Oregon State; M.S., 1968, Ph.D., 1969, Idaho.

McDonald, Geral I., 1966, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S., 1963, Ph.D., 1969, Washington State.

McFarland, Ronald E., 1970, Assistant Professor of English; A.A., 1962, Brevard; B.A., 1963, M.A., 1965, Florida State; Ph.D., 1970, Illinois.

***McKay, Hugh C.**, 1951, Research Professor of Agronomy; Agronomist; Superintendent, Tetonia Branch Experiment Station; B.S.Ag., 1935, M.S.Ag., 1941, Idaho.

McKie, Maryann E., 1956, Instructor in English; B.S., 1950, Southern Idaho; M.A., 1956, Idaho.

McKinney, Charles W., 1970, Assistant Professor of Business; B.S., 1961, Oregon State; M.S., 1965, Southern Oregon.

***McMaster, Galen M.**, 1955, Associate Research Professor of Agricultural Engineering; Irrigationist, Aberdeen; B.S.Ag.E., 1950, M.S.Ag.E., 1964, Idaho; P.E.

McMullen, John L., 1951, Associate Professor of Botany; Assistant Dean, College of Letters and Science; B.Ed., 1934, Eastern Illinois State; M.S., 1948, Ph.D., 1966, Washington State.

***McPherson, Walter H.**, 1951, Lewis County Extension Agricultural Agent, Cooperative Extension Service, Nez Perce; B.S.Ag., 1949, M.Ag., 1964, Idaho.

***McProud, G. Elbert**, 1938, Associate Professor Emeritus of Agricultural Education and Extension Studies and Training Specialist Emeritus, Cooperative Extension Service; B.S., 1934, M.S., 1940, Idaho.

Mead, Rodney A., 1968, Assistant Professor of Zoology; A.A., 1958, Sierra; A.B., 1960, M.A., 1962, California (Davis); Ph.D., 1966, Montana. **(g)**

Medsker, Shirley R., 1967, Assistant Professor of Home Economics (Textiles-Weaving); B.S.H.Ec., 1958, M.A.H.Ec., 1964, Wayne State (Detroit).

Meldrum, Barbara R., 1965, Associate Professor of English; B.A., 1956, Westmont; M.A., 1957, Ph.D., 1964, Claremont. **(g)**

Menard, Albert R., Jr., 1967, Professor of Law; Dean, College of Law; A.B., 1938, Georgia; J.D., 1941, Columbia. **(g)**

Mendoza, Nancy L., 1957, Assistant Professor of Speech; B.A., 1952, Lake Forest; M.S., 1957, Wisconsin.

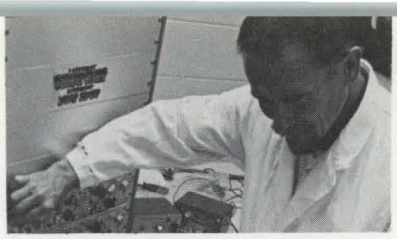
Merk, Lawrence H., 1967, Assistant Professor of Business; B.S., 1961, Oregon State; M.A., 1963, Washington.

Meyer, Gordon B., 1970, Assistant Professor of Poultry Science; Extension Poultry Specialist, Cooperative Extension Service; B.S., 1965, Minnesota; M.S., 1968, Ph.D., 1970, Wisconsin. **(g)**

Michalson, Edgar L., 1969, Associate Professor of Agricultural Economics; Associate Resource Economist; B.S., 1956, Oregon State; M.S., 1959, Ph.D., 1963, Pennsylvania State **(g)**

Miles, Paul L., 1965, Assistant Professor of Speech; B.S., 1962, Brigham Young; M.A., 1964, Arizona.

***Miller, Betty**, 1969, Franklin County Extension Home Economics Agent, Cooperative Extension Service, Preston; B.S., 1959, Brigham Young.



***Miller, John C.**, 1970, Extension Meats Specialist, Cooperative Extension Service, Caldwell; B.S., 1962, Texas Technological; M.S., 1964, Missouri; Ph.D., 1968, Pennsylvania State.

***Miller, John J.**, 1952, Professor Emeritus of Physics; B.A., 1924, M.A., 1927, Ph.D., 1936, Texas.

Miller, Laura Jean, 1970, Instructor in Home Economics; B.A., 1950, Washington State.

***Miller, Richard L.**, 1969, Affiliate Professor of Metallurgy, NRTS, Idaho Falls; B.A., 1957, M.S., 1960, Arizona State; Ph.D., 1968, Utah.

Miller, Sidney W., 1959, Associate Professor of Education; Director, Career Planning and Placement Center; B.S.Ed., 1952, M.S.Ed., 1959, Idaho.

***Miller, William D.**, 1954, Affiliate Professor of Business; Resident Director, Education Program, National Reactor Testing Station, Idaho Falls; B.S., 1940, Brigham Young; M.S., 1949, California (Berkeley).

***Mink, Edward F.**, 1957, Idaho County Extension Agricultural Agent, Cooperative Extension Service, Grangeville; B.S.Ag., 1956, Idaho.

Mirus, John E., 1971, Assistant Professor of Military Science; B.B.A., 1964, Gonzaga.

Moden, Walter L., Jr., 1957, Associate Research Professor of Agricultural Engineering; Associate Agricultural Engineer; B.A.Ag.E., 1957, Kansas State; M.S.Ag.E., 1961, Idaho; P.E.

Molnau, Myron P., 1969, Assistant Professor of Agricultural Engineering; B.Ag.E., 1961, M.S., 1963, Minnesota; Ph.D., 1969, Iowa State; P.E. **(g)**

***Montgomery, Beverly W.**, 1969, Canyon County Extension Home Economics Agent, Cooperative Extension Service, Caldwell; B.S.H.Ec., 1964, Idaho.

Montgomery, Victor E., 1963, Professor of Psychology; Department Head; A.B., 1948, Duke; M.S., 1949, Washington State; Ph.D., 1952, Northwestern. **(g)**

Montoure, John E., 1961, Associate Professor of Food Science; Department Head; Associate Food Scientist; B.S., 1954, M.S., 1955, Wisconsin; Ph.D., 1961, Washington State. **(g)**

***Moore, Chester A.**, 1949, Professor Emeritus of Civil Engineering (Head, Department of Civil Engineering, 1949-1966); B.S., 1922, Massachusetts Institute of Technology; P.E.

***Moore, Clarence A.**, 1966, Affiliate Professor of Civil Engineering, NRTS, Idaho Falls; B.S., 1954, M.S., 1960, Texas Technological.

Moore, William C., 1930-1946, 1964, Associate Professor of Business; B.S., 1930, M.A., 1936, Idaho. **(g)**

Moorty, Jagarlapudi S., 1970, Visiting Assistant Professor of Philosophy; B.A., M.A., 1956, Andhra (India); M.A., 1965, California (Berkeley).

Morris, James D., 1965, Student Counselor; B.S.Ed., 1962, M.S.Ed., 1963, Idaho; Ed.D., 1970, Indiana.

***Mortensen, Glen A.**, 1963, Affiliate Professor of Nuclear Engineering; NRTS, Idaho Falls; B.S.Ch.E., 1955, Idaho; Ph.D., 1963, California (Berkeley).

***Moss, Ralph J.**, 1954, Bonneville County Extension Agricultural Agent, Cooperative Extension Service, Idaho Falls; B.S., 1950, Utah State.

Mullins, Auttis M., 1970, Professor of Animal Science; Head, Department of Animal Industries; Animal Scientist; Extension Animal Scientist, Cooperative Extension Service, Moscow; B.S., 1953, M.S., 1954, Kentucky; Ph.D., 1957, Missouri. **(g)**

Muneta, Paul, 1959, Associate Professor of Food Science; Associate Food Scientist; B.S., 1953, Montana State; Ph.D., 1959, Cornell. **(g)**

Murray, Glen A., 1967, Assistant Professor of Agronomy; Assistant Agronomist; Extension Agronomist, Cooperative Extension Service, Moscow; B.S., 1962, M.S., 1963, Montana State; Ph.D., 1967, Arizona. **(g)**

Muth, Arnold J., 1970, Assistant Professor of Military Science; B.A., 1956, Washington State; B.S., 1963, Missouri School of Mines.

Myers, Roberta K., 1970, Assistant Professor of Home Economics; B.A., 1968, Idaho; M.A., 1970, Wisconsin.

N

Nagan, Michael P., 1970, Visiting Instructor in Political Science; B.A., 1965, M.A., 1966, Wisconsin.

***Narum, Robert E.**, 1968, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.A., 1963, M.A., 1966, Colorado.

Naskali, Richard J., 1967, Assistant Professor of Botany; B.Sc., 1957, M.S., 1961, Ph.D., 1969, Ohio State. **(g)**

Naylor, Denny V., 1966, Assistant Professor of Soils; Assistant Soil Scientist; B.S., 1959, M.S., 1961, Idaho; Ph.D., 1966, California (Berkeley). **(g)**

Neely, Marjorie M., 1957, Dean of Women; B.A., 1948, Eastern Washington State; M.S., 1950, Ohio.

Nelson, Charles K., 1969, Assistant Professor of General Engineering; B.S., 1965, M.Ed., 1968, Idaho.

***Nelson, Karl E.**, 1970, Affiliate Professor of Food Science (Young's Dairy Products Co., Twin Falls); B.S.Ag., 1966, M.S., 1968, Idaho.

Nelson, Merlin W., 1964, Affiliate Professor of Civil Defense Education (U.S. Office of Civil Defense); B.S., 1950, Idaho; M.S., 1960, Utah.

Nelson, Milo G., 1970, Humanities Librarian (equivalent rank: Assistant Professor); B.A., 1960, Drake; M.A., 1967, M.L.S., 1970, Wisconsin.

***Nesbitt, Susan C.**, 1968, Payette County Extension Home Economics Agent, Cooperative Extension Service, Payette; B.S.H.Ec., 1964, Idaho; M.S., 1966, Washington State.

Neuhaus, Ralph J., 1967, Assistant Professor of Mathematics; B.A., 1961, St. Ambrose; M.S., 1963, Ph.D., 1967, Iowa. **(g)**

Newcomb, Shirley A., 1949, Associate Professor of Home Economics (Food-Nutrition); B.S.H.Ec., 1944, Nebraska; M.S., 1951, Idaho. **(g)**

Newton, Joseph, 1932, Professor of Metallurgy; Assistant Dean, College of Mines; B.S.Met.E., 1930, Montana College of Mineral Science and Technology; M.S.Met.E., 1931, Idaho. **(g)**

***Ney, Jerome J.**, 1968, Nez Perce County Extension Agricultural Agent, Cooperative Extension Service, Lewiston; B.S.Ag., 1965, M.S., 1966, Idaho.

Nickelsburg, Robert T., 1970, Assistant Professor of Special Education; A.A., 1955, Concordia (N.Y.); B.A., 1957, Valparaiso; M.A., 1961, M.S., 1965, Denver; Ed.D., 1970, Northern Colorado.

***Nielsen, Elsine**, 1942, Associate Professor Emerita of Home Economics; B.S., 1926, Utah State; M.S., 1931, Iowa State.

Nielsen, Ralph, 1964, Catalog Librarian (equivalent rank: Assistant Professor); B.A., 1954, Alberta; B.L.S., 1958, Toronto.

***Noble, Charles**, 1966, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.A., 1961, M.A., 1965, New Mexico.

***Nordlund, Mary N.**, 1955, Fremont County Extension Home Economics Agent, Cooperative Extension Service, St. Anthony; B.S., 1942, Brigham Young.

Norgord, John T., 1948, Associate Professor of Mechanical Engineering; B.S., 1948, Washington; M.S.E., 1951, Michigan; P.E.

Norton, James R., 1970, Instructor in Foreign Languages (Spanish); B.A., 1967, Idaho State; M.A., 1969, Purdue.

Nybroten, A. Norman, 1939-1948; 1958, Professor of Economics; Associate Director, Bureau of Business and Economic Research; B.Ed., 1935, Wisconsin State (Plattville); Ph.D., 1941, Wisconsin. **(g)**

O

***Obenchain, Carl F.**, 1965, Affiliate Professor of Chemical Engineering, NRTS, Idaho Falls; B.S., 1958, Oregon State; M.S., 1961, Ph.D., 1964, Michigan.

O'Callaghan, James F., 1970, Instructor in English; B.A., 1967, Seattle; M.A., 1969, Washington.

***Ohms, Richard E.**, 1957, Associate Research Professor of Horticulture; Extension Potato Specialist, Cooperative Extension Service, Twin Falls; B.S.Ag., 1950, M.S.Ag., 1952, Idaho; Ph.D., 1955, Illinois.

O'Keeffe, Lawrence E., 1965, Assistant Professor of Entomology; Assistant Entomologist; B.S., 1956, M.S., 1958, North Dakota State; Ph.D., 1965, Iowa State. **(g)**

Old, Leila S., 1967, Assistant Professor of Home Economics (Clothing); Ed.B., 1937, California (Los Angeles); B.S., 1941, Oregon State; M.A., 1942, Southern California; E.D., 1964, Washington State.

Olson, David E., 1969, Assistant Professor of Electrical Engineering; B.S.M.E., 1962, Michigan Technological; Ph.D., 1969, Utah.

Otness, H. Robert, 1950, Professor of Psychology; B.S., 1931, M.S.Ed., 1932, Idaho; Ph.D., 1939, New York. **(g)**

Otness, Lillian W., 1963, Instructor in English; B.A., 1930, M.S.Ed., 1940, M.A., 1961, Idaho.

***Owens, Edward W.**, 1955, Research Professor of Horticulture; Superintendent, Aberdeen Branch Experiment Station; B.S.Ag., 1949, M.S.Ag., 1951, Idaho; Ph.D., 1954, Cornell.

Owens, Warren S., 1968, Dean, Instructional Services; Director of Libraries (equivalent rank: Professor); B.A., 1943, Kalamazoo; M.A., 1949, Chicago; M.A.L.S., 1953, Michigan.

P-Q

***Packenham, Howard E.**, 1931, Associate Professor Emeritus of English; B.A., 1920, College of Idaho; M.A., 1933, Idaho.

***Painter, Charles G.**, 1954, Associate Research Professor of Soils; Soil Scientist, Parma; B.S., 1947, Colorado State; M.S., 1948, Michigan State.

***Papenfuss, Kenneth M.**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.A., 1955, M.A., 1959, Montana.

Parberry, Clem H., 1953, Associate Professor of Physical Education (Administration); B.S.Ed., 1935, Pacific; M.S.Ed., 1957, Idaho. **(g)**

Parish, William R., 1947, Professor of Electrical Engineering; B.S.E.E., 1944, Iowa State; M.S.E.E., 1952, Idaho. **(g)**

Parker, Frances J., 1969, Associate Professor of Home Economics (Education-Family Life); Department Head; A.A., 1962, Antelope Valley; B.S., 1965, San Fernando Valley State; M.A., 1967, California State (Long Beach); Ph.D., 1969, Ohio State. **(g)**

Parton, Robert R., 1967, Director of Housing; B.A., 1951, Denver.

Parks, Frankin P., 1966, Extension Associate in Soils, Cooperative Extension Service, Moscow; B.S.Ag., 1960, M.S.Ag., 1963, Idaho.

Partridge, Arthur D., 1960, Professor of Forestry (Pathology); B.S., 1953, Maine; M.S., 1956, Ph.D., 1957, New Hampshire. **(g)**

Patsakos, George, 1970, Visiting Assistant Professor of Physics; A.B., 1962, Columbia; Ph.D., 1969, Stanford. **(g)**

***Pavek, Joseph J.**, 1965, Affiliate Professor of Genetics (Collaborator, U.S. Department of Agriculture Branch Experiment Station, Aberdeen); B.S., 1955, M.S., 1960, Minnesota; Ph.D., 1965, Wisconsin.

Peck, Edson R., 1962, Professor of Physics; B.A., 1936, M.S., 1937, Northwestern; Ph.D., 1945, Chicago. **(g)**

Peebles, John J., 1963, Associate Research Professor of Civil Engineering (Water Resources); B.S.C.E., 1947, Idaho; M.S.C.E., 1950, Colorado; C.E., 1961, Idaho; P.E. **(g)**

***Peebles, Stephen L.**, 1960, Area Extension Livestock Agent (Fremont and Madison Counties), Cooperative Extension Service, St. Anthony; B.S.Ag., 1955, Idaho.

Penton, Vance E., Jr., 1960, Assistant Professor of Mechanical Engineering; Research Technician; B.S.M.E., 1960, M.S.M.E., 1965, Idaho.

***Perry, Allan**, 1942, Instructor in Communications and Supervisor of the Audio-Visual Center Emeritus; B.S., 1925, Whitman; M.S.-Ed., 1949, Idaho.

Petersen, Charlie F., 1943, Professor of Poultry Science; Poultry Scientist; B.S.Ag., 1940, M.S.Aq., 1946, Idaho. **(g)**

***Peterson, Colette**, 1970, Home Economics Agent, Lewis County, Nez Perce; B.S., 1970, Brigham Young.

***Peterson, Doran A.**, 1959, Ada County Extension Agricultural Agent, Cooperative Extension Service, Boise; B.S.Ag., 1940, Idaho.

Peterson, Floyd H., 1969, Professor of Music (History, Orchestra); Director, School of Music; B.Mus., 1952, M.Mus., 1953, Northwestern; Mus.Ed.D., 1963, Indiana. **(g)**

Peterson, Philip E., 1952, Professor of Law (Dean, College of Law, 1962-1966); B.S., 1950, J.D., 1952, Illinois; LL.M., 1958, Harvard.

Pitkin, Franklin H., 1939, Associate Professor of Forestry (Reforestation), Nursery Superintendent; B.S.For., 1939, M.F., 1958, Idaho. **(g)**

Place, T. Alan, 1970, Associate Professor of Mechanical Engineering; B.Sc., 1961, Nottingham (England); M.Eng., 1966, McMaster (Ontario); Ph.D., 1969, British Columbia; A.I.M., 1965, London.

***Pletcher, Peggy**, 1968, Ada County Extension Home Economics Agent, Cooperative Extension Service, Boise; B.S.H.Ec., 1953, Baylor.

Plouf, Thomas M., 1969, Instructor in Chemical Engineering; B.Ch.E., 1961, Minnesota; M.S.Met.E., 1969, Nevada.

Pope, Warren K., 1947, Research Professor of Agronomy; Agronomist; B.S., 1940, Ph.D., 1948, California (Berkeley). **(g)**

Porter, Glen H., 1968, Associate Professor of Physical Education (Biodynamics); B.S., 1962, Idaho; M.S., 1965, Illinois; Ph.D., 1968, Wisconsin. **(g)**

Porter, Richard A., 1962, Associate Professor of Chemistry; B.S., 1954, Northwestern; Ph.D., 1959, California (Los Angeles). **(g)**

Portman, Roland W., 1949, Extension Entomologist, Cooperative Extension Service, Moscow; B.S., 1937, Colorado State; M.S., 1940, Kansas State.

Potratz, Clarence J., 1966, Assistant Professor of Mathematics; B.A., 1957, Pacific Lutheran; M.S., 1959, Idaho; Ph.D., 1966, Washington State. **(g)**

Potter, Gretchen L., 1966, Assistant Professor of Home Economics (Art-Home Furnishings); B.S.H.Ec., 1939, Idaho; M.A.T., 1966, Washington State.

Potter, Robert E., 1969, Visiting Associate Professor of Special Education; B.A., 1954, Montana; M.A., 1958, Columbia; Ed.D., 1963, Oregon.

Powell, J. Dan, 1970, Associate Professor of Geology; B.S., M.S., 1958, Texas Technological; Ph.D., 1961, Texas.

***Price, Donald A.**, 1970, Affiliate Professor of Animal Science (U.S. Sheep Experiment Station, U.S. Department of Agriculture, Dubois); B.S., 1947, Kansas State; M.S., 1949, Colorado State; Ph.D., 1957, Oregon State.

***Prichard, Theodore J.**, 1926, Professor of Architecture and Department Head Emeritus (Head, Department of Art and Architecture, 1926-1967); B.A., 1925, Minnesota; M.Arch., 1944, Harvard.

***Priest, Wilmer G.**, 1946, Jerome County Extension Agricultural Agent, Cooperative Extension Service, Jerome; B.S.Ag., 1946, Idaho.

Probasco, Robert C., 1968, Assistant Professor of Music (History, Theory, Oboe); B.Mus., 1966, Michigan; M.Mus., 1968, Nebraska.

Proctor, Raymond L., 1965, Associate Professor of History (European History); B.S., 1960, Maryland; M.A., 1962, Ph.D., 1966, Oregon. **(g)**

Pugmire, R. Lynn, 1969, Instructor in English; B.A., 1967, M.A., 1969, Brigham Young.

***Pulley, Stephen R.**, 1970, Affiliate Professor of Accounting, NRTS, Idaho Falls; B.S., 1967, M.S., 1969, Utah State.

R

Rabe, Fred W., 1965, Assistant Professor of Zoology; B.S., 1950, M.S., 1955, Colorado State; Ph.D., 1963, Utah. **(g)**

***Raeder, J. Milford**, 1921, Professor Emeritus of Plant Sciences (Plant Pathology); B.S., 1915, M.S., 1920, Iowa State.

Ralston, Dale R., 1970, Assistant Professor of Hydrogeology; Hydrogeologist; B.S.C.E., 1964, Oregon State; M.S.Hydrogeol., 1967, Arizona.

***Randolph, Peter D.**, 1959, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1950, M.S., 1952, Ph.D., 1958, Michigan.

Ratchye, James C., 1970, Assistant Professor of Military Science; B.A., 1965, Montana.

Rathbone, Donald E., 1968, Professor of Electrical Engineering, Department Chairman; B.S.E.E., 1951, Purdue; M.S.E.E., 1956, Northwestern; Ph.D., 1962, Pittsburgh. **(g)**

Raunio, Elmer K., 1949, Professor of Chemistry; Dean, College of Letters and Science; B.S., 1940, Wyoming; M.S., 1942, North Dakota State; Ph.D., 1949, Michigan. **(g)**

Reece, James R., 1970, Instructor in Foreign Languages (German); B.A., 1966, Pacific Lutheran; M.A., 1968, Oregon.

***Reed, Alice M.**, 1966, Twin Falls County Extension Home Economics Agent, Cooperative Extension Service, Twin Falls; B.S.H.Ec., 1965, Idaho.

Reed, Eugene E., 1960, Professor of Foreign Languages (German); B.A., 1947, Texas Christian; M.A., 1950, Ph.D., 1953, Texas.

Rees, Willis W., 1969, Assistant Professor of Psychology; B.A., 1964, California State (Long Beach); M.A., 1966, Ph.D., 1968, Arizona.

***Reese, L. Eugene**, 1961, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1959, Idaho State; M.S., 1961, Brigham Young.

Rehfeldt, Gerald E., 1967, Affiliate Professor of Forest Genetics (U.S. Forest Service, Moscow); B.S., 1963, Utah State; M.S., 1965, Ph.D., 1967, Wisconsin.

***Reich, Charles W.**, 1958, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1952, Oklahoma; M.A., 1954, Ph.D., 1956, Rice.

Reid, Rolland R., 1955, Professor of Geology; Dean, College of Mines; Director, Idaho Bureau of Mines and Geology; Director, Idaho Mining Research Bureau; B.S., 1951, M.S., 1953, Ph.D., 1959, Washington. **(g)**

***Renberg, Charles L.**, 1954, Bannock County Extension Agricultural Agent, Cooperative Extension Service, Pocatello; B.S.Ag., 1952, M.S.Ag., 1954, Idaho.

Renfrew, Malcolm M., 1959, Professor of Chemistry; Department Head; B.S., 1932, M.S., 1934, Idaho; Ph.D., 1938, Minnesota. **(g)**

Renshaw, Vernon D., 1970, Assistant Professor of Economics; B.A., 1966, Washington State; Ph.D., 1970, Massachusetts Institute of Technology. **(g)**

***Rexford, Villa R.**, 1962-1964, 1965, Gem County Extension Home Economics Agent, Cooperative Extension Service, Emmett; B.S., 1962, M.S., 1968, Oregon State.

Reynolds, Robert G., 1963, Associate Professor of Accounting; B.S.Bus., 1949, Denver; M.S.Bus., 1952, Illinois; C.P.A.

Reynolds, Robert J., 1969, Assistant Professor of Economics; B.S., 1965, Ph.D., 1970, Northwestern. **(g)**

Rice, Charles W., Jr., 1965, Assistant Professor of Statistics and Management; B.S., 1962, Illinois Institute of Technology; M.S., 1963, Bucknell; C.D.P. **(g)**

Rice, David G., 1969, Assistant Professor of Anthropology; B.A., 1965, Washington; M.A., 1967, Washington State.

Richarz, Wilbert H., 1968, Professor of Aerospace Studies; Department Head; B.S.-Ed., 1947, Trinity; M.S., 1966, Ed.D., 1969, Oregon.

***Ricks, Kimber O.**, 1967, Affiliate Professor of Business; NRTS, Idaho Falls; B.B.A., 1965, Idaho State; M.S., 1966, Utah.

Ridley, Jack R., 1966, Assistant Professor of Plant Sciences; Assistant Crop Physiologist; B.S., 1961, M.S., 1963, Nevada; Ph.D., 1966, California (Davis). **(g)**

Rigas, Anthony L., 1966, Associate Professor of Electrical Engineering; B.S.E.E., 1958, M.S.E.E., 1962, Kansas **(g)**

Riley, Samuel M., 1970, Instructor in English; B.A., 1964, Seattle; M.A., 1968, Washington

***Rinebold, Eugene M.**, 1952-1958; 1965, Area Extension Potato Specialist, Cooperative Extension Service, Burley; B.S.Ag., 1951, Idaho

***Ritchie, Margaret**, 1939, Professor Emerita of Home Economics; B.S., 1918, M.A., 1930, Columbia

Robbins, Howard A., 1969, Instructor in Music (Percussion); B.A., 1963, Whitworth

Roberts, George H., 1957, Professor of Art, Chairman, Art; B.S., 1954, M.S., 1955, Wisconsin **(g)**

***Roberts, J. Daniel**, 1943, Franklin County Extension Agricultural Agent, Cooperative Extension Service, Preston; B.S.Ag., 1939, Idaho

Roberts, Lawrence D., 1967, Assistant Professor of Philosophy; A.B., 1951, A.M., 1962, St. Mary of the Lake, A.M., 1964, Loyola (Chicago), Ph.D., 1969, Indiana

Roberts, Lorin W., 1957, Professor of Botany; B.S., 1948, M.A., 1950, Ph.D., 1952, Missouri **(g)**

Roberts, William S., 1955, Manager, Administrative Data Processing; B.B.A., 1940, Minnesota; B.Ed., 1950, B.A., 1950, Washington State

***Robertson, Carl R.**, 1969, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1964, M.S., 1966, Montana State

Rocheleau, Robert E., 1970, Associate University Physician; M.D., 1965, Wayne State (Detroit)

Rolland, Siegfried B., 1952, Professor of Social Sciences and History (American History); B.A., 1941, M.A., 1947, Wayne State (Detroit); Ph.D., 1952, Wisconsin **(g)**

***Romanko, R. Robert**, 1957, Associate Research Professor of Plant Pathology, Associate Plant Pathologist, Parma; B.S., 1953, New Hampshire; M.S., 1955, Delaware; Ph.D., 1957, Louisiana State

Rose, Alan, 1969, Instructor in Foreign Languages (French); B.A., 1968, University of the South

Ross, Richard H., 1947, Professor of Dairy Science; Dairy Scientist; B.S., 1938, Pennsylvania State; M.S., 1940, West Virginia; Ph.D., 1947, Pennsylvania State **(g)**

Rouyer, Ahwyn R., 1970, Assistant Professor of Political Science; B.A., 1963, Southwestern Louisiana; M.A., 1966, Georgetown

***Roy, Terry C.**, 1969, Affiliate Professor of Physics, NRTS, Idaho Falls; B.S., 1964, California State; M.S., 1965, Wayne State

Royalty, William D., 1969, Assistant Professor of Mathematics; B.A., 1959, M.S., 1964, Ph.D., 1969, Iowa

***Roylance, Howard B.**, 1950, Extension Agronomist, Cooperative Extension Service, Boise; B.S.Ag., 1938, M.S.Ag., 1940, Idaho

Russell, George R., 1947, Professor of Civil Engineering; Assistant Dean, College of Engineering; B.S.C.E., 1943, C.E., 1960, Idaho; P.E.

S

Sack, Ronald L., 1970, Associate Professor of Civil Engineering; B.S., 1957, M.S.C.E., 1958, Ph.D., 1964, Minnesota

***Sampson, Merle R.**, 1946-1952; 1954, Canyon County Extension Agricultural Agent, Cooperative Extension Service, Caldwell; B.S.Ag., 1941, Idaho

Samuelson, Everett V., 1963, Professor of Education; Dean, College of Education; Director, Bureau of Educational Research and Service; B.A., 1948, Southwestern (Kansas); M.S., 1951, Kansas State; Ed.D., 1958, Kansas **(g)**

Sargent, Robert L., 1967, Extension Economist, Cooperative Extension Service, Moscow; B.S., 1950, M.S., 1963, Ph.D., 1965, Montana State

Sasser, R. Garth, 1967, Assistant Professor of Dairy Science; Assistant Dairy Scientist; B.S.Ag., 1961, M.S.Ag., 1963, Idaho; Ph.D., 1968, California (Davis) **(g)**

Sauter, Erwin A., Jr., 1956, Associate Research Professor of Poultry Science; Associate Poultry Scientist; B.S., 1950, M.S., 1952, Ph.D., 1966, Washington State

Savage, Carleton N., 1957, Associate Professor of Geology; Senior Geologist; A.B., 1938, Colby; M.S., 1940, Northwestern **(g)**

Schattschneider, Gary C., 1969, Assistant Professor of Drama; B.A., 1967, M.A., 1968, Saint Cloud State

Scheldorf, Jay J., 1966, Associate Professor of Chemical Engineering and Engineering Science; B.S.Ch.E., 1953, Illinois; M.S.Ch.E., 1954, Kansas State; Ph.D., 1958, Colorado **(g)**

Schell, Stewart C., 1949, Professor of Zoology; Chairman, Zoology; B.S., 1939, Kansas State; M.S., 1941, North Carolina State; Ph.D., 1949, Illinois **(g)**

Schenk, John A., 1961, Professor of Forest Entomology; B.S.F., 1950, Michigan; M.S., 1956, Ph.D., 1961, Wisconsin **(g)**

Schindler, Robert E., 1970, Visiting Assistant Professor of Chemical Engineering; B.S., 1959, Washington; M.S., 1961, Ph.D., 1965, Minnesota.

Schmitz, Richard F., 1970, Affiliate Professor of Forest Entomology (U.S. Forest Service, Moscow); B.S., 1957, Wisconsin (Milwaukee); M.S., 1965, Oregon State.

***Schmunk, Richard E.**, 1960, Affiliate Professor of Physics, NRTS, Idaho Falls; B.A., 1951, M.A., 1953, Miami; M.S., 1957, Ph.D., 1959, Case.

***Schneider, Arthur P.**, 1969, Affiliate Professor of Veterinary Science (Idaho Bureau of Animal Industry, Boise); B.S., 1938, D.V.M., 1938, Washington State.

***Scholer, Annjean C.**, 1965, Minidoka County Extension Home Economics Agent, Cooperative Extension Service, Rupert; B.S., 1965, Brigham Young.

Schomer, Joe Herbert, 1970, Instructor in Education; B.A., 1960, Washington State; B.A., 1964, M.Ed., 1969, Central Washington State.

***Schow, Sterling W.**, 1944, Power County Extension Agricultural Agent, Cooperative Extension Service, American Falls; B.S.Ag., 1939, Utah State.

***Schuldt, Agnes Crawford**, 1927-1930; 1946, Professor Emerita of Music (Piano, Literature); B.Mus., 1924, M.Mus., 1927, Syracuse.

***Schuman, Robert P.**, 1958, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.S., 1941, Denver; M.S., 1944, Ph.D., 1946, Ohio State.

Schuster, Robert L., 1967, Professor of Civil Engineering (Soil Mechanics); Department Chairman; B.S.Geol., 1950, Washington State; M.S.Geol., 1952, Ohio State; M.S.C.E., 1958, Purdue; Dipl. (Soil Mech.), 1965, Imperial College of Science and Technology (London); Ph.D., 1960, Purdue; P.E. **(g)**

***Scott, Donald R.**, 1956, Assistant Research Professor of Entomology, Assistant Entomologist, Parma; B.S., 1948, M.S., 1952, Nebraska.

***Scoville, John J.**, 1964, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1957, Oregon State; M.S., 1959, Pittsburgh.

***Scrivner, Lloyd H.**, 1948, Professor of Veterinary Science and Department Head Emeritus (Head, Department of Veterinary Science, 1948-1967); D.V.M., 1929, Colorado; M.S., 1939, Cornell.

Seale, Robert H., 1949-1950; 1951, Professor of Forestry (Economics); Associate Dean, College of Forestry, Wildlife and Range Sciences; B.S., 1940, California (Berkeley); M.S.For., 1942, Idaho; Ph.D., 1965, State University College of Forestry (Syracuse, N.Y.). **(g)**

Seaman, Francis, 1949, Professor of Philosophy, Chairman, Philosophy; Coordinator, General Studies Program; B.S., 1943, M.A., 1947, Ph.D., 1951, Michigan. **(g)**

Sears, Forrest E., 1966, Assistant Professor of Drama; B.A., 1955, Redlands; M.F.A., 1958, Yale.

Seely, Clarence I., 1947, Professor of Agronomy (Weed Science); Agronomist; B.S., 1933, M.S., 1935, Washington State. **(g)**

Seelye, Donald W., 1959, Associate Professor of Labor Relations; A.B., 1950, Indiana. **(g)**

Seiler, David E., 1963-1964; 1966, Associate Professor of Music (Band, Music Education, Clarinet); B.Mus., 1961, M.Mus., 1964, Wisconsin. **(g)**

***Shaber, Cecil R.**, 1970, Affiliate Professor of Industrial Safety, NRTS, Idaho Falls; B.S., 1944, M.S., 1948, Oklahoma A & M.

Shane, William H., 1969, Extension Studies and Training Specialist, Cooperative Extension Service, Moscow; B.S.Ed., 1959, M.Ed., 1962, Ed.Spec., 1964, Idaho.

***Sharp, D. Wayne**, 1963, Ada County Extension Agricultural Agent, Cooperative Extension Service, Boise; B.S.Ag., 1963, Idaho.

Sharp, Lee A., Professor of Range Management; B.S., 1948, M.S., 1949, Utah State; Ph.D., 1966, Oregon State. **(g)**

Shaw, David B., 1968, Instructor in General Engineering; B.S.Ag.E., 1966, Idaho.

Shepard, Stanley A., 1951-1954; 1961, Associate Director of Libraries (equivalent rank Professor); B.A., 1947, B.S., 1948, Rutgers; M.S.L.S., 1951, Columbia.

***Sherman, Theodore A.**, 1931, Professor Emeritus of English; B.A., 1924, Stanford; M.A., 1933, Idaho.

Shreeve, Jean'ne M., 1961, Professor of Chemistry; B.A., 1953, Montana; M.S., 1956, Minnesota; Ph.D., 1961, Washington. **(g)**

Shreve, Robert H., 1966, Professor of Education (Administration); Ph.B., 1936, Lawrence; M.A., 1941, Ed.D., 1955, Northern Colorado. **(g)**

Shryack, Willma C., 1950, Extension Home Furnishings Specialist, Cooperative Extension Service, Moscow; B.A., 1937, Northern Colorado; M.H.Ec., 1958, Oregon State.

Sieckmann, Everett F., 1962, Professor of Physics; B.A., 1950, Doane; M.S., 1952, Florida State; Ph.D., 1960, Cornell. **(g)**

Siems, Peter L., 1965, Associate Professor of Geology; B.Sc., 1957, London; D.Sc., 1967, Colorado School of Mines. **(g)**

Silha, Henry W., 1941, Associate Professor of Mechanical Engineering; B.S.M.E., 1940, Montana State; M.S.M.E., 1950, Idaho. **(g)**

***Simonds, Roy E.**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1946, Virginia; M.S., 1969, Idaho.

***Simons, Gale Gene**, 1970, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; A.A., 1959, Pratt Junior College; B.S., 1962, M.S., Ph.D., 1968, Kansas State.

***Simpson, Ferrol B.**, 1961, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1950, M.S., 1952, Utah State.

***Simpson, Orval D.**, 1961, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1950, Utah State; M.S., 1952, Utah.

***Simpson, William R.**, 1949, Research Professor of Plant Pathology; Plant Pathologist, Parma; B.S.Ag., 1949, M.S.Ag., 1951, Idaho.

***Singer, Gilbert L.**, 1970, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1963, Illinois; M.S., 1966, Northern Illinois.

Sipahigil, Teoman, 1970, Assistant Professor of English; B.A., 1961, Earlham; M.A., 1963, Miami (Ohio); Ph.D., 1970, California (Los Angeles).

Sita, John B., 1965, Associate Professor of Foreign Languages (Spanish, Linguistics); Maturita Classica, 1931, Liceo Balbo; Laurea (Doctorate), 1936, Venice.

Slade, H. Eugene, 1942, Assistant Business Manager; B.S.Bus., 1943, Idaho.

Slade, Louise L., 1944, Catalog Librarian (equivalent rank: Assistant Professor), B.S., 1942, B.S.L.S., 1943, Denver.

Slette, Carol F., 1969, Instructor in English; B.A., 1963, M.L.S., 1966, Valparaiso.

Slinkard, Alfred E., 1957, Associate Professor of Agronomy; Associate Agronomist; B.S., 1952, M.S., 1954, Washington State; Ph.D., 1957, Minnesota. **(g)**

Sloan, William P., 1955, Professor of Architecture; B.Arch., 1948, Rensselaer Polytechnic Institute; M.C.P., 1961, Yale. **(g)**

Slyter, Stanley E., 1956, Instructor, Herdsman, and Research Associate in Animal Science; B.S., 1954, Kansas State; M.S.Ag., 1964, Idaho.

Smiley, Charles J., 1962, Professor of Geology; B.A., 1951, Western Washington State; M.A., 1954, Ph.D., 1960, California (Berkeley). **(g)**

***Smith, Alan J.**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1965, M.S., 1967, Utah.

Smith, H. Sidwell, 1967, Professor of Civil Engineering (Sanitary Engineering), Dean, College of Engineering; Director, Engineering Experiment Station; B.S.C.E., 1935, M.S.C.E., 1961, Iowa; Ph.D., 1963, Iowa State; P.E. **(g)**

Smith, Howard W., 1954, Associate Professor of Entomology; Associate Entomologist, B.S., 1937, M.S., 1938, New Hampshire; Ph.D., 1950, Ohio State. **(g)**

Smith, James W., 1970, Visiting Assistant Professor of Architecture; B.Arch., M.S., 1970, California (Berkeley).

***Smith, Jay H.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1951, Brigham Young; M.S., 1953, Utah State; Ph.D., 1955, Cornell.

***Smith, LaMont**, 1955, Minidoka County Extension Agricultural Agent, Cooperative Extension Service, Rupert; B.S.Ag., 1951, M.Ag., 1968, Idaho.

Smith, Lewis B., 1967, Associate Professor of Education (Elementary Education); A.B., 1952, Hiram; M.Ed., 1957, Kent State; Ph.D., 1967, Wisconsin. **(g)**

Smith, Richard R., 1967, Assistant Professor of Industrial Education; B.S.Ed., 1967, M.S.Ed., 1969, Idaho.

***Smith, Rosa**, 1961, Idaho County Extension Home Economics Agent, Cooperative Extension Service, Grangeville; B.S.H.Ec., 1956, Kansas State.

***Smith, Vance T.**, 1941-1944; 1945, Teton County Extension Agricultural Agent, Cooperative Extension Service, Driggs; B.S.Ag., 1939, Idaho; M.S., 1941, Washington State.

Snider, Hervon L., 1949, Professor of Education; Associate Dean, College of Education; B.S.Ed., 1941, M.A., 1947, Ph.D., 1949, Nebraska. **(g)**

***Snider, John A.**, 1949, Professor Emeritus of Education (Elementary Education); B.S.Ed., 1930, M.S.Ed., 1938, Oklahoma; Ed.D., 1949, Colorado.

Snyder, William H., 1956, Associate Professor of Landscape Architecture; B.S., 1948, South Dakota State; M.S., 1950, Illinois; M.L.A., 1970, California (Berkeley). **(g)**

***Solbrig, Charles W.**, 1970, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., M.E., 1960, M.S., 1962, Ph.D., 1966, Illinois Institute of Technology.

Sowles, Kenneth M., 1969, Assistant Professor of Wood Utilization and Marketing; B.S.F., 1961, Northern Arizona.

Spangler, Richard J., 1968, Assistant Professor of Chemistry; B.S., 1962, Wyoming; Ph.D., 1967, Wayne State (Detroit). **(g)**

***Sparks, Walter C.**, 1947, Research Professor of Horticulture (Potatoes), Aberdeen; B.S., 1941, M.S., 1943, Colorado State.

Spevacek, Robert J., 1968, Assistant Professor of Music (Band, Music Education, Low Brass); B.Mus., 1959, M.Mus., 1964, Wisconsin.

Spidahl, Ruth W., 1971, State Extension Home Economics Leader, Cooperative Extension Service; B.S., 1947, Minnesota; M.S., 1965, North Dakota State.

***Spiker, Emmet E.**, 1946, Assistant Professor Emeritus of Physics (Electron Microscopist); B.S., 1933, Idaho.

***Spilker, H. Larry**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.S., 1965, J.D., 1968, Utah.

Sprague, Roderick, 1967, Associate Professor of Anthropology; Head, Department of Sociology/Anthropology; B.A., 1955, M.A., 1959, Washington State; Ph.D., 1967, Arizona. **(g)**

***Spraktes, Floyd W.**, 1964, Affiliate Professor of Metallurgy, NRTS, Idaho Falls; B.S.-Met.E., 1952, Idaho.

Sprecher, Robert E., 1970, Assistant Professor of Trade-Technical Education; B.S., 1967, Kansas State (Pittsburg); M.Ed., 1968, Ph.D., 1970, Missouri.

Stage, Albert R., 1962, Affiliate Professor of Forest Management (U.S. Forest Service, Moscow); B.S., 1951, M.F., 1952, M.S., 1961, Ph.D., 1966, Michigan.

***Staley, William W.**, 1928, Professor Emeritus of Mining Engineering; B.S.Min.E., 1925, New Mexico Institute of Mining and Technology; M.S.Met., 1929, Idaho; E.M., 1932, New Mexico Institute of Mining and Technology.

***Stalker, Beatrice**, 1959, Ada County Extension Home Economics Agent, Cooperative Extension Service, Boise; B.S.H.Ec., 1930, Idaho.

***Stallknecht, Gilbert F.**, 1968, Assistant Research Professor of Horticulture; Assistant Horticulturist, Aberdeen; B.S., 1962, M.S., 1966, Ph.D., 1968, Minnesota.

Stark, Ronald W., 1970, Professor of Forestry and Entomology; Coordinator of Research; Dean, Graduate School; B.S., 1948, M.A., 1951, Toronto; Ph.D., 1958, British Columbia. **(g)**

Stauber, Erik H., 1970, Assistant Professor of Veterinary Science; Assistant Veterinarian; D.V.M., 1966, Purdue.

Stefanakos, Elias K., 1968, Assistant Professor of Electrical Engineering; B.S.E.E., 1964, M.S.E.E., 1965, Ph.D., 1969, Washington State. **(g)**

***Steffens, H. Walter**, 1929, Professor of Zoology and Academic Vice President Emeritus (Dean, Graduate School, 1951-1953; Executive Dean, 1953-1961; Academic Vice President, 1961-1969); B.S., 1929, M.S., 1930, Idaho; Ph.D., 1940, Harvard; LL.D., 1969, Idaho.

Steinhoff, Raphael J., 1965, Affiliate Professor of Forest Genetics (U.S. Forest Service, Moscow); B.S.For., 1959, Idaho; M.S., 1961, North Carolina State; Ph.D., 1964, Michigan State.

Stellmon, M. William, 1964, Assistant Professor of Agricultural Information; Editor, Agricultural Experiment Station and Cooperative Extension Service, Moscow; B.A., 1951, Montana.

***Stephens, Dorothy N.**, 1939, Extension Professor and State Home Economics Leader Emerita, Cooperative Extension Service; B.S.H.Ec., 1930, Idaho; M.S., 1932, New York.

***Stephenson, Gordon R.**, 1965, Affiliate Professor of Geology (Northwest Watershed Research Center, U.S. Department of Agriculture, Boise); B.S., 1957, Augustana (Ill.); M.S., 1961, Washington State.

Stevens, Emsley H., 1969, Assistant Professor of Electrical Engineering; B.S., 1961, M.S., 1963, Ph.D., 1970, Washington. **(g)**

Stevenson, Elizabeth E., 1966, Assistant Professor of Foreign Languages (French); B.A., 1935, Vassar; M.A., 1969, Trinity; Ph.D., 1939, Yale.

Stevenson, Robert I., 1966, Professor of Law; B.A., 1934, LL.B., 1937, Yale.

Stewart, Jimmy D., 1970, Associate Professor of Accounting; B.S., 1958, West Virginia; M.B.A., 1959, Miami; C.P.A.

Stewart, Richard B., 1969, Professor of Mechanical Engineering; Department Chairman; B.S.M.E., 1946, M.S.M.E., 1948, Iowa; M.E., 1959, Colorado; Ph.D., 1966, Iowa; P.E. **(g)**

***Stimson, Edward S.**, 1947, Professor of Law and Dean Emeritus (Dean, College of Law, 1947-1962); A.B., 1920, B.S., 1920, A.M., 1922, Ohio State; J.D., 1927, S.J.D., 1932, Michigan.

Storm, Leo F., 1969, Professor of English; Department Chairman; B.A., 1949, Washington; M.A., 1950, Edinburgh; Ph.D., 1958, Washington. **(g)**

***Stough, Howard B.**, 1925, Professor Emeritus of Zoology; A.B., 1907, Midland Lutheran; M.A., 1909, Kansas; Ph.D., 1925, Harvard.

***Stranahan, Clyde H.**, 1943, Kootenai County Extension Agricultural Agent, Cooperative Extension Service, Coeur d'Alene; B.S.Ag., 1940, Idaho.

***Studer, Ben W.**, 1960, Boundary County Extension Agricultural Agent, Cooperative Extension Service, Bonners Ferry; B.S.Ag., 1958, Idaho.

***Suitt, William Josh**, 1970, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1964, Arkansas Polytechnic; M.S., 1967, South Dakota School of Mines and Technology.

Sullivan, John H., 1966, Associate Professor of Foreign Languages (German), Director, Intercultural Programs; B.A., 1949, Oregon; M.A., 1951, Johns Hopkins; Ph.D., 1966, California (Berkeley).

***Summers, Larry V.**, 1958, Affiliate Professor of Agricultural Economics (Collaborator, U.S. Department of Agriculture, Moscow), Agricultural Economist; B.S.Ag., 1958, M.S.Ag., 1960, Idaho; Ph.D., 1968, Washington State. **(g)**

Sun, Ping-Tsoong, 1957, Associate Professor of Engineering Science and Civil Engineering (Statistics); B.S.M.E., 1937, Chiao-Tung; M.S.M.E., 1950, Tennessee; P.E.

***Sunderman, Donald W.**, 1969, Affiliate Professor of Agronomy (Collaborator, U.S. Department of Agriculture Branch Experiment Station, Aberdeen); B.S., 1950, M.S., 1951, Ph.D., 1960, Minnesota.

Sussaman, Aaron, 1970, Instructor in English; B.A., 1957, M.A., 1963, Washington.

***Sutherland, Douglas W. S.**, 1969, Extension Entomologist, Cooperative Extension Service, Twin Falls; B.S., 1955, Vermont; M.S., 1960, Delaware; Ph.D., 1965, Cornell.

***Swartley, Harold W.**, 1960, State Seed Analyst, Cooperative Extension Service, Boise; B.S.Ag., 1951, Pennsylvania State; M.S.Ag., 1952, Kansas State.

***Sweeten, Elizabeth S.**, 1970, Oneida County Extension Home Economics Agent, Cooperative Extension Service, Malad; B.S., 1958, Brigham Young.

T

***Tankersley, Howard C.**, 1960, Community Resources and Development Leader, Cooperative Extension Service, Boise; B.S.Ag., 1956, Idaho; M.S., 1970, Oregon.

Tanner, Stephen L., 1969, Assistant Professor of English; B.A., 1962, M.A., 1964, Utah; Ph.D., 1969, Wisconsin.

***Taylor, Eugene**, 1920, Professor Emeritus of Mathematics; A.B., 1907, M.A., 1909, DePauw.

Taylor, Roy E., 1968, Extension Agricultural Engineer, Cooperative Extension Service, Moscow; B.S.Ag.E., 1948, Idaho; M.T.Sc., 1966, Idaho State.

Telin, Matt E., 1968, Registrar; B.S., 1958, Western Montana.

Tenney, William H., 1949, Associate Professor of English; B.A., 1929, M.A., 1931, Oberlin; Ph.D., 1944, Michigan.

Teresa, George W., 1968, Associate Professor of Bacteriology, Associate Bacteriologist; B.S., 1952, Arkansas A & M; M.S., 1955, Arkansas; Ph.D., 1959, Kansas State. **(g)**

***Thacker, David L.**, 1954, Assistant Research Professor of Dairy Science, Assistant Dairy Scientist, Caldwell; B.S.Ag., 1950, Idaho; M.S.Ag., 1952, Pennsylvania State.

***Thiessen, Wayne L.**, 1962, Assistant Research Professor of Soils, Extension Soils Specialist, Cooperative Extension Service, Twin Falls; B.S.Ag., 1962, M.S.Ag., 1965, Idaho.

Thomas, Carolyn E., 1966, Assistant Professor of Physical Education; B.A., 1965, Western Michigan; M.S., 1967, Washington.

Thomas, Charles M., 1959, Assistant State 4-H Club Leader, Cooperative Extension Service, Moscow; B.S.Ag., 1959, Idaho.

Thomas, Joe E., 1961-1962, 1966, Associate Professor of Electrical Engineering; B.S.E.E., 1960, Wyoming; M.S.E.E., 1962, Idaho; Ph.D., 1970, Denver; P.E. **(g)**

Thomas, Stanley W., 1954, Affiliate Professor of Religious Studies (Idaho School of Religion, Moscow); B.A., 1947, Maine; S.T.B., 1950, Ph.D., 1960, Boston.

Thompson, Billy B., 1970, Assistant Professor of Foreign Languages (Spanish); A.B., 1964, Carson-Newman; M.A., 1965, Tennessee; Ph.D., 1970, Virginia.

Thompson, Charles J., 1965, Assistant Professor of Physical Education; Supervisor, Service Program; B.S.P.E., 1962, Wisconsin State (La Crosse); M.S.P.E., 1965, Indiana.

***Thompson, Victor Neil**, 1970, Affiliate Professor of Business, NRTS, Idaho Falls; B.S.E.E., 1959, North Dakota State; M.S., 1970, Idaho.

Thomson, William J., 1968, Assistant Professor of Chemical Engineering; B.Ch.E., 1960, Pratt; M.S., 1961, Stanford; Ph.D., 1969, Idaho. **(g)**

Thyagarajan, B. S., 1968, Professor of Chemistry; M.A., 1950, M.Sc., 1953, Ph.D., 1956, Madras. **(g)**

***Tingey, Fred H.**, 1954, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1947, Utah State; M.S., 1949, Ph.D., 1951, Washington.

Tisdale, Edwin W., 1947, Professor of Range Management; Associate Director, Forest, Wildlife and Range Experiment Station; B.Sc., 1930, Manitoba; M.S., 1945, Ph.D., 1948, Minnesota. **(g)**

***Torell, Paul J.**, 1957, Associate Research Professor of Agronomy; Associate Agronomist, Parma; B.S.Ag., 1951, M.S.Ag., 1954, Idaho.

***Tovey, DeVere**, 1938-1943; 1959, Franklin County Extension Agricultural Agent, Cooperative Extension Service, Preston; B.S.Ag., 1937, Idaho.

Tovey, Weldon R., 1962-1964; 1965, Associate Professor of General Engineering; B.S.-M.E., 1961, M.Ed., 1964, Idaho.

Trader, Everett P., Jr., 1968, Assistant Professor of Naval Science; B.A.Soc., 1955, Occidental.

Travis, Leon P., 1968, Assistant Professor of Mechanical Engineering; A.A., 1958, Santa Rosa; B.S., 1960, M.S., 1966, California (Berkeley); Ph.D., 1968, California (Davis). **(g)**

Tung, Mason, 1962, Professor of English; B.A., 1951, Taiwan; M.A., 1958, Baylor; Ph.D., 1962, Stanford. **(g)**

Turner, Robert L., 1957, Associate Professor of General Engineering; B.S.Ed., 1958, M.Ed., 1960, Idaho.

Tyler, David J., 1965, Assistant Professor of Music (History, Piano); B.Mus., 1958, M.Mus., 1960, Artist Diploma, 1962, New England Conservatory.

Tylutki, Edmund E., 1956, Associate Professor of Botany; Director, National Science Foundation Summer Institute; B.S., 1951, M.S., 1952, Illinois; Ph.D., 1955, Michigan State. **(g)**

U-V

Uglem, Gary L., 1968, Instructor in Zoology; B.S., 1966, M.S., 1968, North Dakota.

Uldrich, Evert D., 1970, Instructor in Civil Engineering; B.S., 1961, M.S., 1967, Kansas.

Uthurusamy, Ramasamy, 1969, Instructor in Electrical Engineering; B.E., 1966, Madras.

Utzman, Glen G., 1964, Lecturer in Accounting; B.A., 1961, Washington State; J.D., 1964, Idaho.

Van Leuven, James K., 1970, Assistant Professor of Journalism; B.S., 1964, M.S., 1966, Oregon.

***Van Slyke, Carl G.**, 1970, Bingham County Extension Agricultural Agent, Cooperative Extension Service, Blackfoot; B.S.Ag., 1967, Idaho; M.S., 1970, Purdue.

Van Wagoner, Robert N., 1966, Director, Institutional Research; B.A., 1939, Nevada; M.A., 1955, Philippines; M.B.A., 1964, George Washington.

Vent, Herbert J., 1960, Professor of Education (Elementary Education); Acting Department Head; B.S., 1941, M.S.Geog., 1942, Oregon; Ed.D., 1949, Stanford. **(g)**

Vettrus, Dean L., 1961, General Manager, ASUI and Student Union Operations; B.S., 1961, B.A., 1961, Denver.

Vieira, Norman, 1965, Professor of Law; A.B., 1959, Columbia; J.D., 1963, Chicago.

***Vogt, Glenn E.**, 1969, Area Extension Potato Specialist, Cooperative Extension Service, Idaho Falls; A.A., 1962, North Idaho; B.S., 1964, California (Davis); M.S., 1966, Wisconsin.

Vogt, Mabel I., 1967, Instructor in Foreign Languages (German); B.A., 1963, Idaho; M.A., 1967, Washington State.

Voorhees, Jack R., 1969, Professor of Naval Science; Department Head; B.S., 1958, Washington; M.A., 1964, George Washington.

Voxman, William L., 1970, Assistant Professor of Mathematics; B.A., 1960, M.S., 1964, Ph.D., 1968, Iowa.

W

Wai, Chien M., 1969, Assistant Professor of Chemistry and Geology; B.S., 1960, Taiwan; Ph.D., 1967, California (Irvine). **(g)**

Wai, Lily C., 1970, General Librarian (equivalent rank: Instructor); B.A., 1960, Tunghai (Taiwan); M.S., 1965, Illinois.

***Waldhalm, Donald G.**, 1960, Associate Research Professor of Veterinary Science, Caldwell; B.A., 1948, M.S., 1950, Minnesota; Ph.D., 1953, Illinois.

***Walenta, Thomas R.**, 1947, Professor Emeritus of Law; B.S., 1926, Idaho; LL.B., 1933, Minnesota; LL.M., 1953, S.J.D., 1960, Illinois.

Walker, Delbert J., 1950, Associate Professor of Mathematics; A.B., 1935, Nebraska State; M.A., 1947, Nebraska.

Walker, Diane B., 1968, Assistant Professor of Physical Education (Dance); B.F.A., 1960, Boston Conservatory; M.Ed., 1968, Colorado State.

***Walker, Helen L.**, 1969, Affiliate Professor of Food Science (Washington State Dairy Council, Spokane, Wn.); B.A., 1947, Montana.

***Walker, Norman L.**, 1969, Jefferson County Extension Agricultural Agent, Cooperative Extension Service, Rigby; B.S.Ag., 1955, Idaho.

Wallace, Alfred T., 1967, Professor of Civil Engineering (Sanitary Engineering); B.S., 1959, Rutgers; M.S., 1960, Ph.D., 1965, Wisconsin, P.E. **(g)**

Wallace, Richard L., 1967, Assistant Professor of Zoology; B.S., 1956, Washington State; M.S., 1961, Ph.D., 1969, Oregon State. **(g)**

Wallace, William M., 1970, Assistant Science/Technology Librarian (equivalent rank: Instructor); B.S., 1968, Portland State; M.L.S., 1970, Oregon.

Wallins, Roger P., 1970, Assistant Professor of English; A.B., 1962, City College of New York; M.A., 1964, Ohio State.

Walton, Charles W., 1961, Associate Professor of Music (Opera, History, Voice); B.Mus., 1956, M.Mus., 1961, Michigan. **(g)**

***Walz, Arthur J.**, 1948-1956, 1967, Area Extension Potato Specialist, Cooperative Extension Service, Caldwell; B.S., 1942, M.S., 1948, California (Berkeley).

Wang, Chi-Wu, 1960, Professor of Forestry (Genetics); B.S., 1933, National Tsing Hua (Peking); M.S., 1947, Yale; Ph.D., 1953, Harvard. **(g)**

Wang, Ya-Yen, 1960, Assistant Professor of Mathematics; Assistant Analyst, Computer Services; B.S., 1956, Villa Maria; M.S., 1958, Florida; Ph.D., 1965, Idaho. **(g)**

Warner, Richard E., 1966, Professor of Mechanical Engineering; Associate Director, Engineering Experiment Station; A.B., 1942, Miami; M.Sc.Ch.E., 1948, Ph.D., 1951, Ohio State; P.E. **(g)**

Warnick, Calvin C., 1947, Professor of Civil Engineering (Water Resources); Director, Water Resources Research Institute; B.S.C.E., 1943, Utah State; M.S.C.E., 1947, Wisconsin; P.E. **(g)**

Warren, Jon G., 1966, Visiting Associate Professor of Law; LL.B., 1966, Idaho.

Washburn, Richard I., 1970, Affiliate Professor of Forest Entomology (U.S. Forest Service, Moscow); B.S., 1948, M.S., 1950, Colorado State.

Waters, Norman D., 1957, Assistant Research Professor of Entomology; A.A., 1948, Sacramento State; B.S., 1949, Ph.D., 1955, California (Berkeley).

Watson, Roscoe D., 1945, Professor of Plant Pathology; Plant Pathologist; B.S., 1935, M.S., 1937, Utah State; Ph.D., 1942, Cornell. **(g)**

Watts, Frederick J., 1968, Associate Professor of Civil Engineering (Hydraulics, Fluids, Water Resources); B.S.C.E., 1954, Iowa State; M.S.C.E., 1964, Ph.D., 1968, Colorado State; P.E. **(g)**

Watts, Joseph W., 1940, Business Manager; B.S.Bus., 1940, Idaho.

Webbert, Charles A., 1948, Head, Department of Special Collections and Archives, University Library (equivalent rank: Associate Professor); B.A., 1937, Washington; B.S.L.S., 1940, George Peabody; M.S.L.S., 1947, Illinois.

***Weibe, Gus A.**, 1969, Affiliate Professor of Agronomy (Collaborator, retired, U.S. Department of Agriculture Branch Experiment Station, Aberdeen); B.S.Ag., 1922, Idaho; M.S., 1925, Ph.D., 1933, California (Berkeley); D.Sc., 1969, Idaho.

***Wells, Wade G.**, 1934, Extension Animal Scientist, Cooperative Extension Service, Boise; B.S.Ag., 1939, Idaho.

***Weltzin, J. Frederick**, 1944, Professor of Education and Dean Emeritus (Dean, College of Education, 1944-1963); B.A., 1925, B.S.Ed., 1925, M.S.Ed., 1927, Ph.D., 1929, Hum.D., 1958, North Dakota.

Wenner, Lambert N., 1969, Assistant Professor of Sociology; B.S., 1950, M.S., 1954, St. Cloud State; Ph.D., 1970, Syracuse. **(g)**

Werner, Dennis A., Acting Assistant Professor of Psychology; B.S., 1964, Brigham Young; M.S., 1966, Ph.D., 1968, Oregon.

***Wesenberg, Darrell**, 1969, Affiliate Professor of Agronomy (Collaborator, U.S. Department of Agriculture Branch Experiment Station, Aberdeen); B.S., 1962, M.S., 1965, Ph.D., 1968, Wisconsin.

Westerlund, Arnold S., 1949, Professor of Art; B.A., 1938, M.A., 1939, Idaho.

***Westermann, Dale T.**, 1970, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1963, Colorado State; M.S., 1965, Ph.D., 1968, Oregon State.

***Weston, Milton B.**, 1944, Bingham County Extension Agricultural Agent, Cooperative Extension Service, Blackfoot; B.S., 1932, Utah State.

***White, Donald R.**, 1968, Kootenai County Extension Farm Forester, Cooperative Extension Service, Coeur d'Alene; A.B., 1953, Colby; B.S., 1958, Oregon State.

Whitehead, Albert E., 1930, Professor of Speech; Chairman, Speech; B.A., 1929, Colorado; M.A., 1930, Ph.D., 1944, Wisconsin.

Wicker, Ed F., 1963, Affiliate Professor of Forest Pathology (U.S. Forest Service, Moscow); B.S., 1959, Ph.D., 1965, Washington State.

Wiese, Alvin C., 1946, Professor of Agricultural Biochemistry; Head, Department of Agricultural Biochemistry and Soils; Agricultural Biochemist; B.S., 1935, M.S., 1937, Ph.D., 1940, Wisconsin. **(g)**

***Wilde, Ned.**, 1961, Affiliate Professor of Electrical Engineering, NRTS, Idaho Falls; B.S., 1949, Milwaukee School of Engineering; M.S., 1951, Wisconsin.

***Wilde, Willard J.**, 1924, Professor Emeritus of Accounting; B.S., 1923, Utah; M.S., 1924, California (Berkeley); C.P.A.

Willardson, Marlyn L., 1970, Instructor in Education; B.A., 1967, Western Washington State; M.Ed., 1969, Central Washington State.

Willett, James D., 1968, Assistant Professor of Chemistry; A.B., 1959, California (Berkeley); Ph.D., 1965, Massachusetts Institute of Technology. **(g)**

Williams, George A., 1957, Professor of Geological Engineering; Head, Department of Geology; B.S., 1943, Texas (El Paso); Ph.D., 1951, Arizona. **(g)**

Williams, Larry G., 1956, Associate Professor of Agricultural Engineering; Associate Agricultural Engineer; B.S.Ag.E., 1956; M.S.-Ag.E., 1959, Idaho; P.E. **(g)**

Williams, Roy E., 1966, Professor of Hyrogeology; Hydrogeologist; B.S., 1961; M.A., 1962, Indiana; Ph.D., 1966, Illinois **(g)**

Willmes, Henry, 1968, Assistant Professor of Physics; B.S., 1961; M.A., 1962; Ph.D., 1966, California (Los Angeles) **(g)**

Wilson, Esther H., 1963, Extension Nutritionist, Cooperative Extension Service, Moscow; B.S., 1936, Framingham State; M.S., 1949, Washington.

***Wilson, Jesse**, 1962, Owyhee County Extension Agricultural Agent, Cooperative Extension Service, Marsing; B.S.Ag., 1961, Idaho.

***Wilson, Lucia L.**, 1950, Expanded Nutrition Program-Community and Resource Development Program Leader, Cooperative Extension Service, Boise; B.S.H.Ec., 1936, Idaho.

Winchester, Robert O., 1970, Assistant Professor of Aerospace Studies; B.S.Nuc.-Engr., 1965, Wyoming; M.S.Nuc.Engr., 1969, Air Force Institute of Technology.

***Wineinger, Thomas W.**, 1969, Affiliate Professor of Mathematics, NRTS, Idaho Falls; A.B., 1963, Grinnell; M.S., 1966, Ph.D., 1968, Iowa State.

Winkler, Fred H., 1955, Professor of History and Political Science; A.A., 1943, A.B., 1947, M.A., 1948, Florida; Ph.D., 1957, Northwestern. **(g)**

***Winner, Herbert A.**, 1939, Professor of Agricultural Education and Department Head Emeritus (Head, Department of Agricultural Education, 1945-1968); B.S., 1927, Montana State; M.S., 1939, Iowa State.

Wischmeyer, W. Tom, 1970, Visiting Assistant Professor of Business; B.A., 1966, Augustana (Ill.); B.S., 1968, Iowa.

***Wise, Ralph M.**, 1960, Associate Research Professor of Agricultural Chemistry; Associate Agricultural Chemist (Cereals), Aberdeen; B.S., 1928, McPherson.

Withers, Russell V., 1961, Associate Professor of Agricultural Economics; Associate Agricultural Economist; B.S., 1957, M.S., 1958, Utah State; Ph.D., 1962, Cornell. **(g)**

Wohletz, Ernest W., 1937, Professor of Forestry (Policy); Dean, College of Forestry, Wildlife and Range Sciences; Director, Forest, Wildlife and Range Experiment Station; B.S., 1930, M.S., 1947, California (Berkeley). **(g)**

Wolf, Virginia, 1964, Assistant Professor of Physical Education; B.A., 1946, Earlham; M.S., 1950, Colorado.

***Wood, Mary L.**, 1964, Extension Clothing Specialist, Cooperative Extension Service, Boise; B.S.Ag., 1953, Fresno State.

***Woodbury, George W.**, 1935-1943; 1948, Professor Emeritus of Horticulture; B.S., 1927, M.S., 1931, Michigan State; Ph.D., 1943, Cornell.

***Woodbury, Kathryn S.**, 1953, Instructor Emerita in Foreign Languages; B.A., 1924, Elmira; M.A., 1930, Maine.

Woodruff, Dennis E., 1966, Instructor and Research Associate in Dairy Science; B.S.Ag., 1966, Idaho.

Woolums, Edward C., 1962, Associate Professor of Education; B.A., 1953, Ed.M., 1955, Ed.D., 1966, Colorado. **(g)**

Works, D. William, 1956, Associate Research Professor of Agricultural Engineering; Associate Agricultural Engineer; Director, Farm Electrification Project; B.S.Ag.E., 1951, Oregon State; M.S.Ag.E., 1959, Idaho; P.E.

***Wortham, Ruby A.**, 1947, Professor Emerita of Zoology; B.S., Oklahoma City; M.S., Michigan; Ph.D., Washington State.

Wray, George T., 1969, Assistant Professor of Art; B.S., 1963, Moorhead State; M.F.A., 1969, California College of Arts and Crafts.

Wriggle, Larry K., 1965, Associate Professor of Education; B.A., 1954, M.Ed., 1960, Eastern Washington State; Ed.D., 1964, Washington State. **(g)**

***Wright, James L.**, 1969, Affiliate Professor of Soils (Snake River Conservation Research Center, U.S. Department of Agriculture, Kimberly); B.S., 1959, M.S., 1961, Utah State; Ph.D., 1965, Cornell.

Wu, Lin-Yi Chin, 1969, Instructor in Foreign Languages (French); B.A., 1956, Peking; M.A., 1969, Washington State.

X-Y-Z

***Yamamura, Stanley**, 1961, Affiliate Professor of Chemistry, NRTS, Idaho Falls; B.A., 1953, Hawaii; M.S., 1955, Ph.D., 1957, Iowa State.

Yanaros, William D., 1971, Assistant Professor of Naval Science; B.A., 1967, Michigan State.

***Yates, Bennie D.**, 1969, Affiliate Professor of Mathematics, NRTS, Idaho Falls; B.S., 1967, M.S., 1968, Wyoming.

***Ybarrondo, Lawrence J.**, 1969, Affiliate Professor of Mechanical Engineering, NRTS, Idaho Falls; B.S., 1960, Detroit; M.S., 1962, Northwestern; Ph.D., 1964, Georgia Institute of Technology.

***York, R. Aaron**, 1947, Butte County Extention Agricultural Agent, Cooperative Extension Service, Arco; B.S.Ag., 1947, Idaho.

Young, Frank, 1947, Associate Professor of Physical Education; Director of Admissions; B.S., 1937, Jamestown; M.S., 1947, Oregon.

***Youngstrom, Carol O.**, 1929, Extension Professor and Associate Director Emeritus, Cooperative Extension Service; B.S.Ag., 1928, Oregon State; M.S.Ag., 1930, Kansas State.

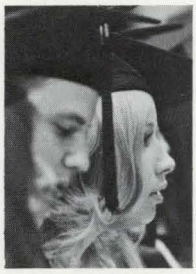
***Youtz, Donald F.**, 1953, Twin Falls County Extension Agricultural Agent, Cooperative Extension Service, Twin Falls; B.S., 1937, Wyoming.

Zaehringer, Mary V., 1953, Research Professor and Head, Department of Home Economics Research; B.S., 1946, Temple; M.S., 1948, Ph.D., 1953, Cornell.

***Zelezny, William F.**, 1961, Affiliate Professor of Metallurgy, NRTS, Idaho Falls; B.S., 1940, M.S., 1941, Montana State; Ph.D., 1951, Iowa.

***Zimmerman, Lee F.**, 1948, University Librarian Emeritus; B.A., 1924, Wisconsin; B.S.L.S., 1929, M.A., 1932, Illinois.

Zuroff, Sylvia, 1966, Assistant Professor of Physical Education; B.S., 1963, Rocky Mountain; M.S., 1966, Springfield (Mass.).



Research and Advisory Councils

THE PRINCIPAL OFF-CAMPUS research and advisory councils are listed below in recognition of the many contributions to the University and the state of Idaho by the members serving on them. The membership lists are current through December 15, 1970.

STEERING COMMITTEE OF THE RESEARCH COUNCIL

Brunning, R. J., Editor, *North Idaho Press*, Wallace.

Crookham, George L, Jr., Board Chairman, Crookham Co., Caldwell.

Egbert, Richard A., Tetonia.

Ellsworth, James, Leadore.

Koch, H. Ferd, Boise.

McKay, J. E., General Manager of Metallurgy, The Bunker Hill Co., Kellogg.

Mayer, Orland C., Meridian.

Peterson, M. A., Idaho Falls.

AGRICULTURAL CONSULTING COUNCIL

Adams, W. E., Eagle (Idaho State Grange).

Anderson, Kenneth, Roberts (Idaho Association of Soil Conservation Districts).

Bergson, F. W., Pocatello (Potato Processors of Idaho).

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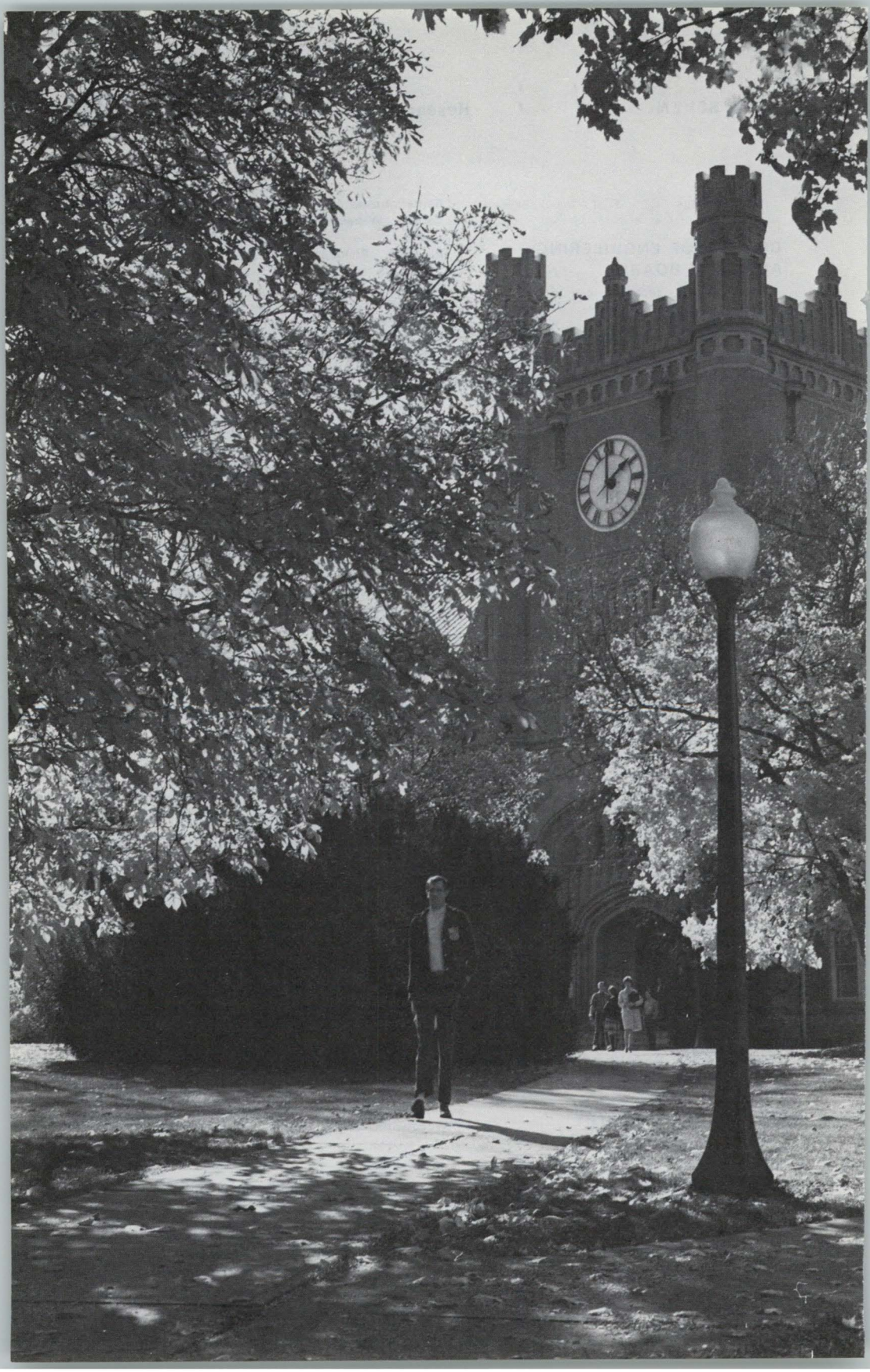

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